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MONITORED NATURAL ATTENUATION FINAL REPORT FOR MINE FILL B SOLID WASTE MANAGEMENT UNIT 13 (SWMU 13) ROUND NUMBER 9 NSA CRANE IN
06/01/2010
TETRA TECH NUS INC

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-94-D-0888

Rev. 0
6/2010

Monitored Natural Attenuation Final Report
for
Mine Fill B (SWMU 13)

Round No. 9

Naval Surface Warfare Center Crane
Crane, Indiana

Contract Task Order 0377

June 2010

Naval Facilities Engineering Command
Midwest
201 Decatur Avenue
Great Lakes, Illinois 60088

TETRA TECH NUS, Inc.

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MONITORED NATURAL ATTENUATION
FINAL REPORT
FOR
MINE FILL B (SWMU 13)

ROUND NO. 9

NAVAL SURFACE WARFARE CENTER, CRANE
CRANE, INDIANA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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Naval Facilities Engineering Command
Midwest
201 Decatur Avenue
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LIST OF ACRONYMS

BGS	below ground surface
CMS	Corrective Measures Study
DNX	hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
DO	dissolved oxygen
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
MFB	Mine Fill B
MNA	monitored natural attenuation
MNX	Hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NSA	Naval Surface Warfare Center
ORP	oxidation reduction potential
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	polychlorinated biphenyls
Plz	Pennsylvanian Lower Water Bearing Zone
Puz	Pennsylvania Upper Water Bearing Zone
PVC	polyvinyl chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RDX	Royal Demolition Explosive
SOPs	Standard Operating Procedures
SVOCs	Semivolatile Organic Compounds
SWMU	solid waste management unit
TNT	2,4,6-trinitrotoluene
TNX	Hexahydro-1,3,5-trinitroso-1,3,5-triazine
TOC	Total organic carbon
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency
µg/L	micrograms per liter

1.0 INTRODUCTION

1.1 GENERAL

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) has been conducted at the Naval Surface Warfare Center (NSA) Crane Mine Fill B (MFB) solid waste management unit (SWMU), also known as SWMU 13. The RFI was conducted in accordance with applicable RCRA corrective action requirements and provided data on the nature and extent of select explosives concentrations in surface soils, subsurface soils, sediment, surface water, and groundwater. The RFI indicates that explosives contamination remains in soil around buildings and that explosives have migrated to groundwater and gully water and unacceptable levels of risk remain for various combinations of human and ecological receptors.

A corrective measures study (CMS) will be conducted at SWMU 13 is to develop, evaluate and recommend corrective measures. Among the remedial alternatives expected to be evaluated will be the potential for natural attenuation to reduce concentrations of explosives in the groundwater. Monitored natural attenuation (MNA) relies on naturally occurring processes in the environment to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. A long-term groundwater monitoring program for explosives has been in progress at SWMU 13 since April 2004 to determine whether residual explosives are naturally degrading. The program was developed on the basis of United States Environmental Protection Agency (U.S. EPA) Region 5 framework guidelines specified in "Region 5 Framework for Monitored Natural Attenuation Decisions for Groundwater" (U.S. EPA, 2000).

The purpose of this report is to provide an evaluation of MNA processes on the basis of 9 rounds of groundwater and surface water data. Section 1.0 includes a description of site history, physical characteristics, and the conceptual flow and transport model for SWMU 13. Section 2.0 presents a description of SWMU 13, field investigation program. Section 3.0 presents the groundwater and surface water monitoring analytical data for all rounds of sampling, along with potentiometric surface maps for Round 9. Section 4 presents an evaluation of analytical data using statistical analyses, temporal plotting, and spatial contouring. Section 5.0 presents conclusions and recommendations. Figures and tables are presented at the end of each section. All field documentation associated with Rounds 1 through 9 is provided in Appendices A through C. Groundwater and surface water analytical results for Rounds 1 through 9 are provided in Appendix D. Appendix E presents potentiometric contour surface maps for previous Rounds 2 through 8. All Appendices A through E are provided on compact disk (CD).

1.2 SITE LOCATION AND DESCRIPTION

SWMU 13 is approximately 50 acres in size and is located in the central portion of NSA Crane within the Boggs and Turkey Creek Drainage Basin. This drainage basin is one of the five drainage basins that carry surface water off the installation and eventually drain into the East Fork of the White River and then to the Wabash River to the southwest. The location of SWMU 13 within NSA Crane is shown in Figure 1-1. Figure 1-2 presents an illustration of site features associated with SWMU 13. SWMU 13 is occupied by several buildings that are identified by specific building numbers. The building locations and building numbers are present in Figure 1-2,

1.2.1 Site History

SWMU 13 was used for the preparation of nitrate and the production of large mines, depth charges, rocket heads, aerial bombs, and projectiles. Trinitrotoluene (TNT), Composition B, H-6, Tritonal, and Minol were used in mine filling operations. Constituents of these explosives are Royal Demolition Explosive (RDX), TNT, aluminum powder, ammonium nitrate, and wax. Fertilizers (ammonium nitrate) were also melted into bombs. In the past, explosives powders that discharged from roof vents and accumulated on the roofs were washed down to the ground by precipitation, resulting in the contamination of soils. Widespread soils explosives contamination and large quantities of TNT, Composition B, HBX-1, HBX-3, and H-6 were reportedly collected in sumps (sediment and water) at MFB (Halliburton NUS, 1992). These sumps released explosives-contaminated water directly to surface drainage channels that flow into the Boggs Creek Watershed. Discharges of explosives powder through roof vents and discharges of explosives-contaminated waters no longer occur, because SWMU 13 is no longer used for loading of bombs.

1.2.2 Nature of Contamination and Chemicals of Concern

As discussed above, explosives contamination remains in soil around SWMU 13 buildings and explosives have migrated to groundwater, surface water, and gully water. RDX was identified as the most frequently detected explosive in groundwater, surface water, and surface soil. As a result, RDX is being considered as a parent compound for evaluating the effectiveness of natural attenuation at SWMU 13. Over time, natural attenuation will reduce the mass or concentration of RDX in soil and groundwater and RDX will decompose in stages to other well-defined intermediate by-products. In the case of RDX, it will degrade to give the nitroso derivatives hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX), hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX) and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX). As a result, the presentation and interpretation of analytical results in Sections 3 and 4 of this report will focus on RDX and its associated degradation products.

1.2.3 SWMU 13 Remediation Programs

Portions of MFB explosives contaminated soil were remediated in 1999, 2000, and 2001 as part of the bioremediation program that included sampling, excavation, on-site treatment through bioremediation (composting) of explosives-contaminated soil, and on-site backfilling of compost (TolTest, 2003). Soil excavation was performed around or near buildings 165, 166, 167, 168, 171, 173, 174, and 2501. However, in some cases, small isolated areas of explosive-contaminated soil were not removed because soil removal would have compromised the integrity of building supports or underground pipelines. These remaining areas of contaminated soil are in the vicinity of Buildings 171, 167, 173, 2501 and 2503. As a result, not all of the explosives contaminated soil could be excavated and that residual explosives contamination still exists outside the previous excavations. It is possible that these residual explosives maybe leaching from soils into groundwater.

1.2.4 Physical Characteristics

1.2.4.1 Physiography and Topography

MFB is located in the Crawford Upland area of the NSA Crane facility. MFB lies on top of a ridge that was flattened to some extent in the 1940s prior to the construction of buildings, roads, and associated parking and staging areas. The areas in between buildings and roads are grass covered. The active operations of MFB lie within an elongated trapezoid with a long axis that runs in a northeast-southwest direction (Figure 1-2). The main road (Highway 45) and a rail line also run in a northeast-southwest direction and lie along the southwestern side of MFB. Most buildings are located on the northwestern side of this road, within a fenced area. At the fence line on the northwestern side of MFB, the ridge top abruptly ends and the land surface slopes steeply down to an unnamed tributary of Boggs Creek. On the southeastern side of the main road, the other side of the ridge drops steeply in elevation to the southeast. Both sides of the ridge beyond the fence line and the main road are heavily forested, except along numerous rights-of-way that contain power lines, pipelines, and other utilities.

Elevations at MFB range from a low of approximately 550 feet above mean sea level (amsl) along the unnamed tributary of Boggs Creek up to approximately 720 feet amsl along the main roadway on the northeastern side of MFB. Thus, there is a total relief in the area of approximately 170 feet.

1.2.4.2 Geology

The bedrock underlying NSA Crane consists of sedimentary rocks from the Lower Pennsylvanian-age Mansfield Formation of the Raccoon Creek Group and the underlying Upper Mississippian-age Stephensport and West Baden Groups (Figure 1-3). The Pennsylvanian-age sandstones, siltstone, shales, coal beds, and thin limestone units of the Mansfield Formation can reach thicknesses of 250 to 300 feet at NSA Crane in the central and western portions of the facility. Because the pre-Pennsylvanian bedrock is dipping to the west-southwest toward the center of the Illinois structural basin, the Mississippian-age rocks are closer to the surface and crop out along the stream valleys and lower slopes on the eastern side of NSA Crane (Figure 1-4). On the eastern side of NSA Crane (e.g., near the Dye Burial Ground, Ammunition Burning Ground, and Rockeye), Pennsylvanian bedrock is confined to the uppermost portions of hills and ridges.

Below the Pennsylvanian rock lies Mississippian-age limestone and sandstone formations of the Stephensport Group (see Figure 1-3), including the Glen Dean, Golconda, and Beech Creek Limestones and the Big Clifty Sandstone. The elevation of the erosional unconformity separating the Pennsylvanian and Mississippian rocks is estimated to be between 500 to 550 feet amsl near SWMU 13 (Barnhill, 1993), or approximately 168 to 218 feet below the top of the ridge. This places the base of the Pennsylvanian rock below the elevation of the tributary stream on the northwestern side of SWMU 13. Therefore, all of the bedrock that lies above stream level consists of Pennsylvanian rock and is at least 186 feet thick from the top of the ridge.

In the RFI, soil borings were collected to characterize the geological structure across SWMU 13. In addition, groundwater monitoring wells were installed at 51 locations at depths ranging from 9.5 feet to 88 feet below ground surface (bgs). Figure 1-5 illustrates the locations of the groundwater monitoring wells and four hydrogeological cross sections, including select borings, through SWMU 13. Figures 1-6, 1-7, 1-8, and 1-9 show hydrogeologic cross sections A-A’, B-B', C-C', and D-D’, respectively.

Pennsylvanian bedrock is encountered beneath natural unconsolidated materials and fill and consists of discontinuous layers of siltstones, sandstones, shales, and coal seams. Most fractures found in the bedrock during the RFI were horizontal bedding plane fractures. The top of the ridge is capped with sandstone and siltstone that is weathered and stained brown because of iron oxidation. These rock units extend from the ridge top down to about 630 to 635 feet amsl (see Figures 1-6 through 1-8). When grouped together, the ridge-capping sandstone and siltstone units form what is termed the Upper Pennsylvanian water-bearing zone (Puz).

Beneath the upper sandstone and siltstone units lies a mudstone (siltstone/shale) unit that extends beneath the entire MFB area. The shale is interlayered with discontinuous siltstone and sandstone lenses. The sandstone lenses are most prevalent in the northeastern portion of SWMU 13. The top of the siltstone/shale unit is encountered at approximately 630 to 645 feet amsl (see Figures 1-6 through 1-8) and the bottom of the siltstone/shale unit lies at about 605 to 615 feet amsl. The total thickness of the siltstone/shale unit is about 30 feet. This siltstone/shale unit is considered to be an aquitard and greatly restricts the downward movement of groundwater. A sandstone layer is the next lithologic unit encountered beneath the interlayered siltstone/shale unit. This sandstone layer is termed as the Pennsylvania Lower water bearing zone (Plz). The top of this sandstone unit is encountered at approximately 605 to 615 feet amsl. The total thickness of the sandstone is not known.

1.2.4.3 Soils

A veneer overburden of natural soil and fill materials blankets the top and the sideslopes of the MFB ridge. The depth of the fill material varies, and in some cases, it extends to the bedrock surface. Fill material is also present near railroad spurs on the western side of the SWMU 13 near buildings, and in areas of past excavations. The fill material includes cinders, gravel, sand, and sandstone fragments.

Natural unconsolidated materials, residual soils of the Raccoon Creek Group, underlie the fill and exist at the ground surface wherever fill is not present. The residual soils on the ridge top and sideslopes consist predominantly of fine materials, including varying amounts of clay, silt, and sand. The maximum thickness of residual soil is about 17.5 feet was found in soil boring 13MWT28 (see Figure 1-8). Elsewhere on the ridge top, the overburden is generally 10 feet thick or less.

1.2.4.4 Hydrogeology

Field investigations indicated that saturated soil conditions often occur in overburden on top of the ridge. The shallow groundwater presumably represents rainfall recharge that has infiltrated the surface soil of the ridge top, percolated down to the upper bedrock surface, and is perched on the bedrock surface. This perched groundwater lens is sporadic in occurrence. Presumably, the thickness of saturated soil diminishes toward the edges of the ridge top where surface elevations decrease and the residual soil layer thins. It is assumed that the majority of the groundwater perched in the overburden soils seeps downward into the underlying bedrock. Some of the perched groundwater may also be migrating laterally toward the edges of the ridge top. In general, the ridge top sandstone aquifer is recharged by downward infiltration through the residual soil, and recharge occurs more readily where the soil is thin or disturbed and supplanted with fill material.

During the RFI, slug tests were performed on 15 monitoring wells screened in the Puz, five monitoring wells screened in the Plz, and two monitoring wells screened in the valley colluvium and alluvium. In most cases, a rising head and falling head test were performed on each well. In a few of the wells, only a rising head test was performed. A summary of the results of slug tests performed on select monitoring wells are presented in Table 1-1. The hydraulic conductivities for the shallow Puz monitoring wells ranged from 0.00345 to 13.95 feet per day (1.2E-06 to 4.9E-03 centimeters per second [cm/s]). The geometric mean hydraulic conductivity (K) for the shallow bedrock was approximately 0.212 foot per day (7.5E-05 cm/s). The large variation in hydraulic conductivities determined for the Puz was not surprising because the sandstone and siltstone unit ranges from partially weathered to highly weathered, and from massive (with little fracturing) to highly fractured.

Horizontal hydraulic gradients for the Puz across the site were calculated graphically from groundwater elevations presented in Figure 1-9. A representative hydraulic gradient for the northwestern side of MFB was estimated to be 0.094. For the southeastern side of the site, the average horizontal hydraulic gradient was estimated to be 0.0478. Assuming a fracture-related porosity of about 0.005 for the bedrock, average groundwater velocities were calculated to be approximately 3.99 feet per day and 2.0 feet per day for the western and eastern sides of the ridge top, respectively (TtNUS, 2007).

The hydraulic conductivities for the Plz monitoring wells (see Table 1-1) ranged from 0.000137 to 9.40 feet per day (4.8E-08 to 3.3E-03 cm/s). Only one well (13MWT46) of the five tested exhibited a hydraulic conductivity value greater than 0.01 foot/day. The geometric mean K value for deep Pennsylvanian bedrock was approximately 0.00896 foot per day (3.2E-06 cm/s). The average horizontal hydraulic gradient across the site for the Plz groundwater, calculated from groundwater elevations measured in RFI Round 3, was estimated to be 0.0387. Assuming a fracture-related porosity of about 0.005 for the bedrock, the average groundwater velocity in the Plz was calculated to be approximately 0.069 foot per day.

1.2.4.5 Conceptual Site Model

Residual explosive residues still remain in the soil cover at SWMU 13. Thus, there still exists potential for COPCs to leach out of the soils and enter the surface water or groundwater transport systems. There is also potential for the soils to erode and be transported by surface runoff and affect surface waters and sediment in drainageways downhill from SWMU 13. Figure 1-10 presents a schematic diagram of pathways that contaminants may take as migration routes from the site. The contaminants originate in the overburden soil at SWMU 13 (Location A). The contaminants that are leached and/or eroded from

the soils may enter the gullies that drain the site and transport surface water down the sideslopes of the ridge on which SWMU 13 is located (Pathway D).

Contaminants have been leaching and migrating downward and entering the perched groundwater and shallow groundwater flow system (Pathway B) probably since the beginning of SWMU 13 operations in the 1940s. The contaminants first leach down to the top of the bedrock surface and accumulate as perched groundwater at the base of the soil column. The perched groundwater likely travels short distances laterally to low spots on the bedrock surface and then infiltrates into bedrock.

The majority of groundwater in the shallow sandstone (Puz) is moving northwestward. This sandstone intercepts the land surface (i.e., crops out) along the upper portions of the ridge. The groundwater in the Puz that reaches the outcrop area will theoretically travel in one of three pathways; the groundwater will either be taken up by vegetation and transpired (Pathway B1), seep into gullies at the ground surface and join surface water in the gullies traveling downhill (Pathway B2), or will migrate down the side of the hill along the bedrock/soil interface which lies 1 to 3 feet bgs (Pathway B3).

A small portion of the groundwater in the Puz is migrating downward through a shale and siltstone aquitard and enters the deeper groundwater flow system in the Lower Pennsylvanian water-bearing zone (Plz). This deeper groundwater (Pathway C) is flowing primarily northwest and southeast toward the nearest streams. However, the primary and secondary permeability of this water-bearing zone is less than the Puz and the groundwater flow velocities are consequently slower in the deeper groundwater system.

During storms and high flow events, most of the surface water flowing down the hillside (Pathway D) probably enters the creek (unnamed tributary of Boggs Creek) as overland flow in the drainageways (Pathway D1). As the surface water reaches the valley bottom, it slows down and some of the surface water will infiltrate into the soils and alluvial deposits (Pathway D2) and continue to flow toward the creek. This D2 groundwater mixes with the deep groundwater migrating from within the ridge (Pathway C); this mixing will likely occur in the valley bottom sediments.

Ultimately the creek, when flowing, will have water in it from several different sources: surface water from upvalley, surface water discharge from the gullies (D1), and groundwater emanating from the valley floor deposits. The creek is dry for a good portion of the year, but groundwater may still be traveling down the valley as underflow in the valley bottom deposits even when the creek bed is dry. Groundwater in the valley bottom on the northwest side of SWMU 13 is also impacted with energetic compounds.

Presumably, surface waters in the gullies are traveling down the hillside and a portion of the surface water re-enters the groundwater when it reaches the valley sediments (Pathway D2).

Surface water runoff and sediment drain off of the top of the SWMU 13 ridge along the northwest and the southeast sides of the ridge. The runoff flows in gullies down the sides of the ridge. In addition to surface water runoff, contaminated groundwater seeps into a few of the gullies at a slow rate. Therefore, the waters in the gullies flowing down the ridge are a mixture of surface runoff and shallow groundwater seepage. The gullies running down the southeast side of the ridge have a relatively long distance (approximately one mile) to travel before reaching Turkey Creek. The gullies running down the northwest side of the ridge have to travel only about 1,200 feet before reaching the floor of the valley of an unnamed tributary of Boggs Creek. Some of the gully waters flow into the tributary creek (Pathway D1); however, some of the surface water also infiltrates into the alluvium (silt, sand, and gravel) and travels via subsurface to the creek (Pathway D2) or down the valley as groundwater underflow (i.e., groundwater that migrates in the alluvium parallel to the creek). Ultimately, the unnamed creek is the recipient of all surface water runoff, sediment, and groundwater originating from the northwestern side of SWMU 13.

1.2.4.6 Design Basis Summary for Site Conceptual Model

The following is a summary of the conceptualized aspects of explosives contaminant migration, fate, and persistence at SWMU 13 based on the results of the RFI:

- Explosives, primarily RDX, and to lesser extent HMX, TNT degradation products, and ammonium nitrate were released to soils.

- Interim remedial actions have greatly reduced explosive compound concentrations in large areas, such that most soils now meet residential or industrial standards.

- Isolated areas of residual explosives are present in soils and are continuing to degrade.

- The upper zone of groundwater has been contaminated with explosives, primarily RDX, and to a lesser extent HMX, TNT degradation products, and ammonium nitrate.

- Nearly all of the groundwater in the uppermost bedrock (i.e., the Puz) is flowing laterally toward the upper slopes of the ridge. Some of this groundwater seeps into the gullies on the side of the ridge and some of the contaminated groundwater is taken up by trees and other vegetation and transpired.

Thus, natural phytoremediation is playing a part in controlling and reducing the rate of contaminants reaching the base of the ridge and entering the tributary stream.

- Explosives (RDX and TNT) in groundwater are degrading as evidenced by the presence of degradation products.

- Some of the explosives contaminants (mainly RDX and HMX) are reaching the unnamed intermittent stream on the northwest side of the site, which is a tributary of Boggs Creek.

- Only a trace of contaminants (<0.5 µg/L of 2-nitrotoluene and 3-nitrotoluene) have reached the deeper groundwater monitoring wells (e.g., 60-100 feet bgs). The siltstone and shale layers between the upper and lower water-bearing zones are an effective aquitard and prevent most of the shallow groundwater and contaminants from reaching the deeper portion of the ridge.

- Some shallow groundwater in the sediments in the valley located northeast of the ridge is contaminated with RDX and nitrate. This contamination is derived from contaminated surface water running down the gullies and infiltrating into the valley bottom.

- Contaminated groundwater in the valley bottom is either flowing into the tributary stream or is flowing southwest down the valley as groundwater underflow. No groundwater from SWMU 13 is flowing under the stream beneath the adjacent ridge.

- Contaminants continue to leach from the surface and near-surface soils and migrate downhill in steep gullies on the northwestern and southeastern sides of the ridge. The largest concentrations of explosives have been detected in the gullies leading down the northwest side of the ridge.

TABLE 1-1

HYDRAULIC CONDUCTIVITIES (K) OF GEOLOGIC MATERIALS BASED ON SLUG TESTS
SWMU 13 MINE FILL B
NSA CRANE
CRANE, INDIANA

Well No.	Screened Material	K (rising head, ft/day)	K (falling head, ft/day)
Upper Pennsylvanian Water-Bearing Zone (Puz)			
13MWT02	Shaly sandstone	0.00302	0.00388
13MWT08	Siltstone with some interlayered sandstone	2.16	10.9
13MWT11	Siltstone with some interlayered sandstone	0.159	0.389
13MWT14	Shaley siltstone and sandstone	1.26	1.67
13MWT15	Siltstone, sandstone, and coal	0.128	0.195
13MWT17	Siltstone, sandstone, and coal	17.3	10.6
13MWT20	Siltstone, sandstone, and silty shale	0.131	0.135
13MWT26	Siltstone and sandstone	0.0132	0.0186
13MWT30	Siltstone, sandstone, and coal	0.0607	0.0873
13MWT32	Sandstone	0.231	0.303
13MWT33	Siltstone, sandstone, and silty shale	0.0147	ND
13MWT34	Shaly siltstone	0.163	0.199
13MWT37	Sandstone	1.03	1.37
13MWT42	Sandstone	0.0794	ND
13MWT47	Sandstone	0.275, 0.423	0.375
Lower Pennsylvanian Water-Bearing Zone (Plz)			
13MWT35	Sandstone	8.95E-04	ND
13MWT38	Fine to medium sandstone	6.78E-03	ND
13MWT45	Shale and siltstone	1.37E-04	ND
13MWT46	Sandstone	9.40	6.12
13MWT50	Shaly siltstone	0.128	0.004
Valley Colluvium and Alluvium			
13MWT49	Clayey sand with some rock fragments	137	0.128
13MWT51	Clayey sand with some rock fragments	3.73	4.93

ND - No data.

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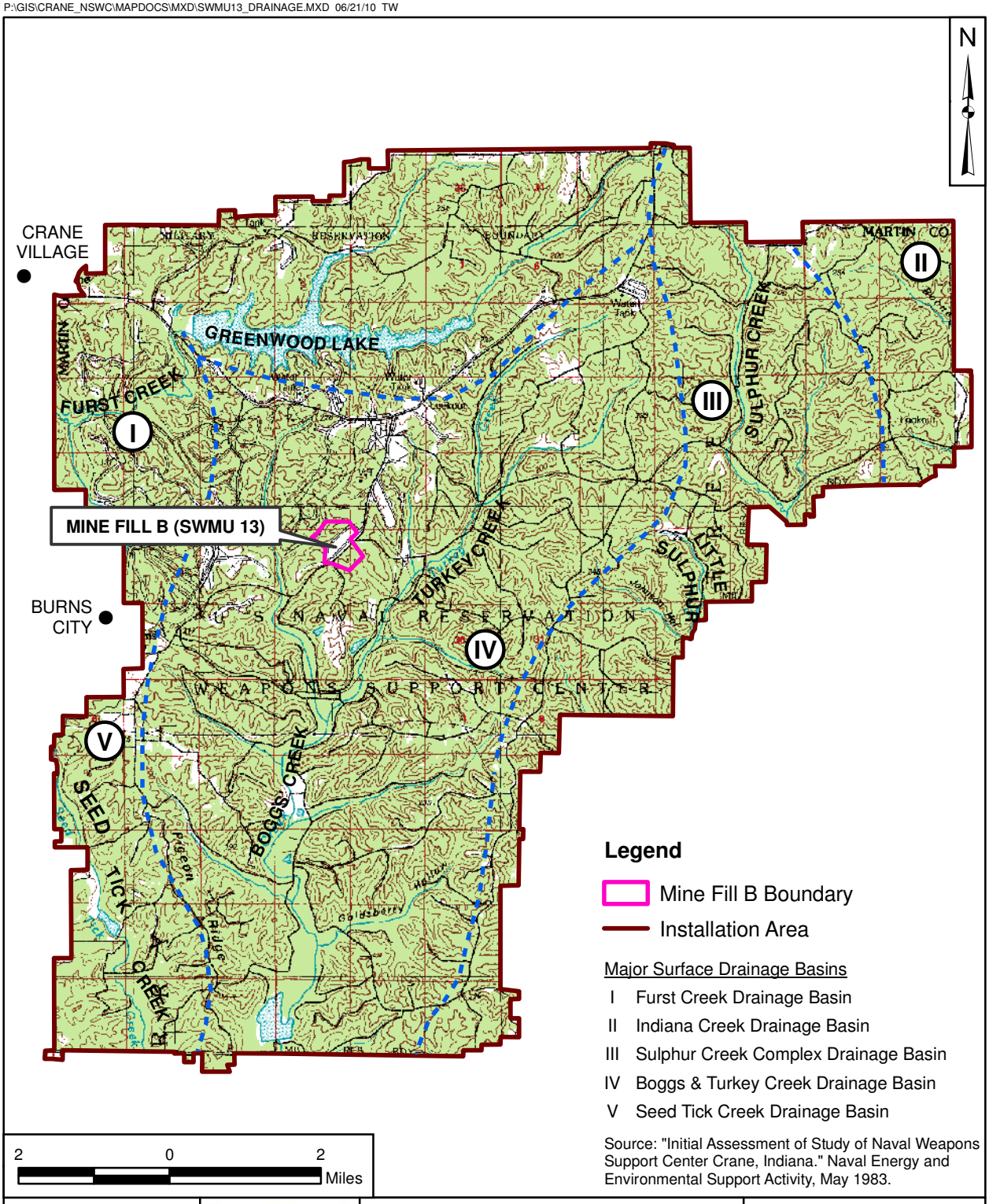

Source: "Initial Assessment of Study of Naval Weapons Support Center Crane, Indiana." Naval Energy and Environmental Support Activity, May 1983.

DRAWN BY T. WHEATON	DATE 05/12/10	NAVFAC	LOCATION OF SWMU 13 NSA CRANE CRANE, INDIANA	CONTRACT NUMBER CTO 0377
CHECKED BY J. LUCAS	DATE 06/21/10			OWNER NUMBER —
REVISED BY —	DATE —			APPROVED BY — / DATE —
SCALE AS NOTED				FIGURE NO. FIGURE 1-1 / REV 0

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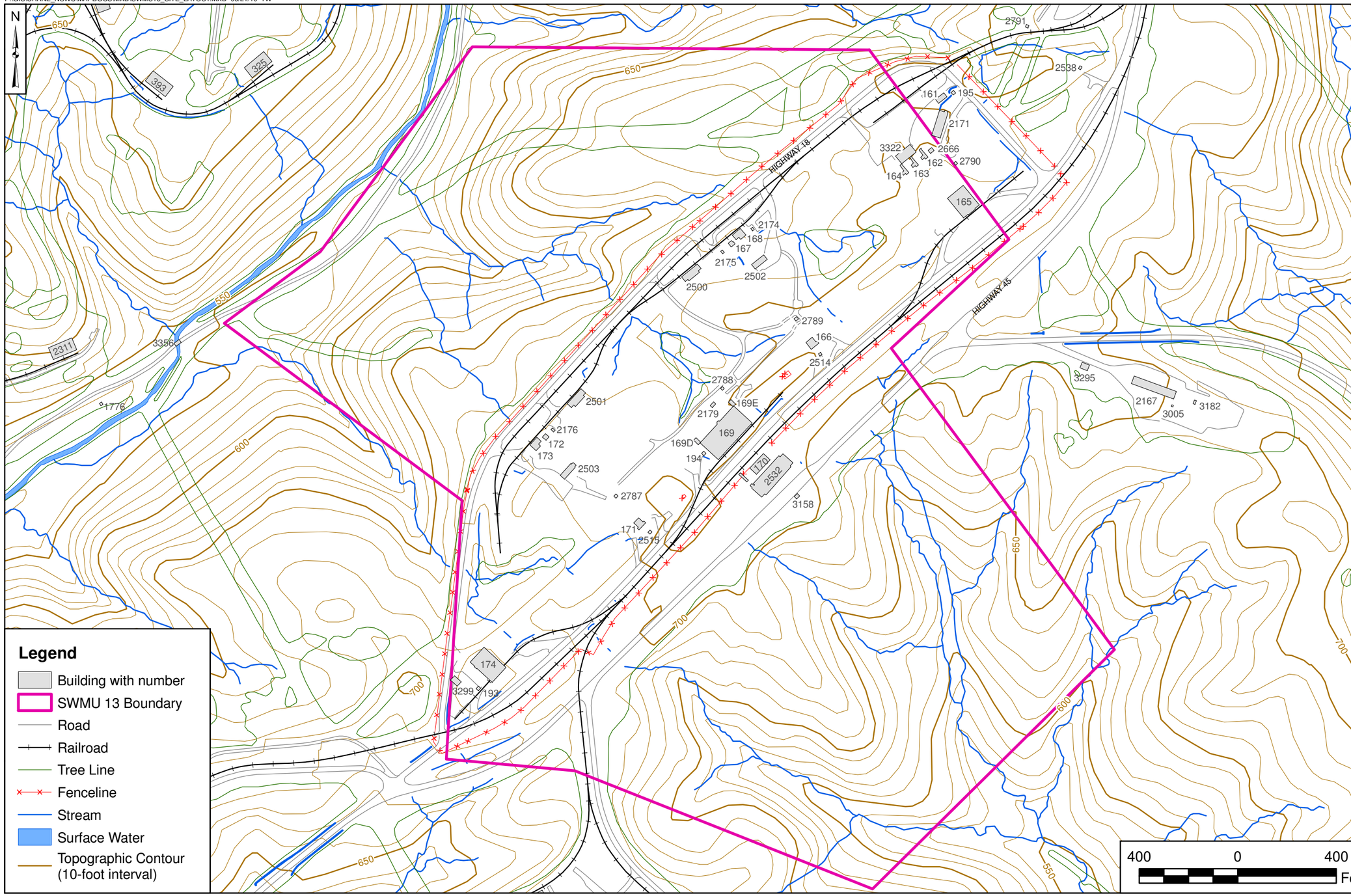

CONTRACT NUMBER
CTO 0377

APPROVED BY — DATE —

APPROVED BY — DATE —

FIGURE NO. FIGURE 1-2

REV 0

SITE FEATURES
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

DRAWN BY T. WHEATON DATE 06/21/10

CHECKED BY V. PLACHY DATE 06/21/10

COST/SCHEDULE-AREA

SCALE AS NOTED

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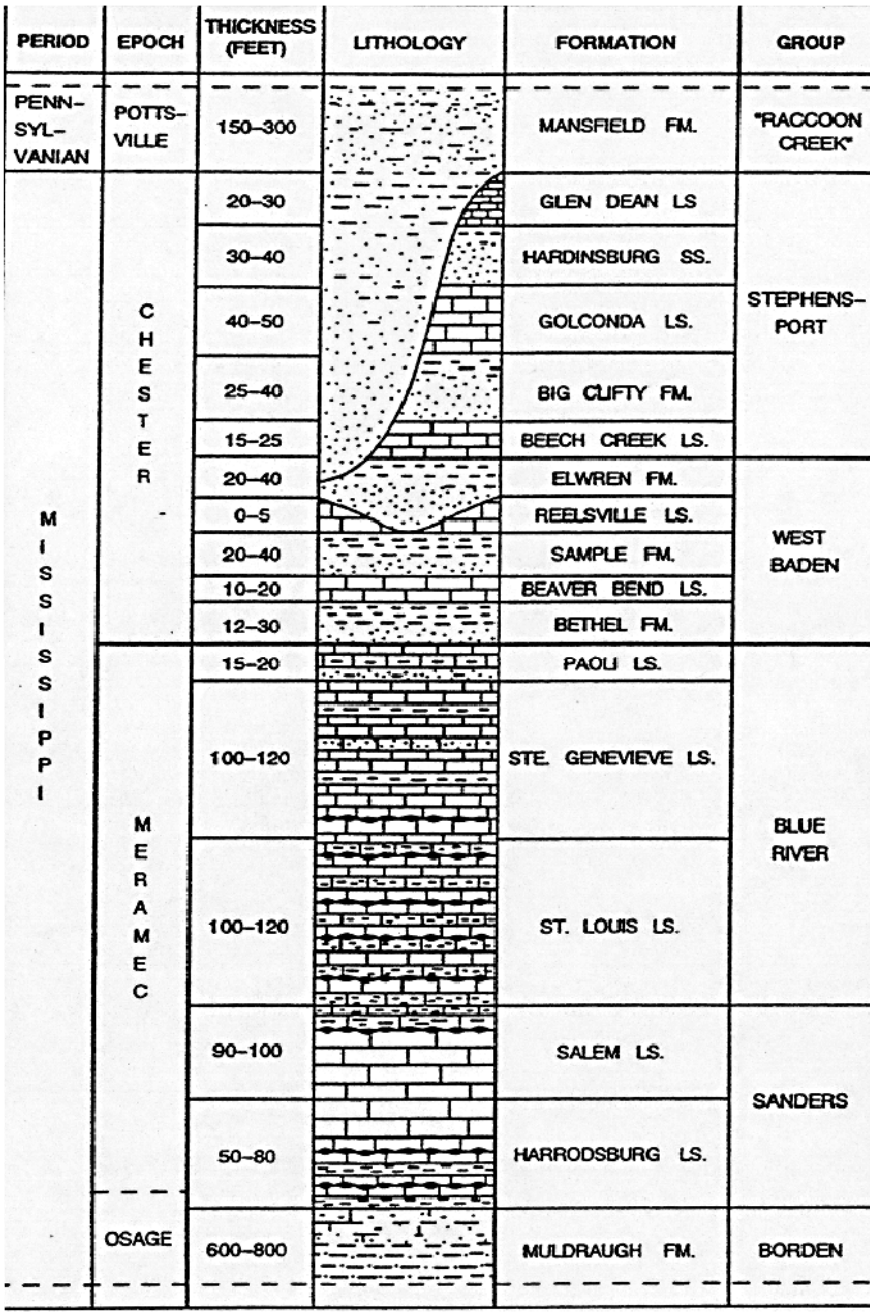

Source: Draft Report, RCRA Facility Investigation
Phase II Groundwater Release Assessment, SWMU 06/09
Demolition Area and Phase III Release
Characterization SWMU 07/09 Old Rifle Range
November 1995 - Figure 13
by William L. Murphy and Roy Wade

DRAWN BY T. WHEATON DATE 06/21/10		GENERALIZED STRATIGRAPHIC COLUMN SWMU 13 - MINE FILL B NSA CRANE CRANE INDIANA	CONTRACT NUMBER CTO 0377
CHECKED BY J. LUCAS DATE 06/21/10			OWNER NUMBER —
REVISED BY — DATE —			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		FIGURE NO. FIGURE 1-3 / REV 0

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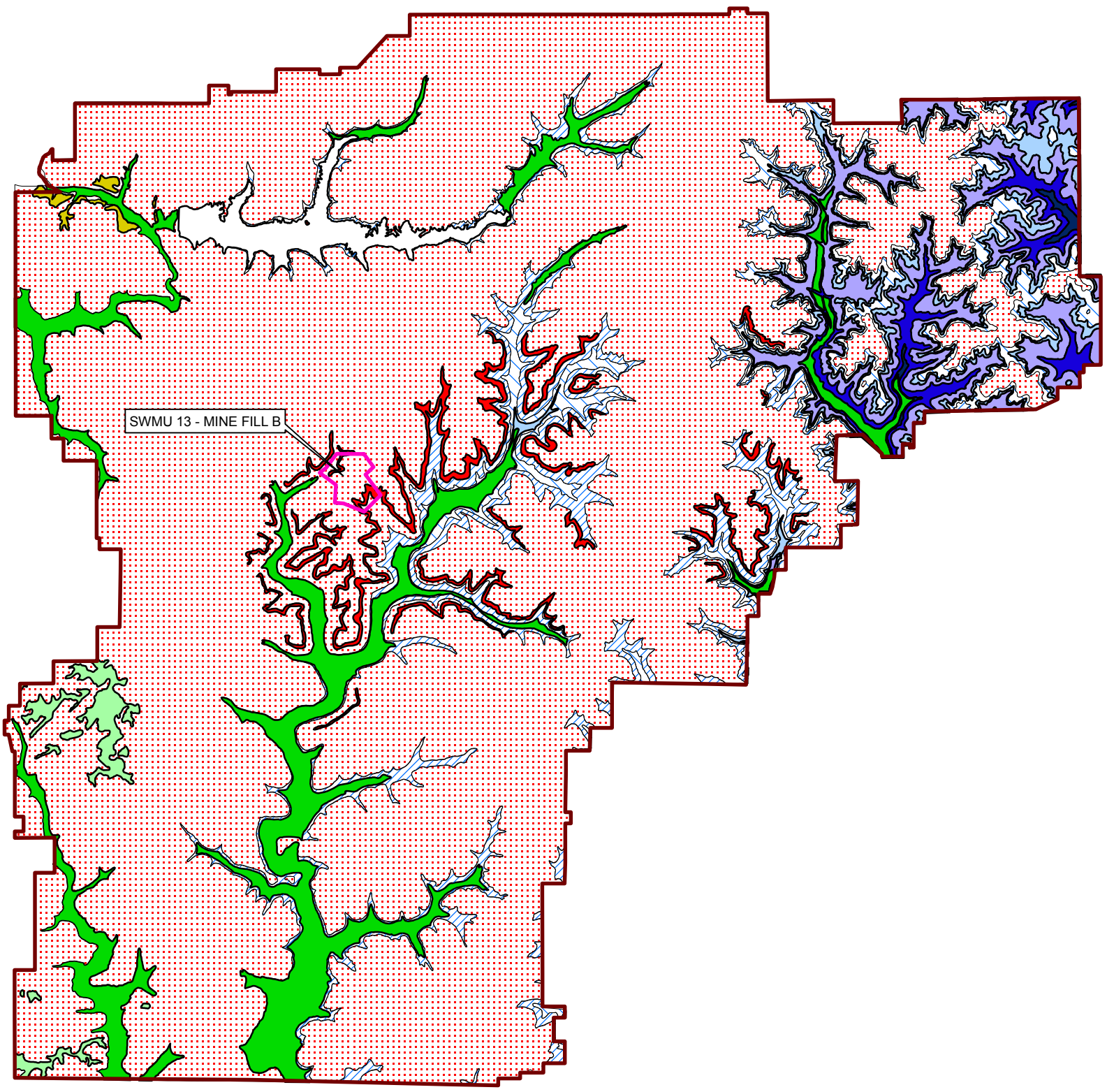

Inferred Depositional Environment		Explanation of Geology
Alluvium	Qal	*Alluvium*
Loess/Glacial Outwash	Ql	*Loess*
	Qo	*Glacial Outwash*
Residual Soil derived from Pennsylvanian bedrock/colluvium	P	*Raccoon Creek Group and undifferentiated*
	Ps	*Sandstone-dominated horizon of Lower Pennsylvanian*
Residual soil derived from Mississippian bedrock/colluvium	M6	*Glenn Dean Ls, Hardinsburg Fm, Haney Ls, Indian Springs Shale Mbr, and undifferentiated*
	M5	*Sandstone member of the Big Clifty Fm*
	M4	*Beech Creek Ls*
	M3	*Elwren Fm, Reelsville Ls, upper Sample Fm, and undifferentiated*
	M2	*Lower part of Sample Fm, Beaver Bend Ls, Bethel Fm, and undifferentiated*
	M1	*Paoli Ls, Ste Genevieve Ls, and undifferentiated*

Source: Background Soils Report. TtNUS 2001. (Modified from Blunck, 1995).

Legend

- SWMU 13 Boundary
- Installation Area

1.5 0 1.5 Miles

DRAWN BY	DATE
T. WHEATON	06/21/10
CHECKED BY	DATE
J. LUCAS	06/21/10
REVISED BY	DATE
___	___
SCALE	
AS NOTED	

NAVFAC

SURFICIAL GEOLOGY MAP
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	
CTO 0377	
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FIGURE NO.	REV
FIGURE 1-4	0

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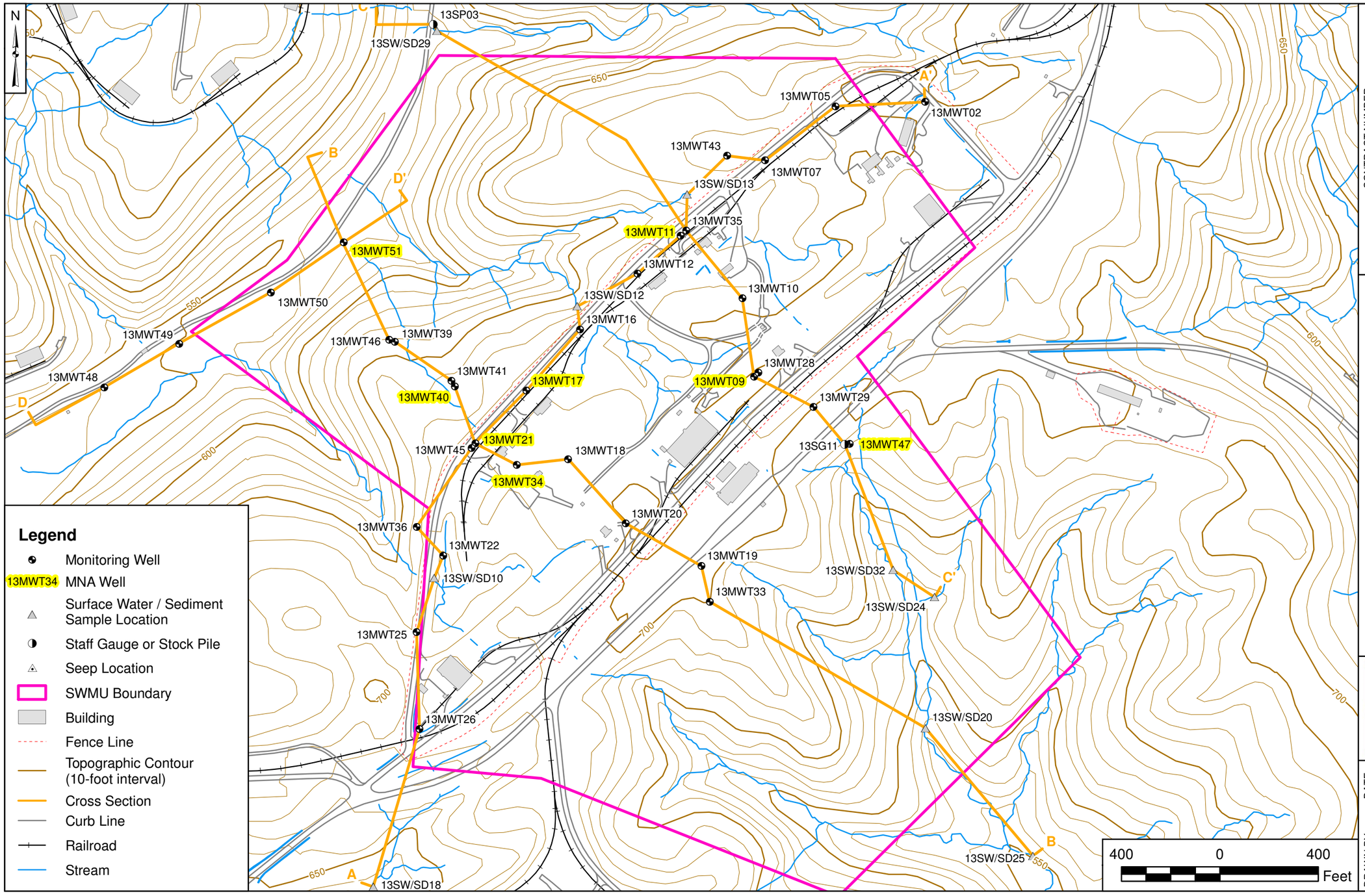

CONTRACT NUMBER
CTO 0377

APPROVED BY — DATE —

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FIGURE NO. FIGURE 1-5

REV 0

CROSS SECTION MAP
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

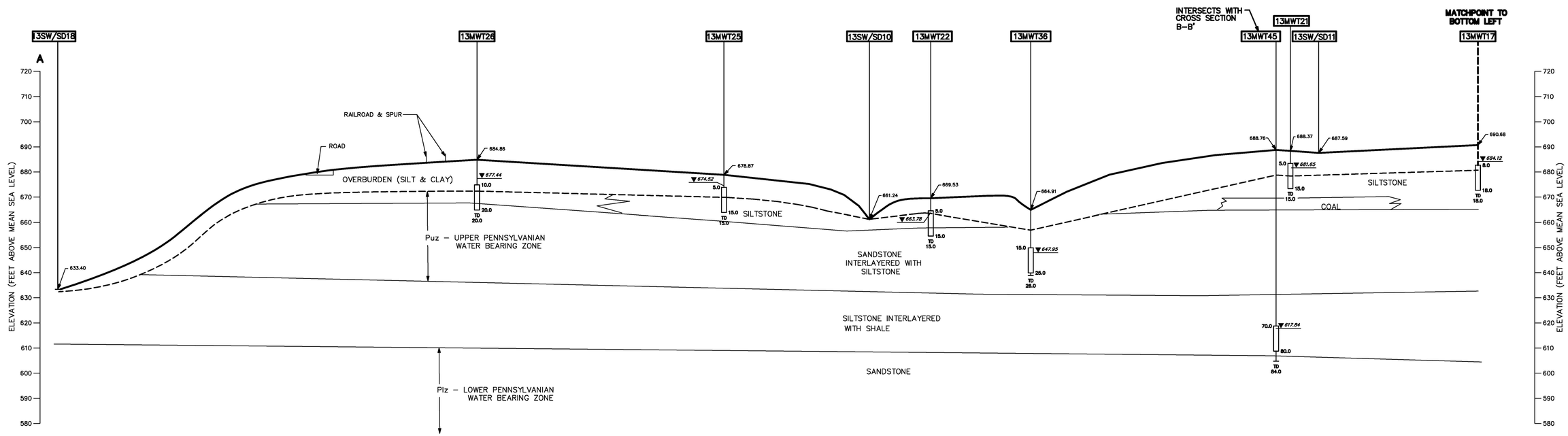
NAVFAC

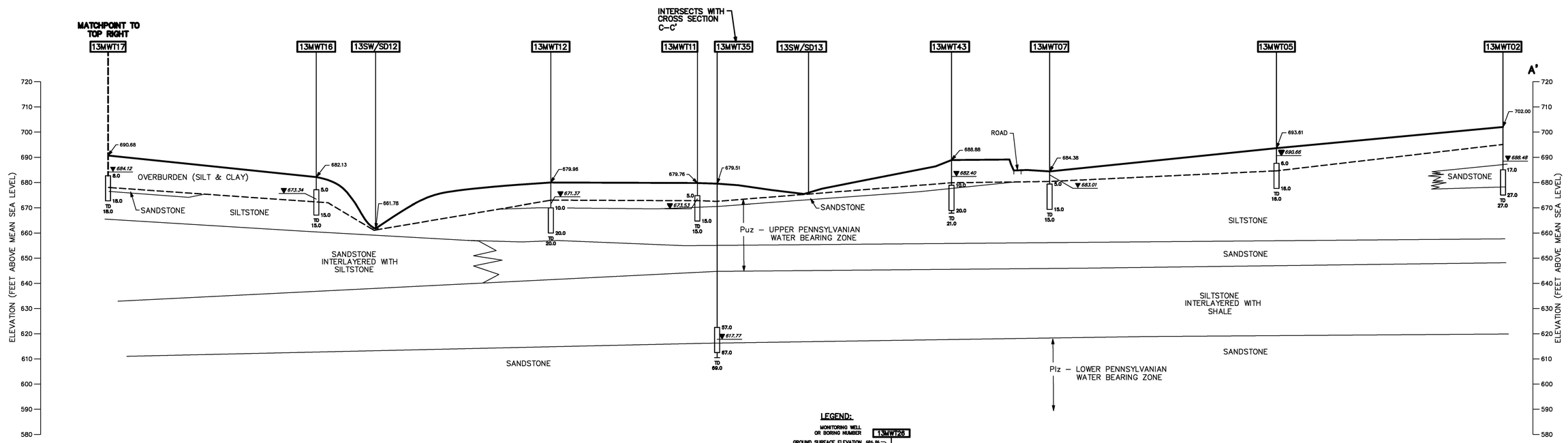
DRAWN BY T. WHEATON DATE 06/21/10

CHECKED BY J. LUCAS DATE 06/21/10

COST/SCHEDULE-AREA

SCALE AS NOTED





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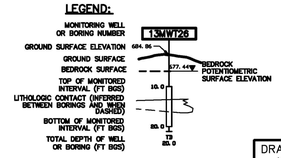

0 80 160
HORIZONTAL SCALE IN FEET
0 20 40
VERTICAL SCALE IN FEET

DRAWN BY HJB	DATE 1/18/04	NAVFAC	GEOLOGICAL CROSS SECTION A–A' SWMU 13 MINE FILL B NSA CRANE CRANE, INDIANA
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REVISED BY	DATE		
SCALE AS NOTED			

CONTRACT NO. 00041	
OWNER NO. 0000	
APPROVED BY	DATE
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DRAWING NO. FIGURE 1–6 REV. 0

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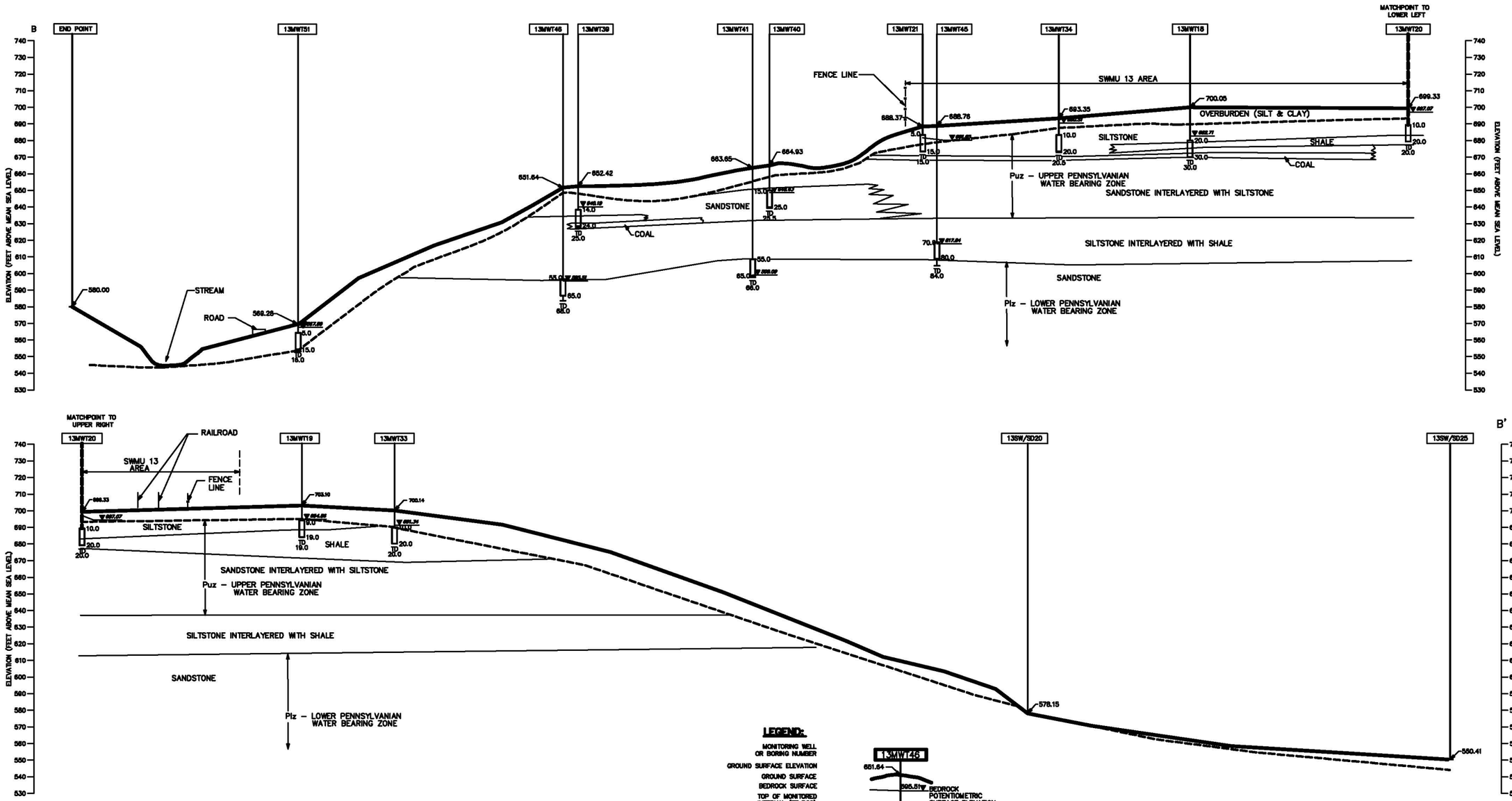

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REVISED BY	DATE		APPROVED BY / DATE
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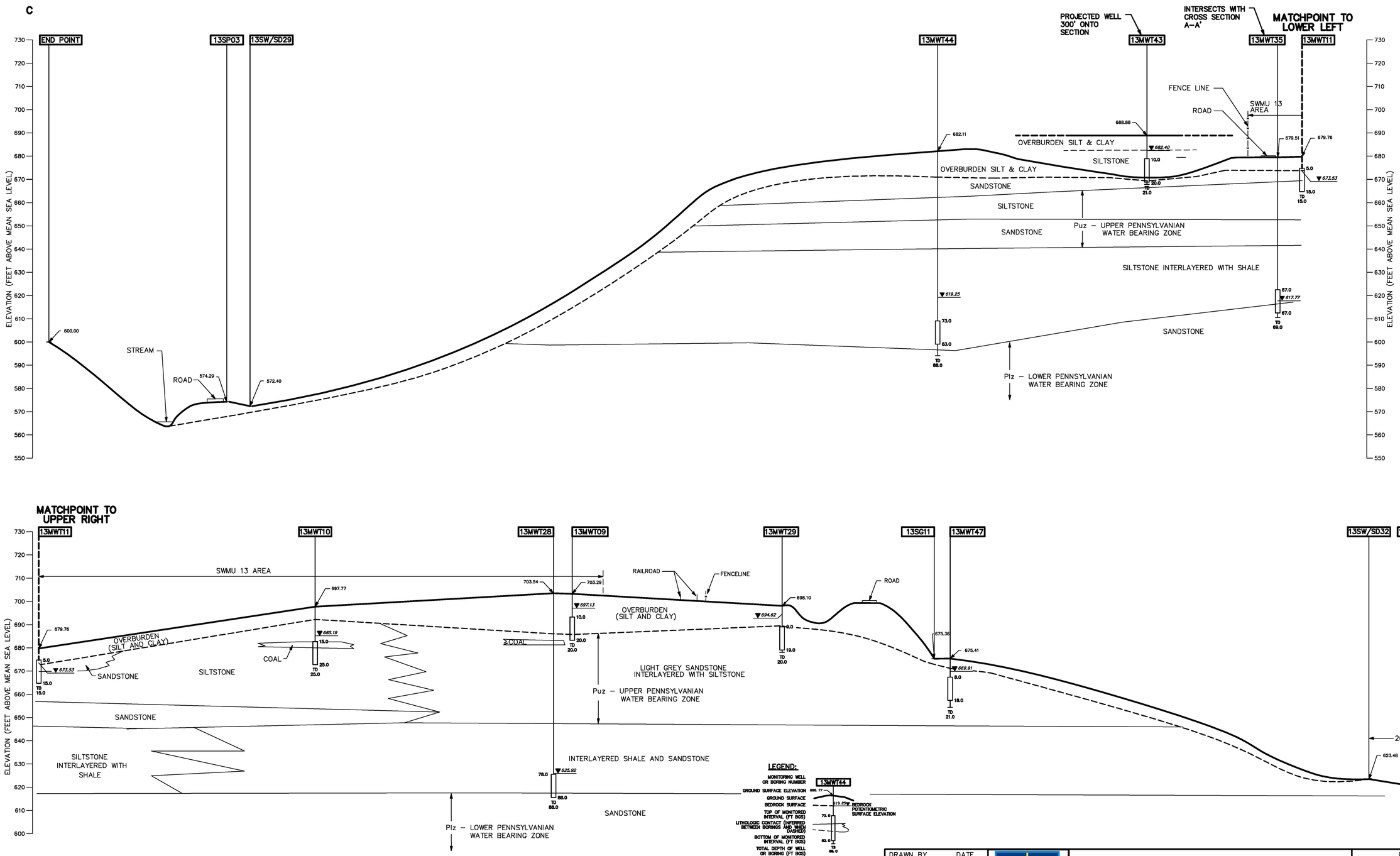
DRAWING NO. FIGURE 1–7 REV. 0



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GEOLOGICAL CROSS SECTION C–C'
SWMU 13 MINE FILL B
NSA CRANE
CRANE, INDIANIA

CONTRACT NO. 00041	
OWNER NO. 0000	
APPROVED BY	DATE
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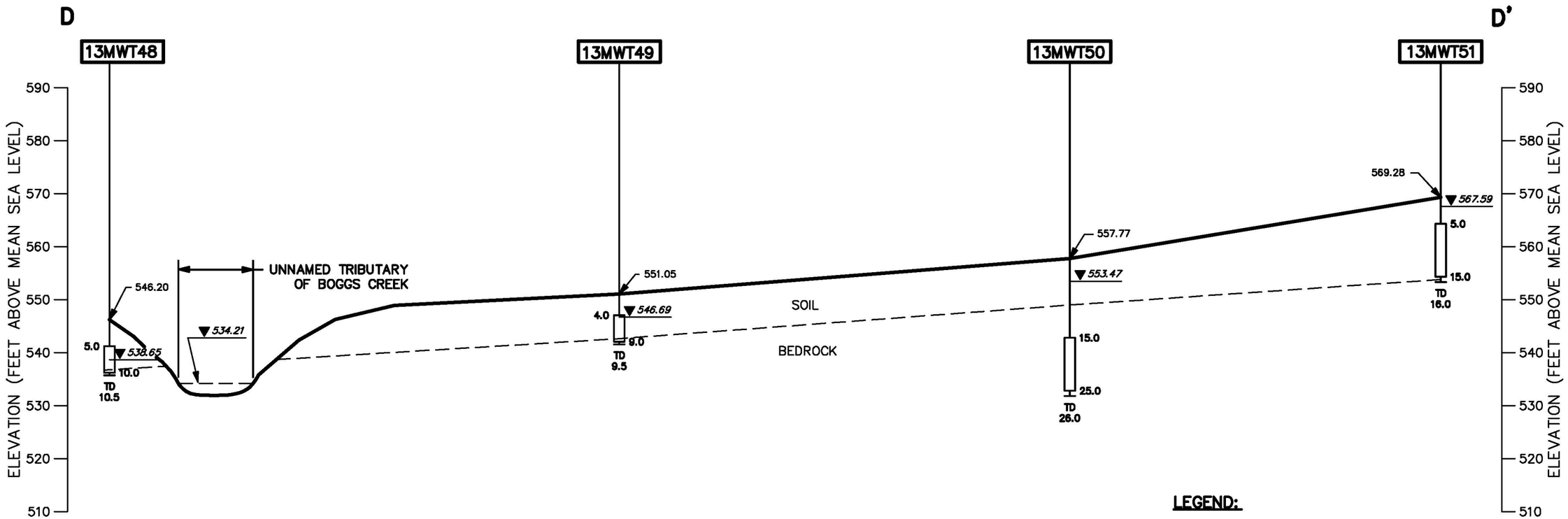

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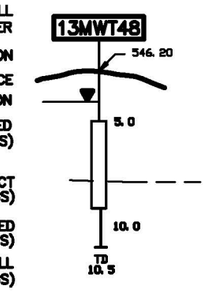

0 100 200
HORIZONTAL SCALE IN FEET

0 30 60
VERTICAL SCALE IN FEET

DRAWN BY HJB	DATE 1/20/04	GEOLOGICAL CROSS SECTION D–D' SWMU 13 MINE FILL B NSA CRANE CRANE, INDIANA
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CONTRACT NO. 00041	
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FORM CADD NO. SDIV-BH.DWG - REV 1 - 9/10/98

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LEGEND:

PATHWAY DISCRIPTIONS:

A – CONTAMINANT SOURCE AREAS (OVERBURDEN SOIL AND SUMPS)

B – SHALLOW GROUNDWATER SYSTEM

B1 – GROUNDWATER TAKEN UP BY VEGETATION AND TRANSPIRED

B2 – GROUNDWATER SEEPS INTO GULLIES AT THE SURFACE AND JOINS SURFACE WATERS

B3 – MIGRATION ALONG BEDROCK/SOIL INTERFACE (1–3" bgs) AND NEAR–SURFACE FRACTURES

C – DEEP GROUNDWATER

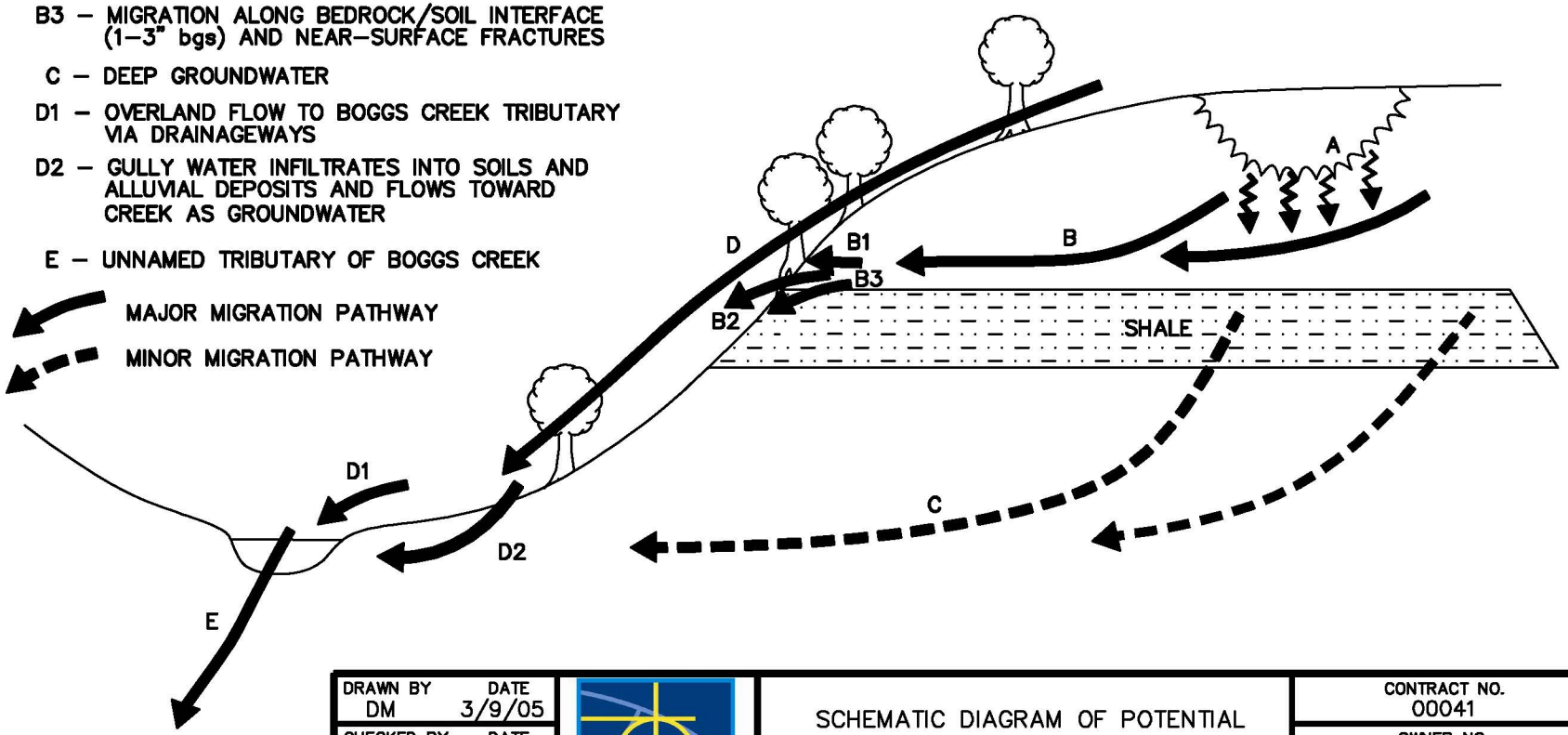
D1 – OVERLAND FLOW TO BOGGS CREEK TRIBUTARY VIA DRAINAGEWAYS

D2 – GULLY WATER INFILTRATES INTO SOILS AND ALLUVIAL DEPOSITS AND FLOWS TOWARD CREEK AS GROUNDWATER

E – UNNAMED TRIBUTARY OF BOGGS CREEK

MAJOR MIGRATION PATHWAY

MINOR MIGRATION PATHWAY



DRAWN BY DM	DATE 3/9/05	SCHEMATIC DIAGRAM OF POTENTIAL CONTAMINANT MIGRATION PATHWAYS SWMU 13 – MINE FILL B NSA CRANE CRANE, INDIANA	CONTRACT NO. 00041
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1–10 / REV. 0

NAVFAC

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2.0 FIELD INVESTIGATION

This section presents an overview of the long term monitoring program for explosives at SWMU 13. The program consisted of nine rounds of groundwater and surface water sampling over a 4 year period (April 2003 through April, 2007):

- Round 1 - April 25 through May 7, 2003
- Round 2 - November 5 through December 9, 2003
- Round 3 - July 23 through August 1, 2004
- Round 4 - January 22 through February 3, 2005
- Round 5 - May 3 through May 5, 2005
- Round 6 - August 10 through August 29, 2005
- Round 7 - January 5 through January 24, 2006
- Round 8 - May 21 through June 4, 2006
- Round 9 - April 24 through April 30, 2007

All field activities were conducted in accordance with the procedures and methodologies described in the U.S. EPA-approved Quality Assurance Project Plan (QAPP) Addendum No. 2 to the approved QAPP (TtNUS, 2004). Standard operating procedures (SOPs) that governed the field work are included in Appendix C of Addendum No. 2 to the approved QAPP. All field activities were electronically recorded and copies of all field forms, records, daily activities, and health and safety documentation associated with the field investigation for Rounds 1 through 9 are provided in Appendices A through C.

2.1 SAMPLING LOCATIONS

2.1.1 Monitoring Wells

A groundwater sampling program for SWMU 13 was established during the RFI. A total of 51 monitoring wells were installed at SWMU 13 at depths within the Upper Pennsylvanian (Puz) and Lower Pennsylvanian (Plz) water bearing zones (see Figure 2-1). Of the 51 monitoring wells that have been installed at this site, 40 wells are screened in this upper bedrock zone. Table 2-1 shows a list of monitoring wells installed during RFI field activities at SWMU 13, along with the total well depth, water bearing zone, and groundwater elevations measured in Rounds 1 through 9.

The MNA groundwater sampling program is being conducted at 17 select well locations across SWMU 13 (see Figure 2-1 and Table 2-1). Fourteen wells are located in the Puz aquifer, while the remaining three wells are in the Plz aquifer. These wells have been established in accordance with U.S. EPA Region 5 MNA guidance (U.S. EPA 2000). The monitoring wells have a specific role in the monitoring program and represent locations within the plume source area, within the center and leading edges of the plume, and from points located vertically (above and below) and horizontally (upgradient and downgradient) outside the area of groundwater contamination. The selected wells are distributed as follows in the Puz and Plz:

Pennsylvanian Upper Water Bearing Zone Wells

- Two clean, laterally upgradient wells (13MWT01 and 13MWT15)
- Four source area wells (13MWT09, 13MWT11, 13MWT17, and 13MWT21)
- Four wells within the RDX plumes (13MWT13, 13MWT34, 13MWT37, and 13MWT40)
- Three wells at the leading edge of the RDX plumes (13MWT14, 13MWT31, and 13MWT51)
- One laterally downgradient well that is clean (13MWT47)

Pennsylvanian Lower Water Bearing Zone Wells

- Three clean, deep wells below the RDX plumes (13MWT28, 13MWT45, and 13MWT46)

2.1.2 Surface Water Locations

Surface water samples were collected from eight select intermittent streams, drainage ditches, and surface runoff locations (see Figure 2-2) in support of the MNA program. Pertinent information regarding the surface water sample locations is also presented in Table 2-1These locations include 13SW11, 13SW14, 13SW15, 13SW16, 13SW19, 13SW20, 13SW22, and 13SW30.

2.2 SAMPLING PROCEDURES

2.2.1 Groundwater Level Measurements

Groundwater elevations were collected prior to sampling activities during each round and are summarized in Table 2-1. Measurements were taken with an electrical water level indicator (M-scope), using the top of the riser pipe as the reference point to determine water depth for monitoring wells and using a surveyed mark for staff gauge measurements. All measurements were taken in accordance with the specific SOP contained in the QAPP addendum. Water level measurements and staff gauge measurements were

recorded to the nearest 0.01 foot on groundwater level measurement forms, which are provided in Appendix A.4 of this document.

2.2.2 Groundwater Purging and Sampling

All MNA groundwater wells were sampled using previously installed dedicated bladder pumps. Groundwater quality parameters including pH, specific conductance, temperature, dissolved oxygen (DO), and oxidation reduction potential (ORP) were measured during purging at 5- to 10-minute intervals using a multi-parameter water quality meter and flow-through cell. Longer intervals were used for wells with slower pumping rates. Following purging, sample containers were filled by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence. All groundwater samples were analyzed for explosives and well stabilization parameters with occasional analyses for routine indicator MNA parameters and RDX degradation by-products.

A listing of all collected groundwater samples for Rounds 1 through 9, including analytical fractions are presented in Table 2-2.

2.2.3 Surface Water Sampling

The surface water samples were collected in accordance with Addendum No. 2 to the approved QAPP (TtNUS, 2004). All pertinent field data, including water quality parameters, sampling methods, and locations were recorded electronically on a surface water sample log sheet (see Appendix A.2).

A listing of all collected surface water samples for Rounds 1 through 9, including analytical fractions are presented in Table 2-3.

2.2.4 Quality Control Samples

Quality assurance (QA)/quality control (QC) samples were generated and collected during all rounds of sampling activities to monitor both field and laboratory procedures. QA/QC samples collected in Rounds 1 through 9 included field duplicates, MS/MSD, and temperature blanks.

2.2.5 Decontamination

Any nondedicated, nondisposable equipment involved in field sampling activities was decontaminated before beginning work, during sampling activities, and at the completion of the field activities in accordance with SOP CTO166-16. Field analytical equipment such as pH, conductivity, and temperature

probes were rinsed first with analyte-free water then with the sample prior to making measurements. Water level devices were rinsed with dionized (DI) water.

TABLE 2-1

MONITORING WELL CONSTRUCTION INFORMATION AND WATER LEVEL MEASUREMENTS
SWMU 13 - MINE FILL B
ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

Well or Gauge Number	Northing (feet)	Easting (feet)	Top of Riser Elevation (feet amsl)	Total Depth[1] (feet bgs)	Water-Bearing Zone	Round 1		Round 2		Round 3		Round 4		Round 5		Round 6		Round 7		Round 8		Round 9	
						May 5, 2003		May 11, 2003		January 19-20, 2004		November 14, 2004		May 3, 2005		August 9, 2005		January 4, 2006		May 21, 2006		April 10, 2007	
						Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)
MONITORING WELLS																							
13MWT01	1310541.57	3025015.94	715.34	15.00	Puz	6.21	709.13	5.82	709.52	7.55	707.79	7.56	707.78	7.71	707.63	9.79	705.55	7.20	708.14	6.70	708.64	7.05	708.29
13MWT02	1310776.56	3024743.55	704.72	27.00	Puz	17.15	687.57	17.10	687.62	16.24	688.48	15.88	688.84	16.19	688.53	16.00	688.72	15.37	689.35	16.91	687.81	17.13	687.59
13MWT03	1310240.95	3024891.66	721.10	15.00	Puz	8.79	712.31	8.88	712.22	9.98	711.12	12.17	708.93	9.72	711.38	11.18	709.92	9.63	711.47	8.45	712.65	NA[4]	NA[4]
13MWT04	1310383.40	3024546.11	706.84	15.00	Puz	12.98	693.86	12.75	694.09	14.09	692.75	15.42	691.42	14.27	692.57	15.83	691.01	14.31	692.53	13.82	693.02	13.80	693.04
13MWT05	1310758.93	3024380.03	696.44	16.00	Puz	5.42	691.02	4.13	692.31	5.78	690.66	8.73	687.71	5.96	690.48	8.31	688.13	5.75	690.69	5.06	691.38	6.15	690.29
13MWT06	1309916.18	3024495.27	717.93	15.00	Puz	15.11	702.82	15.62	702.31	11.91	706.02	14.78	703.15	11.66	706.27	14.95	702.98	13.91	704.02	11.20	706.73	11.60	706.33
13MWT07	1310539.32	3024094.13	687.22	15.00	Puz	3.12	684.10	3.10	684.12	4.21	683.01	4.84	682.38	3.44	683.78	3.35	683.87	4.32	682.90	3.02	684.20	3.15	684.07
13MWT08	1310247.86	3024337.56	700.56	15.00	Puz	3.17	697.39	2.92	697.64	3.88	696.68	3.87	696.69	4.85	695.71	8.77	691.79	3.35	697.21	3.81	696.75	NA[4]	NA[4]
13MWT09	1309662.07	3024049.03	705.90	20.00	Puz	7.74	698.16	7.40	698.50	8.77	697.13	8.64	697.26	9.15	696.75	10.40	695.50	8.10	697.80	7.96	697.94	8.71	697.19
13MWT10	1309979.69	3024001.26	700.15	25.00	Puz	13.65	686.50	13.11	687.04	14.96	685.19	16.11	684.04	13.68	686.47	15.32	684.83	15.14	685.01	13.00	687.15	NA[4]	NA[4]
13MWT11	1310233.72	3023750.09	682.29	15.00	Puz	7.87	674.42	7.00	675.29	8.76	673.53	8.82	673.47	9.03	673.26	10.14	672.15	8.64	673.65	8.56	673.73	NA[4]	NA[4]
13MWT12	1310080.21	3023574.95	682.12	20.00	Puz	7.88	674.24	7.78	674.34	10.75	671.37	11.50	670.62	10.14	671.98	11.93	670.19	11.27	670.85	9.87	672.25	9.64	672.48
13MWT13	1309441.27	3024163.61	701.98	19.00	Puz	3.62	698.36	3.18	698.80	4.93	697.05	4.40	697.58	5.13	696.85	6.04	695.94	4.49	697.49	3.91	698.07	4.93	697.05
13MWT14	1309142.23	3024110.17	705.50	23.00	Puz	13.25	692.25	13.08	692.42	14.17	691.33	14.69	690.81	14.10	691.40	16.09	689.41	14.00	691.50	13.46	692.04	13.80	691.70
13MWT15	1309565.52	3023717.80	696.65	25.00	Puz	12.88	683.77	12.63	684.02	14.59	682.06	15.49	681.16	13.88	682.77	15.89	680.76	14.92	681.73	13.22	683.43	13.47	683.18
13MWT16	1309854.28	3023341.92	684.35	15.00	Puz	8.49	675.86	8.61	675.74	11.01	673.34	14.29	670.06	12.33	672.02	14.76	669.59	13.39	670.96	9.72	674.63	10.95	673.40
13MWT17	1309605.27	3023123.97	693.01	18.00	Puz	8.70	684.31	8.09	684.92	8.89	684.12	9.04	683.97	9.91	683.10	11.23	681.78	8.48	684.53	8.52	684.49	9.94	683.07
13MWT18	1309326.98	3023293.42	702.92	30.00	Puz	19.06	683.86	19.04	683.88	20.21	682.71	20.52	682.40	19.41	683.51	20.31	682.61	20.02	682.90	18.76	684.16	18.90	684.02
13MWT19	1308893.97	3023834.57	705.82	19.00	Puz	8.31	697.51	6.80	699.02	10.96	694.86	11.31	694.51	10.40	695.42	12.08	693.74	10.78	695.04	9.14	696.68	10.15	695.67
13MWT20	1309066.76	3023527.23	702.07	20.00	Puz	4.22	697.85	4.00	698.07	5.00	697.07	5.23	696.84	4.94	697.13	4.96	697.11	4.76	697.31	4.34	697.73	4.90	697.17
13MWT21	1309391.01	3022916.22	690.74	15.00	Puz	7.69	683.05	7.34	683.40	9.09	681.65	9.20	681.54	9.30	681.44	10.37	680.37	8.30	682.44	8.02	682.72	NA[4]	NA[4]
13MWT22	1308936.34	3022785.67	671.96	15.00	Puz	7.44	664.52	7.25	664.71	8.18	663.78	9.13	662.83	8.21	663.75	9.92	662.04	8.40	663.56	7.84	664.12	8.12	663.84
13MWT23	1308708.02	3023245.12	699.14	22.00	Puz	7.45	691.69	7.17	691.97	8.50	690.64	9.25	689.89	8.60	690.54	9.39	689.75	8.90	690.24	8.06	691.08	8.52	690.62
13MWT24	1308397.23	3022916.48	693.93	22.00	Puz	8.45	685.48	8.23	685.70	9.25	684.68	10.04	683.89	9.27	684.66	10.52	683.41	9.41	684.52	8.68	685.25	9.10	684.83
13MWT25	1308625.62	3022677.44	681.57	15.00	Puz	16.00	665.57	16.61	664.96	7.05	674.52	6.79	674.78	6.65	674.92	9.27	672.30	5.86	675.71	5.80	675.77	6.61	674.96
13MWT26	1308232.69	3022690.14	687.49	20.00	Puz	9.10	678.39	8.93	678.56	10.05	677.44	11.09	676.40	9.81	677.68	10.79	676.70	10.51	676.98	9.44	678.05	9.97	677.52
13MWT27	1309786.55	3023829.07	698.13	21.00	Puz	NA	NA	NA	NA	9.31	688.82	9.86	688.27	9.27	688.86	10.97	687.16	8.80	689.33	8.35	689.78	9.00	689.13
13MWT28	1309678.62	3024066.67	705.55	88.00	Plz	NA	NA	NA	NA	79.63	625.92	78.38	627.17	77.88	627.67	71.76	633.79	77.21	628.34	77.29	628.26	77.11	628.44

TABLE 2-1

MONITORING WELL CONSTRUCTION INFORMATION AND WATER LEVEL MEASUREMENTS
SWMU 13 - MINE FILL B
ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

Well or Gauge Number	Northing (feet)	Easting (feet)	Top of Riser Elevation (feet amsl)	Total Depth[1] (feet bgs)	Water-Bearing Zone	Round 1		Round 2		Round 3		Round 4		Round 5		Round 6		Round 7		Round 8		Round 9	
						May 5, 2003		May 11, 2003		January 19-20, 2004		November 14, 2004		May 3, 2005		August 9, 2005		January 4, 2006		May 21, 2006		April 10, 2007	
						Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)
13MWT29	1309538.75	3024290.72	700.44	20.00	Puz	NA	NA	NA	NA	5.82	694.62	5.46	694.98	5.61	694.83	6.32	694.12	5.51	694.93	5.06	695.38	5.50	694.94
13MWT30	1309174.84	3024237.45	698.94	25.00	Puz	NA	NA	NA	NA	11.72	687.22	11.37	687.57	11.55	687.39	13.13	685.81	11.13	687.81	11.02	687.92	11.29	687.65
13MWT31	1308631.83	3023583.85	696.21	20.00	Puz	NA	NA	NA	NA	10.65	685.56	10.74	685.47	10.74	685.47	13.00	683.21	10.39	685.82	9.98	686.23	10.22	685.99
13MWT32	1308214.11	3023162.00	696.04	25.00	Puz	NA	NA	NA	NA	9.52	686.52	10.55	685.49	9.02	687.02	10.16	685.88	10.00	686.04	8.30	687.74	8.51	687.53
13MWT33	1308749.27	3023868.77	701.97	20.00	Puz	NA	NA	NA	NA	10.63	691.34	11.54	690.43	10.41	691.56	13.92	688.05	12.21	689.76	9.60	692.37	9.40	692.57
13MWT34	1309304.31	3023084.25	695.93	20.50	Puz	NA	NA	NA	NA	5.42	690.51	6.45	689.48	5.26	690.67	5.81	690.12	5.64	690.29	4.86	691.07	8.40	687.53
13MWT35	1310254.91	3023773.29	681.73	69.00	Plz	NA	NA	NA	NA	63.96	617.77	64.40	617.33	63.94	617.79	63.98	617.75	63.65	618.08	63.65	618.08	63.85	617.88
13MWT36	1309053.39	3022677.86	667.21	26.00	Puz	NA	NA	NA	NA	19.26	647.95	19.56	647.65	18.83	648.38	18.80	648.41	18.61	648.60	18.55	648.66	18.39	648.82
13MWT37	1309402.93	3022617.27	662.29	25.00	Puz	NA	NA	NA	NA	14.37	647.92	14.71	647.58	13.64	648.65	13.56	648.73	14.14	648.15	13.29	649.00	13.46	648.83
13MWT38	1309376.76	3022619.53	661.04	80.00	Plz	NA	NA	NA	NA	61.90	599.14	62.33	598.71	61.81	599.23	61.63	599.41	61.41	599.63	61.58	599.46	61.47	599.57
13MWT39	1309804.48	3022589.03	654.44	25.00	Puz	NA	NA	NA	NA	14.25	640.19	13.84	640.60	13.36	641.08	16.31	638.13	3.47	650.97	12.88	641.56	12.91	641.53
13MWT40	1309622.33	3022833.33	667.18	25.50	Puz	NA	NA	NA	NA	18.55	648.63	18.74	648.44	18.15	649.03	17.93	649.25	18.16	649.02	17.96	649.22	17.79	649.39
13MWT41	1309645.20	3022819.00	665.67	66.00	Plz	NA	NA	NA	NA	66.58	599.09	67.05	598.62	65.52	600.15	66.21	599.46	66.03	599.64	66.28	599.39	66.05	599.62
13MWT42	1309862.28	3023113.22	670.31	25.00	Puz	NA	NA	NA	NA	21.14	649.17	21.21	649.10	20.38	649.93	20.28	650.03	20.77	649.54	20.23	650.08	20.18	650.13
13MWT43	1310558.56	3023939.45	690.90	21.00	Puz	NA	NA	NA	NA	8.50	682.40	9.70	681.20	8.17	682.73	10.05	680.85	8.77	682.13	7.85	683.05	7.92	682.98
13MWT44	1310621.14	3023530.33	683.82	88.00	Plz	NA	NA	NA	NA	64.57	619.25	64.80	619.02	64.36	619.46	64.47	619.35	64.13	619.69	64.06	619.76	64.19	619.63
13MWT45	1309373.68	3022901.38	690.59	84.00	Plz	NA	NA	NA	NA	72.75	617.84	69.83	620.76	70.76	619.83	70.55	620.04	70.39	620.20	70.85	619.74	70.15	620.44
13MWT46	1309812.02	3022565.94	653.61	68.00	Plz	NA	NA	NA	NA	58.10	595.51	58.25	595.36	56.61	597.00	57.12	596.49	57.34	596.27	56.23	597.38	55.95	597.66
13MWT47	1309389.47	3024437.45	677.23	21.00	Puz	NA	NA	NA	NA	7.32	669.91	7.02	670.21	7.15	670.08	3.95	673.28	7.68	669.55	6.84	670.39	7.30	669.93
13MWT48	1309618.82	3021409.02	548.67	10.50	Valley Fill[2]	NA	NA	NA	NA	NA	NA	10.02	538.65	10.29	538.38	12.21	536.46	9.78	538.89	9.88	538.79	10.18	538.49
13MWT49	1309795.96	3021713.21	553.90	9.50	Valley Fill[2]	NA	NA	NA	NA	NA	NA	7.21	546.69	7.25	546.65	8.65	545.25	7.19	546.71	7.20	546.70	7.39	546.51
13MWT50	1310002.40	3022085.22	560.49	26.00	Valley Fill[2]	NA	NA	NA	NA	NA	NA	7.02	553.47	7.90	552.59	8.76	551.73	7.43	553.06	7.33	553.16	8.00	552.49
13MWT51	1310206.30	3022381.03	571.36	16.00	Valley Fill[2]	NA	NA	NA	NA	NA	NA	3.77	567.59	5.80	565.56	14.00	557.36	5.80	565.56	5.62	565.74	10.69	560.67

TABLE 2-1

MONITORING WELL CONSTRUCTION INFORMATION AND WATER LEVEL MEASUREMENTS
SWMU 13 - MINE FILL B
ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

Well or Gauge Number	Northing (feet)	Easting (feet)	Top of Riser Elevation (feet amsl)	Total Depth[1] (feet bgs)	Water-Bearing Zone	Round 1		Round 2		Round 3		Round 4		Round 5		Round 6		Round 7		Round 8		Round 9	
						May 5, 2003		May 11, 2003		January 19-20, 2004		November 14, 2004		May 3, 2005		August 9, 2005		January 4, 2006		May 21, 2006		April 10, 2007	
						Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)	Depth to Water (feet btor)	Water Elevation (feet amsl)
STAFF GAUGES																							
13SG01	1310836.89	3024771.44	NA	NA	(3)	NA	NA	1.73	696.62	1.77	696.58	1.76	696.59	1.77	696.58	Dry	NA	1.77	696.58	1.77	696.58	1.75	696.60
13SG02	1310746.57	3024854.37	NA	NA	Puz	NA	NA	3.64	698.31	3.68	698.27	3.71	698.24	3.73	698.22	Dry	NA	3.69	698.26	3.69	698.26	3.62	698.33
13SG03	1309585.70	3024436.89	NA	NA	Puz	NA	NA	1.96	694.28	1.87	694.37	1.95	694.29	1.96	694.28	Dry	NA	1.94	694.30	1.94	694.30	1.94	694.30
13SG04	1309478.26	3024317.86	NA	NA	Puz	NA	NA	2.38	686.61	2.45	686.54	2.46	686.53	2.45	686.54	Dry	NA	2.42	686.57	2.43	686.56	2.46	686.53
13SG05	1309341.46	3024185.40	NA	NA	Puz	NA	NA	3.89	689.05	3.90	689.04	3.92	689.02	3.89	689.05	Dry	NA	3.90	689.04	3.89	689.05	3.89	689.05
13SG06	1308991.98	3023849.68	NA	NA	(3)	NA	NA	2.37	702.51	2.35	702.53	2.35	702.53	Dry	NA	Dry	NA	2.35	702.53	2.34	702.54	Dry	NA
13SG07	1308164.25	3022622.07	NA	NA	Puz	NA	NA	1.50	678.80	1.47	678.83	1.55	678.75	1.69	678.61	Dry	NA	1.48	678.82	1.56	678.74	1.57	678.73
13SG08	1308846.74	3022744.78	NA	NA	Puz	NA	NA	5.05	660.90	5.08	660.87	5.10	660.85	5.13	660.82	NM	NA	5.10	660.85	5.08	660.87	4.98	660.97
13SG09	1309868.61	3023412.15	NA	NA	Puz	NA	NA	4.15	671.15	4.15	671.15	4.18	671.12	4.21	671.09	NM	NA	4.15	671.15	4.14	671.16	5.48	669.82
13SG10	1310366.98	3023821.25	NA	NA	Puz	NA	NA	4.78	671.32	4.82	671.28	4.96	671.14	4.84	671.26	NM	NA	4.80	671.30	4.93	671.17	4.97	671.13
13SG11	1309388.01	3024416.84	NA	NA	Puz	NA	NA	NA	NA	2.74	672.62	2.30	673.06	2.51	672.85	NM	NA	2.15	673.21	2.24	673.12	2.19	673.17
13SG12	1312371.18	3022662.06	NA	NA	Plz	NA	NA	NA	NA	NA	NA	6.87	588.41	6.85	588.43	NM	NA	6.81	588.47	6.88	588.40	6.81	588.47
13SG13	1311077.60	3022704.86	NA	NA	Plz	NA	NA	NA	NA	NA	NA	5.87	566.65	6.06	566.46	NM	NA	5.58	566.94	4.83	567.69	4.75	567.77
13SG14	1310424.91	3022481.79	NA	NA	Plz	NA	NA	NA	NA	NA	NA	6.37	561.38	6.41	561.34	NM	NA	6.32	561.43	6.35	561.40	6.32	561.43
13SG15	1309660.62	3021524.54	NA	NA	Plz	NA	NA	NA	NA	NA	NA	9.97	534.21	5.24	538.94	NM	NA	Destroyed from Construction	NA	NA	NA	NA	NA
13SG16	1309270.46	3021074.88	NA	NA	Plz	NA	NA	NA	NA	NA	NA	Dry	Na	Dry	NA	NM	NA	Dry	NA	Dry	NA	NA	NA
13SG17	1309034.25	3020747.93	NA	NA	Plz	NA	NA	NA	NA	NA	NA	Dry	Na	Dry	NA	NM	NA	Dry	NA	Dry	NA	Dry	NA
13SG18	1308276.51	3019633.62	NA	NA	Plz	NA	NA	NA	NA	NA	NA	8.16	516.07	8.19	516.04	NM	NA	8.16	516.07	8.14	516.09	8.10	516.13

Notes:
1 = Total depth of boring, total depth of well may be less.
2 = Valley Fill includes alluvium, colluvium, and weathered siltstone directly below fill material. Total thickness of these materials is 26 feet or less.
3 = Staff gauge measured surface water level that appears to be perched above groundwater in the Pennsylvanian geologic unit immediately adjacent to or underlying the drainageway.
bgs = Below ground surface.
btor = Below top of riser/reference point.
amsl = Above mean sea level (NAVD88).
NA = Not applicable.
NAVD88 = North American Vertical Datum of 1988.
NM = Not measured.
Puz = Upper Pennsylvanian water-bearing zone.
Plz = Lower Pennsylvanian water-bearing zone.

TABLE 2-2

SUMMARY OF GROUNDWATER SAMPLES AND LABORATORY ANALYSES
SWMU 13 - MINE FILL B MNA PROGRAM
NSA CRANE
CRANE, INDIANA

Sample Number	Analytical Fraction					
	Explosives	RDX Degradation Products	Nitrate/Nitrite	TOC	MNA	Total Organic Carbon
Groundwater - Round 1						
13GWT0101	X		X			
13GWT0901	X		X			
13GWT1101	X		X			
13GWT1301	X		X			
13GWT1401	X		X			
13GWT1501	X		X			
13GWT1701	X		X			
13GWT2101	X		X			
GW TOTALS	**8**	**0**	**8**	**0**	**0**	**0**
Groundwater - Round 2						
13GWT0102	X		X			
13GWT0902	X		X		X	
13GWT1102	X		X		X	
13GWT1302	X		X		X	
13GWT1402	X		X			X
13GWT1502	X		X	X	X	X
13GWT1702	X		X		X	X
13GWT2102	X		X		X	X
13GWT3101	X		X			X
13GWT3401	X		X		X	
13GWT3701	X		X			
13GWT4001	X		X			
13GWT4701	X		X			
GW TOTALS	**13**	**0**	**13**	**1**	**7**	**0**
Groundwater - Round 3						
13GWT0103	X					
13GWT0903	X					
13GWT1103	X					
13GWT1303	X					
13GWT1403	X					
13GWT1503	X					
13GWT1703	X					
13GWT2103	X					
13GWT3002	X					
13GWT3102	X					
13GWT3402	X					
13GWT3702	X					
13GWT4002	X					
13GWT4702	X					
13GWT5101	X					
GW TOTALS	**15**	**0**	**0**	**0**	**0**	**0**
Groundwater - Round 4						
13GWT0104	X	X	X			
13GWT0904	X	X	X			
13GWT1104	X	X	X			
13GWT1304	X	X	X			
13GWT1404	X	X	X			
13GWT1504	X	X	X			
13GWT1704	X	X	X			
13GWT2104	X	X	X			
13GWT2803	X	X	X			
13GWT3103	X	X	X			
13GWT3403	X	X	X			
13GWT3703	X	X	X			
13GWT4003	X	X	X			
13GWT4503	X	X	X			
13GWT4603	X	X	X			
13GWT4703	X	X	X			
13GWT5102	X	X	X			
GW TOTALS	**17**	**17**	**17**	**0**	**0**	**0**

TABLE 2-2

SUMMARY OF GROUNDWATER SAMPLES AND LABORATORY ANALYSES
SWMU 13 - MINE FILL B MNA PROGRAM
NSA CRANE
CRANE, INDIANA

Sample Number	Analytical Fraction					
	Explosives	RDX Degradation Products	Nitrate/Nitrite	TOC	MNA	Total Organic Carbon
Groundwater - Round 5						
13GWT0105	X					
13GWT0905	X					
13GWT1105	X					
13GWT1305	X					
13GWT1405	X					
13GWT1505	X					
13GWT1705	X					
13GWT2105	X					
13GWT2804	X					
13GWT3104	X					
13GWT3404	X					
13GWT3704	X					
13GWT4004	X					
13GWT4504	X					
13GWT4604	X					
13GWT4704	X					
13GWT5103	X					
GW TOTALS	**17**	**0**	**0**	**0**	**0**	**0**
Groundwater - Round 6						
13GWT0106	X	X	X			
13GWT0906	X	X	X			
13GWT1106	X	X	X			
13GWT1306	X	X	X			
13GWT1406	X	X	X			
13GWT1506	X	X	X			
13GWT1706	X	X	X			
13GWT2106	X	X	X			
13GWT2805	X	X	X			
13GWT3105	X	X	X			
13GWT3405	X	X	X			
13GWT3705	X	X	X			
13GWT4005	X	X	X			
13GWT4505	X	X	X			
13GWT4605	X	X	X			
13GWT4705	X	X	X			
13GWT5104	X	X	X			
GW TOTALS	**17**	**17**	**17**	**0**	**0**	**0**
Groundwater - Round 7						
13GWT0107	X					
13GWT0907	X					
13GWT1107	X					
13GWT1307	X					
13GWT1407	X					
13GWT1507	X					
13GWT1707	X					
13GWT2107	X					
13GWT2806	X					
13GWT3106	X					
13GWT3406	X					
13GWT3706	X					
13GWT4006	X					
13GWT4506	X					
13GWT4606	X					
13GWT4706	X					
13GWT5105	X					
GW TOTALS	**17**					

TABLE 2-2

SUMMARY OF GROUNDWATER SAMPLES AND LABORATORY ANALYSES
SWMU 13 - MINE FILL B MNA PROGRAM
NSA CRANE
CRANE, INDIANA

Sample Number	Analytical Fraction					
	Explosives	RDX Degradation Products	Nitrate/Nitrite	TOC	MNA	Total Organic Carbon
Groundwater - Round 8						
13GWT0108	X					
13GWT0908	X					
13GWT1108	X					
13GWT1308	X					
13GWT1408	X					
13GWT1508	X					
13GWT1708	X					
13GWT2108	X					
13GWT2807	X					
13GWT3107	X					
13GWT3407	X					
13GWT3707	X					
13GWT4007	X					
13GWT4507	X					
13GWT4607	X					
13GWT4707	X					
13GWT5106	X					
GW TOTALS	**17**	**0**	**0**	**0**	**0**	**0**
Groundwater - Round 9						
13GWT0109	X					
13GWT0909	X					
13GWT1109	X					
13GWT1309	X					
13GWT1409	X					
13GWT1509	X					
13GWT1709	X					
13GWT2109	X					
13GWT2808	X					
13GWT3108	X					
13GWT3408	X					
13GWT3708	X					
13GWT4008	X					
13GWT4508	X					
13GWT4608	X					
13GWT4708	X					
13GWT5107	X					
GW TOTALS	**17**	**0**	**0**	**0**	**0**	**0**

X - Sample collected and analyzed as proposed.
TOC - Total Organic Carbon
MNA - Monitored natural attenuation

TABLE 2-3

SUMMARY OF SURFACE WATER SAMPLES AND LABORATORY ANALYSES
SWMU 13 - MINE FILL B MNA PROGRAM
NSA CRANE
CRANE, INDIANA

Sample Number	Analytical Fraction	
	Explosives	Nitrate/Nitrite
Surface Water - Round 1		
13SW1101	X	X
SW TOTALS	**1**	**1**
Surface Water - Round 2		
13SW1401	X	X
13SW1501	X	X
13SW1601	X	X
13SW1901	X	X
13SW2001	X	X
13SW2201	X	X
13SW3001	X	X
SW TOTALS	**7**	**7**
Surface Water - Round 3		
13SW1402	X	X
13SW1502	X	X
13SW1602	X	X
13SW3002	X	X
SW TOTALS	**4**	**4**
Surface Water - Round 4		
13SW1103	X	
13SW1403	X	
13SW1503	X	
13SW1603	X	
13SW1902	X	
13SW2002	X	
13SW2203	X	
13SW3003	X	
SW TOTALS	**8**	**0**
Surface Water - Round 5		
13SW1104	O	
13SW1404	X	
13SW1504	X	
13SW1604	X	
13SW1903	X	
13SW2003	X	
13SW2204	X	
13SW3004	X	
SW TOTALS	**7**	**0**
Surface Water - Round 6		
13SW1104	O	
13SW1405	X	
13SW1505	X	
13SW1605	X	
13SW1904	X	
13SW2004	X	
13SW2205	O	
13SW3005	X	
SW TOTALS	**6**	**0**

TABLE 2-3

SUMMARY OF SURFACE WATER SAMPLES AND LABORATORY ANALYSES
SWMU 13 - MINE FILL B MNA PROGRAM
NSA CRANE
CRANE, INDIANA

Sample Number	Analytical Fraction	
	Explosives	Nitrate/Nitrite
Surface Water - Round 7		
13SW1104	X	
13SW1406	X	
13SW1506	X	
13SW1606	X	
13SW1905	X	
13SW2005	X	
13SW2205	X	
13SW3006	X	
SW TOTALS	**8**	**0**
Surface Water - Round 8		
13SW1105	X	
13SW1407	X	
13SW1507	X	
13SW1607	X	
13SW1906	X	
13SW2006	X	
13SW2206	X	
13SW3007	X	
SW TOTALS	**8**	**0**
Surface Water - Round 9		
13SW11	O	
13SW1408	X	
13SW1508	X	
13SW1608	X	
13SW1907	X	
13SW2007	X	
13SW2207	X	
13SW3008	X	
SW TOTALS	**7**	**0**

X - Sample collected as proposed.
O - Sample not collected as proposed.

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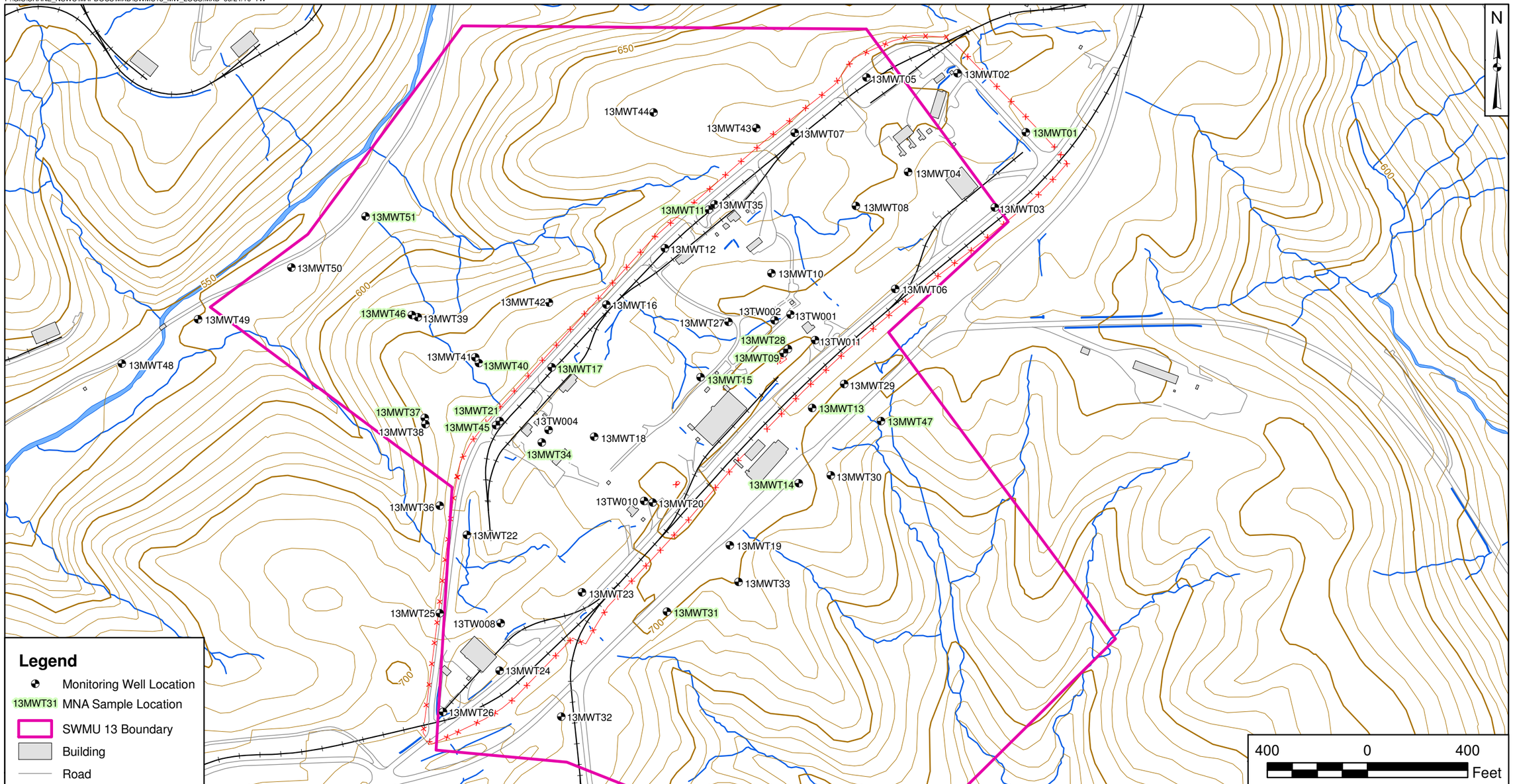

DRAWN BY	DATE
T. WHEATON	05/14/10
CHECKED BY	DATE
J. LUCAS	06/21/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

MONITORING WELL LOCATIONS
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. FIGURE 2-1	REV 0

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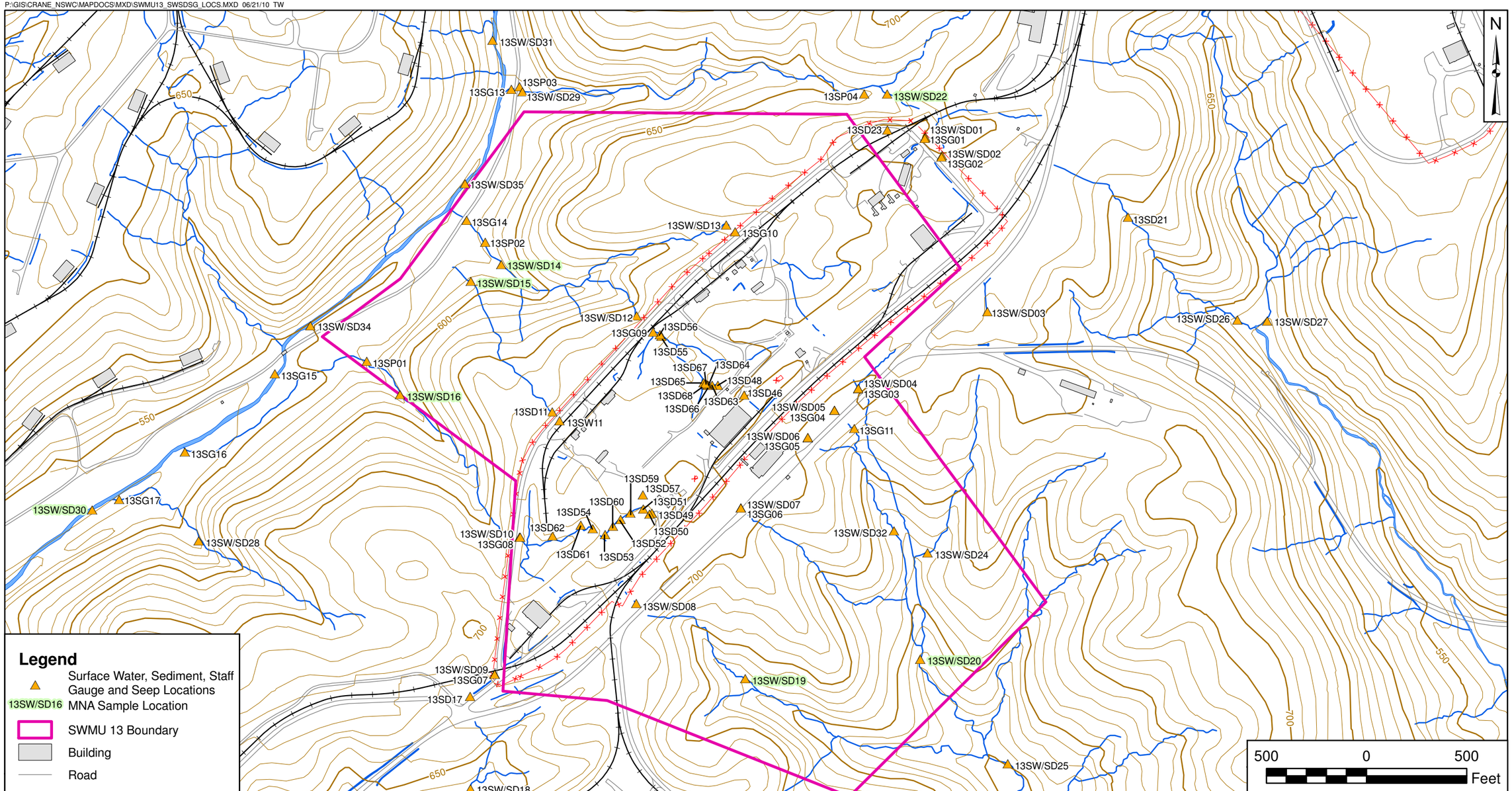

DRAWN BY	DATE
T. WHEATON	05/14/10
CHECKED BY	DATE
J. LUCAS	06/21/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

SURVEYED SURFACE WATER, SEDIMENT, SEEP, AND STAFF GAUGE LOCATIONS
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER CTO 0377	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. FIGURE 2-2	REV 0

3.0 DATA PRESENTATION

This section presents the data collected in Rounds 1 through 9 at SWMU 13. The data presented includes analytical results for groundwater and surface water, and field parameters. Groundwater elevation data given in Table 2-1 for Round 9 is also presented as potentiometic surface maps to indicate groundwater movement in the Puz, Pmz, and Plz Water Bearing Zones. The complete set of analytical results for all rounds of sampling is presented in Appendix D. The potentiometric surface maps for Rounds 1 through 8 are given in Appendix E.

As stated previously in Section 1.2.2, the RFI identified RDX as the most frequently detected explosive in groundwater, surface water, and surface soil at SWMU 13. As a result, RDX is considered as the primary compound for evaluating the effectiveness of explosives natural attenuation at SWMU 13. In the case of RDX, it will degrade to give MNX, DNX, and TNX. As a result, the presentation and interpretation of analytical results in Sections 3 and 4 of this report will focus on RDX and its associated degradation products.

3.1 GROUNDWATER DATA

As indicated in Section 1.1.2, each well in the SWMU 13 MNA monitoring programs has a specific role in the monitoring program based on spatial locations within the plume source area, within the center and leading edges of the plume, and from points located vertically (above and below) and horizontally (upgradient and downgradient) outside the area of groundwater contamination.

3.1.1 Pennsylvanian Upper Water Bearing Zone (Puz)

Fourteen wells are located in the Puz water bearing zone. *The spatial location of each Puz well is indicated below:*

- Two clean, laterally upgradient wells (13MWT01 and 13MWT15)
- Four source area wells (13MWT09, 13MWT11, 13MWT17, and 13 MWT21)
- Four wells within the RDX plumes (13 MWT13, 13 MWT34, 13MWT37, and 13MWT40)
- Three wells at the leading edge of the RDX plumes (13MWT14, 13MWT31, and 13MWT51)
- One laterally downgradient well that is clean (13MWT47)

Table 3-1 shows the groundwater analytical results for the Puz for Rounds 1 through 9. The table shows summary listings by sampling round of explosives and degradation by-product concentrations, and

miscellaneous field parameters. Concentrations are presented in micrograms per liter (µg/L) along with data validation qualifiers, as applicable. A more detailed summary is presented in Section 4.0.

3.1.2 Pennsylvanian Lower Water Bearing Zone (Plz)

There are three clean wells (13MWT28, 13MWT45, and 13MWT46) in the Plz to monitor if RDX contamination is migrating to the lower water bearing zone. Table 3-2 shows the Plz groundwater analytical results by sampling round in micrograms per liter (µg/L) along with data validation qualifiers, as applicable.

3.2 SURFACE WATER DATA

Surface water samples were collected from eight select intermittent streams, drainage ditches, and surface runoff locations during Rounds 1 through 9 (see Figure 2-2) in support of the MNA program. These locations included 13SW11, 13SW14, 13SW15, 13SW16, 13SW19, 13SW20, 13SW22, and 13SW30 and were analyzed for explosives only.

Table 3-3 shows the surface water analytical results and miscellaneous field parameters for Rounds 1 through 9. Concentrations are presented in micrograms per liter (µg/L) along with data validation qualifiers, as applicable. A more detailed summary is presented in Section 4.0.

3.3 POTENTIOMETRIC SURFACES

Groundwater elevations were collected prior to sampling activities during each round and are summarized for all monitoring wells in Table 2-1. Water level measurements and staff gauge measurements were recorded to the nearest 0.01 foot on groundwater level measurement forms, which are provided in Appendix A.4 of this document. The Round 9 potentiometric surface maps are shown in Figures 3-1 and 3-2 for the Puz and Plz waterbearing zones respectively, and are based on groundwater measurements presented in Table 2-1.

As indicated in Figure 3-1, the highest groundwater elevations in the Puz form a ridge that coincides with the main road and the railroad tracks that run along the southeastern edge of the SWMU boundary. Throughout the ridge where MFB is located, groundwater is moving primarily in a lateral direction. Shallow groundwater on the northwestern side of this ridge flows to the northwest and west. Shallow groundwater on the southeastern side of the ridge flows southeast. All shallow groundwater in the Puz is presumably flowing toward the crop line and discharging to the gullies that are incised on the

northwestern and southeastern sides of the ridge. The hydraulic gradients in the Puz steepen as the sideslopes of the ridge are approached.

Figure 3-2 shows that the groundwater flow direction in the Plz is to the west toward the unnamed tributary of Boggs Creek. Based on the groundwater elevation in 13MWT28, if is inferred that groundwater is flowing southeastward on the other side of the ridge to the northwest. In other words, groundwater in the Plz is flowing from the ridge toward and discharging into the creeks from opposite directions.

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		13MWT01									13MWT09								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		04/26/2003	11/23/2003	08/01/2004	01/23/2005	05/03/2005	08/15/2005	01/23/2006	06/02/2006	04/27/2007	04/28/2003	12/04/2003	07/31/2004	02/01/2005	05/03/2005	08/27/2005	01/09/2006	06/03/2006	04/28/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L	0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	1.3	1.1	0.94	0.94	1.2	1.2	1	0.81
1,3-DINITROBENZENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	1.4 J	2.4	2.1	2.2	2.1	2.2	2.3	1.7	1.5
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.526 U									0.505 U							
2,4,6-TRINITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	19	25	24	22	21	23	22	17	14
2,4-DIAMINO-6-NITROTOLUENE			0.263 U		0.264 U		0.27 U					3.9		2.5 R		2.6 R			
2,4-DINITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	0.253 U	1.4 J	0.25 U	0.288 U	0.26 U	1.2 J	1.2 J	0.85 J
2,6-DIAMINO-4-NITROTOLUENE			0.263 U		0.264 U		0.27 U					0.253 U		0.25 U		0.26 U			
2,6-DINITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	9.9	8.8 J	0.25 U	8.3	8.9	7.4 J	7	5.1
2-AMINO-4,6-DINITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	8.6 J	13	15 J	13 J	15	18 J	17	12 J	18
2-NITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	0.253 U	0.24 U	0.25 U	0.288 U	0.26 U	0.26 U	0.25 U	0.24 U
3,5-DINITROANILINE			0.263 U		0.264 U		0.27 U					0.253 U		2.2 J		2.1 J			
3-NITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	0.253 U	0.24 U	0.25 U	0.288 U	0.26 U	0.26 U	0.25 U	0.24 U
4,4'-TN-AZOXY					0.528 U		0.54 U							0.5 U		0.52 U			
4-AMINO-2,6-DINITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	18	18	19	18	17	19	21	19	17
4-NITROTOLUENE		0.47 U	0.263 U	0.25 U	0.264 U	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	0.215 U	0.253 U	0.24 U	0.25 U	0.288 U	0.26 U	0.26 U	0.25 U	0.24 U
RDX		0.44 U	0.35 J	0.3 J	0.37 J	0.278 U	0.27 U	0.26 U	0.25 U	0.24 U	1100	1700	1500	1200	1300	1400	1300	1400	1100
DNX			0.263 U		0.264 U		0.27 U					4 J		0.27 R		0.27 R			
MNX			0.263 U		0.264 U		0.27 U					7.1 J		4.2		2.8 J			
TNX			0.263 U		0.264 U		0.27 U					1.5 J		1.3 J		0.26 U			
FIELD PARAMETERS																			
TEMPERATURE	C	12.59	17.04	18.75	9.98	11.12	20.97		14.1	10.87	13.33	12.82	18.15	12.15	12.47	17.69	12.22	14.5	12.65
ALKALINITY	MG/L											0							
CARBON DIOXIDE												48							
DISSOLVED OXYGEN				4.2	0.81				0.67	2.33		1.5	0.2	0.74			0.73	0.53	2.52
DISSOLVED OXYGEN - METER		1.28	1.4			0.96	0.73				1.69	1.14			1.5	0.065			
HYDROGEN SULFIDE (H2S)												0							
IRON(+2)												0							
MANGANESE(+2)												0.4							
NITRITE-N												0.023							
SULFIDE												0.01							
SPECIFIC CONDUCTANCE	MS/CM	0.229	0.233	0.255	0.192	0.17	188		0.255	0.255	0.829	0.64	0.773	0.57	0.576	0.427	0.784	0.818	0.98
OXIDATION REDUCTION POTENTIAL	MV	220	385.4	461.2	295	403.8	687.8		427	424	205.6	251	88.1	29.9	250.1	544.3	302	254	260
TURBIDITY	NTU	3.8	4.39	9.5	3	1	0.73		0	0	3	4.07	3.8	1.6	0.15	1.1	7.8	0	0
PH	S.U.	4.68	4.17	3.57	3.98	4.45	3.56		4.21	4.04	5.36	5.32	6.27	5.49	5.29	4.73	5.62	5.67	5.46
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 UJ									0.2 UJ
AMMONIA-N	MG/L	0.01 U	0.005 UJ								3.3	3.4							
NITRITE/NITRATE-N		0.07	0.15 J		0.1 J		0.025 U		0.16		92	54 J		77 J		59		62	
TOTAL ORGANIC CARBON							1 U									2.3			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		13MWT11									13MWT13								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		04/27/2003	11/20/2003	07/23/2004	01/23/2005	05/04/2005	08/11/2005	01/24/2006	06/02/2006	04/29/2007	05/07/2003	11/25/2003	08/01/2004	02/02/2005	05/05/2005	08/15/2005	01/08/2006	05/23/2006	04/25/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L	0.43 U	0.258 U	0.27 U	0.269 U	0.248 U	0.26 U	0.26 U	0.25 U	0.24 U	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
1,3-DINITROBENZENE		0.83 J	0.258 U	0.46 J	1.2	0.248 U	0.55	1.4	0.89	0.24 U	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.515 U									0.515 U							
2,4,6-TRINITROTOLUENE		31	9.5	11	44	47	16	49	30	31	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
2,4-DIAMINO-6-NITROTOLUENE			1.4 J		1.6 R		0.77 J					0.258 U		0.245 U		0.26 U			
2,4-DINITROTOLUENE		0.43 U	1.2	1.6	4	4.3	1.9	4.1 J	3.3	2.9	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
2,6-DIAMINO-4-NITROTOLUENE			1.8 J		0.269 U		0.26 U					0.258 U		0.245 U		0.26 U			
2,6-DINITROTOLUENE		0.43 U	1.2 J	2.1 J	5.7 J	6.5	3.2	0.26 U	4.5 J	3.3	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
2-AMINO-4,6-DINITROTOLUENE		6 J	4.4 J	6.6 J	12 J	20	11 J	14 J	12 J	15	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
2-NITROTOLUENE		0.43 U	0.258 U	0.27 U	0.269 U	0.248 U	0.26 U	0.26 U	0.25 U	0.24 U	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
3,5-DINITROANILINE			0.258 U		0.269 U		0.26 U					0.258 U		0.245 U		0.26 U			
3-NITROTOLUENE		0.43 U	0.258 U	0.58 J	0.45 R	0.47 J	0.26 U	1.3 J	0.25 U	0.24 U	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
4,4'-TN-AZOXY					0.538 U		0.52 U							0.49 U		0.52 U			
4-AMINO-2,6-DINITROTOLUENE		19	9.8	14	27	29	18	29	21	19	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
4-NITROTOLUENE		0.43 U	0.258 U	0.27 U	0.269 U	0.248 U	0.26 U	0.26 U	0.25 U	0.24 U	0.37 U	0.258 U	0.24 U	0.245 U	0.255 U	0.26 U	0.26 U	0.25 U	0.24 UJ
RDX		560	520	490	830	830	620	760	740	600	12	20	17	18	15	21	17	16	18 J
DNX			0.258 U		0.269 U		0.26 U					0.258 U		0.245 U		0.26 U			
MNX			1.2		0.74 J		0.75 J					0.258 U		0.245 U		0.26 U			
TNX			0.258 U		0.269 U		0.26 U					0.258 U		0.245 U		0.26 U			
FIELD PARAMETERS																			
TEMPERATURE	C	15.73	16.35	21.2	10.8	15.27	23	9.55	15.3	15.87	13.82	12.33	20.61	9.87	13.3	19.47	12.32		11.6
ALKALINITY	MG/L		10 U									10 U							
CARBON DIOXIDE			165									120							
DISSOLVED OXYGEN			1.5	4.95	0.71			0.82	0.64	4.67		11	0.73	5.31			3.12		2.81
DISSOLVED OXYGEN - METER		0.85	3.49			0.73	0.39				3.37	3.26			3.67	3.3			
HYDROGEN SULFIDE (H2S)			0									0							
IRON(+2)			3.3 >									0.03							
MANGANESE(+2)			0.3									0.5							
NITRITE-N			0.009									0							
SULFIDE			0.01									0							
SPECIFIC CONDUCTANCE	MS/CM	0.251	0.238	0.262	0.222	0.224	0.253	0.307	0.286	0.278	0.106	0.113	0.131	1.01	0.085	97	0.127		0.148
OXIDATION REDUCTION POTENTIAL	MV	265	355	127	284	401	154.1	290	288	316	268.2	385.1	132	392.7	421.6	688.9	396		382
TURBIDITY	NTU	10	4.52	2.5	10	6.1	6.3	8.8	1.7	1.1	5.8	0.38	0.7	7.2	1	0	4.3		0.42
PH	S.U.	3.64	3.93	3.85	3.8	3.2	4.09	4.19	4.16	3.83	4.2	3.56	4.31	3.94	4.52	3.58	4.28		4.45
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 UJ									0.2 U
AMMONIA-N	MG/L	0.1	0.1 J								0.03	0.01							
NITRITE/NITRATE-N		0.02 U	0.19 J		0.1 J		0.025 U		0.11		1.1	1 J		1.1 J		0.025 U		0.51	
TOTAL ORGANIC CARBON							1.7									1 U			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		13MWT14									13MWT15								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		04/29/2003	11/24/2003	07/27/2004	01/25/2005	05/05/2005	08/16/2005	01/09/2006	05/23/2006	04/25/2007	05/06/2003	11/25/2003	07/29/2004	02/03/2005	05/05/2005	08/11/2005	01/19/2006	06/04/2006	04/27/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L	0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
1,3-DINITROBENZENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.5 U									0.515 U							
2,4,6-TRINITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
2,4-DIAMINO-6-NITROTOLUENE			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
2,4-DINITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
2,6-DIAMINO-4-NITROTOLUENE			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
2,6-DINITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
2-NITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
3,5-DINITROANILINE			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
3-NITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
4,4'-TN-AZOXY					0.485 U		0.48 U							0.475 U		0.53 U			
4-AMINO-2,6-DINITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
4-NITROTOLUENE		0.345 U	0.25 U	0.25 U	0.242 U	0.258 U	0.24 U	0.25 U	0.25 U	0.27 UJ	0.485 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
RDX		1.6	4.7	2	2.8	2.2	2.7	3.7	2.5	5.4 J	0.46 U	0.258 U	0.25 U	0.238 U	0.252 U	0.27 U	0.264 U	0.25 U	0.25 U
DNX			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
MNX			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
TNX			0.25 U		0.242 U		0.24 U					0.258 U		0.238 U		0.27 U			
FIELD PARAMETERS																			
TEMPERATURE	C	14.34	10.77	17.41	14.39	15.29	19.15	10.98		17.2	15.89	12.28	15.66	13.29	13.95	18.4	13.6		12
ALKALINITY	MG/L											10 U							
CARBON DIOXIDE												137							
DISSOLVED OXYGEN				6.74	0.91			1.43		1.23		0.07	0.53	1.57			0.58		2.23
DISSOLVED OXYGEN - METER		1.2	0.52			1.69	0.54				0.53	7.79			1	0.91			
HYDROGEN SULFIDE (H2S)												0							
IRON(+2)												3.3 >							
MANGANESE(+2)												0.9							
NITRITE-N												0.001							
SULFIDE												0.14							
SPECIFIC CONDUCTANCE	MS/CM	0.885	0.623	0.714	0.595	0.704	586	1.03		0.97	0.391	0.34	0.352	0.314	0.313	0.309	0.449		0.402
OXIDATION REDUCTION POTENTIAL	MV	23.2	100.5	71	62.4	134.8	526.8	97		118	286.8	322	6.85	373.3	401	342	326		358
TURBIDITY	NTU	1.6	0	3	3.3	2.6	0.8	4.1		3.57	7.3	45.4	10	8.31	15	4.4	10		3.1
PH	S.U.	5.5	5.48	6.86	5.58	5.84	5.48	5.77		6.16	3.74	3.98	3.26	3.65	3.02	3.14	3.92		3.79
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 U									0.2 UJ
AMMONIA-N	MG/L	0.08	0.06 J								1	1.3							
NITRITE/NITRATE-N		0.13	0.05 J		0.025 UJ		0.025 U		0.079		0.02 U	0.05 U		0.025 U		0.025 U		0.14	
TOTAL ORGANIC CARBON							4.2					1.1				1.1			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		**13MWT17**									**13MWT21**								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		05/07/2003	11/05/2003	07/29/2004	01/23/2005	05/04/2005	08/11/2005	01/24/2006	06/04/2006	04/26/2007	04/25/2003	11/05/2003	07/28/2004	01/22/2005	05/04/2005	08/10/2005	01/19/2006	06/01/2006	04/28/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L	0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	1.3 J	0.4 J	0.36 J	0.41 J	0.47 J	0.26 U	0.25 U	0.24 U
1,3-DINITROBENZENE		0.43 U	0.25 U	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	1.8 J	0.8	0.78	0.26 U	0.96	0.26 U	0.6	0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.5 U									0.481 U							
2,4,6-TRINITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	26 J	69 J	26	24	29	30	0.48 J	15	3
2,4-DIAMINO-6-NITROTOLUENE			0.25 U		0.248 U		0.26 U					0.77 J		0.29 R		0.3 J			
2,4-DINITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	1.4 J	0.65 J	0.238 U	0.26 U	0.28 U	0.26 U	0.25 U	0.24 U
2,6-DIAMINO-4-NITROTOLUENE			0.25 U		0.248 U		0.26 U					0.24 U		0.238 U		0.28 U			
2,6-DINITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	5.8 J	2.8	2.6 J	2.9	2.8	0.26 U	2	0.37 J
2-AMINO-4,6-DINITROTOLUENE		0.43 U	0.28 J	0.37 J	0.27 J	0.271 U	0.31 J	0.4 J	0.25 U	0.24 U	0.28 U	0.24 UJ	3.8 J	1.9 J	0.26 U	8.1 J	0.76 J	2.1 J	0.8
2-NITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	0.24 UJ	0.24 U	0.238 U	0.26 U	0.28 U	0.26 U	0.25 U	0.24 U
3,5-DINITROANILINE			0.25 U		0.248 U		0.26 U					0.24 U		0.238 U		0.31 J			
3-NITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.28 U	0.24 UJ	0.24 U	0.238 U	0.26 U	0.28 U	0.26 U	0.25 U	0.24 U
4,4'-TN-AZOXY					0.495 U		0.51 U							0.475 U		0.56 U			
4-AMINO-2,6-DINITROTOLUENE		0.6 J	0.71	0.84	0.54	0.44 J	0.56	0.41 J	0.25 U	0.36 J	0.28 U	0.24 U	2.9 J	3.2	3 J	5	1.1	3.4	1.1
4-NITROTOLUENE		0.43 U	0.25 UJ	0.25 U	0.248 U	0.271 U	0.26 U	0.26 U	0.25 U	0.24 U	0.5 J	0.24 UJ	0.24 U	0.238 U	0.26 U	0.28 U	0.26 U	0.25 U	0.24 U
RDX		430	580	490	480	390	560	500	560	470	2700	7700	4000	3200	4500	4200	180	3800	960
DNX			2.2 J		0.41 J		0.44 J					50 J		0.238 U		0.28 U			
MNX			11		6.2		6.5					9.3 J		3.3 R		0.28 U			
TNX			1.2		0.248 U		0.3 J					1.4 J		0.238 U		0.28 U			
FIELD PARAMETERS																			
TEMPERATURE	C	15.7	15.97	18.57	11.51	13.52	21.81	12.05		15.4	13.01	15.17	20.07	9.15	13.1	22.3	10.7		13
ALKALINITY	MG/L		10 U									10 U							
CARBON DIOXIDE			170									125							
DISSOLVED OXYGEN			0.9	2.01	0.35			0.48		0.187		1	2.94	1.56			6.41		2.09
DISSOLVED OXYGEN - METER		0.53	0.84			0.18	0.96				1.45	2.09			0.42	0.65			
HYDROGEN SULFIDE (H2S)			0									0							
IRON(+2)			0.06									0.1							
MANGANESE(+2)			0									0.6							
NITRITE-N			0.006									0.031							
SULFIDE			0.02									0.04							
SPECIFIC CONDUCTANCE	MS/CM	0.17	0.153	0.159	0.118	0.135	0.233	0.368		0.656	0.212	0.195	0.298	0.148	0.176	171	0.371		0.48
OXIDATION REDUCTION POTENTIAL	MV	112	338	129.4	4	289.6	517	230		176	193.6	247.2	107.3	56.1	283.7	748.2	259		148
TURBIDITY	NTU	10	3.74	4.1	15	0.4	0	1.1		8.7	8.2	2.61	4	4	2.8	4.2	5		3.66
PH	S.U.	5.35	5.38	5.28	5.4	5.16	4.43	5.28		6.32	5.46	5.59	7.32	5.71	5.42	5	6.83		6.61
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 UJ									0.2 UJ
AMMONIA-N	MG/L	0.01	0.005 U								0.05	0.02							
NITRITE/NITRATE-N		0.86	0.65		1.7 J		0.22		0.52		0.64	1.2		0.81 J		0.45		0.49	
TOTAL ORGANIC CARBON							3.4									2.3			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		**13MWT31**									**13MWT34**								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		No Sample	11/24/2003	07/26/2004	02/01/2005	05/05/2005	08/29/2005	01/10/2006	06/04/2006	04/29/2007	No Sample	12/04/2003	07/29/2004	01/23/2005	05/05/2005	08/11/2005	01/10/2006	06/03/2006	04/29/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L		0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
1,3-DINITROBENZENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.581 U									0.5 U							
2,4,6-TRINITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
2,4-DIAMINO-6-NITROTOLUENE			0.291 U		0.242 U		0.25 U					0.25 U		0.242 U		0.26 U			
2,4-DINITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
2,6-DIAMINO-4-NITROTOLUENE			0.291 U		0.242 U		0.25 U					0.25 U		0.242 U		0.26 U			
2,6-DINITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
2-AMINO-4,6-DINITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
2-NITROTOLUENE			0.291 U	0.37 J	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
3,5-DINITROANILINE			0.291 U		0.242 U		0.25 U					0.25 U		0.242 U		0.26 U			
3-NITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
4,4'-TN-AZOXY					0.485 U		0.5 U							0.485 U		0.52 U			
4-AMINO-2,6-DINITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.29 J	0.26 J	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
4-NITROTOLUENE			0.291 U	0.27 U	0.242 U	0.248 U	0.25 U	0.26 U	0.25 U	0.25 U		0.25 U	0.24 U	0.242 U	0.245 U	0.26 U	0.242 U	0.25 U	0.24 U
RDX			9.3	22	19	18	14	21	24	20		460	400	440	340	380	500	340	340
DNX			0.291 U		0.242 U		0.25 U					1		0.242 U		0.26 U			
MNX			0.291 U		0.242 U		0.25 U					4.5		3.3		2.8			
TNX			0.291 U		0.242 U		0.25 U					0.25 U		0.242 U		0.26 U			
FIELD PARAMETERS																			
TEMPERATURE	C		10.09	15.98	11.08	13.77	19.09	8.65		12.4		10.94	18.58	12.06	15.29	16.85	10.75		12.76
ALKALINITY	MG/L											10 U							
CARBON DIOXIDE												32							
DISSOLVED OXYGEN				23.4	1.52			1.93		3.88		1	13.42	1.3			0.84		2.52
DISSOLVED OXYGEN - METER			5.66			2.39	0.98					2.35			0.62	0.36			
HYDROGEN SULFIDE (H2S)												0							
IRON(+2)												0.18							
MANGANESE(+2)												0.8							
NITRITE-N												0.005							
SULFIDE												0							
SPECIFIC CONDUCTANCE	MS/CM		0.793	1.444	1228	1.119	0.749	1.58		1.17		0.312	0.347	0.271	0.311	0.289	0.391		0.427
OXIDATION REDUCTION POTENTIAL	MV		246.7	518.6	51.9	271.8	126	272		238		276	149.6	99.9	640	244.6	329		368
TURBIDITY	NTU		4.69	6.1	5.2	3.4	4.4	8.8		7.6		6.07	21	5.5	28	1.1	5.2		0.3
PH	S.U.		5.67	5.39	5.42	5.74	5.5	5.56		5.63		4.97	5.06	5.05	3.87	4.49	5.12		4.72
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.11 J									0.2 UJ
AMMONIA-N	MG/L		0.005 UJ									0.04							
NITRITE/NITRATE-N			0.13 J		0.06 J		0.025 U		0.22			0.3 J		0.24 J		0.19		0.27	
TOTAL ORGANIC CARBON							1 U									1 U			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

	LOCATION	**13MWT37**									**13MWT40**								
	ROUND	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
	DATE	No Sample	11/06/2003	07/30/2004	02/02/2005	05/04/2005	08/11/2005	01/06/2006	05/21/2006	04/24/2007	No Sample	11/05/2003	07/30/2004	02/02/2005	05/04/2005	08/11/2005	01/05/2006	06/01/2006	04/30/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L		0.04 U	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 U	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
1,3-DINITROBENZENE			0.04 U	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 U	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.52 U									0.51 UJ							
2,4,6-TRINITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
2,4-DIAMINO-6-NITROTOLUENE			0.26 U		0.24 U		0.26 J					0.26 U		0.264 U		0.28 U			
2,4-DINITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
2,6-DIAMINO-4-NITROTOLUENE			0.26 U		0.24 U		0.26 U					0.26 U		0.264 U		0.28 U			
2,6-DINITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
2-AMINO-4,6-DINITROTOLUENE			0.04 U	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 U	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
2-NITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
3,5-DINITROANILINE			0.26 U		0.24 U		0.26 U					0.26 U		0.264 U		0.28 U			
3-NITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
4,4'-TN-AZOXY					0.48 U		0.52 U							0.528 U		0.56 U			
4-AMINO-2,6-DINITROTOLUENE			0.04 U	0.5	0.31 J	0.58	0.51 J	0.36 J	0.61	0.59 J		0.52 J	1.1	0.39 J	0.81	1.1	1.1	1	0.7
4-NITROTOLUENE			0.04 UJ	0.24 U	0.24 U	0.248 U	0.26 U	0.24 U	0.25 U	0.26 UJ		0.04 UJ	0.25 U	0.264 U	0.271 U	0.28 U	0.258 U	0.25 U	0.27 U
RDX			650	2100	1500	2300	2100	2100	2500	2000 J		140	230	110	200	250	250	240	190
DNX			1.5 J		0.47 J		0.41 J					0.9 J		0.264 U		0.33 J			
MNX			5.2		6.9		7.8					3.3		3.2		3.6			
TNX			0.73		0.24 U		0.26 U					0.26 U		0.264 U		0.28 U			
FIELD PARAMETERS																			
TEMPERATURE	C		13.32	17.35	10.9	13.5	16.53	9.61		12		13.28	15.02	11.71	11.87	15.03	11.65		14.7
ALKALINITY	MG/L																		
CARBON DIOXIDE																			
DISSOLVED OXYGEN				2.9	4.2			9.29		3.88			0.39	13.39			8.46		7.55
DISSOLVED OXYGEN - METER			4.82			4.64	4.39					6.28			8.41	7.84			
HYDROGEN SULFIDE (H2S)																			
IRON(+2)																			
MANGANESE(+2)																			
NITRITE-N																			
SULFIDE																			
SPECIFIC CONDUCTANCE	MS/CM		0.307	0.174	0.24	0.127	127	0.309		0.196		0.273	0.329	0.314	0.287	248	0.383		0.576
OXIDATION REDUCTION POTENTIAL	MV		-144.9	133.5	64.2	300.8	472.7	235		357		100.3	538	168.9	256.7	588.7	269		193
TURBIDITY	NTU		3.2	5	1.3	2.8	1.6	4.3		2.03		6.2	1.28	6.5	2.3	1.4	6.4		5.9
PH	S.U.		5.75	6.26	5.65	5.37	5	5.6		4.82		5.53	5.04	6.51	6.1	6	5.68		5.99
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 U									0.233 J
AMMONIA-N	MG/L		0.005 U									0.11 J							
NITRITE/NITRATE-N			0.28		0.25 J		0.22		0.29			0.28		0.33 J		0.37		0.53	
TOTAL ORGANIC CARBON							1 U									1 U			

TABLE 3-1

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS,
AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER
ROUNDS 1 THROUGH 9
PENNSYLVANIAN UPPER WATER BEARING ZONE
NSA CRANE
CRANE, INDIANA

LOCATION		13MWT47									13MWT51								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		No Sample	12/09/2003	08/01/2004	01/25/2005	05/05/2005	08/15/2005	01/05/2006	05/23/2006	04/29/2007	No Sample	No Sample	08/01/2004	02/03/2005	05/05/2005	08/11/2005	01/20/2006	06/03/2006	04/26/2007
EXPLOSIVES	**Units**																		
1,3,5-TRINITROBENZENE	µG/L		0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
1,3-DINITROBENZENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.521 U																
2,4,6-TRINITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
2,4-DIAMINO-6-NITROTOLUENE			0.26 U		0.242 U		0.27 U							0.264 U		0.38 J			
2,4-DINITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
2,6-DIAMINO-4-NITROTOLUENE			0.26 U		0.242 U		0.27 U							0.264 U		0.26 UJ			
2,6-DINITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
2-AMINO-4,6-DINITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.39 J	0.264 U	0.39 J	0.26 UJ	0.242 U	0.25 U	0.24 U
2-NITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
3,5-DINITROANILINE			0.26 U		0.242 U		0.27 U							0.264 U		0.26 UJ			
3-NITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
4,4'-TN-AZOXY					0.485 U		0.54 U							0.528 U		0.51 UJ			
4-AMINO-2,6-DINITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.5 J	0.72	0.26 UJ	0.242 U	0.25 U	0.24 U
4-NITROTOLUENE			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			0.27 U	0.264 U	0.269 U	0.26 UJ	0.242 U	0.25 U	0.24 U
RDX			0.26 U	0.24 U	0.242 U	0.291 U	0.27 U	0.242 U	0.25 U	0.24 U			250	320	230	27 J	58	350	70
DNX			0.26 U		0.242 U		0.27 U							0.64 J		0.44 J			
MNX			0.26 U		0.242 U		0.27 U							9.3		0.26 UJ			
TNX			0.26 U		0.242 U		0.27 U							0.91 J		0.26 UJ			
FIELD PARAMETERS																			
TEMPERATURE	C		12.42	18.41	8.87	11.59	19.16	8.66		13			20.57	5.07	11.07	17.78	8.22		16.8
ALKALINITY	MG/L																		
CARBON DIOXIDE																			
DISSOLVED OXYGEN				0.51	0.81			0.64		4.58			8.32	10.19			5.48		0.225
DISSOLVED OXYGEN - METER			1.5			0.07									0.17	0.52			
HYDROGEN SULFIDE (H2S)																			
IRON(+2)																			
MANGANESE(+2)																			
NITRITE-N																			
SULFIDE																			
SPECIFIC CONDUCTANCE	MS/CM		1634	1.056	0.673	0.075	0.793	1.32		1.02			0.278	0.14	0.131	344	0.231		0.72
OXIDATION REDUCTION POTENTIAL	MV		409.9	181.2	353.3	320.1	353	303		269			299	254.4	249.6	356.2	208		118
TURBIDITY	NTU		5.4	7	10	0.18	10	10		9.5			33	9.7	8.3	110	8.9		13.28
PH	S.U.		3.46	3.4	3.63	3.41	3.38	3.79		4.04			5.94	6.2	5.93	6	7.17		5.45
MISCELLANEOUS PARAMETERS																			
PERCHLORATE										0.2 UJ									0.0797 J
AMMONIA-N	MG/L		0.44																
NITRITE/NITRATE-N			0.05 U		0.025 UJ		0.025 U		0.079					1.5		0.025 U		0.51	
TOTAL ORGANIC CARBON							2.1									5.4			

A blank cell indicates that no sample was collected or analysis was conducted for the parameter.

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate.

> - Indicates that the true value is probably greater than the reported value. This "qualifier flag" is used to identify reported values that exceed the calibration range of field measurements but could not be re-analyzed for various reasons.

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

UG/L - micrograms per liter
C - degrees centigrade
MG/L - milligrams per liter
MS/CM - millisiemens per centimeter
MV - millivolts
NTU - nephelometric turbidity units
S.U. - standard units

TABLE 3-2

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER ROUNDS 1 THROUGH 9 PENNSYLVANIAN LOWER WATER BEARING ZONE NSA CRANE CRANE, INDIANA

LOCATION		13MWT28									13MWT45								
ROUND		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
DATE		No Sample	12/07/2003	07/31/2004	02/01/2005	05/03/2005	08/09/2005	01/10/2006	06/04/2006	04/29/2007	No Sample	12/08/2003	07/29/2004	01/23/2005	05/05/2005	08/10/2005	01/19/2006	06/02/2006	04/28/2007
EXPLOSIVES	**UNITS**																		
1,3,5-TRINITROBENZENE	µG/L		0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
1,3-DINITROBENZENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.515 U									0.515 U							
2,4,6-TRINITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
2,4-DIAMINO-6-NITROTOLUENE			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
2,4-DINITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
2,6-DIAMINO-4-NITROTOLUENE			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
2,6-DINITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
2-AMINO-4,6-DINITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
2-NITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
3,5-DINITROANILINE			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
3-NITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.34 J	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
4,4'-TN-AZOXY					0.55 U		0.54 U							0.48 U		0.54 U			
4-AMINO-2,6-DINITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
4-NITROTOLUENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
RDX			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
DNX			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
MNX			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
TNX			0.258 U		0.275 U		0.27 U					0.258 U		0.24 U		0.27 U			
HMX			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 UJ	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
NITROBENZENE			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
TETRYL			0.258 U	0.25 U	0.275 U	0.269 U	0.27 U	0.242 U	0.25 U	0.24 U		0.258 U	0.24 U	0.24 U	0.252 U	0.27 U	0.252 U	0.28 U	0.27 U
FIELD PARAMETERS																			
TEMPERATURE	C		13.59	17.98	13.87	14.09	16.4	11.52		15.43		13.36	25.29	10.13	16.63	17.09	9.1		16.8
ALKALINITY	MG/L		150																
CARBON DIOXIDE			10 U																
DISSOLVED OXYGEN			0.5	0.26	8.87			1.78		2.28			7.97	0.56			0.94		1.25
DISSOLVED OXYGEN - METER			0.57			0.59	0.49					0.55			0.91	0.72			
HYDROGEN SULFIDE (H2S)			0																
IRON(+2)			0.01																
MANGANESE(+2)			0																
NITRITE-N			0.007																
SULFIDE			0																
SPECIFIC CONDUCTANCE	MS/CM		0.495	1.217	0.918	0.771	808	1.23		1.02		0.357	0.703	0.491	0.518	505	0.733		0.758
OXIDATION REDUCTION POTENTIAL	MV		-34.1	73.5	144.6	191.3	564.4	112		205		55.5	116.5	-48	71	580.3	146		17
TURBIDITY	NTU		260	65	50	42	11	54		10		75	19	14	13	34	14		11.6
PH	S.U.		9.15	8.08	7.78	7.58	4.14	7.75		7.46		8.19	6.78	7.08	6.7	4.76	7.17		6.69
MISCELLANEOUS PARAMETERS																			
AMMONIA-N	MG/L		0.46 J									0.26							
NITRITE/NITRATE-N			0.66 J		0.15 J		0.77		0.44			0.05 U		0.06 J		0.025 U		0.4	
TOTAL ORGANIC CARBON							1 U									1 U			
PERCHLORATE	UG/L									0.2 UJ									0.2 UJ

TABLE 3-2

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 GROUNDWATER ROUNDS 1 THROUGH 9 PENNSYLVANIAN LOWER WATER BEARING ZONE NSA CRANE CRANE, INDIANA

LOCATION		**13MWT46**								
ROUND		1	2	3	4	5	6	7	8	9
DATE		No Sample	12/09/2003	07/30/2004	02/02/2005	05/04/2005	08/10/2005	01/06/2006	05/21/2006	04/24/2007
EXPLOSIVES	**UNITS**									
1,3,5-TRINITROBENZENE	µG/L		0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
1,3-DINITROBENZENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.556 U							
2,4,6-TRINITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
2,4-DIAMINO-6-NITROTOLUENE			0.278 U		0.245 U		0.28 U			
2,4-DINITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
2,6-DIAMINO-4-NITROTOLUENE			0.278 U		0.245 U		0.28 U			
2,6-DINITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
2-AMINO-4,6-DINITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
2-NITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
3,5-DINITROANILINE			0.278 U		0.245 U		0.28 U			
3-NITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
4,4'-TN-AZOXY					0.49 U		0.55 U			
4-AMINO-2,6-DINITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
4-NITROTOLUENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
RDX			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
DNX			0.278 U		0.245 U		0.28 U			
MNX			0.278 U		0.245 U		0.28 U			
TNX			0.278 U		0.245 U		0.28 U			
HMX			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
NITROBENZENE			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
TETRYL			0.278 U	0.26 U	0.245 U	0.252 U	0.28 U	0.252 U	0.25 U	0.31 UJ
FIELD PARAMETERS										
TEMPERATURE	C		12.45	14.1	10.45	13.64	15.05	10.28		13.3
ALKALINITY	MG/L									
CARBON DIOXIDE										
DISSOLVED OXYGEN				0.05	1.3			2.64		0
DISSOLVED OXYGEN - METER			0.99			0.92	0.84			
HYDROGEN SULFIDE (H2S)										
IRON(+2)										
MANGANESE(+2)										
NITRITE-N										
SULFIDE										
SPECIFIC CONDUCTANCE	MS/CM		1.021	0.786	0.731	0.596	554	1.07		0.761
OXIDATION REDUCTION POTENTIAL	MV		-32.5	131	-21.4	64.7	597.6	-31		111
TURBIDITY	NTU		8.72	2.81	1.65	3.5	0.35	6.2		17.3
PH	S.U.		6.6	6.25	6.45	6.44	0	6.56		5.59
MISCELLANEOUS PARAMETERS										
AMMONIA-N	MG/L		0.12							
NITRITE/NITRATE-N			0.05 U		0.025 UJ		0.025 U		0.025 U	
TOTAL ORGANIC CARBON							1 U			
PERCHLORATE	UG/L									0.2 U

A blank cell indicates that no sample was collected or analysis was conducted for the parameter.

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate.

µG/L - micrograms per liter
C - degrees centigrade
MG/L - milligrams per liter
MS/CM - millisiemens per centimeter
MV - millivolts
NTU - nephelometric turbidity units
S.U. - standard units

TABLE 3-3

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 SURFACE WATER ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

		13SW11									13SW/SD14								
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
		05/08/2003	11/18/2003	No Sample	02/02/2005	No Sample	No Sample	01/05/2006	05/22/2006	No Sample	No Sample	10/22/2003	10/27/2004	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/22/2006	04/17/2007
EXPLOSIVES	**UNITS**																		
1,3,5-TRINITROBENZENE	µG/L	0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
1,3-DINITROBENZENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.575 U									0.94							
2,4,6-TRINITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.42 J	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
2,4-DIAMINO-6-NITROTOLUENE			0.287 U									0.48	0.248 U						
2,4-DINITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
2,6-DIAMINO-4-NITROTOLUENE			0.287 U									0.48	0.248 U						
2,6-DINITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
2-AMINO-4,6-DINITROTOLUENE		0.25 R	0.9 J		0.242 U			0.242 U	0.25 U			2.7 UR	1 J	0.252 U	0.82 J	0.89 J	0.84 J	0.25 U	0.61
2-NITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
3,5-DINITROANILINE			0.287 U									0.48	0.248 U						
3-NITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
4,4'-TN-AZOXY													0.495 U						
4-AMINO-2,6-DINITROTOLUENE		1 J	4.5 J		0.34 J			0.242 U	0.25 U			5.9 UJ	2.5	1.3	1.9	2.2	1.9	0.25 U	1.2
4-NITROTOLUENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
RDX		610	5500		1100			1500	220			174 UJ	97	60	46	47	76	120	47
DNX			35									6.2 BU	1						
MNX			72									9.1 BU	1.9						
TNX			4									1.72 BU	0.248 U						
HMX		93	730		130			210 J	210			44 UJ	18	21	30	18	25 J	62	26
NITROBENZENE		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
TETRYL		0.21 U	0.287 U		0.242 U			0.242 U	0.25 U			0.48	0.248 U	0.252 U	0.25 U	0.24 U	0.248 U	0.25 U	0.27 U
FIELD PARAMETERS																			
TEMPERATURE	C	16.45	15.2		2.72			5.22	14.4			12.14	14.69	2.88	15.05	21.68	5.21	13.2	9.2
DISSOLVED OXYGEN	MG/L				12.46			10.18	9.61				10.3	13.8			10.91	9.9	11.41
DISSOLVED OXYGEN - METER		4.35	4.99									5.93			11.85	7.78			
SPECIFIC CONDUCTANCE	MS/CM	2.743	1.024		1.439			2.34	2.06			0.365	0.702	0.278	0.223	0.323	0.605	0.451	0.326
OXIDATION REDUCTION POTENTIAL	MV	152.9	216		282			200	-9999			224.7	81.7	178	208	78.6	233	-9999	324
TURBIDITY	NTU	85	242		7.6			14	14			4.4	12.8	4.1	10 U	9.1	6.5	19	17.8
PH	S.U.	7.67	6.9		7.76			7.49	8.54			7.33	7.45	7.91	7.51	8.23	6.63	7.02	6.91
MISCELLANEOUS PARAMETERS																			
AMMONIA-N	MG/L	3.4	0.26 J									0.01 UJ							
NITRITE/NITRATE-N		23	8.5 J									1.09 BU	7.4						
TOTAL ORGANIC CARBON																			
PERCHLORATE	µG/L																		0.2 U

TABLE 3-3

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 SURFACE WATER ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

		13SW/SD15									13SW/SD16								
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
		No Sample	10/27/2003	10/27/2004	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/22/2006	04/17/2007	No Sample	10/22/2003	10/27/2004	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/22/2006	04/17/2007
EXPLOSIVES	**UNITS**																		
1,3,5-TRINITROBENZENE	µG/L		0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
1,3-DINITROBENZENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.49 U									0.5 U							
2,4,6-TRINITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
2,4-DIAMINO-6-NITROTOLUENE			0.24 U	0.25 U								0.25 U	0.24 U						
2,4-DINITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
2,6-DIAMINO-4-NITROTOLUENE			0.24 U	0.25 U								0.25 U	0.24 U						
2,6-DINITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
2-AMINO-4,6-DINITROTOLUENE			0.24 U	0.26 J	0.24 U	0.25 U	0.29 U	0.25 U	0.74	0.3 U		0.8 J	0.35 J	0.24 U	0.36 J	1 J	0.28 J	0.5	0.28 U
2-NITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
3,5-DINITROANILINE			0.24 U	0.25 U								0.25 U	0.24 U						
3-NITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.29 J	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
4,4'-TN-AZOXY				0.5 U									0.48 U						
4-AMINO-2,6-DINITROTOLUENE			0.24 U	0.62	0.29 J	0.32 J	0.29 U	0.25 U	1.8	0.3 U		1.6	0.83	0.37 J	0.87 J	2.2	0.59	1.25 UJ	0.38 J
4-NITROTOLUENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
RDX			1500	1000	390	100	200	450	50	190		50	43	29	37 J	41	34	66 UJ	25
DNX			23 J	1.8 J								3.6 J	0.24 U						
MNX			47	22								3	1.2						
TNX			4	0.74 J								0.48 J	0.24 U						
HMX			210	160	81	60	47	94 J	30	67		21	15	13	22 J	23	17 J	39 UJ	13
NITROBENZENE			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
TETRYL			0.24 U	0.25 U	0.24 U	0.25 U	0.29 U	0.25 U	0.25 U	0.3 U		0.25 U	0.24 U	0.24 U	0.29 UJ	0.29 U	0.242 U	0.5	0.28 U
FIELD PARAMETERS																			
TEMPERATURE	C		8.93	14.22	2.44	16.88	21.47	4.88	12.8	7.8		12.18	14.56	1.43	14.24	21.08	5	12.6	8.7
DISSOLVED OXYGEN	MG/L			11.97	13.38			11.02	8.7	11.41			11.63	13.88			10.67	9.83	11.4
DISSOLVED OXYGEN - METER			10.59			10.43	8.56					8.48			11.35	5.4			
SPECIFIC CONDUCTANCE	MS/CM		0.251	0.361	0.132	0.14	0.181	0.276	0.222	0.173		0.254	0.297	0.106	0.134	0.215	0.614	0.257	0.199
OXIDATION REDUCTION POTENTIAL	MV		290.5	101.4	195	194	74.6	209	-9999	320		213.7	71.5	188	173	92.3	244	-9999	302
TURBIDITY	NTU		10.4	23.8	85	10 U	655	34	75	36.5		6.5	12.7	10	10 U	24.5	12	19	6.58
PH	S.U.		7.43	7.41	8.13	7.4	8.6	6.98	6.96	7.07		7.17	7.61	8.29	7.53	7.91	6.87	7.21	6.71
MISCELLANEOUS PARAMETERS																			
AMMONIA-N	MG/L		0.01									0.005 UJ							
NITRITE/NITRATE-N			0.14	3.4								0.66 J	1.3						
TOTAL ORGANIC CARBON																			
PERCHLORATE	µG/L									0.2 U									0.2 U

TABLE 3-3

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 SURFACE WATER ROUNDS 1 THROUGH 9 NSA CRANE CRANE, INDIANA

		13SW/SD19									13SW/SD20								
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
		No Sample	10/23/2003	No Sample	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/21/2006	04/17/2007	No Sample	10/23/2003	No Sample	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/21/2006	04/17/2007
EXPLOSIVES	**UNITS**																		
1,3,5-TRINITROBENZENE	µG/L		0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
1,3-DINITROBENZENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.49 U									0.54 U							
2,4,6-TRINITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
2,4-DIAMINO-6-NITROTOLUENE			0.24 U									0.27 U							
2,4-DINITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
2,6-DIAMINO-4-NITROTOLUENE			0.24 U									0.27 U							
2,6-DINITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
2-NITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
3,5-DINITROANILINE			0.24 U									0.27 U							
3-NITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
4,4'-TN-AZOXY																			
4-AMINO-2,6-DINITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
4-NITROTOLUENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
RDX			0.24 U		0.92	0.41 J	0.29 U	0.84	0.83	0.67		0.46 J		0.38 J	0.26 U	0.29 U	0.31 J	0.25 U	0.25 U
DNX			0.24 U									0.27 U							
MNX			0.24 U									0.27 U							
TNX			0.24 U									0.27 U							
HMX			0.24 U		0.54	0.51	0.29 U	0.55 J	0.77	0.57		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
NITROBENZENE			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
TETRYL			0.24 U		0.264 U	0.25 U	0.29 U	0.238 U	0.25 U	0.25 U		0.27 U		0.24 U	0.26 U	0.29 U	0.242 U	0.25 U	0.25 U
FIELD PARAMETERS																			
TEMPERATURE	C		11.69		2.64	15.03	21.35	4.9	14.43	13.4		13.22		2.24	14.94	21.73	5.4	14.36	11.4
DISSOLVED OXYGEN	MG/L				13.12			9.91	-9999	983				13.25			10.44	-9999	9.96
DISSOLVED OXYGEN - METER			6.03			11.58	12.02					4.39			11.18	2.54			
SPECIFIC CONDUCTANCE	MS/CM		0.566		0.236	0.316	0.376	0.562	0.474	0.345		0.3		0.154	0.174	0.231	0.396	0.296	0.243
OXIDATION REDUCTION POTENTIAL	MV		203.5		220	213	134.2	136	-9999	285		158.3		205	214	103.3	163	-9999	280
TURBIDITY	NTU		1.93		36	10 U	12	0.5	3.83	2.96		6.25		6.1	10 U	3.71	3.3	11.1	6.47
PH	S.U.		7.25		7.9	7.13	8.51	7.67	5.57	6.81		7.75		8.17	7.21	7.58	8.11	5.84	6.67
MISCELLANEOUS PARAMETERS																			
AMMONIA-N	MG/L		0.04 J									0.005 UJ							
NITRITE/NITRATE-N			0.13 U									0.11 U							
TOTAL ORGANIC CARBON																			
PERCHLORATE	µG/L									0.2 U									0.2 U

TABLE 3-3

SUMMARY OF CHEMICALS DETECTED, FIELD PARAMETERS, AND MISCELLANEOUS PARAMETERS FOR SWMU 13 SURFACE WATER ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

		13SW/SD22									13SW/SD30								
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
		No Sample	10/22/2003	10/27/2004	02/02/2005	05/08/2005	No Sample	01/05/2006	05/22/2006	04/17/2007	No Sample	10/22/2003	10/26/2004	02/02/2005	05/08/2005	08/16/2005	01/05/2006	05/22/2006	04/17/2007
EXPLOSIVES	**UNITS**																		
1,3,5-TRINITROBENZENE	µG/L		0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
1,3-DINITROBENZENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.52 U									0.5 U							
2,4,6-TRINITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
2,4-DIAMINO-6-NITROTOLUENE			0.26 U									0.25 U	0.24 U						
2,4-DINITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
2,6-DIAMINO-4-NITROTOLUENE			0.26 U									0.25 U	0.24 U						
2,6-DINITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
2-NITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
3,5-DINITROANILINE			0.26 U									0.25 U	0.24 U						
3-NITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
4,4'-TN-AZOXY													0.48 U						
4-AMINO-2,6-DINITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
4-NITROTOLUENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
RDX			1.6		1.1	0.33 J		1	0.78	4.2 BU		6.2	9.9	6	4.9	10.2 UJ	13.5 UJ	5.8	4.1
DNX			0.26 U									0.25 U	0.24 U						
MNX			0.26 U									0.28 J	0.31 J						
TNX			0.26 U									0.25 U	0.24 U						
HMX			0.26 U		0.36 J	0.27 U		0.258 U	0.25 U	0.8275 R		3.2 J	2.9	2	2.6	4.8 UJ	4.8 BU	3.3	1.8
NITROBENZENE			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
TETRYL			0.26 U		0.266 U	0.27 U		0.258 U	0.25 U	0.84 J		0.25 U	0.24 U	0.252 U	0.25 U	0.51	0.518	0.25 U	0.25 U
FIELD PARAMETERS																			
TEMPERATURE	C		13.65	15.14	2.02	13.53		5.12	13	10.2		13.09	14.39	1.63	19.29	45.04 UJ	4.91	14.1	9.1
DISSOLVED OXYGEN	MG/L			10.84	8.25			9.72	7.95	10.87			9.44	14.1			11.18	11.11	12.56
DISSOLVED OXYGEN - METER			3.71			6.86						9.63			11.3	20.42 UJ			
SPECIFIC CONDUCTANCE	MS/CM		0.434	0.205	0.151	0.184		0.342	0.406	0.337		0.395	0.359	0.168	0.234	0.728 UJ	0.389	0.371	0.306
OXIDATION REDUCTION POTENTIAL	MV		264.7	74.1	139	199		188	-9999	328		222.1	39.6	201	165	71	199	-9999	235
TURBIDITY	NTU		1.5	21.3	3.1	10 U		6.7	5.6	6.65		2.6	5.69	4.5	3.5	4.36 UJ	40	4.2	2.98
PH	S.U.		7.02	7.7	8.18	7.03		7.24	7.88	6.98		7.84	7.52	8.07	8.06	17.18 UJ	7.15	8.11	6.54
MISCELLANEOUS PARAMETERS																			
AMMONIA-N	MG/L		0.005 UJ									0.005 UJ							
NITRITE/NITRATE-N			0.025 U									0.025 U	0.26						
TOTAL ORGANIC CARBON																2.2			
PERCHLORATE	µG/L									0.4									0.2 U

A blank cell indicates that no sample was collected or analysis was conducted for the parameter.
U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (i.e., holding time

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate.
BU - Indicates that the associated organic chemical was detected in this sample as well as the associated laboratory method blank, but has been qualified as non-detected because the concentration was less than the blank level adjusted for uncertainties (i

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable.
-9999 - Data not available
µG/L - micrograms per liter
C - degrees centigrade
MG/L - milligrams per liter
MS/CM - millisiemens per centimeter
MV - millivolts
NTU - nephelometric turbidity units
S.U. - standard units

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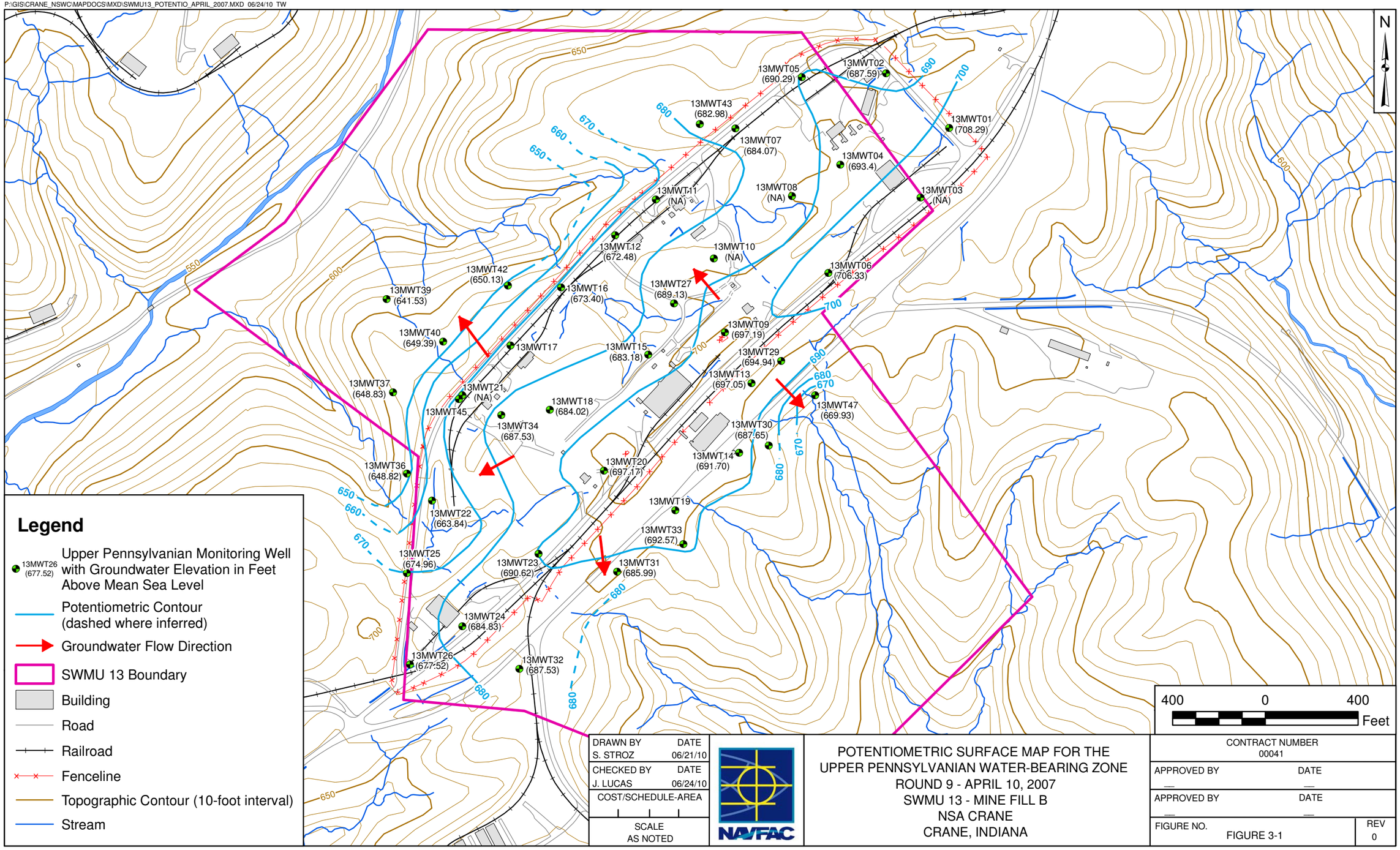

DRAWN BY	DATE
S. STROZ	06/21/10
CHECKED BY	DATE
J. LUCAS	06/24/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

POTENTIOMETRIC SURFACE MAP FOR THE
UPPER PENNSYLVANIAN WATER-BEARING ZONE
ROUND 9 - APRIL 10, 2007
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041	
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FIGURE NO. FIGURE 3-1	REV 0

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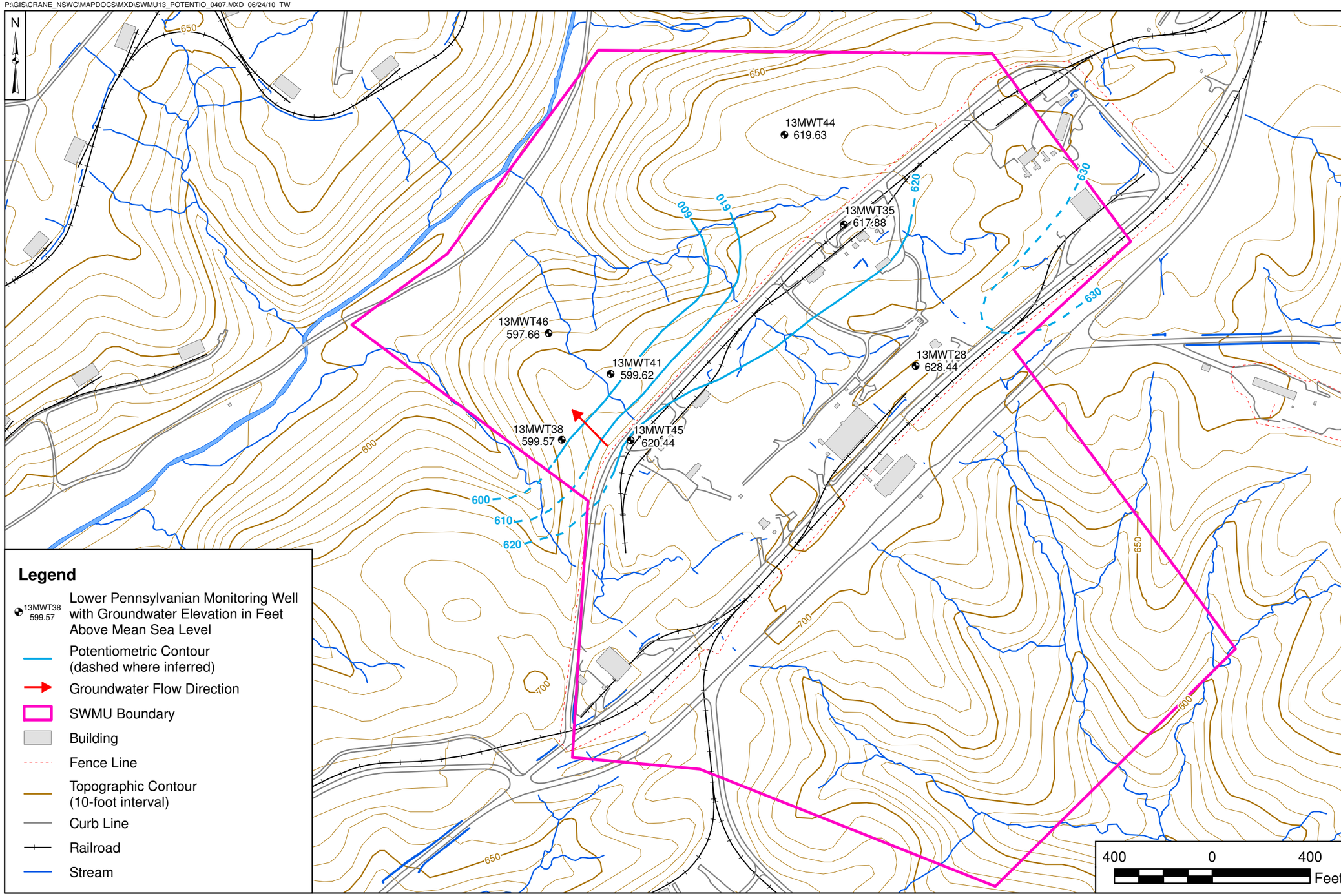


CONTRACT NUMBER
00041

APPROVED BY — DATE —

APPROVED BY — DATE —

FIGURE NO. FIGURE 3-2

REV 0

POTENTIOMETRIC SURFACE MAP FOR THE
LOWER PENNSYLVANIAN WATER-BEARING ZONE
ROUND 9 - APRIL 10, 2007
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY T. WHEATON DATE 06/22/10

CHECKED BY J. LUCAS DATE 06/24/10

COST/SCHEDULE-AREA —

SCALE AS NOTED

4.0 DATA EVALUATION

This section presents an evaluation of groundwater and surface water monitoring data presented in Section 3. The objective of the evaluation is to determine if the monitoring data demonstrates whether residual explosives in SWMU 13 groundwater may be naturally degrading. The primary source of information for demonstrating MNA includes historical groundwater monitoring data that exhibits a clear and meaningful decreasing trend of contaminant mass and concentration. The historical groundwater MNA data presented in Section 3 has been analyzed for trends using basic statistics, appropriate statistical tests, and graphical presentations of contaminant concentrations using temporal plotting, color spatial contouring, and lateral cross-sections.

4.1 STATISTICAL ANALYSIS

4.1.1 Basic Statistics

The basis statistics for groundwater concentration data collected during the SWMU 13 MNA program is presented in Tables 4-1 through 4-5 for each spatial location group (source area, RDX plume, edge of the plume, upgradient, and downgradient). The statistics include frequency of detection (FOD), minimum, maximum and mean concentration, and the round in which the maximum concentration occurred. A discussion of the statistical parameters for each spatial group of monitoring wells is presented below.

Source Area Wells

RDX was detected at all source area wells in all 9 rounds of sampling. The maximum RDX concentrations (7,700 µg/L) detected in the MNA program occurred at source area well 13MWT21 in Round 2. Since Round 6, RDX concentrations have been less than 4,000 µg/L with concentrations during Rounds 7 and 9 being less than 1,000 µg/L. The second highest RDX concentration (1,700 µg/L) reported for the source area wells also occurred in Round 2 at well 13MWT09. The maximum RDX concentrations reported for the remaining source area wells (13MWT11 and 13MWT17) were respectively, 830 µg/L and 580 µg/L and also occurred in the early rounds (2, 4, and 5).

RDX degradation by-products were detected in all source area wells in Rounds 2, 4, and 6. The maximum concentrations of DNX, MNX, and TNX all occurred at well 13MWT21 in Round 2. The maximum reported concentration was 11 µg/L for MNX in well 13MWT17. Only MNX was detected at all wells. TNX and DNX were detected at all source area wells except 13MWT11. The maximum TNX and DNX concentrations were 50 µg/L and 1.4 µg/L, respectively, in Round 2 in well 13MWT21.

RDX Plume Wells

RDX was detected in all wells in all 9 rounds. The maximum RDX concentrations of 2,500 µg/L and 500 µg/L were detected in wells 13MWT37 and 13MWT34, respectively, in Round 7 and Round 6. The maximum RDX concentrations for wells 13MWT13 and 13MWT40 were 21 µg/L and 250 µg/L, respectively, in Rounds 5 and 6.

DNX, MNX, and TNX were detected in Rounds 2, 4, and 6 in all wells with the exception of 13MWT13. DNX, MNX, and TNX maximum concentrations all occurred at 13MWT37 (1.5 µg/L, 7.8 µg/L, and 0.73 µg/L, respectively). TNX was only detected in well 13MWT37 in Round 1.

Leading Edge of the Plume Wells

RDX was detected in all 3 leading edge wells in Rounds 2, 4, and 6. The maximum RDX concentration of 350 µg/L was detected in well 13MWT51 in Round 6. The maximum RDX concentrations reported in wells 13MWT31 and 13MWT14 were 24 µg/L and 5.4 µg/L, respectively, in Round 7 and Round 9.

DNX, MNX, and TNX were only detected in well 13MWT51 during Rounds 4 and 6. The maximum concentrations of DNX, MNX, and TNX were 0.64 µg/L, 9.3 µg/L, and 0.91, respectively, and all occurred in Round 4.

Upgradient Wells

RDX has been detected 3 times only at upgradient well 13MWT01 in Rounds 2. 3. and 4. The concentrations for each of these detections were low and generally the same in the range of 0.3 µg/L to 0.37 µg/L, with the maximum detection occurring in Round 4.

There have been no detections of DNX, MNX, or TNX at both upgradient wells in Rounds 1 through 9.

Downgradient Wells

There have been no detections of RDX, DNX, MNX, or TNX in Rounds 1 through 9 at well 13MWT47.

4.1.2 Mann-Kendal Statistical Trend Analysis

The Mann-Kendall statistical test was used to determine if there are indications of temporal trends at the SWMU 13 Puz monitoring wells where RDX and degradation by-products have been detected. RDX and

degradation by-products have not been detected in the Plz wells. The Mann-Kendall test involves computing a statistic S, which is the difference between the number of pairwise differences that are positive minus the number that are negative. If S is a large positive number, then there is evidence of an increasing trend in the data. If S is a large negative value, then there is evidence of a decreasing trend in the data. The null hypothesis or baseline condition for this test is that there is no temporal trend in the data values. The alternative hypothesis is that of either an upward or a downward trend. The Mann-Kendall test is particularly useful since missing values are allowed and the data need not conform to any particular distribution. One half the detection limits is used for all non-detected values.

The number of samples for each Puz well was less than 10. If the number of samples is less than 10 then the following procedure is used in the statistical analysis.

The first step is to list the data in the order in which they were collected over time: $x_1, x_2 . . . x_n$, where x is the observation at time i. Then determine the sign of all n(n-1)/2 possible differences $x_j - x_k$, where j > k. These differences are $x_2 - x_1, x_3 - x_1, . . . , x_n - x_1, x_3 - x_2, x_4 - s_2, . . . , x_n - x_{n-2}, x_n - x_{n-1}$. A convenient way of arranging the calculations is as follows:

Data Values Listed in Order Collected Over Time							**No. of + Signs**	**No. of – Signs**
x_1	x_2	x_3	x_4	. . .	x_{n-1}	x_n		
	$x_2 - x_1$	$x_3 - x_1$	$x_4 - x_1$	. . .	$x_{n-1} - x_1$	$x_n - x_1$		
		$x_3 - x_2$	$x_4 - x_2$	. . .	$x_{n-1} - x_2$	$x_n - x_2$		
			$x_4 - x_3$	. . .	$x_{n-1} - x_3$	$x_n - x_3$		
					$\vdots$	$\vdots$		
					$x_{n-1} - x_{n-2}$	$x_n - x_{n-2}$		
						$x_n - x_{n-1}$		
						S =	$\begin{pmatrix}\text{sum of} \\ + \text{ signs}\end{pmatrix} +$	$\begin{pmatrix}\text{sum of} \\ - \text{ signs}\end{pmatrix}$

The next step is to use Table 4-6 to find the critical value and Table 4-7 to find the p-value. The null hypothesis of no trend is rejected:

- if the absolute value of S is greater than or equal to the critical value, and
- if the p-value is less than the significance level, α.

The results of the Mann-Kendall statistical test are presented in Table 4-8 for alpha values (significance levels) of 0.2, 0.1 and 0.05. IDEM guidance (IDEM, 2001 *RISC*) typically recommends using alpha values of 0.10 or 0.05. In the case of the least conservative significance level (0.20), the test indicated six wells were potentially showing a combination of significant upward or downward trends in concentrations. Significant upward trends were found at Wells 13MWT01 (upgradient), 13MWT14 and 13MWT31 (leading edge of plume) and 13MWT37 (within the plume). Two wells, located in the source area (13MWT21) and the within the plume (13MWT34), tested positive for significant downward trends.

However, in the case of the more conservative significance level (0.10 and 0.05) tests, trends were potentially identified only for two wells. At the 0.10 significance level, wells 13MWT01 (upgradient) and 13MWT14 (leading edge on the eastern slope) tested positive for downward and upward trends, respectively. Only one well, 13MWT01 (upgradient), demonstrated a potential downward trend at the 0.05 significance level. All other wells indicated no trend at the 0.05 level.

4.2 TEMPORAL PLOTS

Temporal plots of RDX and degradation by-product concentrations in Puz groundwater wells by spatial group are presented in Figures 4-1 through 4-5 and for surface water locations in Figure 4-6. The temporal plots are arranged in columns by monitoring well showing the concentration plot for RDX followed by the temporal plot for DNX, MNX, and TNX, respectively. The data points shown in each plot represent the parameter concentration by round and the data validation qualifier as presented for groundwater and surface water, respectively, in Tables 3-1 and 3-3. The absence of a data point in a round indicates that no sample was collected or no analysis was conducted for a specific parameter.

A discussion of potential temporal trends at groundwater wells and surface water locations are discussed below in Sections 4.2.1 and 4.2.2, respectively.

4.2.1 Groundwater Trends

Source Area Wells

Temporal plots for all source area wells are shown in Figure 4-1. The RDX concentrations at wells 13MWT21 and 13MWT09 show a potential downward trend since the maximum concentrations were detected in Round 2. The reduction in RDX concentration has been much greater at 13MWT21 in comparison to 13MWT09. However, historical RDX concentrations at wells 13MWT11 and 13MWT17 have fluctuated from round to round and show no discernible trend through 9 rounds. DNX, MNX, and

TNX concentrations have generally trended downward since Round 2 when the maximum concentrations were detected.

RDX Plume Wells

Temporal plots for RDX plume wells are shown in Figure 4-2. The RDX concentrations at wells 13MWT13 and 13MWT40 have fluctuated from round to round and indicate no clear trend. In the case of well 13MWT34, RDX concentrations have also fluctuated from round to round; however, concentrations show a potential downward trend overall through 9 rounds of sampling. Conversely, RDX concentrations at well 13MWT37 have trended upward significantly since Round 2 and have remained at or above 2,000 µg/L since Round 5.

MNX concentrations trended upward based on 3 rounds (Rounds 2, 4, and 6) of sampling at wells 13MWT37 and 13MWT40; however trended downward in well 13MWT34. In the same sample rounds, DNX concentrations trended lower at wells 13MWT34, 13MWT37, and 13MWT40. There was only 1 detection of TNX in Round 2 at well 13MWT37.

Leading Edge of the Plume Wells

Temporal plots for RDX plume wells are shown in Figure 4-3. Through 9 rounds of sampling, RDX concentrations have fluctuated consistently at all wells making it difficult discern possible trends. RDX concentrations were most variable in well 13MWT51 ranging between 27 µg/L and 350 µg/L. RDX concentrations at well 13MWT31 remained relatively stable between Rounds 3 and 9 in the range of 15 µg/L to 25 µg/L. In the case of well 13MWT14, RDX concentrations have fluctuated between 1 µg/L and 6 µg/L and show a potential upward trend since Round 5.

DNX, MNX, and TNX have only been detected in well 13MWT51 within this group in Round 4 and Round 6. All three degradation parameters were detected in Round 4; however, DNX was the only parameter detected in Round 6 and at a lower concentration in comparison to Round 4.

Upgradient Wells

Temporal plots for upgradient wells are shown in Figure 4-4. RDX has only been detected in well 13MWT01 at very low concentrations (less than 0.4 µg/L) in Rounds 2, 3, and 4. Since then there have been no detections of RDX. In addition, there have been no detections of DNX, MNX, or TNX in both upgradient wells.

Downgradient Wells

The temporal plot for the single downgradient wells is shown in Figure 4-5. There have been no detections of RDX, DNX, MNX, or TNX in Rounds 1 through 9 at well 13MWT47.

4.2.2 Surface Water Trends

The temporal plots for the 8 surface water locations are in Figure 4-6. The highest RDX concentrations have been detected at surface water locations 13SW11 and 13SW/SD15. Both of these locations reported their highest RDX concentrations in Round 2, which have trended significantly lower since Round 2, especially at well 13SW11. An overall downward trend of much lesser proportions is potentially shown for RDX since Round 2 at 13SW/SD16 and possibly at 13SW/SD20 and 13MWT30. RDX concentrations at 13SW/SD14, 13SW/SD19 and 13SW/SD22 have fluctuated from round to round and show no clear trend in RDX concentrations.

Only very limited sampling (2 rounds) has been conducted for DNX, MNX, and TNX in surface water and does not provide sufficient data to discern potential trends. DNX, MNX, and TNX have been detected at only 5 surface water locations (13SW11, 13SW/SD14, 13SW/SD15, 13SW/SD16, and 13SW/SD30) in Rounds 2 and 3. The maximum DNX, MNX, and TNX concentrations were 35 µg/L, 72 µg/L, and 4 µg/L, respectively, and all occurred at location 13SW11 in Round 2.

4.3 LATERAL CROSS-SECTIONS

Figures 4-7 and 4-8 represent cross-sectional plots of RDX concentrations in monitoring wells laterally from source areas. Figure 4-7 represents a west-east cross-sectional line through 13MWT21, and Figure 4-8 represents a west-east cross-sectional line through 13MWT09. The cross-sectional lines are approximately parallel to groundwater flow direction. Concentrations for the monitoring wells are plotted for the nine monitoring rounds.

For the southern cross-section (Figure 4-7), the RDX concentrations decrease sharply away from the source area well (13MWT21) to the wells within the RDX plume (13MWT40 to the west and 13MWT34 to the east), which are located within 200 feet from the source.

A similar pattern of decreasing concentrations laterally from the source area exists for the northern cross-section (Figure 4-8). However, the decrease in concentration is more gradual to the west to 13MWTW11 in contrast to the decrease in concentration to the east (13MWT13).

TABLE 4-1

DESCRIPTIVE STATISTICS FOR SOURCE AREA WELLS
IN THE PENNSYLVANIAN UPPER WATER BEARING ZONE
AT SWMU 13 FOR ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

13MWT09									
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**		**Maximum Concentration (µg/L)**		**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	1/1	4	J	4	J	- - -	NA	NA	13GWT0902
MNX	3/3	2.8	J	7.1	J	- - -	4.70	4.70	13GWT0902
RDX	9/9	1100		1700		- - -	1333	1333	13GWT0902
TNX	2/3	1.3	J	1.5	J	0.26 - 0.26	0.977	1.40	13GWT0902
13MWT11									
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**		**Maximum Concentration (µg/L)**		**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA		NA		0.258 - 0.269	NA	NA	NA
MNX	3/3	0.74	J	1.2		- - -	0.897	0.897	13GWT1102
RDX	9/9	490		830		- - -	661	661	13GWT1104, 13GWT1105
TNX	0/3	NA		NA		0.258 - 0.269	NA	NA	NA
13MWT17									
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**		**Maximum Concentration (µg/L)**		**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	3/3	0.41	J	2.2	J	- - -	1.02	1.02	13GWT1702
MNX	3/3	6.2		11		- - -	7.90	7.90	13GWT1702
RDX	9/9	390		580		- - -	496	496	13GWT1702
TNX	2/3	0.3	J	1.2		0.248 - 0.248	0.541	0.750	13GWT1702
13MWT21									
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**		**Maximum Concentration (µg/L)**		**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	1/3	50	J	50	J	0.238 - 0.28	16.8	50.0	13GWT2102
MNX	1/2	9.3	J	9.3	J	0.28 - 0.28	4.72	9.30	13GWT2102
RDX	9/9	180		7700		- - -	3471	3471	13GWT2102
TNX	1/3	1.4	J	1.4	J	0.238 - 0.28	0.553	1.40	13GWT2102

NA - Not Available

TABLE 4-2

DESCRIPTIVE STATISTICS FOR WELLS WITHIN THE RDX PLUME IN THE PENNSYLVANIAN UPPER WATER BEARING ZONE AT SWMU 13 FOR ROUNDS 1 THROUGH 9 NSA CRANE CRANE, INDIANA

13MWT37							
Parameter	Frequency of Detection	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Range of Nondetects	Mean Concentration (µg/L)	Average of Positive Detects	Sample of Maximum Detect
DNX	3/3	0.41 J	1.5 J	- - -	0.793	0.793	13GWT3701
MNX	3/3	5.2	7.8	- - -	6.63	6.63	13GWT3705
RDX	8/8	650	2500	- - -	1906	1906	13GWT3707
TNX	1/3	0.73	0.73	0.24 - 0.26	0.327	0.730	13GWT3701
13MWT34							
Parameter	Frequency of Detection	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Range of Nondetects	Mean Concentration (µg/L)	Average of Positive Detects	Sample of Maximum Detect
DNX	1/3	1	1	0.242 - 0.26	0.417	1.00	13GWT3401
MNX	3/3	2.8	4.5	- - -	3.53	3.53	13GWT3401
RDX	8/8	340	500	- - -	400	400	13GWT3406
TNX	0/3	NA	NA	0.242 - 0.26	NA	NA	NA
13MWT40							
Parameter	Frequency of Detection	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Range of Nondetects	Mean Concentration (µg/L)	Average of Positive Detects	Sample of Maximum Detect
DNX	2/3	0.33 J	0.9 J	0.264 - 0.264	0.454	0.615	13GWT4001
MNX	3/3	3.2	3.6	- - -	3.37	3.37	13GWT4005
RDX	8/8	110	250	- - -	201	201	13GWT4005, 13GWT4006
TNX	0/3	NA	NA	0.26 - 0.28	NA	NA	NA
13MWT13							
Parameter	Frequency of Detection	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Range of Nondetects	Mean Concentration (µg/L)	Average of Positive Detects	Sample of Maximum Detect
DNX	0/3	NA	NA	0.245 - 0.26	NA	NA	NA
MNX	0/3	NA	NA	0.245 - 0.26	NA	NA	NA
RDX	9/9	12	21	- - -	17	17	13GWT1306
TNX	0/3	NA	NA	0.245 - 0.26	NA	NA	NA

NA - Not Available

TABLE 4-3

DESCRIPTIVE STATISTICS FOR EDGE OF PLUME WELLS
IN THE PENNSYLVANIAN UPPER WATER BEARING ZONE
AT SWMU 13 FOR ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA

13GWT14							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA	NA	0.24 - 0.25	NA	NA	NA
MNX	0/3	NA	NA	0.24 - 0.25	NA	NA	NA
RDX	9/9	1.6	5.4 J	- - -	3.07	3.07	13GWT1409
TNX	0/3	NA	NA	0.24 - 0.25	NA	NA	NA

13GWT31							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA	NA	0.242 - 0.291	NA	NA	NA
MNX	0/3	NA	NA	0.242 - 0.291	NA	NA	NA
RDX	8/8	9.3	24	- - -	18.4	18.4	13GWT3107
TNX	0/3	NA	NA	0.242 - 0.291	NA	NA	NA

13MWT51							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	2/2	0.44 J	0.64 J	- - -	0.540	0.540	13GWT5102
MNX	1/2	9.3	9.3	0.26 - 0.26	4.72	9.30	13GWT5102
RDX	7/7	27 J	350	- - -	186	186	13GWT5106
TNX	1/2	0.91 J	0.91 J	0.26 - 0.26	0.520	0.910	13GWT5102

NA - Available

TABLE 4-4

**DESCRIPTIVE STATISTICS FOR UPGRADIENT WELLS
IN THE PENNSYLVANIAN UPPER WATER BEARING ZONE
AT SWMU 13 FOR ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA**

13MWT01							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA	NA	0.263 - 0.27	NA	NA	NA
MNX	0/3	NA	NA	0.263 - 0.27	NA	NA	NA
RDX	3/9	0.3 J	0.37 J	0.24 - 0.44	0.210	0.340	13GWT0104
TNX	0/3	NA	NA	0.263 - 0.27	NA	NA	NA
13MWT15							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA	NA	0.238 - 0.27	NA	NA	NA
MNX	0/3	NA	NA	0.238 - 0.27	NA	NA	NA
RDX	0/9	NA	NA	0.238 - 0.46	NA	NA	NA
TNX	0/3	NA	NA	0.238 - 0.27	NA	NA	NA

NA - Not Available

TABLE 4-5

**DESCRIPTIVE STATISTICS FOR DOWNGRADIENT WELLS
IN THE PENNSYLVANIAN UPPER WATER BEARING ZONE
AT SWMU 13 FOR ROUNDS 1 THROUGH 9
NSA CRANE
CRANE, INDIANA**

13MWT47							
Parameter	**Frequency of Detection**	**Minimum Concentration (µg/L)**	**Maximum Concentration (µg/L)**	**Range of Nondetects**	**Mean Concentration (µg/L)**	**Average of Positive Detects**	**Sample of Maximum Detect**
DNX	0/3	NA	NA	0.242 - 0.27	NA	NA	NA
MNX	0/3	NA	NA	0.242 - 0.27	NA	NA	NA
RDX	0/8	NA	NA	0.24 - 0.291	NA	NA	NA
TNX	0/3	NA	NA	0.242 - 0.27	NA	NA	NA

NA - Not Available

TABLE 4-6

CRITICAL VALUES FOR THE MANN-KENDALL STATISTICAL TEST
FOR TREND ANALYSIS AT SWMU 13
NSA CRANE
CRANE, INDIANA

Significance Level α	Sample Size (n)																
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0.20	4	6	7	7	8	10	11	13	14	16	17	19	20	22	25	27	28
0.10	6	8	9	11	12	14	17	19	20	24	25	29	30	34	35	39	42
0.05	6	8	11	13	16	18	21	23	26	28	31	35	38	42	45	49	52
0.01	-	10	13	17	20	24	27	31	34	40	43	47	52	58	63	67	72

TABLE 4-7

PROBABILITIES (P) FOR THE SMALL-SAMPLE
MANN-KENDALL TEST FOR GROUNDWATER TREND ANALYSIS AT SWMU 13
NSA CRANE
CRANE, INDIANA

S	n				S	n		
	4	5	8	9		6	7	10
0	0.625	0.592	0.548	0.54	**1**	0.5	0.5	0.5
2	0.375	0.408	0.452	0.46	**3**	0.36	0.386	0.431
4	0.167	0.242	0.36	0.381	**5**	0.235	0.281	0.364
6	0.042	0.117	0.274	0.306	**7**	0.136	0.191	0.3
8		0.042	0.199	0.238	**9**	0.068	0.119	0.242
10		0.0083	0.138	0.179	**11**	0.028	0.068	0.19
12			0.089	0.13	**13**	0.0083	0.035	0.146
14			0.054	0.09	**15**	0.0014	0.015	0.108
16			0.031	0.06	**17**		0.0054	0.078
18			0.016	0.038	**19**		0.0014	0.054
20			0.0071	0.022	**21**		0.0002	0.036
22			0.0028	0.012	**23**			0.023
24			0.00087	0.0063	**25**			0.014
26			0.00019	0.0029	**27**			0.0083
28			0.000025	0.0012	**29**			0.0046
30				0.00043	**31**			0.0023
32				0.00012	**33**			0.0011
34				0.000025	**35**			0.00047
36				0.0000028	**37**			0.00018
					39			0.000058
					41			0.000015
					43			0.0000028
					45			0.00000028

TABLE 4-8

MANN-KENDALL TREND TEST RESULTS FOR RDX
SWMU 13 (MINE FILL B)
NSA CRANE
CRANE, INDIANA

Location	N	S	p-value	Test Statistic	Alpha = 0.2		Alpha = 0.1		Alpha = 0.05	
					Critical Value	Trend?	Critical Value	Trend?	Critical Value	Trend?
PENNSYLVANIAN UPPER WATER BEARING ZONE (PUZ)										
13MWT01	9	-26	0.003	-26	10	Significant Downward Trend	14	Significant Downward Trend	18	Significant Downward Trend
13MWT09	9	-5	0.344	-5	10	No Trend	14	No Trend	18	No Trend
13MWT11	9	5	0.344	5	10	No Trend	14	No Trend	18	No Trend
13MWT13	9	4	0.381	4	10	No Trend	14	No Trend	18	No Trend
13MWT14	9	14	0.090	14	10	Significant Upward Trend	14	Significant Upward Trend	18	No Trend
13MWT15	RDX was not detected in any round of sampling.									
13MWT17	9	1	0.500	1	10	No Trend	14	No Trend	18	No Trend
13MWT21	9	-10	0.179	-10	10	Significant Downward Trend	14	No Trend	18	No Trend
13MWT31	8	8	0.199	8	8	Significant Upward Trend	12	No Trend	16	No Trend
13MWT34	8	-11	0.114	-11	8	Significant Downward Trend	12	No Trend	16	No Trend
13MWT37	8	9	0.169	9	8	Significant Upward Trend	12	No Trend	16	No Trend
13MWT40	8	7	0.237	7	8	No Trend	12	No Trend	16	No Trend
13MWT47	RDX was not detected in any round of sampling.									
13MWT51	7	-3	0.386	-3	7	No Trend	11	No Trend	13	No Trend
PENNSYLVANIAN LOWER WATER BEARING ZONE (PLZ)										
13MWT28	RDX was not detected in any round of sampling.									
13MWT45	RDX was not detected in any round of sampling.									
13MWT46	RDX was not detected in any round of sampling.									

Notes:
-- Indicates that there were an insufficient number of samples to run the test.

Null Hypothesis: Ho: There is no trend.
Alternative Hypothesis: HA: There is an upward trend (indicated by a positive value of S).
HA: There is a downward trend (indicated by a negative value of S).

If p-value is less than alpha then reject null hypothesis of no trend.
If absolute value of the test statistic is greater than or equal to the critical value then reject null hypothesis of no trend.
Source: Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, EPA/240/B-06/003. February 2006.

FIGURE 4-1

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN THE PENNSYLVANIA UPPER WATER BEARING ZONE AT SWMU 13 SOURCE AREA WELLS NSA CRANE CRANE, INDIANA

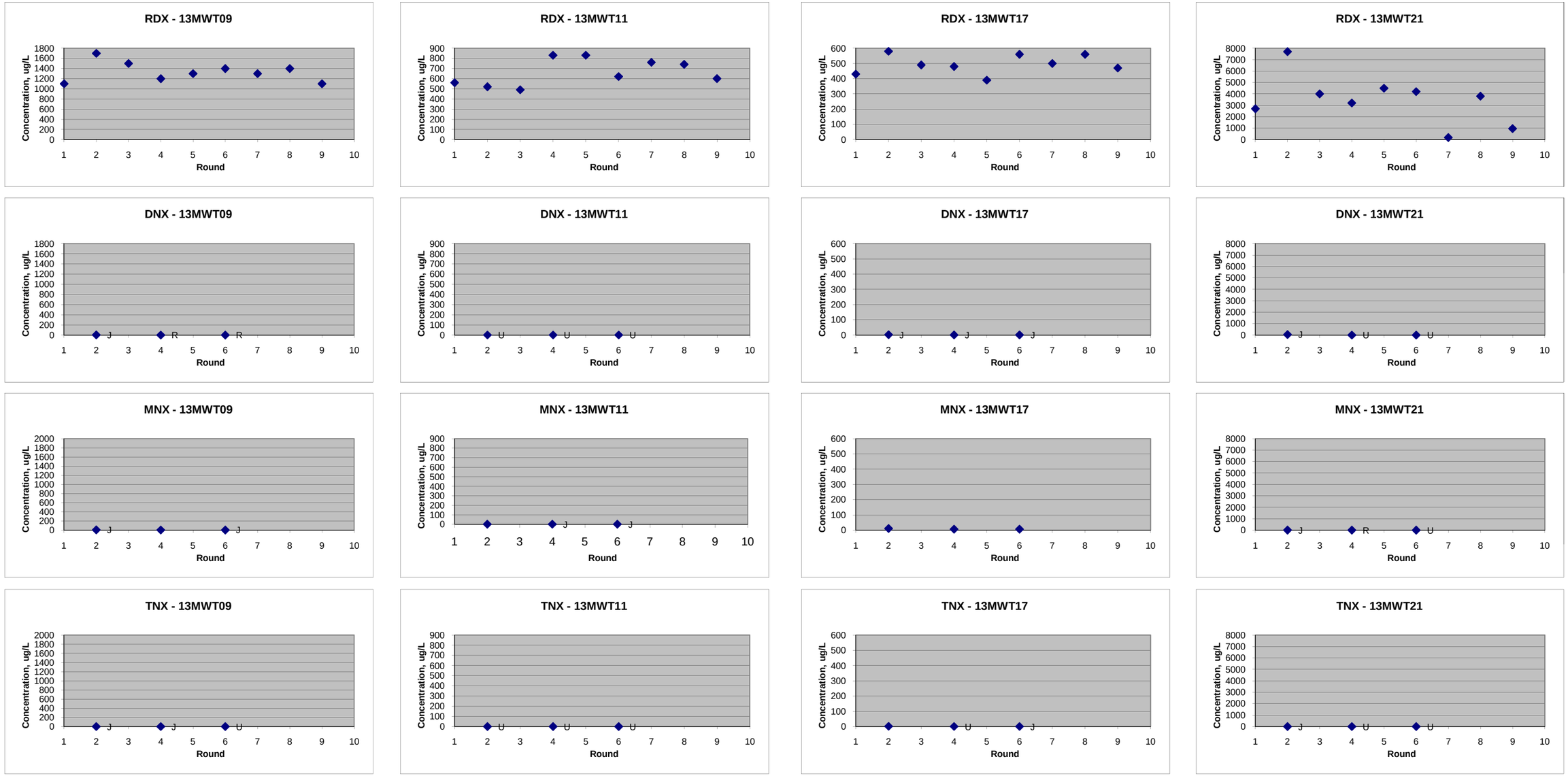


FIGURE 4-2

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN THE PENNSYLVANIA UPPER WATER BEARING ZONE AT SWMU 13
RDX PLUME WELLS
NSA CRANE
CRANE, INDIANA

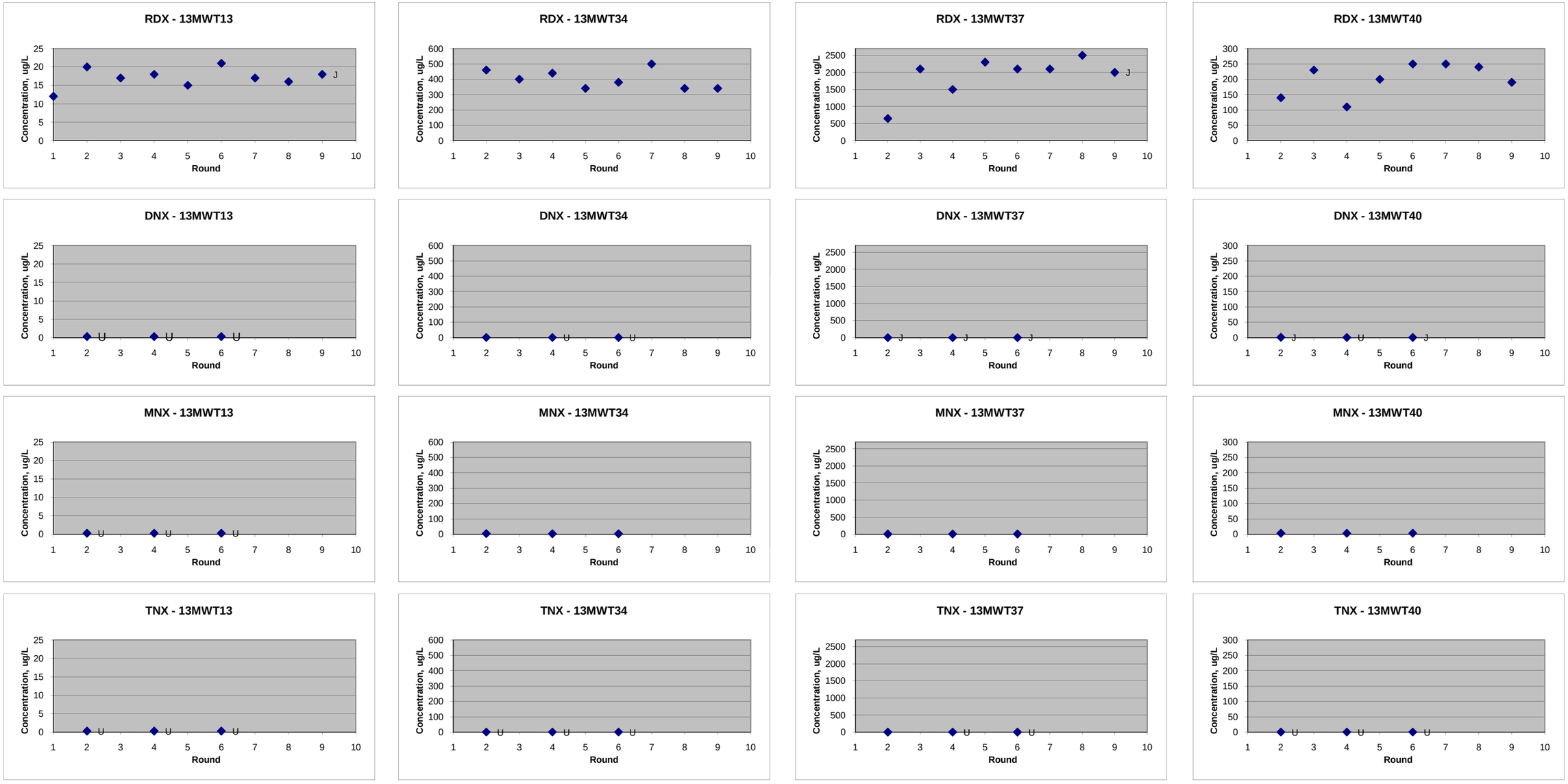


FIGURE 4-3

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN THE PENNSYLVANIA UPPER WATER BEARING ZONE AT SWMU 13 LEADING EDGE WELLS NSA CRANE CRANE, INDIANA

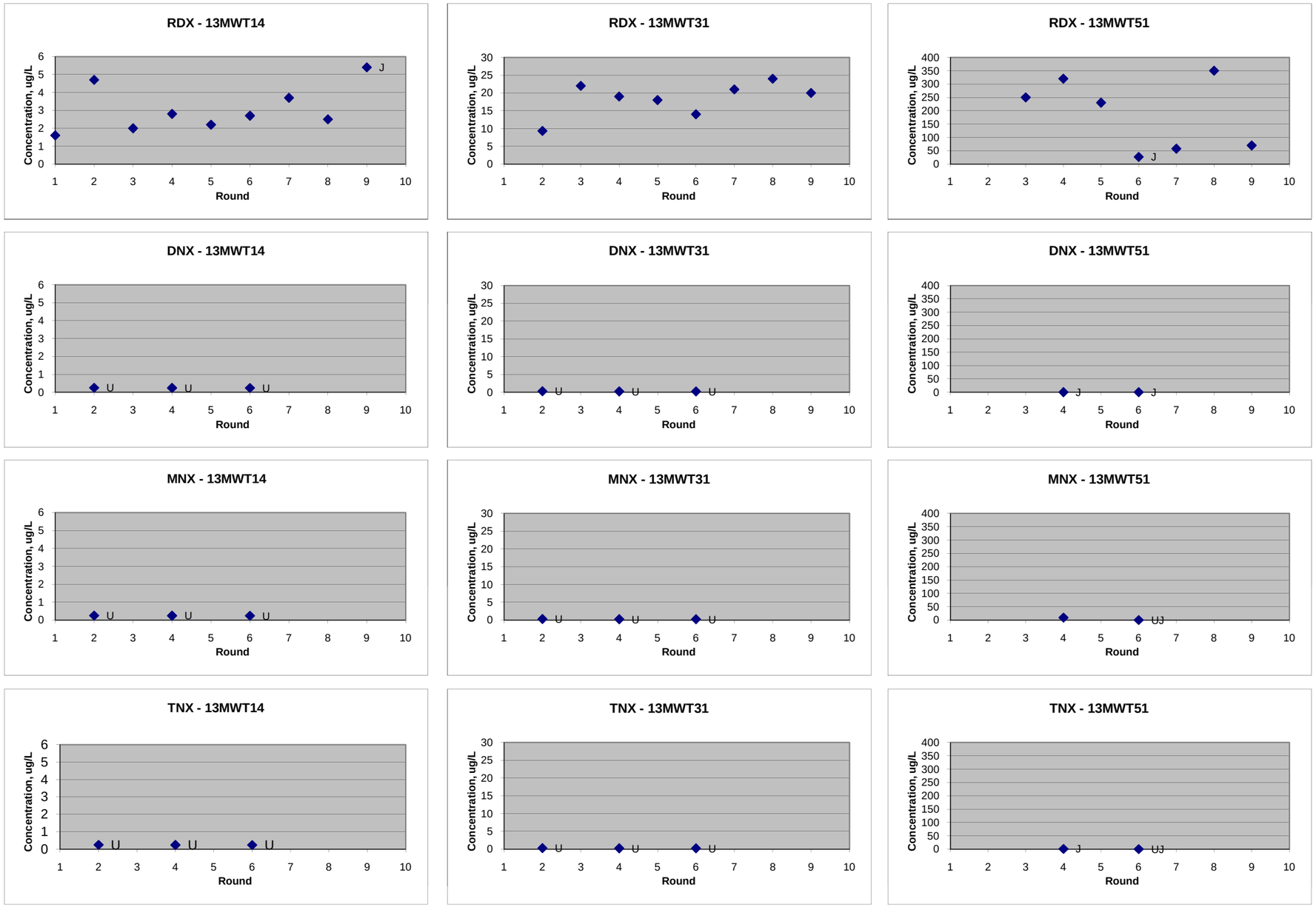


FIGURE 4-4

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN THE PENNSYLVANIA UPPER WATER BEARING ZONE AT SWMU 13 UPGRADIENT WELLS NSA CRANE CRANE, INDIANA

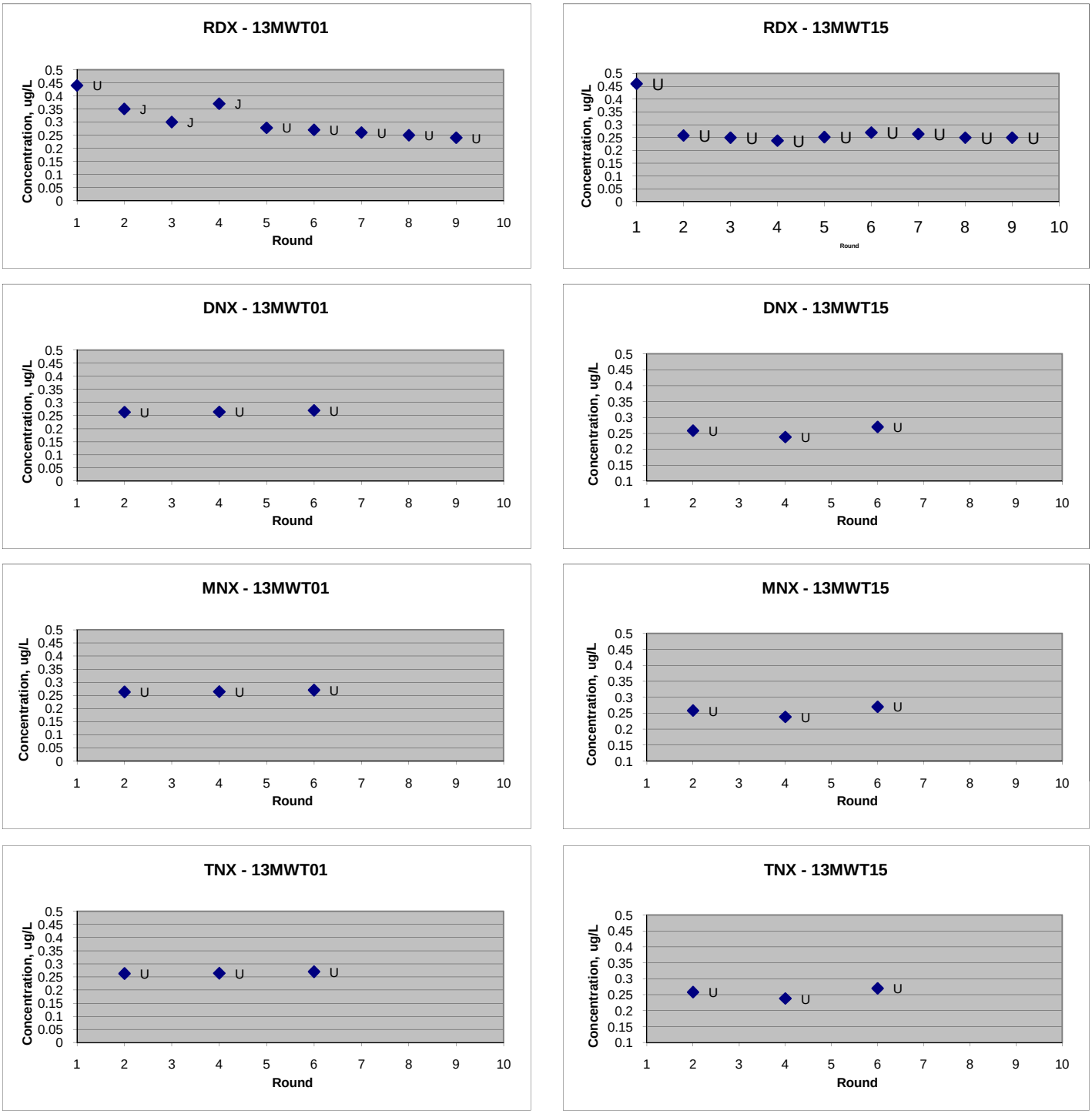
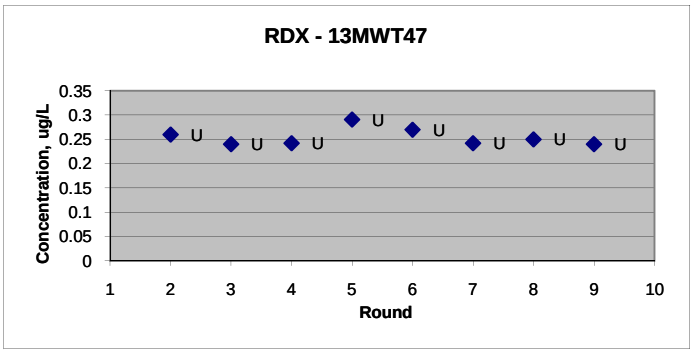
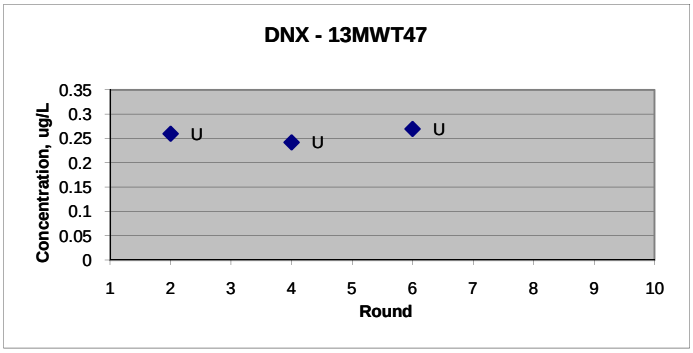
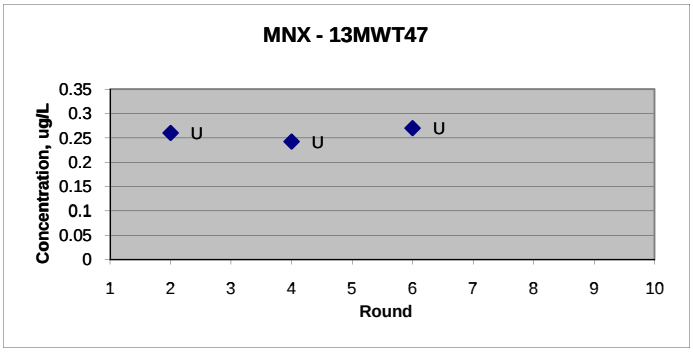


FIGURE 4-5

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN THE PENNSYLVANIA UPPER WATER BEARING ZONE AT SWMU 13 DOWNGRADIENT WELL
NSA CRANE
CRANE, INDIANA







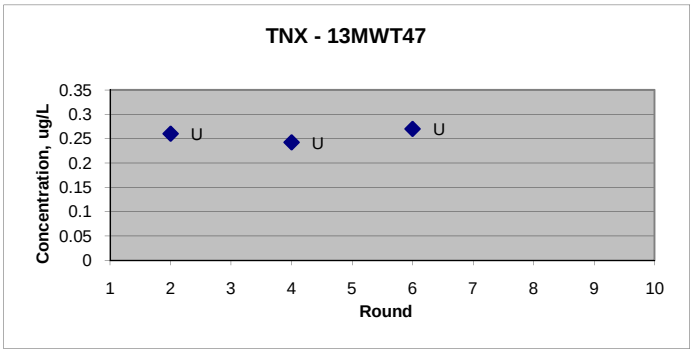


FIGURE 4-6

TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN SURFACE WATER AT SWMU 13 FOR ROUNDS 1 THROUGH 9 NSA CRANE CRANE, INDIANA

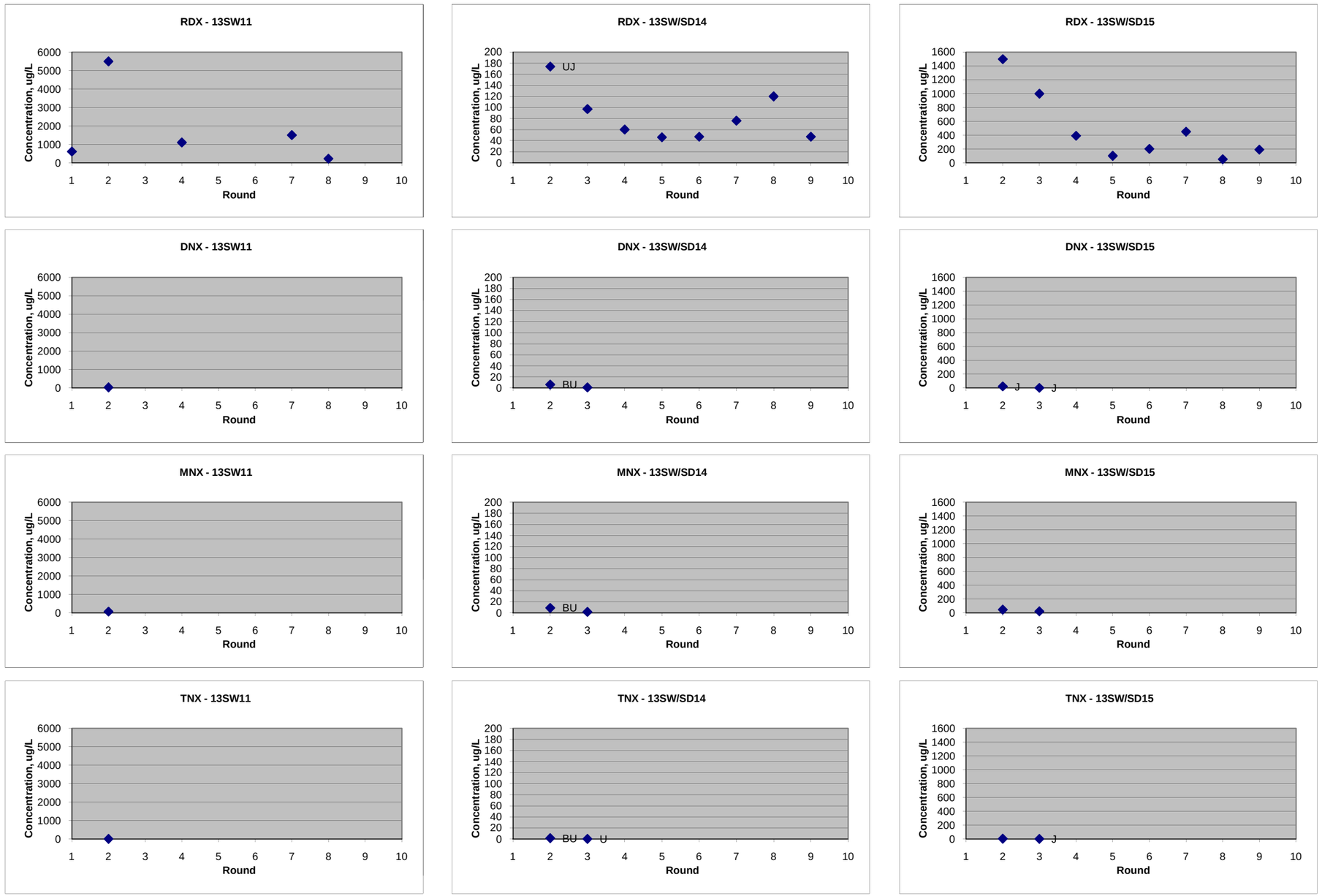
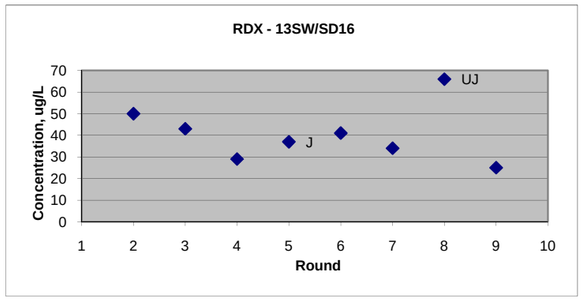
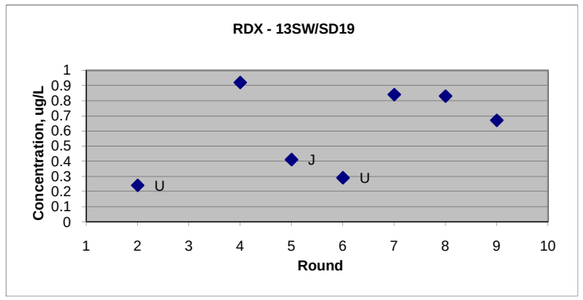
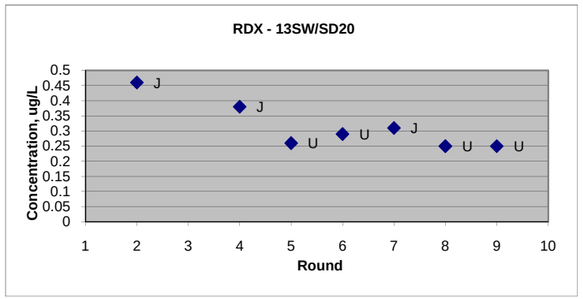


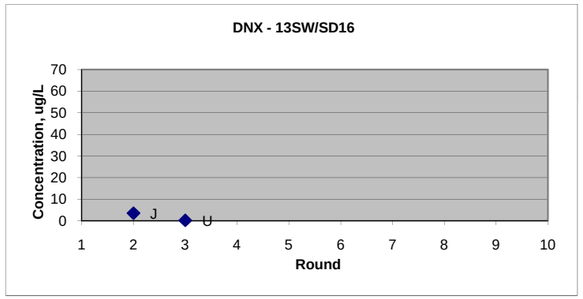
FIGURE 4-6

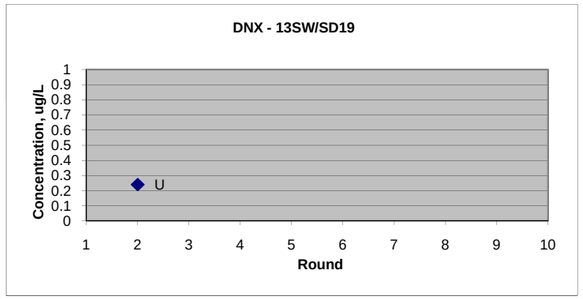
TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN SURFACE WATER AT SWMU 13 FOR ROUNDS 1 THROUGH 9 NSA CRANE CRANE, INDIANA

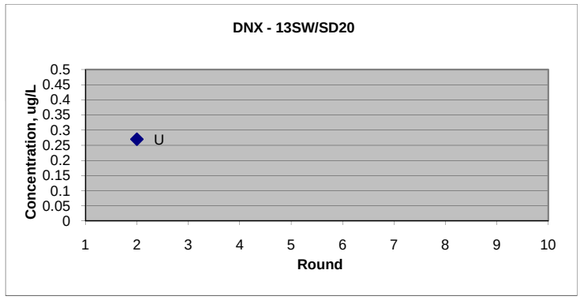


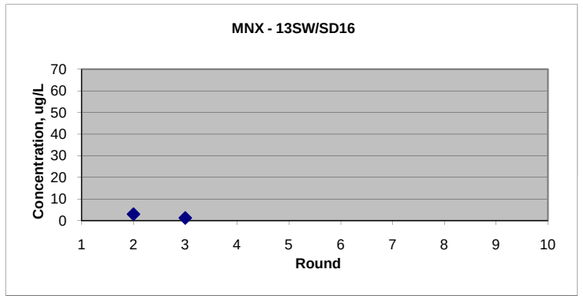


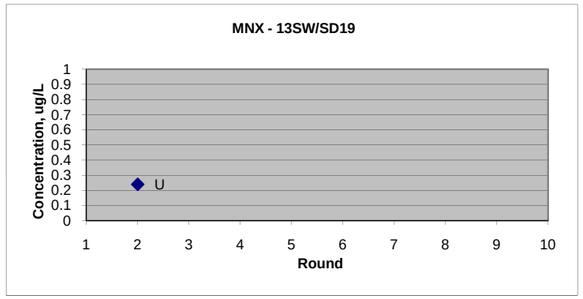


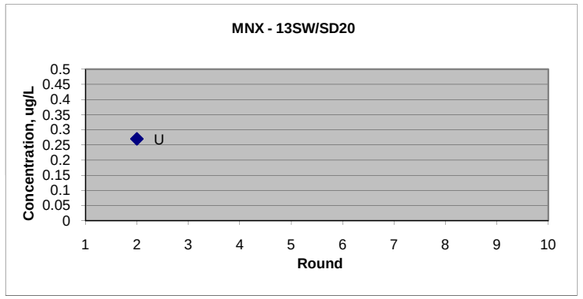


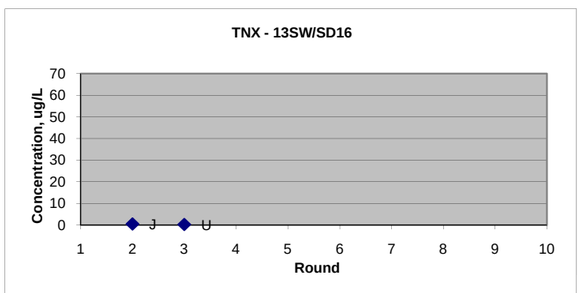


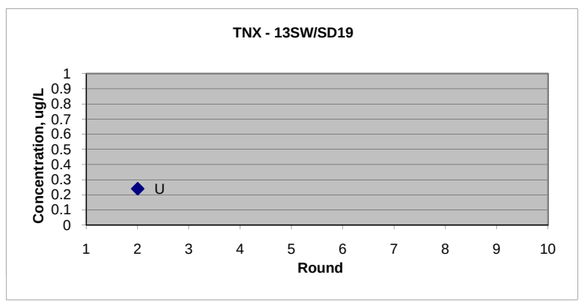












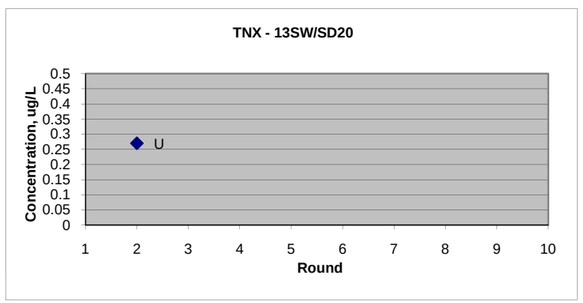
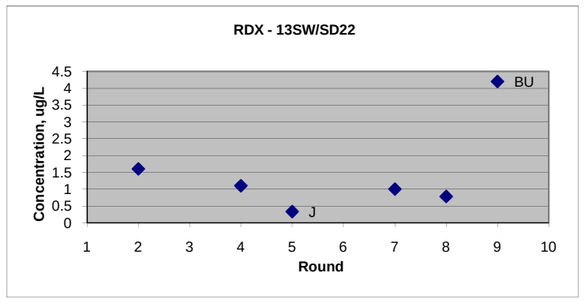
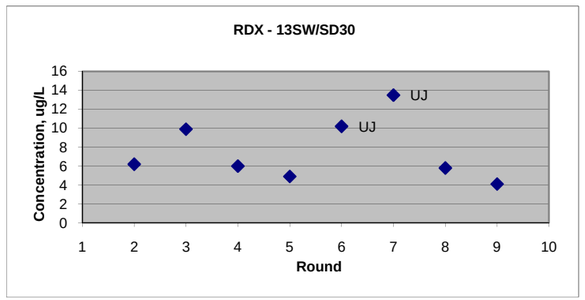
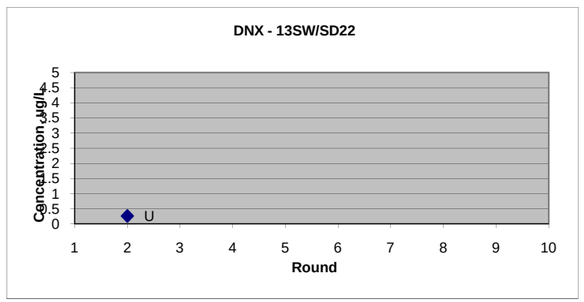


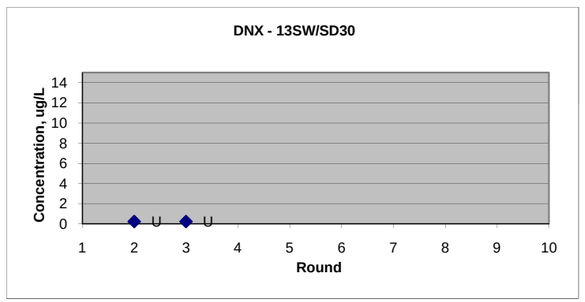
FIGURE 4-6

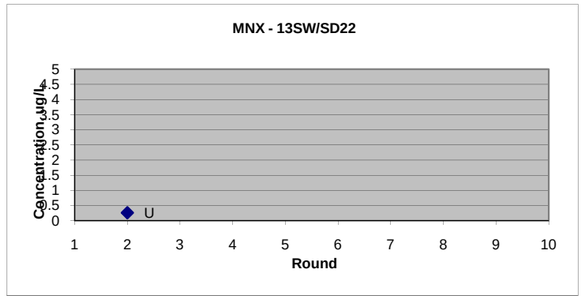
TEMPORAL PLOTS OF RDX AND DEGRADATION BY-PRODUCT CONCENTRATIONS IN SURFACE WATER AT SWMU 13 FOR ROUNDS 1 THROUGH 9 NSA CRANE CRANE, INDIANA PAGE 3 OF 3

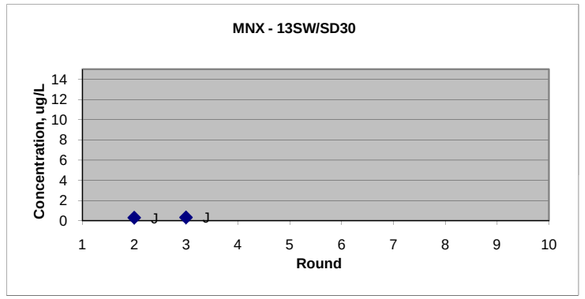


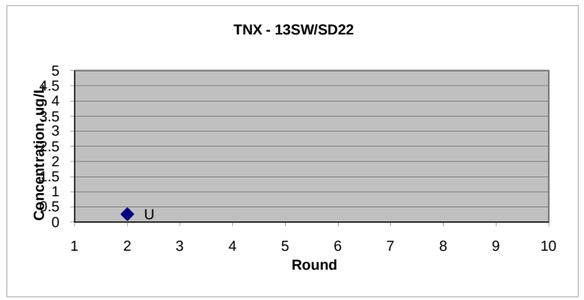












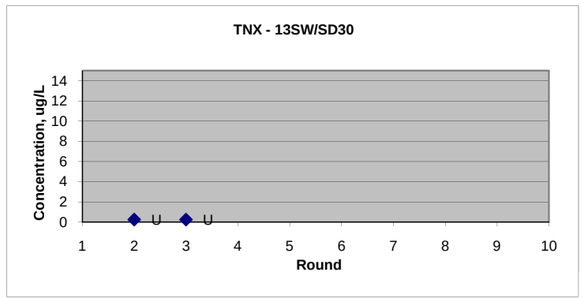
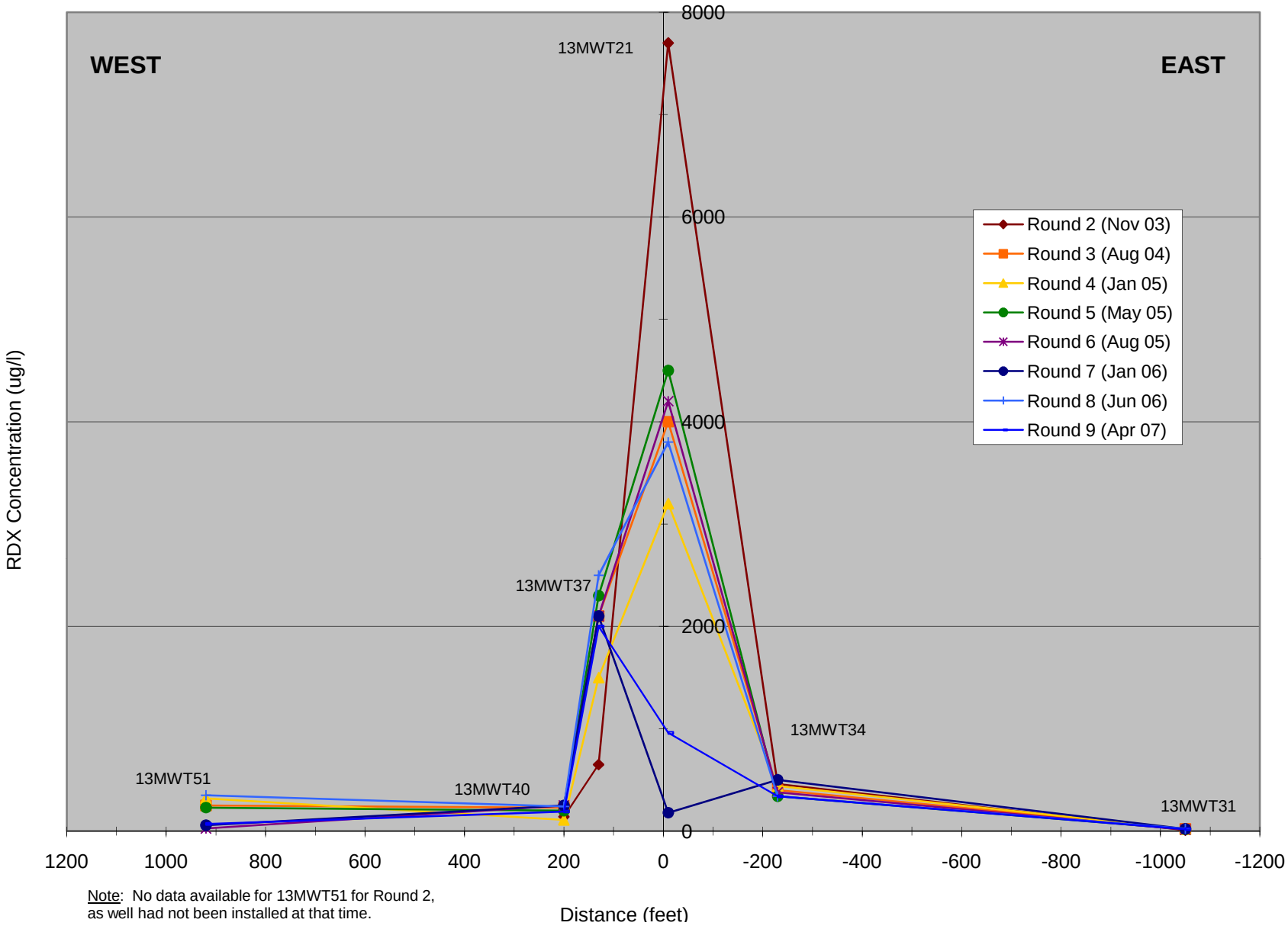
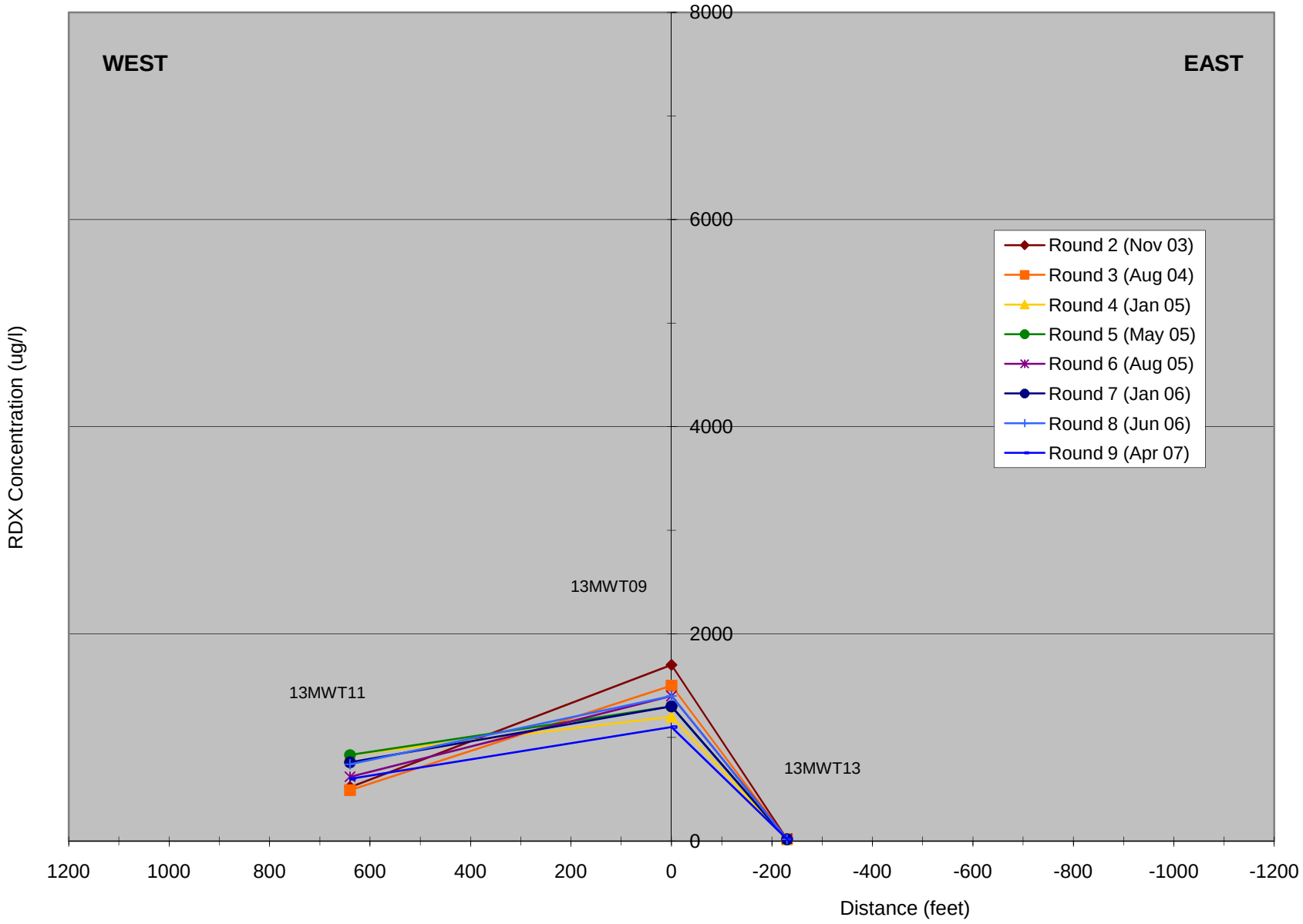


FIGURE 4-7
WEST TO EAST SPATIAL DISTRIBUTION OF RDX CONCENTRATIONS THROUGH WELL 13MWT21
NSA CRANE
CRANE, INDIANA



Note: No data available for 13MWT51 for Round 2, as well had not been installed at that time.

FIGURE 4-8
WEST TO EAST SPATIAL DISTRIBUTION OF RDX CONCENTRATIONS THROUGH WELL 13MWT09
NSA CRANE
CRANE, INDIANA



5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 PLUME STABILITY

The MNA evaluation suggests that the RDX plume within the Puz is relatively stable. The distribution of RDX concentrations in groundwater decreases rapidly moving laterally from the source areas to the upper slopes of the ridge and drainages. Despite slight potential upward trends in concentrations within the plume interior and at the plume periphery, RDX concentrations have decreased or are relatively stable with time and have not increased in surface water.

5.2 TEMPORAL TRENDS

Source Area

Although not statistically significant at higher confidence levels (90 and 95%), a potential decreasing concentration trend for RDX in source area well 13MWT21 was noted at the 80% confidence interval. The highest RDX concentration (7,700 µg/L) was detected in Round 2 (November 2003). Since Round 6 (August 2005), RDX concentrations have been less than 4,000 µg/L with concentrations during Round 7 (January 2006) and Round 9 (April 2007) less than 1,000 µg/L (180 and 960 µg/L, respectively). Temporal plots and spatial contouring of RDX concentrations also indicate an overall downward trend in RDX concentrations in 13MWT21 since the maximum concentration was reported in Round 2. It is important to note that some areas of contaminated soil located east and south of 13MWT21 were not removed during remedial activities in 1999, 2000, and 2001. These existing source areas may be responsible for the sporadic increases in RDX concentrations in Rounds 5, 6, and 8.

RDX degradation by-products have been detected in all source area wells. Maximum DNX, MNX, and TNX concentrations all occurred in well 13MWT21 in Round 2, but have not been detected in subsequent rounds of sampling. Contaminated soil in the vicinity of 13MWT21 was remediated between 1999 and 2001 and maybe responsible for the downward trend of RDX concentrations in groundwater at 13MWT21.

No apparent, statistical trends were identified for the other source area wells (13MWT09, 13MWT11, or 13MWT17). RDX concentrations have been relatively consistent for these source area wells, although decreases have been observed in these wells for the last two rounds (June 2006 and April 2007). The fact that contaminated soil still exists southeast of wells 13MWT1 and 13MWT17 may indicate that these source areas are continuing to have an affect on groundwater concentrations at these wells.

RDX Plume

Within the RDX plume, RDX concentrations from well 13MWT37 have an upward trend at the 80% confidence level, but no apparent trend at higher confidence levels. The RDX concentrations have been between 2,000 to 2,500 µg/L since Round 5 (May 2005). The relatively stable RDX concentrations in well13MWT37 maybe the result of an area of contaminated soil that exists approximately 400 feet east of 13MWT37. MNX concentrations in well 13MWT37 also display a similar trend. RDX degradation by-products have been detected most frequently in well 13MWT37. So, despite a potential increase in RDX, degradation of RDX may be occurring as indicated by increasing MNX concentrations.

In contrast, a downward trend in RDX concentrations was noted for well 13MWT34 at the 80% confidence level, but no apparent trend was noted at higher confidence levels. In general, RDX concentrations have been relatively stable in 13MWT34 and may indicate an impact from an area of contaminated soil that is located west, north, and east.

No apparent, statistical trends were identified for the other plume wells (13MWT13 or 13MWT40). RDX concentrations have ranged between 12 and 21 µg/L in groundwater from 13MWT13 and between 110 and 250 µg/L in groundwater from 13MWT40. The RDX concentrations at 13MWT40 most likely reflect the downgradient flow of contaminated groundwater from 13MWT21 and the possible impact from existing areas of contaminated soil located about 400 to 500 feet east of 13MWT40.

Plume Leading Edge

Upward trends were noted for RDX concentrations from wells 13MWT14 and 13MWT31, at the 90% and 80% confidence levels, respectively. Temporal plots for these 2 wells also indicate an overall upward trend in RDX concentrations. Both of these wells are on the leading edge of the eastern portion of the plume, 500 and 1,000 feet, respectively, from source areas. The RDX concentrations detected in groundwater from these wells are several orders of magnitude less than RDX concentrations detected in the plume interior, ranging from 1.6 to 5.4 µg/L in 13MWT14 and from 9.3 to 24 µg/L in 13MWT31.

No apparent trend was noted from the well 13MWT51, which monitors the shallow overburden on the western portion of the plume. RDX concentrations have been between 27 and 70 µg/L from August 2005 (Round 6) to April 2006 (Round 9) with an excursion to 350 µg/L; in contrast, RDX concentrations ranged between 230 and 350 µg/L during the three rounds prior to August 2005. DNX, MNX, and TNX have only been detected in 13MWT51.

Surface Water

RDX concentrations in surface water samples (13SW11, 13SW14, 13SW15, 13SW16, 13SW22) along the western slopes appear to indicate a generally decreasing trend. RDX concentrations along the tributary to Boggs Creek similarly appear to have a decreasing trend. The remediation of contaminated soil at several locations within SWMU 13 from 1999 to 2001 maybe responsible in part for lower RDX concentrations in surface water.

RDX concentrations in surface water samples (13SW19 and 13SW20) continue to be relatively low, with a slight decreasing trend in 13SW20.

The remediation of contaminated soil at several locations within SWMU 13 from 1999 to 2001 maybe responsible in part for the lower RDX concentrations in surface water.

5.3 CONCEPTUAL SITE MODEL EVALUATION

The monitoring data supports the conceptual site model presented in the Section 1.2. The interim remedial actions have reduced the overall mass of RDX in the soil and reduced potential leaching of RDX to groundwater, given the stability of the plume and no significant concentration increases in source area wells. Decreasing concentrations in surface water samples further suggests that the interim remedial actions have reduced potential transport of residual source mass to storm water.

Groundwater impacts continue to be limited to the groundwater in the Puz. The distribution of RDX concentrations indicates a sharp an order of magnitude decrease within 200 to 300 feet of source areas, and another order of magnitude decrease within a similar distance beyond 300 feet.

Although the groundwater flows laterally to the upper slopes of the ridge in the shallow Puz unit, the western portion of the plume is more laterally extensive and is likely controlled by the bedrock stratigraphy and orientation. The groundwater plume extends to the geologic contact between the upper sandstone/siltstone unit and the underlying mudstone, however, the mudstone unit restricts vertical migration of contaminants to the Plz unit. Groundwater from the Puz unit seeps to the surface water drainages along the slopes of the ridge, impacting surface water and in turn shallow groundwater at the base of the slopes. The slight dip of the bedrock to the west in conjunction with source areas located on the western side of the groundwater divide has limited groundwater migration laterally to the east.

5.4 RECOMMENDATIONS

Based on the MNA evaluation, the groundwater plume at Mine Fill B is relatively stable. Statistical and temporal plots indicate that RDX concentrations in some source and plume area wells are decreasing with time. Remedial actions taken in the vicinity of RDX source areas in the period 1999 to 2001 appear to have resulted in lower groundwater and surface water RDX concentrations at some well locations. In addition, degradation by-products have been detected at several wells to indicate that natural attenuation processes are occurring in the groundwater. However, other wells continue to show steady or increasing concentrations of RDX that maybe a result of continuing impacts from contaminated soil areas near these wells.

In addition to the reductions in groundwater contamination achieved via soil remediation and natural attenuation, recent research by the United States Army Corp of Engineers (USACE) (May et al., 2003) suggests that plant uptake and phytoremediation may also be removing, degrading, and volatilizing RDX from the soils at NSA Crane. During the SWMU 13 RFI, vegetation samples were collected from trees and shrubs located on the northwest side of the ridge containing SWMU 13. Results of the leaf analyses showed a relatively high frequency of detections of RDX, HMX, TNT, and degradation products in the 16 vegetation samples that were analyzed.

Based on this evaluation, it is recommended that the natural attenuation monitoring program at SWMU 13 continued on an annual or semi-annual basis to evaluate MNA as an alternative remedy for RDX contaminated groundwater. In addition, the MNA monitoring program also appears to demonstrate that prior soil remedial activities at SWMU 13 have resulted in reductions in RDX groundwater concentrations. As a result, the corrective measure process should also consider further soil remediation at SWMU 13 as an alternative measure to reduce RDX concentrations in groundwater.

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APPENDIX A

SWMU 13

SAMPLE LOG SHEETS AND OTHER FIELD FORMS

ROUNDS 1

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW 01 01 & F
Sample Location: 13SW 01
Sampled By: T. Rojahn
C.O.C. No.: 0973

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other: Drainage Ditch
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 3/29/03 Time: 1030 Depth: 1/2" Method: Direct	CLEAR	7.49	262	9.29	11	11.7 ~~[illegible]~~	NA	95

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES

Flow < 1 gpm @ culvert

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW 02 01 EF
Sample Location: 13SW 02
Sampled By: T. Rojahn
C.O.C. No.: 0973

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other: Drainage Ditch
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 3/29/03	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Time: 1100								
Depth: <1"	Sl Tan	7.24	280	9.29	59	9.28	NA	113
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

Flow 1-5 gpm @ Culvert

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tey Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW03 01 & F
Sample Location: 13SW03
Sampled By: T. Rojahn
C.O.C. No.: 0973

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 3/29/03	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Time: 1420								
Depth: Surface								
Method: Direct	CLEAR	7.39	.496	11	16	9.12	NA	131

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES

Flow ~1-5 gpm
IN GRASSY AREA

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: DRAINAGE DITCH
[] QA Sample Type:

Sample ID No.: 13SW 04 01 EF
Sample Location: 13SW
Sampled By: T. Rojahn
C.O.C. No.: 0973

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 3/29/03 Time: 1440 Depth: 3" Method: DIRECT FILL	SI TAN	7.75	.181	10.65	298	10.41	NA	174

SAMPLE PRESERVATION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	Yes
SVOCs (SIM)	4°C	(2) 1 L Amber	Yes
SVOCs (8151A)	4°C	(2) 1 L Amber	Yes
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES

Flow 1-5 gal
@ Culvert W. side of Road

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW05 01 F
Sample Location: 13SW05
Sampled By: T. Rojahn
C.O.C. No.: 0973

- [x] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [ ] Other: DRAINAGE Ditch
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

SAMPLE DATA

Date: 3/29/03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1510	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	mV
Depth: 1-3" Surface	V.Sl. Tan	7.58	0.203	10.49	36	10.8	NA	109
Method: Direct								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	(Yes)
SVOCs (SIM)	4°C	(2) 1 L Amber	(Yes)
SVOCs (8151A)	4°C	(2) 1 L Amber	(Yes)
Explosives (8330)	4°C	(2) 1 L Amber	(Yes)
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	(Yes)
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	(Yes)
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	(Yes)

OBSERVATIONS/NOTES

Culvert W. side of Road
Flow 1-5 gal

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Ty Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: Drainage Ditch
[] QA Sample Type:

Sample ID No.: 13SW06 01 EF
Sample Location: 13SW06
Sampled By: T. Rojahn
C.O.C. No.: 0973

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 3/29/03 Time: 1535	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Depth: SURFACE Method: DIRECT	Clear	7.41	0.543	10.44		9.62	NA	640

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	Yes
SVOCs (SIM)	4°C	(2) 1 L Amber	Yes
SVOCs (8151A)	4°C	(2) 1 L Amber	Yes
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES

FLOW: 1-2 gal/min
West side of Road @ Culvert

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: DRAINAGE Ditch
[] QA Sample Type:

Sample ID No.: 13SW 07 01 & F
Sample Location: 13SW 07
Sampled By: T. Rojahn
C.O.C. No.: 0973 & 0980

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 3/29/03 Time: 1555 Depth: Surface ~2" Method: Direct	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
	SL.TAN	7.32	1394	9.8	352	8.13	NA	177

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	NO
SVOCs (SIM)	4°C	(2) 1 L Amber	↓
SVOCs (8151A)	4°C	(2) 1 L Amber	↓
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES:

Culvert W side of Road
Flow < 1 gpm

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: DRAINAGE DITCH
[] QA Sample Type:

Sample ID No.: 13SW08 01 EF
Sample Location: 13SW08
Sampled By: T. Rojahn / R. Balkovec
C.O.C. No.: 0996

Type of Sample:
[X] Low Concentration
[] High Concentration

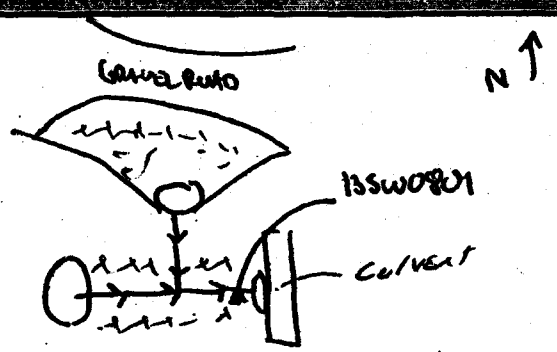
SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 5/8/03								
Time: 0910								
Depth: 2"								
Method: GRAB	CLEAR	6.13	0.462	15-18	31	6.91	NA	+190.6

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES



FLOW COMING FROM N + W

≈ 1.5 gpm FLOW

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: Drainage Ditch
[] QA Sample Type:

Sample ID No.: 13SW 09 01 EF
Sample Location: 13SW 09
Sampled By: T. Rojahn
C.O.C. No.: 0980

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 3/29/03 Time: 1645 Depth: Surface 1-3" Method: Direct	Clear	8.48	0.138	1100	45	9.81	NA	120

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES

@ Culvert inside Mine Fill B
South end

Flow <1 gpm

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Ty Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW 10 01 &F
Sample Location: 13SW 10
Sampled By: T. Rojahn
C.O.C. No.: 0980

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 3/29/03 Time: 1700 Depth: SURFACE 1' Method: Direct	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
	VSLTAN	7.74	.199 ~~.292~~	9.3	150	9.95	NA	145

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

Flow ~10-20 gpm @ Culvert

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: FD03290303 &F

Signature(s): Ty Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: DRAINAGE PIPE
[] QA Sample Type:

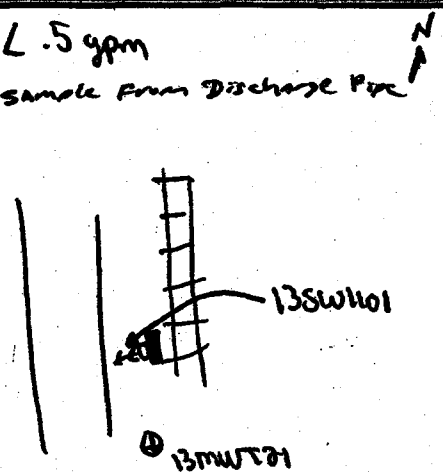
Sample ID No.: 13SW 11 01 EF
Sample Location: 13SW 11
Sampled By: T. Rojahn / R. Bulkner
C.O.C. No.: 0996

Type of Sample:
[X] Low Concentration
[] High Concentration

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 5/8/03								
Time: 0935								
Depth: —								
Method: GRAB	RUSTY ORANGE	7.67	2.743	16.45	85	4.35	NA	157.1

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4° C	(2) 1 L Amber	—
SVOCs (SIM)	4° C	(2) 1 L Amber	—
SVOCs (8151A)	4° C	(2) 1 L Amber	—
Explosives (8330)	4° C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4° C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4° C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4° C	(1) 1 L HDPE	Yes

L .5 gpm
sample from Discharge Pipe



Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkner

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

Sample ID No.: 13SW 12 01 EF
Sample Location: 13SW 12
Sampled By: T. Rojahn
C.O.C. No.: 0980

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other: culvert
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 3/30/03 Time: 0930 Depth: 1-3" Method: Direct from culvert	CLEAR	7.92	0.690	6.85	17	11.98	NA	162

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

Flow 10-20 gpm

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW 13 01 EF
Sample Location: 13SW 13
Sampled By: T. Rojahn
C.O.C. No.: 0980

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

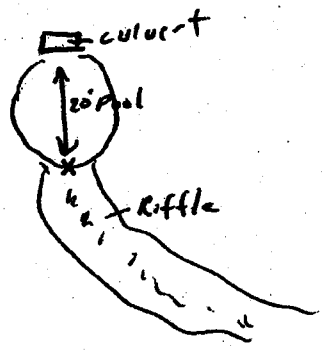
	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	ORP mV
Date: 3/30/03 Time: 1000 Depth: 3" Method: Direct	CLEAR	8.07	0.260	6.52	12.6	12.32	NA	157

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
SVOCs (8270C)	4°C	(2) 1 L Amber	—
SVOCs (SIM)	4°C	(2) 1 L Amber	—
SVOCs (8151A)	4°C	(2) 1 L Amber	—
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES

20' W. of culvert



FLOW ~20-50 gpm

MAP

Refer to Figure 3-2 of the QAPP for CTO 0166

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Ty Rojahn

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT01 01
Sample Location: 13MWT01
Sampled By: T. ROJAHN
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

PRE-PURGE DATA

Date: 4/26/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1024	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	4.68	0.229	12.59	3.8	1.28	NA	+220

PURGE DATA

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.95	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 6.68								
One Casing Volume(gal/L): 7								
Start Purge (hrs): 0912								
End Purge (hrs): 1022								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 7.3								

SAMPLE PARAMETERS/CONTAINERS

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Intake of Pump @~12.95'

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT01
DATE: 4/26/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0912	6.68	—	—	—	—	—	—	—	Start Purge
0922	7.48	120	12.12	4.93	0.218	1.52	+158	3.8	1200 ml CLEAR
0932	7.56	110	12.27	4.77	0.224	1.39	+186	4.1	2300 ml "
0942	7.60	100	12.40	4.73	0.228	1.31	+200	3.5	3300 ml "
0952	7.64	100	12.42	4.71	0.228	1.32	+207	4.2	4300 ml "
1002	7.66	100	12.52	4.69	0.229	1.30	+214	3.2	5300 ml "
1012	7.68	100	12.60	4.67	0.231	1.28	+219	2.6	6300 ml "
1022	7.69	100	12.59	4.68	0.229	1.28	+220	3.8	7300 ml "
1024	—	—	—	—	—	—	—	—	Sample Time

SIGNATURE(S): Terry Rojek

TL: MIN VOL.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0201
Sample Location: 13MWT02
Sampled By: R. Bangouise
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 4/26/03 Time: 1536	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Method: Peristaltic	CLEAR	4.61	1.244	15.28	6.0	1.98	NA	2191.0

PURGE DATA

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 29.50	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 17.28'								
One Casing Volume (gal/l): 2								
Start Purge (hrs): 1246								
End Purge (hrs): 1535								
Total Purge Time (min): 169								
Total Vol. Purged (gal/l): 3.3								

SAMPLE ANALYSIS / CONTAINER INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

- STARTED SAMPLING @ 1536 WELL RAN DRY AFTER 1 L. FOR EXP SAMPLED WELL ALLOW WELL TO RECHARGE BEFORE SAMPLING IS RESUMED
- 4/27/03 WL: 21.35': 8.15' OF WATER. FINISH SAMPLING @ 0830 TURB 6.0 DURING SAMPLING.

Check If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkwill

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: BMW702
DATE: 4/26/05

Time (Hrs.)	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1246	17.28	START							CLEAR	
1250	18.02	160	15.88	4.56	1.240	4.08	+239.1	19		.72 L
1255	18.49	130	15.24	4.37	1.228	2.91	+276.3	18		1.37 L
1300	18.85	75	15.58	4.31	1.241	2.76	+240.4	17		—
1305	19.61	75	15.62	4.24	1.243	2.73	+254.2	21	HANDLE TO LOWER RATE	2.1 L
1310	20.05	75	15.63	4.25	1.243	2.70	+303.1	20		—
1315	20.26	75	15.45	4.26	1.240	2.67	+304	20		2.85 L
1325	20.71	75	15.65	4.27	1.241	2.67	+306.1	20		—
1335	21.19	75	15.55	4.32	1.240	2.68	+306.2	19		3.6 L
1345	21.72	75	15.56	4.38	1.241	2.67	+301.1	16		—
1355	22.20	75	15.52	4.54	1.243	2.69	+299.7	17		5.1 L
1405	22.64	75	15.51	4.56	1.245	2.66	+282.9	17		—
1415	23.14	75	15.56	4.59	1.247	2.64	+276.6	15		6.6 L
1425	23.61	75	15.39	4.60	1.250	2.63	+257.9	16		—
1435	24.00	75	15.40	4.62	1.250	2.61	+240.1	15	> 1 vol	8.1 L
1445	24.40	75	15.40	4.63	1.250	2.57	+229.3	13	2 HRS.	—
1455	24.83	75	15.27	4.63	1.247	2.41	+198.7	13		9.6 L
1505	25.35	75	15.23	4.62	1.246	2.26	+188.6	12		—
1515	25.90	75	15.27	4.60	1.244	2.09	+192.6	12		11.1 L
1525	26.29	75	15.28	4.60	1.245	2.00	+192.7	8.9		—
1530	26.57	75	15.30	4.61	1.244	2.01	+191.4	7.4		~~12.6~~
1535	26.80	75	15.28	4.61	1.244	1.99	+191.0	6.8	3 HRS	12.6 L
	→ END PURGE									
	SAMPLED @	1536								

SIGNATURE(S): Robert Bulthuis 7.5 L = 1 vol 24.8 °C

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT03 01 & F
Sample Location: 13MWT03
Sampled By: B Brunner
C.O.C. No.: 0982
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 4/26/03	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Time: 1146								
Method: PERISTALTIC	CLEAR	5.56	0.445	13.14	38	4.50	NA	457.7

PURGE DATA

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 18.05	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 8.67								
One Casing Volume (gal/L): 1.5								
Start Purge (hrs): 0745								
End Purge (hrs): 1145								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 4.6								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	↓
SVOCs (8270C)	4°C	(2) 1 L Amber	↓
SVOCs (SIM)	4°C	(2) 1 L Amber	↓
SVOCs (8151A)	4°C	(2) 1 L Amber	↓
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

WL = 19.70 @ time of sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkner

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: BPMW 03
DATE: 4/26/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
0745	8.67	START							HAZY
0750	8.98	140	11.35	5.82	0.390	6.75	+147.2	200	.7L
0755	9.46	125	11.39	5.74	0.388	6.48	+173.1	150	1.33L
0800	9.64	100	11.47	5.73	0.389	6.46	+180.4	60	1.83L
0805	9.81	75	11.62	5.73	0.390	6.45	+186.0	30	2.2L
0810	10.03	75	11.76	5.71	0.392	6.44	+193.1	24	SLIGHT HAZE 2.6L
0815	10.15	70	12.05	5.70	0.393	6.51	+195.5	30	2.95 L
0820	10.32	70	12.22	5.70	0.396	6.56	+199.1	33	LOWERED TO PUMP BELOW 70ml/min –
0825	10.51	70	12.30	5.70	0.399	6.67	+202.4	40	3.65 L
0830	10.65	70	12.42	5.70	0.401	6.74	+204.1	45	—
0835	10.80	70	12.46	5.70	0.402	6.61	+204.7	45	4.3 L
0840	10.96	70	12.47	5.70	0.403	6.54	+205.0	44	–
0845	11.12	70	12.48	5.70	0.404	6.48	+205.4	45	5.0 L
0850	11.30	70	12.53	5.69	0.404	6.21	+203.4	42	–
0855	11.52	70	12.57	5.68	0.404	6.04	+201.9	39	1 vol. 5.7L
0900	11.65	70	12.64	5.66	0.404	5.80	+199.7	42	—
0905	11.78	70	12.65	5.61	0.398	4.62	+199.1	55	6.4L
0910	11.93	70	12.66	5.56	0.394	4.89	+197.7	52	–
0915	12.08	70	12.76	5.56	0.396	4.20	+194.1	50	7.1L
0925	12.30	70	12.88	5.55	0.400	4.30	+190.1	45	— 7.8L
0935	12.62	70	12.93	5.51	0.401	4.45	+191.0	45	[redacted] 8.5L
0945	12.93	70	12.98	5.51	0.402	4.71	+196.1	55	2 vol. — 9.2L
0955	13.20	70	13.09	5.55	0.410	4.80	+174.7	60	9.9L [redacted]
1005	13.48	70	13.15	5.63	0.421	4.93	+160.2	65	–
1015	13.73	70	13.05	5.65	0.429	4.88	+154.0	55	11.3
1025	13.96	70	13.20	5.66	0.435	4.78	+155.6	55	~ 2 vol. —
1035	14.17	70	13.22	5.63	0.437	4.70	+158.0	45	12.7
1045	14.37	70	13.06	5.62	0.437	4.71	+153.6	45	3 vols. —
1055	14.63	70	13.15	5.60	0.440	4.67	+153.3	40	14.1 L
1105	14.85	70	13.27	5.60	0.445	4.55	+154.4	29	–

SIGNATURE(S): Robert Bulkner

5.7L = 1 vol. TO. 1805

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW703
DATE: 4/26/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1115	15.05	70	13.12	5.57	0.446	4.52	+153.3	32	.2 Decrease in WL	15.51
1125	15.27	70	13.18	5.58	0.449	4.52	+153.1	25		
1135	15.44	70	13.16	5.57	0.447	4.52	+152.8	40	2.3 vol	16.41
1145	15.70	70	13.14	5.56	0.445	4.50	+152.7	38	4 hrs.	− 17.66
→	End Purge									
	Sampling @	1146								

SIGNATURE(S): Robert Balkner

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT04 01
Sample Location: 13MWT04
Sampled By: B. BALKURE
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03 Time: 1051 Method: PERISTALTIC	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
	CLEAR	4.77	0.316	13.73	6.0	4.30	NA	+246.1

Date: 4/27/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.80	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 13.86								
One Casing Volume (gal/L): .64								
Start Purge (hrs): 0946								
End Purge (hrs): 1050								
Total Purge Time (min): 94								
Total Vol. Purged (gal/L): 1.5								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ No
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkure

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: B1MW704
DATE: 4/27/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
0916	13.86	START							BROWN	
0918	14.04	100								
0920	14.10	100							CELL NOT FILLED YET!	
0921	—	100	13.81	3.55	1.374	2.18	+265.7	7999		
0925	14.22							→	CLEANED OUT CELL	.9L
0930	14.37	80	13.40	4.87	0.263	7.42	+190.2	210	HAZY BROWN.	1.3L
0935	14.44	70	13.42	5.26	0.224	7.38	+168.6	70	UNABLE TO LOWER RATE	1.65L
0940	14.50	70	13.17	5.34	0.216	7.34	+172.1	100		—
0945	14.45	70	13.26	5.34	0.215	7.31	+176.9	130	>1 vol STABLE WL	2.35L
0950	14.51	70	13.30	5.32	0.214	7.22	+182.4	150	>1 vol	2.7L
1000	14.61	70	13.29	5.30	0.224	6.47	+192.7	31		3.4L
1010	14.65	70	13.38	5.06	0.245	5.84	+194.4	20		4.1L
1020	14.67	70	13.39	4.91	0.277	5.14	+199.7	15	72 HRS. 2 vols.	4.8L
1030	14.69	70	13.69	4.76	0.310	4.50	+206.7	12		5.5L
1040	14.65	70	13.70	4.78	0.314	4.48	+214.2	8.0	CLEAR	6.2L
1045	14.66	70	13.71	4.77	0.316	4.35	+215.1	8.3		
1050	14.66	70	13.73	4.77	0.316	4.30	+216.1	6.0		6.9L
	→ END PURGE									
	SAMPLED @	1051								

SIGNATURE(S): Robert Baltzer 2.4L = 1 vol.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0501 & F
Sample Location: 13MWT05
Sampled By: T. Rosand
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 0910	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	5.83	0.632	15.18	8.8	0.60	—	76

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 19.15	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 6.02								
One Casing Volume(gal/L): 8.2								
Start Purge (hrs): 1117								
End Purge (hrs): 1349								
Total Purge Time (min): 152								
Total Vol. Purged (gal/L): 23.4								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

W.L 4/27/03 - 7.35'
@ 0940 Hrs Turb. increased to 350 NTUs - NEED to collect a filtered sample.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT05
DATE: 9/26/03

Time (HR.)	Water Level (Ft. BMP)	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
11:17	6.02	—	—	—	—	—	—	—	Start Purge
1127	7.32	1300	14.21	6.15	0.536	0.95	+160	85	1300 V. Sl. Cloudy
1137	7.51	80.0	14.36	6.25	0.540	1.37	+157	75	2100 " " "
1147	7.81	100.0	14.39	6.27	0.544	1.54	+155	65	3100 " " "
1157	7.93	90.0	14.74	6.27	0.534	1.29	+148	55	4000 " " "
1207	8.30	90.0	15.06	6.19	0.544	1.60	+148	55	4900 " " "
1217	8.69	100.0	14.88	6.17	0.547	1.71	+147	55	5900 " " "
1227	9.08	100.0	15.01	6.15	0.553	1.47	+141	65	6900 " " "
1237	9.40	100.0	15.57	6.15	0.562	1.66	+143	70	7900 " " "
1247	9.70	90	15.06	6.13	0.562	1.50	+140	120	8800 Sl. Cloudy
1257	10.03	100	15.26	6.13	0.573	1.67	+145	180	9800 TANISH
1307	10.32	80	14.71	6.09	0.576	1.68	+147	390	10600 TAN
1317	10.58	80	14.48	6.00	0.590	1.70	+151	650	11400 TAN
	Note → Turbidity on the increase & water level								
	dropping rapidly - will pump to dryness								
1349	DRY	Removed an additional 12 L to dryness							23400 Orange BRN

SIGNATURE(S): Tony Agel

82 min vol in Liters

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT06 01 EF
Sample Location: 13MWT06
Sampled By: T. Rossman & B. Balkansc
C.O.C. No.: 0992, 0994, 0995
Type of Sample: 0996
[X] Low Concentration
[] High Concentration

Date: 4/27/03	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Time: 0835								
Method: SAME	Lt Tan	6.63	0.495	12.46	[illegible]	3.15	—	+98

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.6	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 12.9								
One Casing Volume(gal/L): 3.1								
Start Purge (hrs): 0745								
End Purge (hrs): 0843								
Total Purge Time (min): 58								
Total Vol. Purged (gal/L): 6.2								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330) WL 16.9	4°C	4/27/03 (1) (2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	4/28/03 (1) 1 L HDPE @ 1748	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	5/6/03 (1) 1 L HDPE @ 1735	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	5/7/03 (1) 1 L HDPE @ 1700	Yes

OBSERVATIONS / NOTES

W.L. @ 4/27/03 @ 0834 Hrs = 16.65'

REPURGED WELL ON 5/5/03 to dry - Start Purge @ 1720 Hrs
END PURGE @ 1724; Vol. purged ~ 1.5 gal.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279
WELL ID.: 13MW706
DATE: 4/26/03

Time (Hrs.)	Water Level (ft. BTOC)	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
0745	12.90	–	–	–	–	–	–	–	Start Purge
0755	13.78	100	11.66	6.40	0.481	2.29	+84	70	1000ml V. Sl. Cloudy
0805	14.36	90	11.68	6.54	0.471	2.98	+86	27	1900 CLEAR
0815	14.91	80	12.09	6.57	0.475	3.20	+87	24	2700 CLEAR
0825	15.46	80	12.76	6.66	0.488	3.30	+87	85	3500 CLOUDY
0835	16.23	110	12.46	6.63	0.495	3.15	+88	656	4600 Lt Tan
0843	~~Bottom~~	Turbidity on the increase & water level							6200 (JCY)
		dropping rapidly – will purge dry & sample later.							

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0701
Sample Location: 13MWT07
Sampled By: T. ROLAND
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1200	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	3.98	1030	15.60	68	0.34	—	278

Date: 4/27/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.95	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 3.75								
One Casing Volume(gal/L): 8.9								
Start Purge (hrs): 1020								
End Purge (hrs): 1155								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 9								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	Yes
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4° C	(2) 1 L Amber	
SVOCs (SIM)	4° C	(2) 1 L Amber	
SVOCs (8151A)	4° C	(2) 1 L Amber	
Explosives (8330)	4° C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4° C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4° C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4° C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT07
DATE: 4/27/03

Time (Hrs.)	Water Level (Ft. BTOC)	Flow (ml/min)	Temp. (°C)	pH	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments
1020	3.75	—	—	—	—	—	—	—	Start PURGE
1030	5.12	130	15.30	4.02	0.962	0.05	177	19	1300 ml CLEAR
1040	5.71	110	15.62	4.07	0.976	0.16	200	13	2400 ml "
1050	6.12	100	16.00	4.06	0.985	0.26	223	10	3400 ml "
1100	6.38	100	16.16	4.07	0.995	0.34	240	8.9	4400 ml "
1110	6.60	100	15.90	4.05	0.994	0.38	251	8.5	5400 ml "
1120	6.72	80	15.54	4.03	0.995	0.39	258	9.1	6200 ml "
1130	6.67	80	15.59	4.01	0.999	0.38	265	7.2	7000 ml "
1140	6.70	80	15.51	3.98	1.010	0.34	272	6.6	7800 ml "
1150	6.73	80	15.55	3.97	1.020	0.33	276	6.4	8600 ml "
1155	6.75	80	15.60	3.98	1.030	0.34	278	6.8	9000 ml "
1200	—	—	—	—	—	—	—	—	Start Sampling

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0801
Sample Location: 13MWT03
Sampled By: T. RAHAN
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/26/03	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Time: 1545								
Method: SAME	CLEAR	5.06	0.74	14.65	10	2.45	—	+206

Date: 4/26/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.50	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 3.32								
One Casing Volume(gal/L): 8.9								
Start Purge (hrs): 1442								
End Purge (hrs): 1542								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L) 9								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ No
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Check if applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): T. Rahan

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT08
DATE: 8/26/03

Time (Hrs.)	Water Level (ft BTOC)	Flow (ml/min)	Temp. (°C)	pH (SU)	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments (Color, Odor, Sheen)
1412	3.32	–	–	–	–	–	–	–	Start Purge
1422	3.61	120	14.16	5.34	0.88	1.33	+163	170	1200 ml Cloudy
1432	3.66	80	14.77	5.35	0.80	2.00	+170	90	2000 V. Sl. Cloudy
1442	3.72	100	14.74	5.18	0.77	2.10	+182	32	3000 CLEAR
1452	3.80	100	14.78	5.14	0.76	2.08	+188	21	4000 "
1502	3.85	100	14.82	5.12	0.76	2.18	+193	15	5000 "
1512	3.89	100	14.81	5.10	0.74	2.30	+197	13	6000 "
1522	3.93	100	14.80	5.09	0.74	2.37	+202	12	7000 "
1532	3.97	100	14.77	5.07	0.74	2.41	+204	11	8000 "
1542	4.00	100	14.65	5.06	0.74	2.45	+206	10	9000 "
1545	—	–	–	–	–	–	–	–	Sample Time

SIGNATURE(S): Terry Bryant

8.9L = MIN VOL

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT09 01
Sample Location: 13MWT 04
Sampled By: B. Bauquez
C.O.C. No.: 0993
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/28/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 0911	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: PERSTALTIC	CLEAR	5.36	0.809	13.33	3.0	1.69	NA	+205.6

Date: 4/28/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERSTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 23.03	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 8.50								
One Casing Volume (gal/L): 2.4								
Start Purge (hrs): 0740								
End Purge (hrs): 0910								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 9.3								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	2x (3) 40 mL Vials	Yes
VOCs 8015B	HCl / 4°C	2x (2) 40 mL Vials	Yes
SVOCs (8270C)	4°C	2x (2) 1 L Amber	Yes
SVOCs (SIM)	4°C	2x (2) 1 L Amber	Yes
SVOCs (8151A)	4°C	2x (2) 1 L Amber	Yes
Explosives (8330)	4°C	2x (2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	2x (1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	2x (1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD04280301

Signature(s): Robert Balkenee

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW704
DATE: 4/28/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
0740	8.50	START							CLOUDY	
0745	8.80	130	12.89	5.47	0.808	2.57	+235.0	200		
0750	8.85	130	12.80	5.48	0.815	2.13	+219.7	110		1.3
0755	8.87	110	12.82	5.47	0.823	2.05	+197.8	65		—
0800	8.89	100							CLEARED OUT CELL	2.3
0805	8.88	100	12.71	5.49	0.821	1.93	+195.6	21	UNABLE TO SLOW RATE PUMP SHUTS OFF	
0810	8.90	100	12.69	5.47	0.821	1.79	+194.4	17	CLEAR	3.3
0815	8.93	100	12.64	5.46	0.821	1.72	+194.9	16		—
0820	8.96	100	12.55	5.46	0.819	1.68	+196.0	9.3		4.3
0825	8.97	100	12.85	5.46	0.825	1.67	+195.7	9.3		—
0830	8.97	100	12.85	5.46	0.826	1.68	+196.3	7.1		5.3
0835	8.98	100	12.92	5.47	0.826	1.66	+197.6	5.2		—
0840	8.98	100	12.91	5.43	0.828	1.65	+198.9	5.0		6.3
0845	8.98	100	12.98	5.42	0.829	1.66	+200.0	4.6		—
0850	8.99	100	13.00	5.41	0.831	1.67	+200.7	2.7		7.3
0855	8.98	100	13.10	5.39	0.834	1.69	+202.0	2.2		—
0900	8.99	100	13.28	5.37	0.830	1.68	+204.1	4.0		8.3
0905	9.00	100	13.30	5.37	0.830	1.68	+204.7	3.4		—
0910	9.00	100	13.33	5.36	0.829	1.64	+205.6	3.0	TURBID	9.3
	→ END PURGE SAMPLED @ 0911									

SIGNATURE(S): Robert Balthaser

9L-1200.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0903
Sample Location: 13MWT09
Sampled By: T. ROJAHN
C.O.C. No.: 0989
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/9/03	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Time: 1000								
Method: SAME	CLEAR	5.38	0.725	14.36	0.10	1.21	—	+ 148

Date: 5/9/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 23.03	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 7.47								
One Casing Volume(gal/L) 10								
Start Purge (hrs): 0818								
End Purge (hrs): 0958								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L) 10.3								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	2 X (2) 1 L Amber	Yes
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES:

QA/QC Analysis:

MS/MSD	Duplicate ID No.:
—	FD05090301

Signature(s): [signature]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT09
DATE: 5/9/03

Time (Hrs)	Water Level (Feet)	Flow (ml/min)	Temp. (°C)	pH (Units)	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments (Color, Odor, etc.)
0818	7.47	—	—	—	—	—	—	—	START PURGE
0828	7.84	120	14.62	5.55	0.732	1.54	131	2.1	1200 ml CLEAR
0838	7.87	110	14.87	5.49	0.743	1.45	132	0.35	2300 ml CLEAR
0848	7.91	100	14.93	5.48	0.745	1.34	134	0.10	3300 ml CLEAR
0858	7.95	100	14.99	5.47	0.747	1.23	135	0.10	4300 ml CLEAR
0908	7.98	100	14.82	5.45	0.743	1.24	137	0.35	5300 ml CLEAR
0918	8.00	100	14.70	5.45	0.738	1.24	138	1.00	6300 ml CLEAR
0928	8.02	100	14.61	5.43	0.737	1.27	140	0.60	7300 ml CLEAR
0938	8.04	100	14.43	5.40	0.731	1.24	143	0.10	8300 ml CLEAR
0948	8.05	100	14.40	5.39	0.727	1.22	146	0.10	9300 ml CLEAR
0958	8.07	100	14.36	5.38	0.725	1.21	148	0.10	10,300 ml CLEAR
1000	—	—	—	—	—	—	—	—	START SAMPLING

SIGNATURE(S): Terry Rogers

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT40 01
Sample Location: 13MWT40
Sampled By: D. BAUGNET
C.O.C. No.: 0993
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03 Time: 1811	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Method: PERISTALTIC	CLEAR	3.01	0.582	15.60	40	1.40	NA	+364.0

Date: 4/27/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 28.13	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 15.30								
One Casing Volume (gal/L): 2.1								
Start Purge (hrs): 1602								
End Purge (hrs): 1810								
Total Purge Time (min): 128								
Total Vol. Purged (gal/l): 2.9								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkner

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW010
DATE: 4/22/03

Time (Hrs.)	Water Level (Ft. Below)	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1602	15.30	Start							Begin Flow	
1605	15.82	120	16.79	3.43	0.596	3.16	+343.7	160		
1610	16.15	120	15.83	3.33	0.583	2.09	+352.0	80	HAZY	1.2L
1615	16.43	80	15.80	3.31	0.584	1.88	+352.7	28	UNABLE TO STABILIZE DOWN	
1620	16.85	80	15.90	3.29	0.582	1.80	+352.6	28		2L
1625	17.13	80	15.43	3.27	0.582	1.75	+352.0	31		—
1630	17.38	80	15.80	3.25	0.581	1.72	+350.9	31		2.8L
1640	17.78	80	15.81	3.23	0.579	1.64	+347.3	28		3.6L
1650	18.52	80	15.74	3.20	0.577	1.58	+344.6	28		4.4L
1700	18.85	80	15.68	3.18	0.574	1.53	+342.0	23	1HR.	5.2L
1710	19.20	80	15.52	3.16	0.574	1.29	+342.8	17		6.0L
1720	19.54	80	15.45	3.09	0.572	1.26	+342.1	15		6.8L
1730	19.84	80	15.50	3.09	0.575	1.25	+345.6	13		7.6L
1740	20.15	80	15.59	3.05	0.579	1.29	+352.4	13	2hrs.	8.4L
1750	20.40	80	15.61	3.04	0.582	1.32	+358.0	12		9.2L
1800	20.64	80	15.64	3.02	0.583	1.39	+362.7	10	2HR	10.0L
1810	20.88	80	15.60	3.01	0.582	1.40	+364.0	10		10.8L
	→ End Purge									
	Sample 1811									

1715

SIGNATURE(S): Robert Bulthuis

8L total 28.13 gal.

PAGE 2 OF 2

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT11 01
Sample Location: 13MWT11
Sampled By: B Bankure
C.O.C. No.: 0992
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Time: 1506								
Method: PERISTALTIC	CLEAR	3.64	0.251	15.73	40	0.85	NA	+265.0

Date: 4/27/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.75	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 9.47								
One Casing Volume (gal/l): 1.3								
Start Purge (hrs): 1345								
End Purge (hrs): 1505								
Total Purge Time (min): 110								
Total Vol. Purged (gal/l): 3.75								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bankure

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW74
DATE: 4/27/09

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1245	9.47	START							HAZY BROWN	—
1250	9.51	125	15.72	3.88	0.251	1.45	+233.7	>999		—
1255	9.56	125	15.14	3.83	0.245	1.00	+241.1	450		1.25 L
1300	9.61	110	15.19	3.81	0.244	0.89	+246.8	350	CLEANED OUT CELL	1.9 L
1305	9.64	100	15.09	3.82	0.243	1.08	+249.3	300		—
1310	9.66	100	15.26	3.80	0.244	0.90	+250.5	260		2.9 L
1315	9.69	90	15.39	3.80	0.245	0.87	+250.7	230	CLEAR.	2.35 L
1320	9.71	90	15.34	3.78	0.245	0.84	+252.1	200		—
1325	9.72	90	15.42	3.78	0.246	0.82	+253.3	180		3.25 L
1330	9.71	90	15.67	3.78	0.249	0.82	+255.7	130	CLEANED OUT CELL 1331.	—
1335	9.72	90							STABLE WL.	4.15 L
1340	9.72	90	15.86	3.85	0.252	1.12	+256.6	120		—
1345	9.73	90	15.91	3.79	0.252	0.98	+256.9	100	3 LVOL 1HR.	5.05 L
1355	9.73	90	16.06	3.78	0.253	0.91	+260.2	70		5.95 L
1405	9.74	90	15.83	3.75	0.252	0.89	+261.7	45		≈ 6.9 L
1415	9.75	90	15.89	3.74	0.252	0.85	+262.4	30		7.8 L
1425	9.76	90	15.83	3.74	0.252	0.85	+262.8	27		8.7 L
1435	9.76	90	15.80	3.73	0.252	0.87	+263.0	17		9.6 L
1445	9.77	90	15.75	3.70	0.251	0.86	+264.8	12	2HRS. 2VOL	10.5 L
1455	9.77	90	15.72	3.64	0.251	0.86	+264.6	10		11.4 L
1505	9.78	90	15.73	3.64	0.251	0.85	+265.0	10		12.3 L
→ END PURGE										
SAMPLING @	1506									

SIGNATURE(S): Robert Bellhouse 5.1 L

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT12.01 & F
Sample Location: 13MWT12
Sampled By: T. Rosman
C.O.C. No.: 0992 & 0993
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/27/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1710	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: Peristaltic	V.Sl. Cloudy	4.83	0.135	14.46	60	2.35	—	+242

Date: 4/27/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: SAME								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 22.40	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 8.50								
One Casing Volume(gal/L) 8.7								
Start Purge (hrs): 1305								
End Purge (hrs): 1705								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L) 21.5								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/ NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.: —

Signature(s): [signature]

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT12
DATE: 4/27/03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (ml/min)	Temp. (°C)	pH (pH units)	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments (Color, Odor, Precipitation)
1305	8.50	—	—	—	—	—	—	—	Start Purge
1315	8.65	100	16.04	4.76	0.137	0.22	200	25	1000 ml Clear
1325	10.80	110	15.63	4.74	0.135	0.33	205	7.7	2100 ml "
1335	11.64	100	16.04	4.75	0.136	0.49	206	6.9	3100 ml "
1345	12.13	90	17.19	4.75	0.141	0.62	206	16	4000 ml "
1355	12.76	90	16.48	4.77	0.138	0.69	208	14	4900 ml "
1405	13.05	90	16.33	4.81	0.137	0.73	207	12	5800 ml "
1415	13.28	90	16.38	4.77	0.137	0.75	207	16	6700 ml "
1425	13.52	90	16.63	4.78	0.137	0.52	205	23	7600 ml "
1435	13.83	90	16.41	4.72	0.137	0.68	210	31	8500 ml "
1445	14.10	90	16.65	4.74	0.140	0.82	211	45	9400 ml "
1455	14.33	90	15.77	4.76	0.138	0.94	212	50	10300 ml "
1505	14.65	90	15.31	4.71	0.136	0.89	215	45	11200 ml "
1515	14.95	90	14.67	4.76	0.136	0.99	214	60	12100 ml V. Sl Cloudy
1525	15.23	90	14.99	4.80	0.141	1.33	215	70	13000 ml " " "
1535	15.47	85	14.71	4.89	0.144	1.58	217	75	13850 ml " " "
1545	15.71	85	14.82	4.91	0.147	1.79	220	85	14700 ml " " "
1555	15.95	85	14.59	4.92	0.148	1.97	223	90	15550 ml Sl. Cloudy
1605	16.21	85	14.60	4.91	0.149	2.16	226	95	16400 ml " "
1615	16.43	85	14.63	4.92	0.148	2.29	229	95	17250 ml " "
1625	16.67	85	14.58	4.90	0.146	2.32	232	90	18100 ml " "
1635	16.86	85	14.61	4.89	0.145	2.32	234	90	18950 ml " "
1645	17.10	85	14.49	4.87	0.142	2.29	239	80	19800 ml V. " "
1655	17.33	85	14.62	4.83	0.138	2.36	241	65	20650 ml " " "
1705	17.56	85	14.46	4.83	0.135	2.35	242	60	21500 ml
1710	—	—	—	—	—	—	—	—	Sample Time

SIGNATURE(S): Terry Koch

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 13 01
Sample Location: 13MWT 13
Sampled By: B. Balkwill
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/7/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 0943	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: Peristaltic	CLEAR	4.70	0.106	13.82	5.2	3.37	NA	+269.2

Date: 5/7/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 21.44	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 3.83								
One Casing Volume (gal/L): 2.9								
Start Purge (hrs): 0730								
End Purge (hrs): 0945								
Total Purge Time (min): 135								
Total Vol. Purged (gal/L): 3.4								

Analysis	Preservative		Container Requirements	Collected
VOCs 8260B	HCl / 4°C		(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C		(2) 40 mL Vials	
SVOCs (8270C)	4°C		(2) 1 L Amber	
SVOCs (SIM)	4°C		(2) 1 L Amber	
SVOCs (8151A)	4°C		(2) 1 L Amber	
Explosives (8330)	4°C	2x	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	2x	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C		(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	2x	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Check If Applicable:

MS/MSD	Duplicate ID No.:
—	FD05070301

Signature(s): Robert Balkwill

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW713
DATE: 5/7/03

Time (Hrs.)	Water Level (ft. BTOC)	Flow (mL/min)	Temp. (°C)	pH	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments
0730	3.83	START							CLEAR
0735	3.99	120	14.32	4.29	0.126	5.11	+278.7	230	.6
0740	4.03	95	14.00	4.24	0.100	4.45	+246.6	140	2.1 L
0745	4.06	95	13.69	4.21	0.096	4.28	+258.1	85	HAZY 1.55 L
0750	4.05	95	13.78	4.21	0.095	4.16	+262.9	75	2.03 L
0800	4.05	95	13.81	4.22	0.095	4.05	+263.0	75	2.98 L
0810	4.08	95	13.66	4.21	0.096	3.96	+264.4	55	—
0820	4.08	95	13.66	4.22	0.096	3.84	+263.1	50	4.88 L
0830	4.08	95	13.65	4.23	0.097	3.79	+261.5	40	—
0840	4.09	95	13.56	4.23	0.097	3.69	+260.9	31	6.78 L
0850	4.09	95	13.62	4.22	0.099	3.67	+262.3	22	—
0900	4.10	95	13.60	4.21	0.100	3.58	+263.4	19	8.69 L
0910	4.10	95	13.80	4.21	0.102	3.47	+264.5	14	—
0920	4.10	95	13.72	4.20	0.104	3.44	+265.4	12	10.58 L
0930	4.10	95	13.76	4.21	0.105	3.41	+266.1	11	2HRS —
0940	4.10	95	13.80	4.20	0.106	3.39	+267.0	8.4	> 12 ol. 12.49 L
0945	4.10	95	13.82	4.20	0.106	3.37	+268.2	5.8	12.96 L
	→ END PURGE								
	SAMPLED @	0947							

SIGNATURE(S): Robert Beckner

W.B. Wol

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 14 01
Sample Location: 13MWT 14
Sampled By: B. BALKWILL
C.O.C. No.: 0994
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/29/03 Time: 0936 Method: PERISTALTIC	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
	CLEAR	5.50	0.885	14.34	1.6	1.20	NA	+23.2

Date: 4/29/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 25.60	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 13.81								
One Casing Volume (gal/L): 1.9								
Start Purge (hrs): 0755								
End Purge (hrs): 0925								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 2								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ No
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

QA/QC if applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkwill

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW714
DATE: 4/29/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
0755	13.81	START							
0800	14.00	110	13.80	5.73	0.928	3.57	+74.7	11	CLEAR.
0805	14.00	110	13.77	5.69	0.926	2.31	+58.6	12	1.16
0810	14.02	80	13.57	5.68	0.900	1.95	+49.3	10	
0815	14.03	80	13.64	5.68	0.840	1.81	+45.4	9.7	1.9
0820	14.05	80	13.66	5.67	0.835	1.72	+36.7	8.4	UNABLE TO PUMP SLOWER THAN 80ml/min
0825	14.06	80	13.71	5.67	0.830	1.60	+32.9	7.2	2.7
0830	14.07	80	13.78	5.66	0.822	1.53	+31.5	8.4	—
0835	14.07	80	13.80	5.65	0.787	1.36	+28.0	6.1	3.3
0840	14.08	80	13.92	5.63	0.783	1.28	+27.6	6.9	—
0845	14.07	80	13.99	5.63	0.766	1.26	+26.5	5.0	4.3
0850	14.08	80	13.98	5.61	0.850	1.20	+24.1	4.8	—
0855	14.08	80	13.96	5.60	0.919	1.11	+23.3	4.4	5.1
0900	14.09	80	14.11	5.60	0.907	1.09	+23.6	4.5	—
0905	14.10	80	14.20	5.58	0.896	1.21	+23.4	3.6	5.9
0910	14.10	80	14.21	5.56	0.890	1.15	+23.0	2.7	—
0915	14.10	80	14.30	5.53	0.888	1.16	+23.0	2.5	6.7
0920	14.10	80	14.32	5.51	0.886	1.17	+23.1	1.8	—
0925	14.11	80	14.34	5.50	0.885	1.20	+23.2	1.6	1 vol. 7.5
	END PURGE								
	SAMPLED @ 0926								

SIGNATURE(S): Robert Balhuce

7.2L = 1 vol.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT15 01
Sample Location: 13MWT 15
Sampled By: B. Baukness
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/6/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1702	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: Peristaltic	CLEAR	3.74	0.391	15.89	7.3	0.53	NA	+289.9

Date: 5/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 27.87	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 13.07								
One Casing Volume (gal/L): 2.4								
Start Purge (hrs): 1445								
End Purge (hrs): 1700								
Total Purge Time (min): 135								
Total Vol. Purged (gal/L): 9.1								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES:

1445

QC Samples (if applicable):

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW15
DATE: 5/6/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
(Hrs.)	(Volume purged)								
1445	13.07	START							HAZY —
1450	13.70	100	17.21	3.53	0.458	1.83	+342.8	50	.5L
1455	14.18	80	16.70	3.35	0.443	1.37	+391.9	40	.9L
1500	14.46	75	16.64	3.32	0.442	1.30	+386.1	40	UNABLE TO LOWER RATE —
1505	14.72	75	16.56	3.30	0.442	1.26	+388.3	39	1.65L
1515	15.20	75	16.22	3.30	0.438	1.00	+371.4	36	2.4
1525	15.60	75	16.07	3.30	0.433	0.68	+350.7	32	—
1535	15.91	75	15.90	3.37	0.430	0.66	+341.8	30	3.9
1545	16.26	75	15.77	3.44	0.426	0.61	+324.6	30	—
1555	16.54	75	15.84	3.52	0.423	0.58	+312.5	24	5.4
1605	16.72	75	15.80	3.57	0.416	0.58	+304.8	23	—
1615	16.81	75	15.79	3.60	0.411	0.55	+300.0	21	6.9
1625	16.86	75	15.91	3.63	0.407	0.54	+299.1	19	—
1635	16.93	75	16.00	3.67	0.405	0.53	+294.6	14	8.4
1645	16.94	75	15.92	3.71	0.397	0.53	+291.2	11	2HRS —
1655	16.96	75	15.84	3.73	0.393	0.53	+288.7	8.7	7 1/2 hrs 9.9L
1700	16.97	75	15.89	3.74	0.391	0.53	+286.8	7.3	
→ END PURGE									
	SAMPLING	1702							

SIGNATURE(S): Robert Balkwill

9.1 L: 1 vol.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT16 01
Sample Location: 13MWT16
Sampled By: B. Bauckner
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/6/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 0842	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	6.16	0.356	14.27	2.7	0.81	NA	-30.4

Date: 5/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 11.31	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 9.81								
One Casing Volume (gal/L): 1.2								
Start Purge (hrs): 0748								
End Purge (hrs): 0840								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 1.3								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Check if applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkwill

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW116
DATE: 5/6/03

Time (Hrs)	Water Level (Feet)	Flow (ml/min)	Temp. (°C)	pH	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments	Vol. (L)
0749	9.81	START							CLEAR	—
0755	10.21	120	14.22	6.31	0.381	1.20	-53.7	8.1		.84L
0800	10.44	100	14.25	6.20	0.370	1.24	-51.0	6.7		1.34L
0805	10.71	90	14.26	6.17	0.363	1.06	-46.4	4.5		1.8L
0810	10.85	85	14.12	6.17	0.360	0.99	-44.0	5.5	UNABLE TO LOWER PUMP RATE	—
0815	10.97	85	14.29	6.18	0.360	0.97	-42.2	5.7		2.65L
0820	11.18	85	14.19	6.17	0.360	0.90	-41.4	6.2		-
0825	11.39	85	14.30	6.17	0.360	0.87	-38.6	3.8		3.5L
0830	11.44	85	14.20	6.17	0.358	0.86	-36.1	3.6		-
0835	11.51	85	14.31	6.17	0.357	0.84	-34.2	3.0		4.35L
0840	11.67	85	14.27	6.16	0.356	0.81	-30.4	2.7	>1 Vol	4.8L
	END PURGE SAMPLING @ 0842									

SIGNATURE(S): Robert Galtress 4/6/2003 1231 TD

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT17 01
Sample Location: 13MWT17
Sampled By: T. ROJAHN
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Date: 5/7/03								
Time: 1022								
Method: SAME	CLEAR	5.35	0.170	15.70	10	0.53	–	112

PURGE DATA	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Date: 5/7/03								
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material Type: 2" dia. PVC								
Total Well Depth (TD): 20.30	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 9.00								
One Casing Volume(gal/L): 7								
Start Purge (hrs): 0750								
End Purge (hrs): 1020								
Total Purge Time (min): 150								
Total Vol. Purged (gal/L): 15.2								

Analysis	Preservative		Container Requirements	Collected
VOCs 8260B	HCl / 4°C		(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C		(2) 40 mL Vials	↓
SVOCs (8270C)	4°C		(2) 1 L Amber	↓
SVOCs (SIM)	4°C		(2) 1 L Amber	↓
SVOCs (8151A)	4°C		(2) 1 L Amber	↓
Explosives (8330)	4°C	3X	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	3X	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C		(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	3X	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES:

Circle If Applicable:

MS/MSD: YES

Duplicate ID No.: —

Signature(s): Terry Rojahn

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT17
DATE: 5/7/03

Time (Hrs.)	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
0750	9.00	—	—	—	—	—	—	—	Start PURGE
0800	9.03	120	14.92	5.32	0.171	1.48	+75	14	1200 ml CLEAR
0810	9.03	100	14.90	5.33	0.169	1.39	77	13	2200 "
0820	9.03	100	14.63	5.33	0.167	1.31	79	15	3200 "
0830	9.03	100	14.99	5.34	0.168	0.59	82	15	4200 "
0840	9.03	100	15.13	5.34	0.167	0.60	85	18	5200 "
0850	9.03	100	15.15	5.33	0.166	0.57	89	18	6200 "
0900	9.03	100	15.21	5.35	0.166	0.56	93	17	7200 "
0910	9.03	100	15.36	5.34	0.167	0.55	94	15	8200 "
0920	9.03	100	15.38	5.34	0.167	0.55	97	15	9200 "
0930	9.03	100	15.51	5.35	0.168	0.54	100	15	10200 "
0940	9.03	100	15.52	5.34	0.167	0.55	102	14	11200 "
0950	9.03	100	15.69	5.34	0.168	0.54	104	13	12200 "
1000	9.05	100	15.73	5.35	0.171	0.54	108	12	13200 "
1010	9.06	100	15.69	5.35	0.170	0.54	110	11	14200 "
1020	9.06	100	15.70	5.35	0.170	0.53	112	10	15200 "

SIGNATURE(S): Terry Rzeha

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT18 01 & F
Sample Location: 13MWT18
Sampled By: B BALKOVEC
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/6/03 Time: 1342	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Method: PERSTALTIC	Clear	8.88	0.514	16.75	450	2.17	NA	43241

Date: 5/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERSTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 33.27	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 19.23								
One Casing Volume (gal/L): 2.3								
Start Purge (hrs): 0439								
End Purge (hrs): 1340								
Total Purge Time (min): 242								
Total Vol. Purged (gal/L) 18.8L								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	ND
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS/NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW11R
DATE: 9/6/03

Time (Hrs.)	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
0900	19.23	START							HAZY	—
0945	20.24	110	16.11	4.69	0.389	3.20	+226.4	50		.77 L
0950	20.73	80	16.46	4.28	0.399	2.06	+282.9	40		—
1000	21.64	80	16.84	4.27	0.378	1.92	+296.8	26	UNABLE TO LOWER RATE.	1.2 L
1010	22.65	80	16.56	4.28	0.341	1.87	+305.8	65		2.0 L
1020	23.71	80	16.51	4.21	0.343	1.82	+312.1	90		2.8 L
1030	24.15	80	17.40	4.12	0.379	1.77	+323.8	75		3.6 L
1040	24.58	80	17.46	4.08	0.348	1.84	+329.3	70		4.4 L
1050	25.00	80	17.55	3.94	0.354	1.85	+342.4	120		5.2 L
1100	25.32	80	18.00	3.85	0.361	1.77	+357.8	220		6.0 L
1110	25.68	80	18.10	3.71	0.381	1.64	+361.7	250		6.8 L
1120	25.97	80	18.16	3.62	0.401	1.57	+372.2	280		7.6 L
1130	26.27	80	17.17	3.56	0.421	1.51	+369.1	280		8.4 L
1140	26.53	80	17.04	3.61	0.451	1.47	+363.9	250	7 turb 2 obs	9.2 L
1150	26.76	80	17.32	3.67	0.477	1.44	+356.2	230		10.0 L
1200	27.01	80	17.30	3.70	0.481	1.47	+340.1	300		10.8 L
1210	27.16	80	17.29	3.74	0.500	1.50	+331.3	350		11.6 L
1220	27.35	80	17.28	3.77	0.525	1.53	+326.8	450	CLEANED OUT CELL	12.4 L
1230	27.51	80	17.80	3.84	0.544	2.22	+327.4	450		13.2 L
1240	27.65	80	17.49	3.81	0.532	1.73	+330.6	450	3 obs	14.0 L
1250	27.82	80	17.17	3.79	0.526	1.83	+334.8	450		14.8 L
1300	27.90	80	17.18	3.79	0.525	1.80	+335.0	450		15.6 L
1310	28.01	80	17.20	3.80	0.524	1.91	+335.1	450		16.4 L
1320	28.14	80	16.90	3.87	0.519	2.00	+334.7	450		17.2 L
1330	28.30	80	16.78	3.87	0.517	2.10	+334.5	450		18.0 L
1340	28.51	80	16.75	3.88	0.514	2.17	+334.1	450	4 obs. 2 turb	18.8 L
→ End Purge										
Sampling @ 1342										

SIGNATURE(S): Robert Bellhouse B6 Lowe 33 27' 20.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT19 01
Sample Location: 13MWT19
Sampled By: B. Balkovec
C.O.C. No.: 0985
Type of Sample:
[X] Low Concentration
[] High Concentration

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Date: 5/7/03 Time: 1347								
Method: Peristaltic	Clear	5.12	1.241	13.81	5.0	3.51	NA	227.41

Date: 5/7/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 22.05'	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 8.33'								
One Casing Volume (gal/L): 22								
Start Purge (hrs): 1155								
End Purge (hrs): 1345								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L):								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ No
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES / COMMENTS

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Robert Balkovec

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW719
DATE: 5/7/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
1155	8.33	START							CLEAR
1200	8.75	100	14.58	5.18	1.209	4.09	+240.6	11	
1205	8.96	80	14.45	5.24	1.232	3.86	+226.4	7.2	
1210	9.09	90	14.10	5.24	1.247	3.73	+210.1	6.2	
1215	9.15	80	14.11	5.25	1.247	3.71	+217.7	7.6	
1225	9.18	80	14.15	5.24	1.228	3.66	+217.1	3	UNABLE TO LOWER RATE
1235	9.30	80	13.94	5.23	1.229	3.65	+224.8	8.0	
1245	9.30	80	14.02	5.22	1.234	3.65	+224.7	7.9	
1255	9.36	80	14.07	5.19	1.239	3.58	+224.3	7.0	
1305	9.39	80	14.02	5.17	1.240	3.55	+225.1	3.5	
1315	9.41	80	13.89	5.15	1.239	3.39	+224.8	4.1	
1325	9.43	80	13.75	5.13	1.240	3.55	+224.7	5.0	
1335	9.45	80	13.80	5.13	1.239	3.53	+226.0	5.3	
1345	9.46	80	13.81	5.12	1.241	3.51	+224.1	5.0	>1000
	→ END PURGE								
	SAMPLED @	1347							

SIGNATURE(S): Robert Pulkrane QSL-1200

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2001 EF
Sample Location: 13MWT20
Sampled By: B. BALKOVEC
C.O.C. No.: 0994
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/28/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1600	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: PHORSWATER	CLEAR	3.42	1.504	15.78	19	0.11	NA	-265.0

Date: 4/28/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 22.85	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 4.77								
One Casing Volume(gal/L): 11.2								
Start Purge (hrs): 1205								
End Purge (hrs): 1605								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 22.2								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	YES
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	YES
SVOCs (8270C)	4°C	(2) 1 L Amber	YES
SVOCs (SIM)	4°C	(2) 1 L Amber	YES
SVOCs (8151A)	4°C	(2) 1 L Amber	YES
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

INTAKE MID SCREEN

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT20
DATE: 4/28/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
(Hrs.)	(ft.)	(mL/min)	(°C)		(mS/cm)	(mg/L)	(mV)	(NTU)	
1205	4.77	—	—	—	—	—	—	—	Start Purge
1215	6.20	140	17.19	3.23	1668	0.01	+290	120	1400 ml V. SL CLOUDY
1225	6.61	100	17.92	3.26	1685	0.01	+291	110	2400 ml " " "
1235	6.88	90	17.01	3.27	1649	0.04	289	100	3300 ml " " "
1245	7.16	90	17.19	3.31	1623	0.05	283	70	4200 ml " " "
1255	7.41	90	17.38	3.36	1.607	0.07	276	40	5100 ml CLEAR
1305	7.71	90	17.72	3.40	1.607	0.05	273	38	6000 ml "
1315	7.94	90	18.55	3.39	1.633	0.04	271	33	6900 ml "
1325	8.18	90	18.40	3.39	1.620	0.08	270	33	7800 ml "
1335	8.39	90	17.92	3.39	1.601	0.08	271	31	8700 ml "
1345	8.52	90	17.92	3.40	1.599	0.08	272	31	9600 ml "
1355	8.71	90	18.18	3.37	1.608	0.09	271	30	10500 ml "
1405	8.82	90	18.27	3.45	1.617	0.10	271	29	11400 ml "
1415	8.94	90	17.92	3.41	1.597	0.11	270	27	12300 ml "
1425	9.06	90	17.68	3.40	1.586	0.11	270	25	13200 ml "
1435	9.21	90	16.69	3.42	1.544	0.11	269	24	14100 ml "
1445	9.35	90	16.94	3.46	1.552	0.11	267	23	15000 ml "
1455	9.44	90	17.33	3.46	1.561	0.11	266	23	15900 ml "
1505	9.51	90	17.55	3.45	1.562	0.13	267	23	16800 ml "
1515	9.63	90	16.42	3.43	1.513	0.11	266	21	17700 ml "
1525	9.71	90	16.15	3.44	1.512	0.12	265	21	18600 ml "
1535	9.81	90	15.97	3.46	1.494	0.11	264	21	19500 ml "
1545	9.85	90	15.90	3.47	1.500	0.11	+263.1	22	20400 ml
1555	9.90	90	15.80	3.47	1.501	0.11	+264.1	20	21300 ml
1605	9.93	90	15.78	3.48	1.504	0.11	+265.0	19	22200 ml WHOA
→ End Purge									
Sampled @ 1606									

SIGNATURE(S): [illegible] Robert Bolkert 21 = 1200

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2003
Sample Location: 13MWT 20
Sampled By: T. ROSMAN
C.O.C. No.: 0989
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/9/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1505	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	3.65	1.445	16.70	1.4	0.54	—	+224

Date: 5/9/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): -								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 22.85	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 4.17								
One Casing Volume(gal/L): 11.7								
Start Purge (hrs): 1103								
End Purge (hrs): 1503								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 25								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	No
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	No
SVOCs (8270C)	4° C	(2) 1 L Amber	Yes
SVOCs (SIM)	4° C	(2) 1 L Amber	No
SVOCs (8151A)	4° C	(2) 1 L Amber	No (TC)
Explosives (8330)	4° C	(2) 1 L Amber	Yes NO
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4° C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4° C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4° C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES

QA/QC Analysis

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Gill

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW/T20
DATE: 5/9/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1103	4.17	—	—	—	—	—	—	—	Start Purge	
1113	5.55	160	16.39	3.72	2.157	1.05	193	8.2	1600 ml	CLEAR
1123	6.30	140	17.71	3.75	1.796	1.10	195	6.7	3000 ml	CLEAR
1133	6.82	100	17.49	3.90	1.667	1.07	180	6.9	4000 ml	CLEAR
1143	7.22	100	17.10	4.11	1.500	1.05	166	7.0	5000 ml	CLEAR
1153	7.83	100	16.63	3.95	1.451	0.77	173	6.7	6000 ml	CLEAR
1203	8.34	100	16.21	3.88	1.399	0.57	186	6.7	7000 ml	CLEAR
1213	8.65	100	16.15	3.83	1.410	0.55	190	6.0	8000 ml	CLEAR
1223	8.93	100	16.10	3.79	1.418	0.53	194	5.4	9000 ml	CLEAR
1233	9.24	100	16.35	3.75	1.417	0.53	197	5.2	10000 ml	CLEAR
1243	9.48	100	16.55	3.72	1.417	0.54	205	5.0	11000 ml	CLEAR
1253	9.63	100	16.86	3.72	1.428	0.56	205	4.3	12000 ml	CLEAR
1303	9.78	100	17.06	3.90	1.458	0.58	206	3.7	13000 ml	CLEAR
1313	9.92	100	17.01	3.68	1.449	0.56	209	3.4	14000 ml	CLEAR
1323	10.06	100	16.96	3.66	1.440	0.55	212	3.2	15000 ml	CLEAR
1333	10.20	100	16.94	3.66	1.433	0.54	215	3.1	16000 ml	CLEAR
1343	10.33	100	16.90	3.66	1.425	0.53	217	3.0	17000 ml	CLEAR
1353	10.50	100	16.88	3.66	1.428	0.53	218	2.9	18000 ml	CLEAR
1403	10.66	100	16.86	3.66	1.431	0.53	219	2.7	19000 ml	CLEAR
1413	10.82	100	16.85	3.64	1.433	0.53	220	2.7	20000 ml	CLEAR
1423	10.89	100	16.40	3.65	1.438	0.52	220	2.5	21000 ml	CLEAR
1433	10.97	100	16.36	3.65	1.443	0.50	221	2.4	22000 ml	CLEAR
1443	11.05	100	16.48	3.65	1.440	0.50	223	1.8	23000 ml	CLEAR
1453	11.12	100	16.55	3.65	1.433	0.52	224	1.4	24000 ml	CLEAR
1503	11.19	100	16.70	3.65	1.445	0.54	224	1.4	25000 ml	CLEAR
1505	—	—	—	—	—	—	—	—	Start Sampling	

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT21 01
Sample Location: 13MWT21
Sampled By: B. Balkower
C.O.C. No.: 0991
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/25/03 Time: 1346	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Method: PERISTALTIC	CLEAR	5.46	0.212	13.01	8.2	1.45	N/A	+193.6

Date: 4/25/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.76	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 8.26								
One Casing Volume (gal/L): 1.5								
Start Purge (hrs): 1237								
End Purge (hrs): 1345								
Total Purge Time (min): 68								
Total Vol. Purged (gal/L): 1.8								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	2x (2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	2x (1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	2x (1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

5.8 L 2 vol

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD04250301

Signature(s): Robert Balkower

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT24
DATE: 4/25/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
(Hrs.)	(ft. BTOC)									
1237	8.36	START							CLEAR/SL HAZY	
1240	8.52	160	12.51	5.66	0.213	1.38	+165.0	51		.48L
1245	8.57	130	12.34	5.59	0.211	1.03	+160.1	40		—
1250	8.62	100	12.45	5.56	0.211	0.99	+161.5	18	CLEAR	1.8L
1255	8.64	100	12.58	5.53	0.210	1.02	+166.8	15		—
1300	8.65	100	12.74	5.52	0.210	1.04	+171.8	13		2.8L
1305	8.69	100	12.73	5.52	0.210	1.05	+175.2	29	SLIGHT HAZE	—
1310	8.70	100	12.79	5.51	0.210	1.14	+177.8	29		3.8L
1315	8.72	100	12.90	5.50	0.211	1.22	+180.4	21	UNABLE TO PUMP LOWER	—
1320	8.74	100	12.92	5.49	0.211	1.33	+182.9	17	THAN 100ml/min.	4.8L
1325	8.76	100	13.00	5.48	0.213	1.37	+186.3	15	PUMP SHUTS OFF	—
1330	8.77	100	12.99	5.47	0.212	1.40	+188.7	11		5.8L
1335	8.77	100	13.02	5.46	0.213	1.41	+191.1	10		—
1340	8.78	100	12.99	5.47	0.212	1.42	+191.8	9.5		6.8L
1345	8.78	100	13.01	5.46	0.212	1.45	+193.6	8.2		
→ END PURGE										
	SAMPLED @	1346								

SIGNATURE(S): Robert Bulkner 5.8 L total

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2201
Sample Location: 13MWT22
Sampled By: T. ROJAHN
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/06/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1542	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	3.95	0.245	14.15	0.00	0.64	—	+264

Date: 5/06/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 17.76	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 7.64								
One Casing Volume(gal/L): 6.3								
Start Purge (hrs): 1400								
End Purge (hrs): 1540								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 10.6								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4° C	(2) 1 L Amber	
SVOCs (SIM)	4° C	(2) 1 L Amber	
SVOCs (8151A)	4° C	(2) 1 L Amber	
Explosives (8330)	4° C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4° C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4° C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4° C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

QA/QC If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT22
DATE: 5/06/03

Time (Hrs.)	Water Level (Ft. BTOC)	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments
1400	7.64	–	–	–	–	–	–	–	Start Purge
1410	8.35	1600	14.37	4.97	0.255	1.97	+172	12	1600 CLEAR
1420	8.28	100	15.38	4.82	0.256	1.39	181	12	2600 "
1430	8.31	100	15.11	4.66	0.251	1.50	181	7.9	3600 "
1440	8.30	100	15.04	4.40	0.248	1.03	205	4.0	4600 "
1450	8.33	100	14.92	4.22	0.247	0.92	223	5.0	5600 "
1500	8.35	100	14.83	4.13	0.247	0.86	235	0.15	6600 "
1510	8.35	100	14.83	4.01	0.247	0.76	250	0.10	7600 "
1520	8.40	100	14.10	3.95	0.243	0.70	258	0.10	8600 "
1530	8.45	100	14.01	3.92	0.242	0.68	261	0.10	9600 "
1540	8.40	100	14.15	3.95	0.248	0.64	264	0.00	10600 "

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT23 01
Sample Location: 13MWT23
Sampled By: T. Rojahn
C.O.C. No.: 0995
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 5/06/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1242	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: SAME	CLEAR	5.19	0.314	16.46	0.7	4.09	—	+131

Date: 5/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 24.50	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 7.62								
One Casing Volume(gal/L): 10.5								
Start Purge (hrs): 0840								
End Purge (hrs): 1240								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 22.1								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Tony Rojahn

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT23
DATE: 5/06/03

Time (Hrs.)	Water Level (Ft. BTOC)	Flow (ml/min)	Temp. (°C)	pH (S.U.)	Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turb. (NTU)	Comments (Color, Odor, etc.)
0840	7.62	–	–	–	–	–	–	–	Start Purge
0850	9.08	110	14.46	5.15	0.302	4.77	100	40.0	1100 CLEAR
0900	9.55	90	15.02	5.17	0.305	4.58	106	13.0	2000 "
0910	10.08	100	14.87	5.16	0.304	4.47	116	6.2	3000 "
0920	10.43	90	15.50	5.18	0.311	4.91	125	18.0	3900 "
0930	10.50	100	14.77	5.16	0.305	4.29	127	24.0	4900 "
0940	10.86	100	14.65	5.15	0.304	4.17	129	13.0	5900 "
0950	11.11	90	15.50	5.21	0.311	4.18	130	7.2	6800 "
1000	11.32	90	15.76	5.19	0.313	4.13	132	7.3	7700 "
1010	11.44	90	15.76	5.18	0.312	4.16	133	7.5	8600 "
1020	11.63	90	16.00	5.15	0.313	4.14	137	6.2	9500 "
1030	11.71	90	16.54	5.13	0.318	4.15	140	4.6	10400 "
1040	11.76	90	17.08	5.14	0.322	4.11	141	2.4	11300 "
1050	11.80	90	17.06	5.09	0.322	4.09	142	1.8	12200 "
1100	11.89	90	17.09	5.10	0.321	4.10	144	2.0	13100 "
1110	11.96	90	16.93	5.11	0.320	4.11	145	2.4	14000 "
1120	12.01	90	16.99	5.07	0.320	4.09	146	2.3	14900 "
1130	12.02	90	16.86	5.11	0.314	4.09	145	2.2	15800 "
1140	12.07	90	15.73	5.11	0.310	4.17	143	1.6	16700 "
1150	12.10	90	16.35	5.17	0.313	4.13	140	1.2	17600 "
1200	12.14	90	16.14	5.17	0.312	4.19	138	1.1	18500 "
1210	12.17	90	16.00	5.16	0.311	4.15	137	1.4	19400 "
1220	12.20	90	15.73	5.18	0.308	4.15	136	1.3	20300 "
1230	12.23	90	16.20	5.19	0.312	4.08	132	0.9	21200 "
1240	12.26	90	16.46	5.19	0.314	4.09	131	0.7	22100 "
1242	–	–	–	–	–	–	–	–	Start Sampling

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT24 01
Sample Location: 13MWT24
Sampled By: B. BALLARD
C.O.C. No.: 0993
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/28/03 Time: 1456	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	SALINITY %	ORP mV
Method: PERISTALTIC	CLEAR	5.80	0.621	16.76	5.2	2.89	N/A	+284.0

Date: 4/28/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 25.19	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 9.04								
One Casing Volume (gal/L): 2.6								
Start Purge (hrs): 1314								
End Purge (hrs): 1455								
Total Purge Time (min): 104								
Total Vol. Purged (gal/L): 2.6								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	~~Yes~~ NO
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Ballard

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW724
DATE: 4/28/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1311	9.04	START							HAZY.	—
1315	9.53	150	17.21	6.09	0.734	4.07	+178.1	33		—
1320	10.13	150	16.33	5.99	0.689	3.54	+176.1	19		1.4L
1325	10.43	100	16.57	5.95	0.687	3.38	+193.6	17		1.9L
1330	10.61	90	17.01	5.96	0.695	3.30	+212.4	21		—
1335	10.76	90	16.43	5.95	0.694	3.29	+223.0	19	UNABLE TO SLOW RATE.	2.8L
1345	11.04	90	16.76	5.94	0.688	3.25	+246.5	15		3.7L
1355	11.11	90	17.31	5.95	0.693	3.18	+220.3	12		4.6L
1405	11.19	90	17.18	5.92	0.691	3.19	+287.0	11		5.5L
1415	11.25	90	17.06	5.91	0.690	3.08	+304.0	7.7	CLEAR	6.4L
1425	11.30	90	16.85	5.91	0.685	3.07	+303.0	8.2		7.3L
1435	11.31	90	16.80	5.91	0.674	3.00	+284.0	8.8		8.2L
1445	11.33	90	16.78	5.91	0.672	2.90	+285.1	4.7		9.0L
1455	11.34	90	16.76	5.90	0.671	2.89	+284.0	5.2	1 vol.	10.0L
	→ END PURGE									
	SAMPLED @ 1456									

SIGNATURE(S): Robert E Bulkner

1 VOL = 1 vol.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT25 01 & F
Sample Location: 13MWT25
Sampled By: B. Balkovec
C.O.C. No.: 0996, 0994
Type of Sample: 0995 & 0992
[X] Low Concentration
[] High Concentration

Date: Start 4/26/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1230	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: Peristaltic	BRN	6.45	0.511	12.00	> 999	4.21	—	+ 219

Date: 4/25/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 18.02	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 14.76								
One Casing Volume (gal/L): .53								
Start Purge (hrs): 1110								
End Purge (hrs): 1210								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 5.25								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	NO
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330) @ 1230 4/26/03	4°C	1 ~~(2)~~ 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A) 4/28/03	HNO3 / 4°C	@1230 (1) 1 L HDPE	Yes
5/7/03 Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	@ (1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2) ~~[illegible]~~ 5/6/03	H2SO4/ 4°C	@ ~~[illegible]~~ @1440 (1) 1 L HDPE	Yes

OBSERVATIONS / NOTES:

WL= 17.31' @ 0748 ON 4/26/03
WL= 17.24' @ 1228 ON 4/26/03
- Start Sampling Explosives @ 1230 on 4/26/03
- Finished @ 1230 on 4/27/03

3 4/28/03 Started w/ full metals @1230. 1/2 full. Finished 4/29/03
4/29/03 Did Surveys Ammonia
Pumped well dry 5/5/03 WL=16.0'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW125
DATE: 4/25/03

Time (Hrs.)	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
1110	14.76	START							HAZY BROWN	—
1120	15.39	100	12.68	6.42	0.588	7.20	+245.2	130		1L
1125	15.69	80	12.22	6.25	0.504	8.14	+242.7	90	HAZY	1.4L
1130	15.95	75	12.27	6.22	0.462	7.44	+240.8	110	UNABLE	1.78L
1135	16.01	75	12.24	6.22	0.456	7.76	+239.6	110	[redacted] TO PUMP LOWER	—
1140	16.24	75	12.30	6.21	0.457	7.71	+239.3	100	THAN 75 ml/min	2.25L
1145	16.48	75	12.32	6.22	0.474	7.50	+238.8	100	PUMP SHUTS OFF.	—
1150	16.70	75	12.31	6.19	0.495	7.20	+238.2	110	* CANNOT STOP DRAWDOWN!	3.25L
1158	16.79		DRY							—
		WELL LOWER TUBING TO 18.03' AND PUMP ENTIRE WELL DRY.								
1200	—	75							.8L MORE 1LL @ 1202	
1205	17.48	120	11.98	6.37	0.591	3.61	+204.4	7999	BROWN	
1210	DRY	100	12.00	6.45	0.511	4.22	+214.1	7999		Σ 5.25L
→ END PURGE										
	ALLOW RECHARGE BEFORE SAMPLING.									

SIGNATURE(S): Robert Bultmann

2L = 1 vol. TD. 18.03

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT26 01
Sample Location: 13MWT26
Sampled By: B. Paulauer
C.O.C. No.: 0991
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 4/25/03	Color	pH	S.C.	Temp.	Turbidity	DO	SALINITY	ORP
Time: 1020	Visual	Standard	mS/cm	°C	NTU	mg/l	%	mV
Method: PERISTALTIC	CLEAR	6.05	0.352	12.01	7.1	4.20	N/A	189.0

Date: 4/25/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	SALINITY	ORP
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" dia. PVC								
Total Well Depth (TD): 22.18	SEE LOW FLOW PURGE DATA SHEET							
Static Water Level (WL): 10.31								
One Casing Volume (gal/L): 2								
Start Purge (hrs): 0804								
End Purge (hrs): 1020								
Total Purge Time (min): 136								
Total Vol. Purged (gal/L): 2.9								

Analysis	Preservative	Container Requirements	Collected
VOCs 8260B	HCl / 4°C	(3) 40 mL Vials	
VOCs 8015B	HCl / 4°C	(2) 40 mL Vials	
SVOCs (8270C)	4°C	(2) 1 L Amber	
SVOCs (SIM)	4°C	(2) 1 L Amber	
SVOCs (8151A)	4°C	(2) 1 L Amber	
Explosives (8330)	4°C	(2) 1 L Amber	Yes
Total Metals (6020) & Total Hg (7470A)	HNO3 / 4°C	(1) 1 L HDPE	Yes
Dissolved Metals (6020) & Dis. Hg (7470A)	HNO3/ 4°C	(1) 1 L HDPE	Yes
Ammonia (350.1) & Nitrate (353.2)	H2SO4/ 4°C	(1) 1 L HDPE	Yes

OBSERVATIONS / NOTES

PUR PRODUCER
.75 ml/min + WL STILL DROPS.

Grab if Applicable

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balthaser

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MW726
DATE: 4/25/03

Time	Water Level	Flow	Temp.	pH	Cond.	DO	ORP	Turb.	Comments	
(Hrs.)	(Ft. BTOC)	(ml/min)	(°C)	(S.U.)	(mS/cm)	(mg/L)	(mV)	(NTU)		
0804	10.31	START							CLEAR	—
0807	10.51	120	12.08	6.32	0.362	5.49	+183.7	15		—
0810	11.01	120	11.93	6.13	0.358	5.13	+149.0	14		.72L
0815	11.53	100	11.81	6.08	0.350	5.03	+156.6	10		—
0820	12.45	100	11.75	6.09	0.345	4.95	+161.7	8.6	CLEAR	1.7L
0825	12.61	~~100~~ 75	11.76	6.07	0.343	4.87	+165.5	16		—
0830	12.89	~~100~~ 75	11.78	6.05	0.343	4.83	+166.2	33		2.5L
0835	12.94	95	11.74	6.07	0.343	4.80	+167.1	30	SLIGHT HAZE	—
0840	13.18	80	11.77	6.07	0.343	4.79	+167.9	28		3.3L
0845	13.26	75	11.76	6.07	0.344	4.75	+169.9	30		—
0850	13.39	75	11.79	6.07	0.345	4.72	+171.2	29	≈ 1½ vol.	≈ 4.1L
0855	13.50	75	11.77	6.08	0.346	4.73	+171.5	27		—
0900	13.62	75	11.78	6.07	0.346	4.70	+173.6	25	LOWERING TO PUMP	4.85L
0905	13.75	75	11.82	6.08	0.347	4.69	+176.0	22	LOWER THAN 75ml/min	—
0910	13.89	75	11.85	6.08	0.348	4.64	+177.2	23	PUMP SHUTS OFF.	5.6L
0915	14.02	75	11.87	6.08	0.350	4.60	+177.4	24		—
0920	14.15	75	11.95	6.09	0.351	4.53	+178.5	23		6.35
0925	14.26	75	11.99	6.08	0.353	4.51	+179.5	22		—
0930	14.39	75	12.02	6.09	0.353	4.47	+179.8	22		7.1L
0935	14.43	75	12.07	6.09	0.355	4.42	+181.5	17		—
0940	14.47	75	12.09	6.09	0.355	4.39	+192.4	15	≈ 1 vol.	7.85L
0950	14.72	75	12.04	6.05	0.354	4.30	+186.0	11		—
1000	14.81	75	11.98	6.06	0.351	4.24	+187.6	8.6		9.35L
1010	14.85	75	12.00	6.06	0.352	4.23	+188.4	8.0		—
1020	14.87	75	12.01	6.05	0.352	4.20	+189.0	7.1		10.85L
→ END PURGE										
	SAMPLED @ 1022									

SIGNATURE(S): Robert Balhare

7.3L = 1 vol.

15'

ROUND 2

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: SEEP / PONDED WATER
[] QA Sample Type:

Sample ID No.: 13SP0101
Sample Location: 13 SP01
Sampled By: F.W. / TR
C.O.C. No.: 4801 & 4802

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 0930 Depth: SURFACE Method: DIRECT	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLEAR	6.8	0.335	11.81	2.60	3.60	202.6	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Photo #1 (0305)
PONDED No Flow

Circle If Applicable:
MS/MSD — Duplicate ID No.: —

Signature(s): Terry Hyde

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: SEEP / PONDED
[] QA Sample Type:

Sample ID No.: 135P0201
Sample Location: 135P02
Sampled By: MC/TK
C.O.C. No.: 4801 & 4802

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1033								
Depth: MID	CLEAR	7.70	0.360	12.16	5.0	9.79	211.0	—
Method: DIRECT								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	

8" DEEP
PHOTO #6 (0308)
PONDED NO FLOW

Circle if Applicable: MS/MSD

MS/MSD: —
Duplicate ID No.: —

Signature(s): Troy Kopal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[■] Other: SEEP / PONDED
[] QA Sample Type:

Sample ID No.: 13SP0301
Sample Location: 13SP03
Sampled By: MC / TK
C.O.C. No.: 4801 & 4802

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 1230 Depth: MID Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	TANISH	7.03	0.509	14.54	40	5.28	227.5	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth ~1'
PHOTO #9 (0310)
PONDED TRENCH NO FLOW

Check if applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Azal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: Seep / Ponded water
[] QA Sample Type:

Sample ID No.: 13SP0401
Sample Location: 13SP04
Sampled By: FW
C.O.C. No.: 4801 & 4801

Type of Sample:
[X] Low Concentration
[] High Concentration

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Date: 10/22/03 Time: 1330 Depth: MID Method: Direct	Clear	6.44	0.307	14.08	0.01	6.02	283.7	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth ~5"
PHOTO # 12 (0313)
No Flow (Ponded)

Circle If Applicable:
MS/MSD
Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: CULVERT
[] QA Sample Type:

Sample ID No.: 135W0702
Sample Location: 135W07
Sampled By: MC
C.O.C. No.: 4814 & 4813

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1305								
Depth: 4"	CLEAR	7.25	0.550	13.27	9.12	5.19	270	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PHOTO # 0339

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W0802 (TC)
Sample Location: 135W08
Sampled By: MC/TK
C.O.C. No.: 4804

[X] Stream (Formerly)
[] Spring
[] Pond
[] Lake
[X] Other: Former stream now flows through culvert
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/23/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1230								
Depth: MID	Clear	7.09	0.460	14.71	19.3	6.03	-23.7	—
Method: Peristaltic Pump								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

DEPTH ~4'
PHOTO (0322)

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: CULVERT
[] QA Sample Type:

Sample ID No.: 13SW0902
Sample Location: 13SW09
Sampled By: AJC
C.O.C. No.: 4014 & 4813

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1015								
Depth: 6"								
Method: DIRECT FILL	CLEAR	7.80	0.436	11.80	5.13	8.55	324.4	-

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PHOTO #0344

Circle if Applicable

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W1002
Sample Location: 135W10
Sampled By: MC/TK
C.O.C. No.: 4804

- [x] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [ ] Other: PONDED
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

Date: 10/23/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0850								
Depth: M10	Clear	6.17	0.270	12.77	1.98	3.65	178.7	—
Method:								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PONDED No Flow
Depth 8"

Circle If Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[✓] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW1102
Sample Location: SWMU 13
Sampled By: M. Cochran
C.O.C. No.: 4821

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-18-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1400								
Depth: 6" -								
Method: DIRECT FILL	BR	6.90	1.024	15.20	242	4.99	216	

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes ✓
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes ✓
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes ✓
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes ✓
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes ✓
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	NO

FLOW @ 15 GPM

Check if Applicable

MS/MSD —

Duplicate ID No.: —

Signature(s):

[signature] FOR M. Cochran

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 13SW1202
Sample Location: 13SW12
Sampled By: MCLTK
C.O.C. No.: 4801 & 4802

[X] Stream Ponded H2O No Flow
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 1450 Depth: MID Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLEAR	7.51	0.427	12.25	6.0	9.50	233.6	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	

Depth ~1'
115' FROM ORIGINAL location
Downstream
PHOTO #14 (0315)

Order if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW1302
Sample Location: 13SW13
Sampled By: MK / TK
C.O.C. No.: 4801 & 4802

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 1400 Depth: M10 Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLEAR	7.42	0.531	13.33	3.0	2.19	255.6	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Flow <1 gal/min
Sample at EDGE OF pool

Circle if Applicable:
MS/MSD YES
Duplicate ID No.: 13FD10220303

Signature(s): Ty Kyle

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 13SW1401
Sample Location: 13SW14
Sampled By: MC / TK
C.O.C. No.: 4801 & 4802

- [x] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [x] Other: PONDED
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

Date: 10/22/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1045								
Depth: M10	CLEAR	7.33	0.365	12.14	4.4	5.93	224.7	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth 12"
PHOTO #8 (0309)
PONDED No Flow

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	13FD1022030T	[signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 16SW1501
Sample Location: 16SW15D15
Sampled By: MC
C.O.C. No.: 4814 & 4813

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0960								
Depth: 2ft								
Method: DIRECT FILL	CLEAR	7.43	0.231	8.93	10.4	10.59	290.5	-

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes ~F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PONDED WATER

PHOTO # 0342

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: Ponded H2O
[] QA Sample Type:

Sample ID No.: 135W1601
Sample Location: 135W1601
Sampled By: MC/TK
C.O.C. No.: 4801 & 4802

Type of Sample:
[X] Low Concentration
[] High Concentration

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Date: 10-22-03								
Time: 0950								
Depth: MID	Sl. cloudy	7.17	0.254	12.48	6.5	8.48	213.7	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	

4-6" DEEP
PHOTO #2 (03-4)
PONDED No Flow

Circle if Applicable:
MS/MSD —
Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W1801
Sample Location: 135W18
Sampled By: MC
C.O.C. No.: 4804

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other: PONDED AREA No Flow
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/23/03 Time: ~~1555~~ 0915 Depth: ~1.0 Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLEAR	7.12	0.347	12.11	1.03	7.19	175.6	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth of ~~Stream~~ (Pond) PONDED AREA ~1'

Duplicate Information

MS/MSD —

Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W1901
Sample Location: 135W19
Sampled By: MC / FWI
C.O.C. No.: 4804

- [x] Stream
- [ ] Spring
- [ ] Pond
- [ ] Lake
- [x] Other: PONDED No Flow
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

Date: 10/23/03 Time: 0935 Depth: MID Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	Clear	7.25	0.56	11.69	1.93	6.03	203.5	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth of ponded area 1'

PHOTO (#0320)

Check if applicable

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 13 SW2001
Sample Location: 13 SW20
Sampled By: FW/TK
C.O.C. No.: 4804

[X] Stream
[] Spring
[] Pond
[] Lake
[X] Other: Ponded
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/23/03 Time: 1315 Depth: MIN Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
		7.75	0.300	13.22	6.25	4.39	158.5	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Depth 4"
Ponded
PHOTO (#0323)

45' Below original SD location.

Other Applicable:

MS/MSD ✓ Duplicate ID No.: —

Signature(s): Ty Lyal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W2201
Sample Location: 135W22
Sampled By: MC/TK
C.O.C. No.: 4801 & 4802

[X] Stream Ponded No Flow
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 1345 Depth: MID Method: DIRECT	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLEAR	7.02	0.434	13.65	1.5	3.71	264.7	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

60' FROM ORIGINAL location
Down stream

PHOTO # 13 (0314)

Depth 4"

Check if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW2401
Sample Location: 13SW1SD24
Sampled By: MC
C.O.C. No.: 4814 & 4813

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1350								
Depth: 4"	CLEAR	7.65	0.207	10.52	22.7	8.29	261.7	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PONDED WATER
PHOTO # 0340

QC Sample Applicable

MS/MSD —

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 13SW2501
Sample Location: 13SW/5001
Sampled By: FW
C.O.C. No.: 4814 & 4813

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1110								
Depth: 6"	CLEAR	7.63	0.262	10.85	0.0	8.64	288.0	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	✓

FLOWING ~ 20GPM
PHOTO # ~~0344~~ 0345

Check If Applicable:
MS/MSD
Duplicate ID No.: 13FD10270301

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W2601
Sample Location: 135W26
Sampled By: MC
C.O.C. No.: 4814 & 4813

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1410								
Depth: 6"	CLEAR	6.87	0.260	12.25	8.04	6.70	341.3	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PONDED WATER
SURFACE WATER COLLECTED
100' UPSTREAM
PHOTO # 0341

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[X] Stream ~10-15 gal
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW2701
Sample Location: 13SW27
Sampled By: MC/TK
C.O.C. No.: 4804

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-23-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1415								
Depth: MID	Clear	7.58	0.264	13.43	4.0	8.20	257.1	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

Flow ~10-15 gal
PHOTO # (0325)
Depth 6"

Circle if Applicable

MS/MSD — Duplicate ID No.: —

Signature(s): Taylor

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 13SW2801
Sample Location: 13SW1SD28
Sampled By: MC
C.O.C. No.: 4814 & 4813

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0940								
Depth: 4"	CLEAR	6.37	0.073	8.84	221	7.97	330.8	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	—

PONDED WATER
PHOTO # 0343

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): FMW

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W3001
Sample Location: 135W30
Sampled By: MC
C.O.C. No.: 4801 & 4802

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03 Time: 1538 Depth: MID Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	Clear	7.84	0.395	13.09	2.6	9.63	222.1	—

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Miscellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	

-F

6" Depth
PHOTO # (0319 @ 16:5)

Flow
1' in 4 sec
2" Deep
1' long

Duplicate Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W3101
Sample Location: 135W31
Sampled By: MC
C.O.C. No.: 4801 & 4802

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/22/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1300								
Depth: MID	Clear	7.88	0.448	14.25	1.1	9.40	226.2	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	

Depth 8"
PHOTO # 11 (0312)

1' IN 5 SEC
~2' WIDE
1½" DEEP

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

Sample ID No.: 135W3201
Sample Location: 135W32
Sampled By: MC
C.O.C. No.: 4806

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-24-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0840								
Depth: 4"	CLEAR	6.99	0.578	10.33	44	9.15	201.5	—
Method: DIRECT FILL								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	~~Yes~~
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	~~Yes~~
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	~~Yes~~
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	~~Yes~~
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	~~Yes~~
Selected Ion Monitoring - PAHs	4°C	(2) L Glass Amber	YES

NO

FLOW — 3 GPM
DUG OUT ON 10-23-03
PHOTO # 0326

Circle If Applicable
MS/MSD
Duplicate ID No.:

Signature(s):

DUPLICATE ID NO: ~~BFD~~ (F)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWJ0102
Sample Location: 13GWJ01
Sampled By: Goerdt
C.O.C. No.: 4825
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-23-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1320								
Method: Peristaltic	Clear	4.17	0.233	17.04	4.39	1.40	385.4	—

Date: 11-23-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 7.95								
One Casing Volume(gal/L) 6.17								
Start Purge (hrs): 1215								
End Purge (hrs): 1315								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 6.7								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[X]

17.95
7.95
10.00 (.163) = 1.63 gal = 6.17 L

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT01
DATE: 11-23-03
WEATHER: Cloudy 50°

Time (Elap.)	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1215	7.95	-	-	-	-	-	-	-	-	Start Purge
1225	8.47	1.3	1300	4.27	0.225	6.61	2.44	16.92	354.0	Clear
1235	8.60	2.5	1200	4.23	0.228	6.41	1.92	17.01	369.2	"
1245	8.63	3.7	1200	4.20	0.229	4.89	1.71	16.98	377.8	"
1255	8.65	4.7	1000	4.20	0.230	4.01	1.58	17.02	381.1	"
1305	8.65	5.7	1000	4.18	0.232	3.52	1.47	17.10	383.9	"
1315	8.65	6.7	1000	4.17	0.233	4.39	1.40	17.04	385.4	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0926 4298

Pump Intake Depth 129'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GW0T0202
Sample Location: 13GW0T02
Sampled By: Goerdt
C.O.C. No.: 4833
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-7-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0850								
Method: Peristaltic	Clear	5.25	1.230	10.43	6.62	5.75	157.9	—

Date: 12-6-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 29.50								
Static Water Level (WL): 20.05								
One Casing Volume(gal/L): 5.8								
Start Purge (hrs): 1210								
End Purge (hrs): 1345								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 19								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[]

Well was purged on 12/6/03.
Sampled on 12/7/03 @ 0850

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goardt
Field Analyst: Goardt
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT0202
Sample Location: 13GWT02
Duplicate: ☐
Blank: ☐

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Date: 12-7-03 Time: 0850 Method: Peristaltic	Clear	5.25	1.230	10.43	6.62	5.75	~~15~~ 8.0	152.9

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 4.0 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	4.0

Analysis Time: 0917

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: < 10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	< 10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 0929

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 40 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	40
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 0934

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 2.05 ppm

Analysis Time: 0942

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 0949

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goexdt
Field Analyst: Goexdt

Sample ID No.: 13GWT0202
Sample Location: 13GWT02
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):
Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L Concentration: 0.0 ppm
Program/Module: 610nm 93 Analysis Time: 0959 Filtered: ☐
Notes:

Nitrite (NO_2^--N):
Concentration: 0.003 ppm
Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L Analysis Time: 0922 Filtered: ☐
Program/Module: 62
Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):
Concentration: 5.4 ppm
Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L Analysis Time: 1007 Filtered: ☐
Program/Module: 525nm 41
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ~~☐~~ NA
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0302
Sample Location: 13MWT03
Sampled By: TR/FW
C.O.C. No.: 4820
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11/11/03 Time: 0925 Method: SAND	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	CLOUDY	9.39	0.487	18.00	328	4.45	+345	—

Date: 11-10-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): -								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 18.05								
Static Water Level (WL): 12.55								
One Casing Volume(gal/L): 3.4								
Start Purge (hrs): 1005								
End Purge (hrs): 1209								
Total Purge Time (min): 124								
Total Vol. Purged (gal/L): 10.9								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	Yes

Filtered Sample Collected Yes[] No[]

18.05 - 12.55 = 5.5 x 0.163 = 0.9 gal or 3.4L

Intake near bottom - Historically well draws down

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT03 ~~13GW0202~~ (TN)
DATE: 11/10/03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1005	12.55	–	–	–	–	–	–	–	–	Start Purge
1015	13.17	100	5.67	0.447	43.7	6.92	16.23	–	189	1000 CLEAR
1025	13.73	90	5.64	0.442	42.1	6.55	16.68	–	226	1900 "
1035	14.29	90	5.54	0.442	23.4	6.15	16.49	–	243	2800 "
1045	14.61	90	5.49	0.441	12.3	5.70	16.33	–	261	3700 "
1055	14.89	90	5.44	0.440	8.16	5.37	16.21	–	280	4600 "
1105	15.22	90	5.46	0.447	5.35	5.12	16.53	–	284	5500 "
1115	13.57	90	5.43	0.459	4.65	4.81	16.74	–	291	6400 "
1125	15.91	90	5.40	0.468	12.8	4.49	16.98	–	297	7300 "
11.35	16.25	90	5.18	0.480	54.9	3.73	17.55	–	315	8200 "
1145	16.60	90	5.04	0.494	43.3	3.12	17.86	–	338	9100 "
1155	16.95	90	5.16	0.485	112	3.97	18.01	–	346	10000 SLCLOUDY
1205	17.21	90	5.32	0.487	328	4.45	18.00	–	345	10900 CLOUDY
1209	DRY	—	—	–	—	—	–	–	–	DRY will sample 11/11

SIGNATURE(S): [signature]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: TR/FW
Field Analyst: TR/FW
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT0302
Sample Location: 13MWT03
Duplicate: ☐
Blank: ☐

Date: 11/11/03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 0925	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Cloudy	5.32	0.487	18.00	328	4.45	—	345

← 11/10 Purge Data

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 6 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	6

Analysis Time: 0947

Notes:

Alkalinity: FW

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 0955

Filtered: ☐

Notes: At 23ppm colorless ... No Green Color

Carbon Dioxide: FW

Equipment: Chemetrics Test Kit

Concentration: 50 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	50
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 0947

Notes:

Ferrous Iron (Fe^{2+}): TR

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.03 ppm

Analysis Time: 1019

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): TR

Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1002

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	136WT0302
Project No.:	9060	Sample Location:	134WT03
Sampled By:	FW / TR	Duplicate:	☐
Field Analyst:	FW / TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 | DR-8 90 | Range: 0 - 0.70 mg/L | Concentration: 0.06 ppm | TR

Program/Module: 610nm | 93 | Analysis Time: 1026 | Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.006 ppm | TR

Equipment: DR-850 | DR-8 50 | Range: 0 - 0.350 mg/L | Analysis Time: 1026 | Filtered: ☐

Program/Module: | 62

Standard Solution: ☐ | Results: _____ | Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.1 ppm | TR

Equipment: DR-850 | DR-8 50 | Range: 0 - 20.0 mg/L | Analysis Time: 1039 | Filtered: ☐

Program/Module: 525nm | 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0402
Sample Location: 13GWT04
Sampled By: GOEXD4
C.O.C. No.: 4825
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-23-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1044								
Method: Peristaltic	clear	5.24	0.208	16.45	6.85	4.14	243.6	—

Date: 11-23-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.80								
Static Water Level (WL): 14.93								
One Casing Volume(gal/L): 3.0	1.77							
Start Purge (hrs): 0942								
End Purge (hrs): 1042								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 5.9								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[X]

17.80
14.93
2.87 (0.163) = .469 gal = 1.77 L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: Swmu 13

WELL ID.: 13GWT04
DATE: 11-23-03
WEATHER: Cloudy 50°

Time (Hrs)	Water Level (ft below TOC)	Volume (Gallons)	Flowrate (mL/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0942	14.93	—	—	—	—	—	—	—	—	Start purge
0952	15.41	1.2	1200	5.71	0.244	31.0	8.52	16.26	166.0	clear
1002	15.45	2.2	1000	5.75	0.239	14.0	7.59	16.31	182.2	"
1012	15.48	3.2	1000	5.65	0.231	10.7	6.60	16.37	212.4	"
1022	15.48	4.1	900	5.50	0.218	9.05	5.37	16.45	232.6	"
1032	15.49	5.0	900	5.33	0.221	7.89	4.48	16.57	236.7	"
1037	15.49	5.45	450	5.26	0.226	8.35	4.18	16.50	241.3	"
1042	15.48	5.90	450	5.24	0.228	6.85	4.14	16.45	243.6	stop

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) NA
Turbidity Meter (S/N) 0920 4298

Pump Intake Depth 16.8'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0502
Sample Location: 13MWT05
Sampled By: T. Rojahn
C.O.C. No.: 4816
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-6-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1320								
Method: SAME	CLEAR	5.40	0.558	15.42	18.6	3.96	432	---

Date: 11/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 19.15								
Static Water Level (WL): 8.81								
One Casing Volume(gal/L): 6.4								
Start Purge (hrs): 0920								
End Purge (hrs): 1320								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 21.7								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	YES -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	NO

Filtered Sample Collected Yes[] No[]

19.15 - 8.81 = 10.34 x 0.163 = 1.7 gal or 6.4L
INTAK @ MID SCREEN

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Ty Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT05
DATE: 11/06/03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0920	8.81	–	–	–	–	–	–	–	–	Start PURGE
0930	9.60	120	5.21	0.619	23	4.86	14.58	–	347	1200 ml CLEAR
0940	10.18	80	5.16	0.622	10.8	3.88	14.57	–	371	2000 ml "
0950	10.68	80	5.13	0.618	11.5	3.87	14.21	–	384	2800 ml "
1000	11.28	90	5.13	0.617	12.6	3.69	14.64	–	392	3700 ml "
1010	11.76	90	5.12	0.614	18.2	3.53	14.90	–	400	4600 ml "
1020	12.23	90	5.07	0.615	23.4	3.29	15.02	–	401	5500 ml "
1030	12.68	90	5.02	0.615	26.2	2.81	15.13	–	402	6400 ml "
1040	12.95	90	4.99	0.609	20.4	2.87	15.03	–	410	7300 ml "
1050	13.26	90	4.96	0.602	17.7	2.92	14.89	–	416	8200 ml "
1100	13.58	90	5.02	0.612	18.0	3.18	15.35	–	410	9100 ml "
1110	13.85	90	5.10	0.626	19.2	3.40	15.63	–	402	10000 ml "
1120	14.31	90	5.10	0.624	13.3	3.37	15.61	–	409	10900 ml "
1130	14.65	90	5.10	0.624	10.9	3.35	15.60	–	406	11800 ml "
1140	15.02	90	5.10	0.622	7.60	3.32	15.58	–	421	12700 ml "
1150	15.38	90	5.16	0.622	8.13	3.26	15.63	–	421	13600 ml "
1200	15.64	90	5.21	0.619	8.78	3.23	15.62	–	422	14500 ml "
1210	15.85	90	5.25	0.613	10.35	3.16	15.42	–	422	15400 ml "
1220	16.10	90	5.30	0.608	16.3	3.24	15.36	–	422	16300 ml "
1230	16.20	90	5.34	0.602	23.4	3.30	15.31	–	422	17200 ml "
1240	16.35	90	5.35	0.594	19.4	3.32	15.49	–	422	18100 ml "
1250	16.48	90	5.37	0.585	19.3	3.42	15.54	–	424	19000 ml "
1300	16.65	90	5.40	0.577	19.1	3.58	15.47	–	425	19900 ml "
1310	16.81	90	5.40	0.565	18.8	3.77	15.45	–	429	20800 ml "
1320	16.91	90	5.40	0.558	18.6	3.96	15.42	–	432	21700 ml "
1320	—	–	–	–	–	–	–	–	–	Start Sampling

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. ROJANN
Field Analyst: T. ROJANN
Field Form Checked as per QA/QC Checklist (initials): TRR

Sample ID No.: 13GWT0502
Sample Location: 13MWT05
Duplicate: ☐
Blank: ☐

Date: 11-6-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1320	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	5.40	0.558	15.42	18.6	3.96	–	432

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 4 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	4

Analysis Time: 1326

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1336

Filtered: ☐

Notes: Colorless @ 27 but NO GREEN

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 33 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	33
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1348

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-820 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.11 ppm

Analysis Time: 1354

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1358

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. ROJAHN
Field Analyst: T. ROJAHN

Sample ID No.: 13GWT05
Sample Location: 13MWT05
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 26 Range: 0 - 0.70 mg/L
Program/Module: 610nm 93

Concentration: 0.09 ppm
Analysis Time: 1403 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L
Program/Module: 62
Standard Solution: ☐ Results: _____

Concentration: 0.012 ppm
Analysis Time: 1343 Filtered: ☐
Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Equipment: DR-850 DR-8 70 Range: 0 - 20.0 mg/L
Program/Module: 525nm 41

Concentration: 1.3 ppm
Analysis Time: 1411 Filtered: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0602
Sample Location: SWMU 13
Sampled By: T.R.
C.O.C. No.: 4837, 4836
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-07-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1300								
Method: Peristaltic	CLEAR	6.45	0.363	12.50	22	7.35	+180.4	—

Date: 12/6/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.55'								
Static Water Level (WL): 13.58'								
One Casing Volume(gal/L): 2.5								
Start Purge (hrs): 1510								
End Purge (hrs): 1628 — purged dry								
Total Purge Time (min): 78								
Total Vol. Purged (gal/L): 2.0								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	12/7 @ 1300 (1) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	12/9 @ 1730 (1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	12/10 @ 1800 (1) L HDPE	Yes - F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	12/11 @ 1615 (1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

Filtered Sample Collected Yes[] No[] Well Historically Dries out.

Well 13MWT06 wet dry @ 1628
Total vol. purged 2.0g
Collected samples WEEK DAYS & 1730 Hrs due to SECURITY restrictions INSIDE THE BLDG #165 BUFFER ZONE

12/7 Collected 500ml of Exp. Sample (TC)
12/8 " " " " " (JG)
12/9 " Total Metals (TC)
12/10 " Filtered Metals (JG)
12/11 " Nitrate, Nitrite & Ammonia (TR)

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT06
DATE: 12/6/03
WEATHER: Sunny, Breezy, 40°F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
(hrs.)	(ft. below TOC)	(gallons)	(mL/min)							
1510	13.85	0	100	6.26	0.489	230	5.23	15.00	73.8	Cloudy, No odor
1520	14.70		100	6.45	0.414	200	6.30	14.45	118.2	"
1530	15.26		<100	6.51	0.360	50	8.25	14.31	148.5	Clear
1540	15.80			6.47	0.342	33	10.13	14.13	162.0	"
1550	16.10			6.48	0.340	29	10.11	13.73	167.4	"
1600	16.50			6.50	0.346	26	10.08	13.73	172.3	"
1610	16.90			6.48	0.363	23	8.91	13.63	176.9	"
1620	17.11	2.0 gal		6.45	0.363	22	7.35	12.50	180.4	"
1630	—	—	—	—	—	—	—	—	—	DRY

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) Peristaltic #4000
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 16.75'

SIGNATURE(S): Scott Bud

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 136WT0702
Sample Location: 13MWT07
Sampled By: FW
C.O.C. No.: 4818
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-10-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1330								
Method: PERISTALTIC	CLEAR	3.90	1.054	18.45	3.01	1.32	383.6	—

Date: 11-10-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 4.63								
One Casing Volume(gal/L): 2.2								
Start Purge (hrs): 1120								
End Purge (hrs): 1330								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): 2.2								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	—
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	—

Filtered Sample Collected Yes[] No[X]
Intake mid screen

~~MS/MSD~~ Duplicate ID No.: 13FD1110301

Signature(s): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT07
DATE: 11-10-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1120	4.65									START
1130	5.63	85	4.12	0.971	10.0	3.56	16.48	–	330.9	
1140	6.24	↓	4.10	0.983	8.0	2.79	16.99	–	360.0	
1150	6.52	80	4.08	0.985	7.0	2.26	17.17	–	371.1	
1200	6.89		4.04	0.992	6.55	1.92	17.21	–	375.5	
1210	7.11		4.02	1.000	6.02	1.76	17.77	–	375.8	
1230	7.44		3.98	1.007	5.24	1.61	17.70	–	377.8	
1240	7.67		3.96	1.019	4.04	1.50	18.06	–	376.9	
1250	7.89	↓	3.95	1.031	4.49	1.42	18.41	–	376.4	
1300	8.05	75	3.93	1.046	3.69	1.38	18.78	–	378.8	
1307	8.13		3.92	1.049	4.70	1.35	18.66	–	380.7	
1316	8.19		3.90	1.052	3.89	1.35	18.61	–	382.7	
1323	8.26		3.90	1.054	3.38	1.32	18.54	–	383.1	
1330	8.31	↓	3.90	1.054	3.01	1.32	18.45		383.6	SAMPLE
1618										END

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0802
Sample Location: 13MWT08
Sampled By: S. GRIER
C.O.C. No.: 4826
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11/22/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1515								
Method: Peristaltic	Clear	5.00	0.076	15.18	36	6.44	266.7	—

Date: 11/22/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 2"			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 16.60								
Static Water Level (WL): 4.11								
One Casing Volume(gal/L):								
Start Purge (hrs): 1330								
End Purge (hrs): 1505								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 5.0								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	YES
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	YES

Filtered Sample Collected Yes[] No[]

MS/MSD	Duplicate ID No.:	Signature(s):
—	13FD11230301	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: 13 Swmu

WELL ID.: 13 MWT 08
DATE: 11/22/03
WEATHER: Cloudy, 68°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL)	Flowrate (mL/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1330	4.41	0	400	5.17	0.087	>1000	6.07	15.52	191.3	GREY - NO ODOR
1335	4.69	~~400~~	200	4.87	0.079	>1000	6.11	15.02	200.6	
1340	4.71		200	4.89	0.079	738	6.12	15.01	210.4	
1345	4.73		150	4.90	0.079	100	6.13	15.00	228.3	Clearing
1350	4.76		150	4.90	0.079	91	6.19	15.00	235.6	
1355	4.82		150	4.90	0.078	84	6.26	15.00	239.8	
1400	4.88		150	4.90	0.078	70	6.30	14.99	247.1	
1405	4.90		150	4.93	0.078	55	6.33	15.00	248.9	
1415	5.00		150	4.94	0.077	53	6.39	15.07	250.8	
1425	5.05		150	4.96	0.077	50	6.40	15.18	253.1	
1435	5.15		175	4.98	0.076	45	6.44	15.03	259.2	
1445	5.30		150	4.99	0.076	35	6.36	15.07	262.6	
1455	5.37		150	4.99	0.076	36	6.44	15.08	264.4	
1505	5.39	5 gal	150	5.00	0.077	36	6.44	15.23	266.7	
										Sample 13GWT0802 taken @ 1515

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 11.0'

SIGNATURE(S):

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: S. Grice
Field Analyst: T. Rojahn
Field Form Checked as per QA/QC Checklist (Initials): TC

Sample ID No.: 13GWT0802
Sample Location: 13MWT08
Duplicate: ☐
Blank: ☐

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Date: 11-22-03								
Time: Peristaltic	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: 1515	CLEAR	5.00	0.076	15.18	36	6.44	—	+266.7

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	5

Analysis Time: 1615

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1649

Filtered: ☑

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 45 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	45
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1626

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.21 ppm

Analysis Time: 1646

Filtered: ☑

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1704

SG

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT0802
Project No.:	N9060	Sample Location:	13MWT08
Sampled By:	S.G.	Duplicate:	☐
Field Analyst:	T.R.	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 | DR-8 90 | Range: 0 - 0.70 mg/L | Concentration: 0.00 ppm

Program/Module: 610nm | 93 | Analysis Time: 1659 | Filtered: ☑

Notes:

Nitrite (NO_2^--N):

Concentration: 0.001 ppm

Equipment: DR-850 | DR-8 50 | Range: 0 - 0.350 mg/L | Analysis Time: 1655 | Filtered: ☑

Program/Module: | 62

Standard Solution: ☐ | Results: _____ | Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.0 ppm

Equipment: DR-850 | DR-8 50 | Range: 0 - 20.0 mg/L | Analysis Time: 1705 | Filtered: ☑

Program/Module: 525nm | 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT090~~2~~3 (FR)
Sample Location: 13GWT09
Sampled By: JG
C.O.C. No.: 4828
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-4-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1018								
Method: Peristaltic	Clear	5.33	0.640	12.82	4.07	1.14	251.0	—

Date: 12-4-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.96								
Static Water Level (WL): 8.60								
One Casing Volume(gal/L): 8.86								
Start Purge (hrs): 0835								
End Purge (hrs): 1015								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 9.0								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[X]

MYA

22.96
8.60
14.36 (.163) = 2.34 gal = 8.86 L

MS/MSD

Duplicate ID No.: 13FD120403~~05~~01

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT090~~2~~ 3 (TR)
DATE: 12-4-03
WEATHER: Overcast 38°

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0835	8.60	–	–	–	–	–	–	–	–	Start purge
0845	8.95	0.9	900	5.43	0.588	1.15	1.37	11.78	298.8	clear
0855	9.02	1.8	900	5.47	0.580	1.37	1.27	11.87	225.7	"
0905	9.02	2.7	900	5.46	0.572	7.48	1.17	12.34	231.6	"
0915	9.05	3.6	900	5.43	0.577	9.70	1.13	12.01	236.5	"
0925	9.09	4.5	900	5.41	0.586	7.60	1.13	12.31	239.7	"
0935	9.12	5.4	900	5.41	0.592	5.60	1.11	12.19	240.0	"
0945	9.14	6.3	900	5.38	0.606	5.23	1.13	12.64	245.1	"
0955	9.17	7.2	900	5.38	0.624	4.66	1.11	12.77	246.5	"
1005	9.19	8.1	900	5.37	0.636	4.21	1.14	12.58	246.6	"
1015	9.20	9.0	900	5.32	0.640	4.07	1.14	12.82	251.0	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth ~18'

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

TC

Project Site Name: NSWC CRANE

Project No.: N9060 CTO279

Sampled By: Goerdt

Field Analyst: Goerdt

Field Form Checked as per QA/QC Checklist (initials): TC

Sample ID No.: 136WT090 3

Sample Location: 136WT09 M TC

Duplicate: ☐

Blank: ☐

Date: 12-4-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1018	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Clear	5.33	0.640	12.82	4.07	1.14	—	251.0

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 1.5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☒	1 to 12 ppm	K-7512	1.5

Analysis Time: 1040

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 0.0 ppm

Range Used:	Range	Method	Concentration ppm
☒	10 to 100 ppm	K-9810	0.0
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1110

Filtered: ☐

Notes: No color change

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 48 ppm

Range Used:	Range	Method	Concentration ppm
☒	10 to 100 ppm	K-1910	48
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1119

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.0 ppm

Analysis Time: 1128

Notes: colorless

Filtered: ☐

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1135

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

TK

Project Site Name: NSWC CRANE

Project No.: N9060 CTO 279

Sampled By: Goexdt

Field Analyst: Goexdt

Sample ID No.: 136WT090 3

Sample Location: 136WT09 M FZ

Duplicate: ☐

Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L Concentration: 0.01 ppm

Program/Module: 610nm 93 Analysis Time: 1147 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.023 ppm

Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L Analysis Time: 1048 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.4 ppm

Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L Analysis Time: 1157 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ~~☐~~ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1002
Sample Location: 13GWT10
Sampled By: Gorski / TR
C.O.C. No.: 4822
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-20-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1322								
Method: Peristaltic	Clear	4.74	.520	19.73	5.79	4.83	230.3	—

Date: 11-20-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 28.13								
Static Water Level (WL): 16.79								
One Casing Volume(gal/L): 7.0								
Start Purge (hrs): 0917								
End Purge (hrs): 1317								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 18.6								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	N/A
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	YES

Filtered Sample Collected Yes[] No[X]

28.13
16.79
11.34 (0.163) = 18.48 gal = 7.0 L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: Swmu 13

WELL ID.: 136WT1002
DATE: 11-20-03
WEATHER: Sun 50 F

Time (Hrs)	Water Level (ft. below TOC)	Volume (L)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0917	16.79	–	–	–	–	–	–	–	–	start purging
0927	18.40	1.2	120	4.31	0.460	11.1	1.37	14.99	253.3	clear
0937	18.98	2.0	80	4.26	0.464	5.72	0.76	15.12	263.9	"
0947	19.43	3.0	100	4.03	0.473	3.88	1.10	15.53	289.4	"
0957	19.79	3.7	70	3.90	0.479	5.28	1.53	15.49	336.1	"
1007	20.16	4.4	70	3.90	0.479	5.67	1.61	15.53	343.3	"
1017	20.51	5.1	70	3.99	0.478	4.36	1.52	15.66	329.7	"
1027	20.89	5.8	70	4.06	0.477	4.57	1.42	15.72	320.8	"
1037	21.22	6.5	70	4.15	0.480	7.07	1.33	16.07	306.8	"
1047	21.58	7.2	70	4.25	0.479	9.78	1.19	16.06	290.1	"
1057	21.93	7.9	70	4.35	0.477	37.2	1.13	16.09	277.4	jump in turb.
1107	22.22	8.6	70	4.43	0.476	60.2	0.90	16.03	267.7	slight cloudy
1117	22.53	9.3	70	4.45	0.481	102.6	0.76	16.24	262.3	"
1127	22.83	10.0	70	4.59	0.484	105.9	0.71	16.27	246.0	"
1137	23.14	10.7	70	4.67	0.486	340.0	0.80	16.31	228.8	cloudy
1147	23.44	11.55	85	4.76	0.487	447.0	0.87	16.26	215.4	"
1157	23.58	12.40	85	4.81	0.521	392	1.62	17.88	207.7	"
1207	23.58	13.25	85	4.87	0.531	117	2.89	19.09	205.8	"
1217	23.59	14.10	85	4.88	0.526	39.3	3.37	19.22	207.2	"
1227	23.59	14.95	85	4.87	0.517	11.9	3.72	18.95	211.6	TURB. MEAS. PRIOR TO FLOW THRU CELL
1237	23.59	15.80	85	4.84	0.516	22.8	4.14	19.05	215.8	
1247	23.59	16.65	85	4.81	0.519	16.5	4.23	19.46	218.9	CLOUDY

Water Quality Meter (S/N) 98P0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920 4298

Pump Intake Depth ~27' this well draws down

SIGNATURE(S):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT1002
DATE: 11-20-03
WEATHER: SUNNY 60°

Time (Hrs.)	Water Level (Ft. Below TOC)	Volume (Liters)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1257	23.59	17.50	85	4.77	0.521	13.5	4.48	19.69	223.3	CLEAR
1307	23.59	17.90	40	4.76	0.521	8.01	4.59	19.70	226.5	CLEAR
1317	23.59	18.60	70	4.74	0.520	5.79	4.83	19.73	230.3	~~Stop~~ purge

Water Quality Meter (S/N) 98P0478AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920-4298

Pump Intake Depth ~27'

SIGNATURE(S): [illegible]

PAGE ~~2~~ 3 OF ~~2~~ 3

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: JGaudt
Field Analyst: TROJAHN
Field Form Checked as per QA/QC Checklist (initials): JK

Sample ID No.: 13GWT10 02
Sample Location: 13MWT10
Duplicate: ☐
Blank: ☐

Date: 11-20-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1322	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Clear	4.74	0.520	19.73	5.79	4.83	—	+250.3

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 3.5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	3.5

Analysis Time: 1330

Notes: —

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1339

Filtered: ☐

Notes: — —

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 154 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	154
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1344

Notes: — —

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-850 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

High Limit

Concentration: >3.30 ppm

Analysis Time: 1350

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1400

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT1002
Project No.:	9060	Sample Location:	13GWT10
Sampled By:	JG	Duplicate:	☐
Field Analyst:	TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 90 Range: 0 - 0.70 mg/L Concentration: 0.05 ppm

Program/Module: 610nm 93 Analysis Time: 1410 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.003 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 1344 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 1.8 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L Analysis Time: 1414 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1102
Sample Location: 13MWT11
Sampled By: T. Rojahn
C.O.C. No.: 4822
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-20-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1035								
Method: Peristaltic	CLEAR	3.93	0.238	16.35	4.52	3.49	+355	—

Date: 11-20-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.75								
Static Water Level (WL): 8.45								
One Casing Volume(gal/L) 5.7								
Start Purge (hrs): 0930								
End Purge (hrs): 1050								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 7.65								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	NO

Filtered Sample Collected Yes[] No[X]

17.75 - 8.45 = 9.3 × 0.163 = 1.5 gal or 5.7L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT11
DATE: 11/20/03
WEATHER: Mostly Sunny & Low 40's

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0930	8.45	—	—	—	—	—	—	—	—	Start Purge
0940	8.78	1.00	100	3.88	0.229	41.5	6.77	15.11	299	CLEAR
0950	9.00	2.00	100	3.86	0.232	18.5	5.26	15.69	312	CLEAR
1000	9.14	2.950	95	3.86	0.227	8.57	4.22	15.70	324	CLEAR
1010	9.28	3.900	95	3.88	0.230	8.10	4.05	15.88	332	CLEAR
1020	9.39	4.850	95	3.90	0.233	7.85	3.92	16.09	340	CLEAR
1030	9.48	5.800	95	3.91	0.235	7.57	3.78	1621	347	CLEAR
1040	9.53	6.750	95	3.95	0.236	5.11	3.60	1629	353	CLEAR
1050	9.56	7.650	90	3.93	0.238	4.52	3.49	16.35	355	CLEAR
1055	—	—	—	—	—	—	—	—	—	Start Sampling

Water Quality Meter (S/N) 9981412 AA
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317-2402

Pump Intake Depth MID SCREEN ~12.75'

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: TK
Field Analyst: TK
Field Form Checked as per QA/QC Checklist (initials): TK

Sample ID No.: 13GWT1102
Sample Location: 13MWT11
Duplicate: ☐
Blank: ☐

Date: 11-20-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1055	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	3.93	0.238	16.35	4.52	3.49	—	+355

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 1.5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	1.5

Analysis Time: 1106

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1115

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 165 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	165
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1120

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 90 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

High Limit
Concentration: >3.30 ppm

Analysis Time: 1136

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1140

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT1102
Project No.:	9060	Sample Location:	13MWT11
Sampled By:	TR	Duplicate:	☐
Field Analyst:	TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 ~~5~~ Range: 0 - 0.70 mg/L Concentration: 0.01 ppm

Program/Module: 610nm 93 Analysis Time: 1147 Filtered: ☐

Notes:

Nitrite (NO_2^--N): Concentration: 0.009 ppm

Equipment: DR-850 DR-8 ~~5~~ Range: 0 - 0.350 mg/L Analysis Time: 1122 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}): Concentration: 0.3 ppm

Equipment: DR-850 DR-8 ~~9~~ Range: 0 - 20.0 mg/L Analysis Time: 1154 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ~~☐~~ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13 GWT 1202 ~~13GWT1202~~
Sample Location: SWMU 13
Sampled By: Goerdt
C.O.C. No.: 4821
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-18-03 Time: 1408 Method: Peristaltic	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	Slight Brown	4.87	0.131	16.37	29.1	2.02	305.9	—

Date: 11-18-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.40								
Static Water Level (WL): 9.51								
One Casing Volume(gal/L): 7.8								
Start Purge (hrs): 1002								
End Purge (hrs): 1402								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 21.4								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

Filtered Sample Collected Yes[] No[X]

Turbidity checked prior to filling total metals bottle. Reading of 1.86 (NTU)

22.40 gal
- 9.51 gal
12.59(.163) = 2.05 gal = 7.8 L

MS/MSD

Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MW T12
DATE: 11-18-03
WEATHER: 55° Rain

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0952	9.81	—	—	—	—	—	—	—	—	Start Purge
1002	11.59	1.2	120	4.85	0.135	9.50	1.52	16.20	237	Clear
1012	12.49	2.1	90	4.80	0.126	8.85	1.03	16.19	251.2	"
1022	13.10	3.0	90	4.79	0.125	5.13	1.05	16.21	256.4	"
1032	13.52	3.9	90	4.80	0.124	2.82	1.43	16.20	267.5	"
1042	13.90	4.8	90	4.79	0.123	6.99	1.65	16.19	277.0	"
1052	14.52	5.7	90	4.75	0.125	11.8	1.63	16.19	286.9	" pump off
1102	14.50	6.6	90	4.70	0.129	16.2	1.55	16.17	285.9	"
1112	14.78	7.3	70	4.69	0.133	17.9	1.41	16.10	285.2	" pump off short time
1122	15.10	8.1	80	4.68	0.138	15.1	1.35	16.17	291.5	"
1132	15.22	8.9	80	4.69	0.136	13.1	1.37	15.94	295.0	"
1142	14.97	9.7	80	4.70	0.136	12.8	1.47	15.86	298.6	"
1152	15.12	10.4	80	4.70	0.137	12.6	1.68	15.85	300.3	"
1202	15.48	11.4	80	4.70	0.140	13.2	1.23	16.11	299.1	"
1212	15.86	12.2	80	4.70	0.142	14.3	1.18	16.20	300.8	"
1222	16.19	13.0	80	4.72	0.141	16.7	1.19	16.22	305.3	"
1232	16.54	13.8	80	4.71	0.143	15.3	1.47	16.30	305.5	"
1242	16.84	14.6	80	4.71	0.144	27.5	1.39	16.33	309.3	"
1252	17.18	15.4	80	4.72	0.142	28.3	1.34	16.37	312.4	"
1302	17.49	16.2	80	4.73	0.138	27.2	1.45	16.39	313.4	"
1312	17.82	17.0	80	4.76	0.132	16.9	1.78	16.37	315.0	"
1322	18.14	17.8	80	4.77	0.130	19.8	1.95	16.39	318.9	"

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3317-2402

Pump Intake Depth ~1' off bottom
Well historically draws down

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT12
DATE: 11-18-03
WEATHER: 55° Rain

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (gal.)	Flowrate (mL/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1332	18.47	18.7	90	4.77	0.129	27.4	2.03	16.39	322.0	slight cloudiness
1342	18.85	19.6	90	4.79	0.129	41.7	2.13	16.39	323.9	cloudy
1352	19.07	20.5	90	4.80	0.129	37.2	2.17	16.37	321.2	"
1402	19.47	21.4	90	4.87	0.131	29.1	2.02	16.37	305.4	end purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3317-2402

Pump Intake Depth ~1' off bottom

SIGNATURE(S):

PAGE ~~2~~ 3 OF ~~2~~ 3

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE

Project No.: 9060

Sampled By: J.Goerdt

Field Analyst: T.Roland

Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13MWT12 TR

Sample Location: 13GWT1202

Duplicate: ☐

Blank: ☐

1.86 prior to sampling Total Metals

Date: 11/18/03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1408	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	4.87	0.131	16.37	29.1	2.02	—	+305.9

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 2 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	2

Analysis Time: 1430

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	—
☐	100 to 1000 ppm	K-9820	—

Analysis Time: 1439

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 135 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	135
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1446

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.10 ppm

Analysis Time: 1455

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1457

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: JG
Field Analyst: TR

Sample ID No.: 13GWT1202
Sample Location: 13MWT12
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 90 Range: 0 - 0.70 mg/L
Program/Module: 610nm 93
Concentration: 0.01 ppm
Analysis Time: 1509
Filtered: ☐
Notes:

Nitrite (NO_2^--N):

Concentration: 0.000 ppm
Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L
Analysis Time: 1441
Filtered: ☐
Program/Module: 62
Standard Solution: ☐ Results: _____
Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):

Concentration: 0.4 ppm
Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L
Analysis Time: 1514
Filtered: ☐
Program/Module: 525nm 41
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ~~☐~~ NA
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GW1302
Sample Location: 13GW13
Sampled By: Goard
C.O.C. No.: 4827
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-25-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1150								
Method: Peristaltic	Clear	3.56	0.113	12.33	0.38	3.26	385.1	—

Date: 11-25-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.44								
Static Water Level (WL): 4.99								
One Casing Volume(gal/L): 10.46								
Start Purge (hrs): 1016								
End Purge (hrs): 1146								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 10.9								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[X]

21.44
4.99
16.45(.163) = 2.76 gal = 10.46 L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT13
DATE: 11-25-03
WEATHER: Partly cloudy 35°

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1016	4.49	–	–	–	–	–	–	–	–	Start purge
1026	4.50	1.3	1300	4.59	0.140	9.20	3.28	12.20	198.8	Clear
1036	4.51	2.5	1200	3.90	0.104	5.38	3.65	12.19	261.4	"
1046	4.50	3.7	1200	3.75	0.104	3.17	3.59	11.99	297.8	"
1056	4.51	4.9	1200	3.64	0.106	3.10	3.54	12.99	332.7	"
1106	4.50	6.1	1200	3.61	0.109	1.05	3.40	12.85	350.1	"
1116	4.50	7.3	1200	3.35	0.111	1.14	3.39	12.51	365.5	"
1126	4.50	8.5	1200	3.57	0.111	1.25	3.35	12.69	380.8	"
1136	4.50	9.7	1200	3.60	0.112	0.50	3.31	12.22	382.2	"
1146	4.50	10.9	1200	3.56	0.113	0.38	3.26	12.33	385.1	Stop purge

Water Quality Meter (S/N)
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth ~16.4'

SIGNATURE(S): [signature]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: J. Goerdt
Field Analyst: T. Rojahn
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT1302
Sample Location: 13MWT13
Duplicate: ☐
Blank: ☐

Date: 11-25-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1150	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Clear	3.56	0.113	12.33	0.38	3.26	—	+385.1

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI
Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 11 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	11

Analysis Time: 1654 (SG)

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm (SG)

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1658

Filtered: ☐

Notes: Dark Pink @

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 120 ppm TR

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	120
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1659

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 9c Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.03 ppm (TR)

Analysis Time: 1701

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1703

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT1302
Project No.:	N9060	Sample Location:	13MWT13
Sampled By:	J.G.	Duplicate:	☐
Field Analyst:	TIR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 90 Range: 0 - 0.70 mg/L Concentration: 0.00 ppm

Program/Module: 610nm 93 Analysis Time: 1717 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.000 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 1709 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.5 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L Analysis Time: 1719 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13 GWT 1402
Sample Location: 13 MWT 14
Sampled By: S. GRIER
C.O.C. No.: 4825
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11/24/03 Time: 1115 Method: Peristaltic pump	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	Clear	5.48	0.623	10.77	0.0	0.52	100.5	—

Date: 11/24/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.60								
Static Water Level (WL): 14.67								
One Casing Volume (gal/L): 1.78								
Start Purge (hrs): 0935								
End Purge (hrs): 1105								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 2.0								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes No

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13 MWT 14
DATE: 11/24/03
WEATHER: Cloudy, Snow Flurries, 30°F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0935	14.67	~~100~~ 0	100	5.57	0.986	24	1.15	11.90	64.8	Clear, No odor
0945	14.90	–	80	5.52	0.906	20	1.09	11.95	63.9	"
0955	14.92	.65	80	5.47	0.791	13	0.89	10.57	72.1	"
1005	14.93	–	–	5.46	0.796	8.5	0.81	11.04	85.7	"
1015	14.93	1.0	–	5.50	0.703	6.0	0.67	11.94	89.0	"
1025	14.93	–	–	5.50	0.670	3.0	0.56	11.38	93.2	"
1035	14.93	–	–	5.46	0.628	1.2	0.54	10.70	96.6	"
1045	14.94	1.60	–	5.48	0.623	0.0	0.52	10.81	98.0	"
1055	14.94	–	–	5.48	0.624	0.0	0.51	10.78	99.6	"
1105	14.94	2.0	–	5.48	0.623	0.0	0.52	10.77	100.5	"

Water Quality Meter (S/N) 028014/
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 20.00

SIGNATURE(S): S. Gruz

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1502
Sample Location: 13MWT15
Sampled By: T. Keegan
C.O.C. No.: 4827
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-25-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1347								
Method: SAME	CLEAR	3.98	0.340	12.28	45.4	7.79	+322	—

Date: 11-25-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.87								
Static Water Level (WL): 15.62								
One Casing Volume(gal/L): 7.6								
Start Purge (hrs): 0945								
End Purge (hrs): 1345								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 18								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	YES -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	3 x (2) 40ml Vials	YES

Filtered Sample Collected Yes[] No[]

27.87 - 15.63 = 12.24 X .163 = 2 gal or 7.6 L

(TOC only)

MS/MSD YES

Duplicate ID No.: 13FD11250301

Signature(s): Ty Keegan

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT15
DATE: 11-25-03
WEATHER: Partly Cloudy Temp 32° (AM)

Time (Hrs)	Water Level (Ft. Below TOC)	Volume (Liters)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0945	15.62	–	–	–	–	–	–	–	–	Start Purge
0955	16.53	0.850	85	4.77	0.576	34.5	3.30	10.79	258	CLEAR
1005	17.00	1.700	85	4.75	0.589	16.7	3.16	11.52	261	CLEAR
1015	17.36	2.55	85	4.70	0.587	15.5	2.85	11.92	264	CLEAR
1025	17.46	3.40	85	4.65	0.565	12.7	2.48	10.97	260	CLEAR
1035	17.55	4.25	85	4.65	0.544	24.0	2.71	10.90	261	CLEAR
1045	17.62	4.95	70	4.59	0.524	29.1	3.27	10.81	269	CLEAR
1055	17.68	5.65	70	4.38	0.405	63.8	3.86	10.84	283	V. Sl Cloudy
1105	17.73	6.35	70	4.29	0.450	95.6	4.70	10.89	296	Sl. Cloudy
1115	17.76	7.05	70	4.29	0.441	94.8	5.01	11.23	299	Sl. Cloudy
1125	17.79	7.75	70	4.29	0.438	87.6	5.19	11.45	304	Sl. Cloudy
1135	17.88	8.45	70	4.19	0.417	86.9	5.62	11.65	311	Sl. Cloudy
1145	17.92	9.15	70	4.15	0.402	77.2	5.92	11.70	311	V. Sl. Cloudy
1155	17.95	9.85	70	4.12	0.394	75.0	6.08	11.34	313	V. Sl. Cloudy
1205	18.01	10.55	70	4.10	0.393	84.0	6.09	11.96	313	Sl. Cloudy
1215	18.10	11.75	70	4.09	0.384	81.2	6.26	12.36	313	Sl. Cloudy
1225	18.16	12.45	70	4.08	0.372	68.0	6.73	12.44	316	V. Sl. Cloudy
1235	18.24	13.15	70	4.05	0.368	74.8	6.75	12.22	317	V. Sl. Cloudy
1245	18.20	1385	70	4.06	0.372	65.0	6.46	11.98	316	V. Sl. Cloudy
1255	18.19	14.55	70	4.10	0.367	68.3	6.66	11.95	312	V. Sl. Cloudy
1305	18.19	15.25	70	4.05	0.360	61.7	7.01	12.13	312	V. Sl. Cloudy
1315	18.20	15.95	70	4.03	0.359	63.2	7.06	12.50	314	V. Sl. Cloudy

Water Quality Meter (S/N) 998 1412 AA
Control Box Type (S/N) NA
Turbidity Meter (S/N) 0920 4298

Pump Intake Depth MID SCREEN ~ 22.4'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MKIT1502
DATE: 11/25/03
WEATHER: Mostly Cloudy (Temp 30's) PM

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1325	18.20	16.65	70	4.02	.358	65.1	7.11	12.99	316	V. Sl. Cloudy
1335	18.22	17.35	70	4.00	.347	51.8	7.55	12.52	320	CLEAR
1345	18.23	18.05	70	3.98	.340	45.4	7.79	12.28	322	CLEAR
1347	—	—	—	—	—	—	—	—	—	Start Sampling

Water Quality Meter (S/N) SEE Page 2 of 3
Control Box Type (S/N)
Turbidity Meter (S/N)

Pump Intake Depth ~22.9'

SIGNATURE(S): [signature]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. Rolahan
Field Analyst: T.A.
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT1502
Sample Location: 13MWT15
Duplicate: ☐
Blank: ☐

Date: 11-25-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1347	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	3.98	0.390	12.28	45.4	7.79	–	+322

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI
Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.07 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	0.07
☑	1 to 12 ppm	K-7512	

Analysis Time: 1356

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1400

Filtered: ☐

Notes: Sol. Bright red @ start

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 137 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	137
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1406

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: >3.30 ppm

Analysis Time: 1415

Notes: Limit

Filtered: ☐

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1418

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT1502
Project No.:	N9060	Sample Location:	13MWT15
Sampled By:	T.R.	Duplicate:	☐
Field Analyst:	TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 50 Range: 0 - 0.70 mg/L Concentration: 0.14 ppm

Program/Module: 610nm 93 Analysis Time: 1432 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.001 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 1418 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.9 ppm

Equipment: DR-850 DR-8 90 Range: 0 - 20.0 mg/L Analysis Time: 1436 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1602
Sample Location: 13GWT16
Sampled By: Gossett
C.O.C. No.: 4822
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-20-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1537								
Method: Peristaltic	Clear	6.13	0.402	18.83	8.49	3.87	237.8	—

Date: 11-20-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 17.31								
Static Water Level (WL): 10.40								
One Casing Volume(gal/L): 4.26								
Start Purge (hrs): 1404								
End Purge (hrs): 1534								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 8.2								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	NO

Filtered Sample Collected Yes[] No[X]

17.31
10.40
6.91 (.163) = 1.13 gal = 4.26 L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT16
DATE: 11-20-03
WEATHER: Sun 65°

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (gal.)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1404	10.40	—	—	—	—	—	—	—	—	Start purging
1414	10.78	1.2	120	6.25	0.505	8.30	3.95	18.23	182.6	Clear
1424	11.09	2.0	80	6.19	0.485	4.76	4.17	18.06	209.7	"
1434	11.45	2.8	80	6.01	0.400	1.70	4.83	18.19	278.9	"
1444	11.81	3.7	90	6.00	0.397	0.89	4.84	18.01	278.6	"
1454	12.19	4.6	90	6.04	0.402	0.68	4.41	17.89	258.8	"
1504	12.46	5.5	90	6.06	0.411	0.59	3.92	17.95	253.3	"
1514	12.60	6.4	90	6.05	0.397	6.21	3.59	18.45	248.0	"
1524	12.63	7.3	90	6.06	0.407	6.73	4.08	19.05	245.0	"
1534	12.79	8.2	90	6.13	0.402	8.49	3.87	18.83	237.8	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920 4298

Pump Intake Depth ~14' MID water col.

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1702
Sample Location: 13MWT17
Sampled By: T. ROUHAN
C.O.C. No.: 4816
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-05-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1047								
Method: SAME	CLEAR	5.38	0.153	15.97	3.74	0.84	338	—

Date: 11-5-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.30								
Static Water Level (WL): 10.83								
One Casing Volume(gal/L): 5.8								
Start Purge (hrs): 0945								
End Purge (hrs): 1045								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 6								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

Filtered Sample Collected Yes[] No[]

Pump Intake MID SCREEN

20.3 - 10.83 = 9.47 X 0.163 = 1.5 gal or 5.8L

MS/MSD	Duplicate ID No.:	Signature(s):
—	13FD11050301	Tony Rouhan

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT17
DATE: 11-5-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments	
0945	10.83	–	–	–	–	–	–	NA	–	0ml	CLEAR
0955	10.84	100	5.47	0.162	18.3	1.29	15.93	"	282	1000	"
1005	10.84	100	5.41	0.157	14.5	0.98	15.26	"	307	2000	"
1015	10.87	100	5.41	0.156	5.42	1.05	15.67	"	326	3000	"
1025	10.87	100	5.42	0.156	4.09	0.93	15.90	"	338	4000	"
1035	10.87	100	5.40	0.154	4.14	0.86	16.03	"	334	5000	"
1045	10.87	100	5.38	0.153	3.74	0.84	15.97	"	338	6000	"
1047										Samples Taken	

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. ROJAHN
Field Analyst: T. ROJAHN
Field Form Checked as per QA/QC Checklist (initials): TRL

Sample ID No.: 13MWT1702
Sample Location: 13MWT17
Duplicate: ☑
Blank: ☐

Date: 11-05-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1047	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: peristaltic	CLEAR	5.38	0.153	15.97	3.74	0.84	—	338

ORP (Eh) (+/- mv)

Electrode Make & Model: VSL

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.9/0.9 ppm

Analysis Time: 1050/1052

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	0.9 0.9
☑	1 to 12 ppm	K-7512	>1

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10/<10 ppm

Analysis Time: 1100/1105

Filtered: ☐

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10/<10
☑	50 to 500 ppm	K-9815	
☑	100 to 1000 ppm	K-9820	

Notes: Color less ~45-48 but no green color

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 170/180 ppm

Analysis Time: 1110/1115

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	170/180
☐	250 to 2500 ppm	K-1925	

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 (DR-850) Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.06/0.07 ppm

Analysis Time: 1137/1143

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C (HS-C) Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1144

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. Rosanna
Field Analyst: T. Rosanna

Sample ID No.: 13GWT1702
Sample Location: 13MWT17
Duplicate: ☑
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 50 Range: 0 - 0.70 mg/L
Program/Module: 610nm 93

Concentration: 0.02/0.00 ppm
Analysis Time: 1155/1204 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Equipment: DR-850 DR-8 90 Range: 0 - 0.350 mg/L
Program/Module: 62

Concentration: 0.006/0.006 ppm
Analysis Time: 1210/1228 Filtered: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L
Program/Module: 525nm 41

Concentration: 0.0/0.0 ppm
Analysis Time: 1227/1235 Filtered: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA
Title block on 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1802
Sample Location: 13GWT18
Sampled By: GOEXA
C.O.C. No.: 4834
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-7-03 Time: 1538 Method: Peristaltic	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
	Clear	4.26	0.351	9.78	40.2	4.61	422.2	—

Date: 12-7-03 Method: Peristaltic	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
	16.45	4.26	0.351	9.78	6.71	4.61	—	-
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2"ϕ PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 33.27								
Static Water Level (WL): 20.23								
One Casing Volume(gal/L): 8.01								
Start Purge (hrs): 1155								
End Purge (hrs): 1535								
Total Purge Time (min): ~~1538~~ 220								
Total Vol. Purged (gal/L): 1645								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

Filtered Sample Collected Yes[X] No[]

Turbidity checked prior to metals and it was 40 NTU's. Filtered sample taken.

33.27
20.23
13.04 (.163) = 2.13 gal = 8.01 L

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GW18
DATE: 12-7-03
WEATHER: Sun 39° F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1155	20.23	—	—	—	—	—	—	—	—	Start purge
1205	21.99	1.20	1200	4.75	0.320	18.9	2.17	12.26	258.1	clear
1215	23.49	2.15	950	4.79	0.285	4.64	1.19	11.74	282.9	"
1225	23.89	3.05	900	4.79	0.269	5.83	1.48	10.63	305.1	"
1235	24.20	3.95	900	4.76	0.281	38.6	1.52	10.57	314.8	"
1245	24.97	4.85	600	4.67	0.289	40.7	1.28	10.10	327.8	"
1255	25.85	5.85	700	4.68	0.298	42.5	1.13	10.70	336.9	"
1305	25.18	6.45	700	4.57	0.322	69.6	0.97	10.80	346.4	slightly cloudy
1315	25.39	6.65	700	4.50	0.339	84.1	0.95	10.97	355.5	"
1325	25.65	7.35	700	4.37	0.363	83.6	0.95	11.09	365.0	"
1335	25.89	8.05	700	4.34	0.368	88.1	0.83	11.02	367.9	
1345	26.19	8.75	700	4.28	0.395	150	0.85	12.18	368.4	cloudy
1355	26.45	9.45	700	4.22	0.413	174.	0.85	12.04	371.5	cloudy
1405	27.10	10.15	700	4.25	0.418	186.0	0.83	11.73	373.6	cloudy
1415	27.18	10.85	700	4.26	0.410	120	0.95	11.55	374.4	"
1425	27.26	11.55	700	4.28	0.391	95.4	1.07	10.63	375.8	"
1435	27.39	12.25	700	4.28	0.378	55.5	1.98	10.17	376.9	"
1445	27.39	12.95	700	4.26	0.369	22.7	2.18	10.05	382.7	"
1455	27.38	13.65	700	4.26	0.358	17.5	3.22	9.51	397.4	clear
1505	27.38	14.35	700	4.26	0.357	12.7	3.71	9.63	405.2	"
1515	27.38	15.05	700	4.26	0.354	9.66	4.31	9.83	416.1	"
1525	27.38	15.75	700	4.26	0.354	8.72	4.36	9.85	417.5	"

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) —
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth 28'

SIGNATURE(S):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: Swmu 13

WELL ID.: 13GWT-0002 18 gw
DATE: 12-7-03
WEATHER: Sun 39° F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1535	27.38	16.45	700	4.26	0.351	6.71	4.61	9.78	422.2	Clear and Stopping

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth 28'

SIGNATURE(S):

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N 9060 CTO 279
Sampled By: Gordt
Field Analyst: Gordt
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GW71802
Sample Location: 13GWT18 M (R)
Duplicate: ☐
Blank: ☐

Date: 12-7-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1538	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Clear	4.26	0.39	9.78	40.2	4.61	—	422.2

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 5.5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	5.5

Analysis Time: 1557

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: < 10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	< 10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1602

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 45 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	45
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1609

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8__ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.33 ppm

Analysis Time: 1619

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1624

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goerdt
Field Analyst: Goerdt

Sample ID No.: 13GWT18 02
Sample Location: 13GWT18 M
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):
Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L Concentration: 0.07 ppm
Program/Module: 610nm 93 Analysis Time: 1637 Filtered: ☐
Notes:

Nitrite (NO_2^--N):
Concentration: 0.0 ppm
Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L Analysis Time: 1604 Filtered: ☐
Program/Module: 62
Standard Solution: ☐ Results: 0.0 Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):
Concentration: 1.4 ppm
Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L Analysis Time: 1642 Filtered: ☐
Program/Module: 525nm 41
Notes:

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA
Title block on 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

*MNA taken prior to adjusting tubing in well which caused turbidity to rise. MNA was taken w/ a 6.62 NTU turbidity, therefore not filtered. RD. 12/7/03

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU 13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1902 ~~13GWT0502~~
Sample Location: 13MWT19
Sampled By: MGC
C.O.C. No.: 4815
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-28-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1555								
Method: PERISTALTIC	CLEAR	4.87	1.210	14.98	5.5	34.37	209.6	--

Date: 10-28-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.05								
Static Water Level (WL): 11.96								
One Casing Volume(gal/L): 6.22								
Start Purge (hrs): 1410								
End Purge (hrs): 1550								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 10								

Analysis	Preservative	Container Requirements	Collected
Volatiles SW-846 8260B	4°C/HCl	(3) 40ml Vails	~~Yes~~ No
Volatiles SW-846 8015B	4°C/HCl	(3) 40ml Vails	~~Yes~~ No
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia	4°C/H_2SO_4	(1) L HDPE	Yes
Sulfate & Chloride	4°C	(1) L HDPE	~~Yes~~ No
Methane, Ethane &Ethene	4°C	(2) 40ml Vails	
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	

Filtered Sample Collected Yes[] No[✓]

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13 MW J19
DATE: 10-28-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1410	11.96	100	6.18	1.140	11	37.66	14.70	–	-10.9	0 CLEAR
1420	12.59	100	6.00	1.092	2.8	39.04	14.69	–	1.6	1000
1430	12.59	100	5.82	1.111	3.0	38.38	14.32	–	41.3	2000
1440	12.75	100	5.64	1.140	1.7	39.56	14.40	–	62.2	3000
1450	13.06	100	5.25	1.175	3.2	39.57	14.69	–	134.6	4000
1500	13.10	100	6.20	1.178	3.8	38.84	14.70	–	138.9	5000
1510	13.22	100	5.03	1.192	5.3	38.95	14.81	–	146.5	6000
1520	13.32	100	4.92	1.216	5.8	39.30	14.97	–	170.3	7000
1530	13.47	100	4.86	1.216	5.4	36.80	14.84	–	191.2	8000
1540	13.58	100	4.87	1.213	5.4	34.86	14.76	–	201.2	9000
1550	13.109	100	4.87	1.210	5.5	34.37	14.98	–	209.6	10000

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2003
Sample Location: 13MWT20
Sampled By: Gorski
C.O.C. No.: 4821
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 11-19-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1235								
Method: Peristaltic	Clear	3.43	1.30	15.90	6.91	0.76	376.2	—

Date: 11-19-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.85								
Static Water Level (WL): 4.40								
One Casing Volume(gal/L): 11.39								
Start Purge (hrs): 0828								
End Purge (hrs): 1228								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 29.6								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

Filtered Sample Collected Yes[] No[X]

22.85
4.40
18.45 (.163) = 3.01 g = 11.39 L

Turbidity just prior to total metals was 5.04 NTU.

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MW T20
DATE: 11-19-03
WEATHER: Sunny 55° F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (liters)	Flowrate (ml/min)	pH (Units)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0828	4.40	—	—	—	—	—	—	—	—	Start purge
0838	5.41	1.1	110	3.93	1.31	18.0	0.98	13.47	309.2	clear
0848	6.12	2.2	110	3.88	1.24	9.71	0.63	13.79	303.6	"
0858	6.69	3.5	120	3.57	1.20	4.95	0.52	13.99	355.9	"
0908	7.09	4.6	110	3.34	1.22	9.40	0.50	14.14	392.5	"
0918	7.34	5.6	100	3.28	1.21	9.72	0.56	14.19	406.6	"
0928	7.62	6.6	100	3.30	1.23	7.85	0.71	14.41	405.2	"
0938	7.85	7.6	100	3.33	1.25	13.3	0.82	14.47	400.0	"
0948	8.10	8.6	100	3.34	1.26	15.9	0.76	14.74	397.8	"
0958	8.31	9.6	100	3.36	1.23	29.7	0.77	14.75	394.7	"
1008	8.51	10.6	100	3.36	1.25	17.5	0.76	14.78	394.1	"
1018	8.73	11.6	100	3.36	1.25	18.5	0.79	15.01	393.8	"
1028	8.91	12.6	100	3.35	1.25	15.6	0.81	15.19	394.5	"
1038	9.11	13.6	100	3.34	1.26	18.8	0.81	15.33	396.6	"
1048	9.31	14.6	100	3.36	1.25	12.2	0.78	15.26	396.7	"
1058	9.47	15.6	100	3.38	1.25	10.7	0.78	15.39	392.9	"
1108	9.67	16.6	100	3.39	1.25	11.0	0.77	15.43	390.4	"
1118	9.91	17.6	100	3.41	1.26	10.0	0.77	15.49	387.4	"
1128	10.09	18.6	100	3.40	1.26	9.82	0.78	15.46	385.9	"
1138	10.31	19.6	100	3.40	1.26	9.66	0.78	15.47	386.4	"
1148	10.51	20.6	100	3.41	1.28	11.7	0.79	15.53	385.7	"
1158	10.52	21.6	100	3.44	1.29	9.71	0.77	15.56	381.7	"

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920-4298

Pump Intake Depth MID SCREEN

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT20
DATE: 11-19-03
WEATHER: Sun 55° F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (gal.)	Flowrate (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1208	10.56	22.6	100	3.45	1.28	7.66	0.76	15.56	378.0	Clear
1218	10.60	23.6	100	3.45	1.30	7.24	0.77	15.83	375.9	"
1228	10.65	24.6	100	3.43	1.30	6.91	0.76	15.90	376.2	Stop purge

Water Quality Meter (S/N) 98P0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920-4298

Pump Intake Depth Mid Screen

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: J Goerdt
Field Analyst: TR
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT2003
Sample Location: 13MWT2a
Duplicate: ☐
Blank: ☐

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Date: 11-19-03 Time: 1235 Method: Peristaltic	CLEAR	3.43	130	15.90	6.91	0.76	–	+376.2

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.02 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	0.02
☑	1 to 12 ppm	K-7512	<1

Analysis Time: 1322

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1329

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 400 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	400
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1349

Notes:

Ferrous Iron (Fe^{2+}):

>3.30 ppm (Limit)

Equipment: DR-850 DR-850 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: ___ ppm

Analysis Time: 1419

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: ___

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1418

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT2003
Project No.:	N9060	Sample Location:	13MWT20
Sampled By:	J.G.	Duplicate:	☐
Field Analyst:	T.R.	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 90 Range: 0 - 0.70 mg/L Concentration: 0.03 ppm

Program/Module: 610nm 93 Analysis Time: 1409 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.000 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 1340 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: ____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 8.3 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L Analysis Time: 1429 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2102
Sample Location: 13MWT21
Sampled By: FCW
C.O.C. No.: 4816
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-5-03	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 0950	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(mV)	NA
Method: LOW FLOW	CLEAR	5.59	0.185	15.17	2.61	2.09	247.2	—

PURGE DATA

Date: 11-5-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.76								
Static Water Level (WL): 9.64								
One Casing Volume(gal/L): 1.3								
Start Purge (hrs): 0825								
End Purge (hrs): 0950								
Total Purge Time (min): 85								
Total Vol. Purged (gal/L): 2.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	—
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	—

OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[] No[X]
Intake MIO SCALED

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT21
DATE: 11-3-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0825	9.64									START
0835	9.90	100	5.63	0.227	37	2.73	16.10	–	218.9	
0845	10.00	110	5.64	0.202	18.9	2.29	15.91	–	208.8	
0855	10.08	↓	5.68	0.203	13.6	2.24	15.94	–	208.0	
0905	10.13		5.72	0.208	10.4	2.28	15.87	–	211.2	
0915	10.12	100	5.69	0.206	8.07	2.25	15.63	–	222.8	
0925	10.14		5.69	0.203	6.04	2.22	15.71	–	223.3	
0935	10.16		5.62	0.198	4.54	2.10	15.50	–	236.2	
0940	10.16		5.58	0.196	4.09	2.13	15.27	–	245.3	
0945	10.16		5.58	0.195	4.26	2.03	15.13	–	247.4	
0950	10.16	↓	5.59	0.195	2.61	2.09	15.17	–	247.2	SAMPLE
1400										END

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: F. WUOKWICH
Field Analyst: T. ROYAHN / FW
Field Form Checked as per QA/QC Checklist (initials): TLL

Sample ID No.: 13GWT2102
Sample Location: 13MWT21
Duplicate: ☐
Blank: ☐
END SAMPLING ON 11/5 @ 1400 HRS

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Date: 11-05-03 / Time: 0950 / Method: PERISTALTIC	CLEAR	5.59	0.195	15.17	2.61	2.09	~~2.4~~ (0.2)	+247.2

ORP (Eh) (+/- mv) Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen: FW

Equipment: Chemetrics Test Kit

Concentration: 1 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	1
☑	1 to 12 ppm	K-7512	1

Analysis Time: 1319 11/5/03

Notes:

Alkalinity: FW

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1331

Filtered: ☐

Notes:

Carbon Dioxide: FW

Equipment: Chemetrics Test Kit

Concentration: 125 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	125
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1323

Notes:

Ferrous Iron (Fe^{2+}): TR

Equipment: DR-850 DR-8 90 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.10 ppm

Analysis Time: 1332

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L FW

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1335

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT2102
Project No.:	9060	Sample Location:	13MWT21
Sampled By:	F.W	Duplicate:	☐
Field Analyst:	T.R / F.W	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-890 Range: 0 - 0.70 mg/L Concentration: 0.04 ppm

Program/Module: 610nm 99 Analysis Time: 1341 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.031 ppm TR

Equipment: DR-850 DR-854 Range: 0 - 0.350 mg/L Analysis Time: 1339 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.6 ppm

Equipment: DR-850 DR-890 Range: 0 - 20.0 mg/L Analysis Time: 1349 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2202
Sample Location: 13GWT22
Sampled By: [illegible]
C.O.C. No.: 4828
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 12-4-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1510								
Method: Peristaltic	Clear	4.09	0.243	11.90	1.03	1.65	351.6	—

PURGE DATA

Date: 12-4-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2"Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.76								
Static Water Level (WL): 8.45								
One Casing Volume(gal/L): 5.74								
Start Purge (hrs): 1340								
End Purge (hrs): 1455								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 7.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

17.76
8.45
9.31 (.163) = 1.52 gal = 5.74 L

QC's if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT22
DATE: 12-4-03
WEATHER: Overcast 41°C

Time (Hrs.)	Water Level (Ft. below T.O.C.)	Volume (gal.)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1340	8.45	–	–	–	–	–	–	–	–	Start Purge
1350	8.80	1.1	1100	4.49	0.230	2.72	3.79	12.48	323.9	Clear
1400	8.95	2.2	1100	4.32	0.236	3.60	2.82	12.23	342.8	"
1410	9.11	3.2	1000	4.29	0.234	3.80	2.45	12.42	343.9	"
1420	9.18	4.2	1000	4.21	0.242	3.11	2.16	12.27	348.1	"
1430	9.20	5.2	1000	4.13	0.239	2.44	1.69	11.96	348.6	"
1440	9.23	6.2	1000	4.22	0.239	2.23	2.18	12.01	347.1	"
1445	9.24	6.7	500	4.13	0.242	2.18	1.69	12.00	349.8	"
1450	9.27	7.2	500	4.12	0.247	1.06	1.73	11.70	351.0	"
1455	9.28	7.5	500	4.09	0.243	1.03	1.65	11.90	351.6	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth ~13'

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE

Project No.: N9060 CTO 279

Sampled By: Goerdt

Field Analyst: Goerdt

Field Form Checked as per QA/QC Checklist (initials): TL

Sample ID No.: 13GWT2202

Sample Location: 13GWT22

Duplicate: ☒ M (TL)

Blank: ☐

Date: 12-4-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1510	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	Clear	4.09	0.243	11.40	1.03	1.65	–	+351.6

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 1.0/1.0 ppm

Analysis Time: 1600/1603

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☒	1 to 12 ppm	K-7512	1.0/1.0

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10/<10 ppm

Analysis Time: 1546/1550

Filtered: ☐

Range Used:	Range	Method	Concentration ppm
☒	10 to 100 ppm	K-9810	<10/<10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 50/70 ppm

Analysis Time: 1609/1615

Range Used:	Range	Method	Concentration ppm
☒	10 to 100 ppm	K-1910	50/70
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.37/0.40 ppm

Analysis Time: 1626/1634

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0/0.0 ppm

Analysis Time: 1639/1644

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goerdt
Field Analyst: Goerdt

Sample ID No.: 136WT2202
Sample Location: 136WT22
Duplicate: ☒ TM (T2)
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L
Program/Module: 610nm 93
Concentration: 0.06/0.04 ppm
Analysis Time: 1654/1705 Filtered: ☐
Notes:

Nitrite (NO_2^--N):

Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L
Program/Module: 62
Concentration: 0.005/ ppm 0.001
Analysis Time: 1537/1555 Filtered: ☐
Standard Solution: ☐ Results: 0.005/0.001
Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L
Program/Module: 525nm 41
Concentration: 0.1/0.0 ppm
Analysis Time: 1712/1717 Filtered: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated *concentration* is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ N/A
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 136WT2302
Sample Location: 13MWT23
Sampled By: FW
C.O.C. No.: 4815
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 10-28-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1255								
Method: LOW FLOW	CLEAR	5.50	0.309	13.67	2.09	2.37	377.5	—

PURGE DATA

Date: 10-28-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 24.50								
Static Water Level (WL): 8.98								
One Casing Volume(gal/L): 2.5								
Start Purge (hrs): 0850								
End Purge (hrs): 1255								
Total Purge Time (min): 345								
Total Vol. Purged (gal/L): 7.8								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	—
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	—

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X]

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT23
DATE: 10-28-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0850	8.98									START
0900	9.99	~~90~~ 85	5.46	0.349	15.3	2.69	13.68	NA	351.8	
0910	10.64	85	5.41	0.352	12.4	2.47	13.88		363.7	
0920	11.10		5.39	0.350	8.9	2.47	13.78		374.4	
0930	11.41		5.39	0.346	6.54	2.46	13.16		380.2	
0940	11.59		5.40	0.345	5.20	2.44	13.16		384.6	
0950	11.75		5.41	0.346	4.47	2.36	13.34		387.8	
1000	11.92		5.43	0.346	4.49	2.29	13.34		389.7	
1010	12.09		5.44	0.344	4.07	2.22	13.30		392.3	
1020	12.20		5.45	0.343	3.65	2.24	13.49		393.1	
1035	12.38		5.46	0.338	4.39	2.32	13.48		389.4	
1045	12.43		5.47	0.338	3.69	2.37	13.71		386.8	
1055	12.55		5.49	0.337	3.66	2.37	13.71		385.3	
1105	12.63		5.49	0.336	2.81	2.40	13.57		385.6	
1115	12.70		5.49	0.335	2.66	2.42	13.64		385.2	
1125	12.76		5.49	0.333	2.32	2.42	13.47		384.3	
1135	12.80		5.49	0.333	2.81	2.41	13.61		384.5	
1145	12.83		5.49	0.333	2.75	2.39	13.50		384.5	
1155	12.83		5.50	0.333	1.83	2.40	13.63		386.2	
1205	12.84		5.50	0.333	2.32	2.38	13.67		386.0	
1215	12.89		5.50	0.332	1.74	2.40	13.75		390.7	
1225	12.89		5.50	0.332	1.91	2.38	13.82		392.3	
1235	12.77		5.50	0.331	2.12	2.39	13.65		396.1	
1245	12.77		5.50	0.329	1.99	2.34	13.60		396.2	
1255	12.74		5.50	0.329	2.09	2.37	13.67		397.5	SAMPLE
1430										END

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: F. WLODKWYCH
Field Analyst: T.R / FW
Field Form Checked as per QA/QC Checklist (initials): TLR

Sample ID No.: 13GWT2302
Sample Location: 13MWT23
Duplicate: ☐
Blank: ☐

Date: 10/28/03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1255	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	5.50	0.309	13.67	2.09	2.37	~~397~~ 72	+397.5

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 7 ppm FW

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	7

Analysis Time: 1355

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 25 ppm FW

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	25
☑	50 to 500 ppm	K-9815	No END Point
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1400

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 23 ppm FW

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	23
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1405

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.09 ppm

Analysis Time: 1408

Notes:

Filtered: ☐

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1354

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: FW
Field Analyst: TR / FW

Sample ID No.: 13GWT2302
Sample Location: ~~13MWT9~~ 13MWT23
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):
Equipment: DR-850 DR-890 Range: 0 - 0.70 mg/L
Program/Module: 610nm 93
Concentration: 0.01 ppm
Analysis Time: 1432 Filtered: ☐
Notes:

Nitrite (NO_2^--N):
Equipment: DR-850 DR-890 Range: 0 - 0.350 mg/L
Program/Module: 62
Concentration: 0.004 ppm
Analysis Time: 1423 Filtered: ☐
Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):
Equipment: DR-850 DR-890 Range: 0 - 20.0 mg/L
Program/Module: 525nm 41
Concentration: 0.1 ppm
Analysis Time: 1438 Filtered: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☑
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2402
Sample Location: 13MWT24
Sampled By: MGL
C.O.C. No.: 4815
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 10-28-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1045								
Method: PERISTALTIC	CLEAR	6.14	.672	14.27	1.66	29.68	59.9	--

PURGE DATA

Date: 10-28-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.19								
Static Water Level (WL): 9.49								
One Casing Volume(gal): 9.8								
Start Purge (hrs): 0900								
End Purge (hrs): 1045								
Total Purge Time (min): 135								
Total Vol. Purged (gal): 10								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X]

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13 MW T24
DATE: 10-28-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0900	~~10~~ 9.49	120	5.92	.885	2.20	26.86	15.10	—	62.3	~~CLEAR~~ 0 CLEAR
0910	10.49	120	5.94	.885	7.08	31.98	15.14	—	56.7	1200 CLEAR
0920	11.51	100	5.99	.874	7.20	33.05	14.93	—	49.8	2400 CLEAR
0930	12.40	120	6.03	.813	3.52	35.41	14.73	—	48.6	3400 CLEAR
0940	12.50	100	6.08	.761	2.52	30.17	14.23	—	51.8	4400 CLEAR
0950	12.53	100	6.09	.727	1.85	38.55	14.36	—	51.9	5400 CLEAR
1000	12.53	100	6.10	.706	.94	32.61	14.26	—	54.6	6400 CLEAR
1010	12.58	100	6.12	.695	.66	29.52	14.26	—	57.8	7400 CLEAR
1020	12.61	100	6.12	.688	.35	30.52	14.37	—	58.0	8400 CLEAR
1030	12.61	100	6.14	.678	.68	29.15	14.37	—	59.4	9400 CLEAR
1040	12.68	100	6.14	.672	1.66	29.68	14.27	—	59.9	10400 CLEAR

SIGNATURE(S):

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: M. COCHRAN
Field Analyst: T. ROSAHN
Field Form Checked as per QA/QC Checklist (initials): TLR

Sample ID No.: 13GWT2402
Sample Location: 13MWT24
Duplicate: ☐
Blank: ☐

SAMPLE DATA

Date: 10-28-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1045	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Peristaltic	CLEAR	6.14	0.672	14.27	1.66	29.68	—	599

SAMPLE COLLECTION/ANALYSIS INFORMATION

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.5 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	0.5
☑	1 to 12 ppm	K-7512	<1

Analysis Time: 1050

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 90 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-9810	
☑	50 to 500 ppm	K-9815	90
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1108

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 28 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	28
☑	100 to 1000 ppm	K-1920	Lt Pink @ 500 ppt.
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1127

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 3.21 ppm

Analysis Time: 1054

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1138

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT24OZ
Project No.:	N9060	Sample Location:	13MWT24
Sampled By:	MC	Duplicate:	☐
Field Analyst:	TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-890 Range: 0 - 0.70 mg/L Concentration: 0.00 ppm

Program/Module: 610nm 93 Analysis Time: 1140 Filtered: ☐

Notes:

Nitrite (NO_2^--N): Concentration: 0.000 ppm

Equipment: DR-850 DR-890 Range: 0 - 0.350 mg/L Analysis Time: 1115 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}): Concentration: 1.8 ppm

Equipment: DR-850 DR-890 Range: 0 - 20.0 mg/L Analysis Time: 1151 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☑

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2502 ~~13MWT25~~ (T2)
Sample Location: 13MWT25
Sampled By: T. ROJAHN
C.O.C. No.: 4822
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-6-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0845								
Method: SAME								—

PURGE DATA

Date: 11-5-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 7.99								
One Casing Volume(gal/L): 6.1								
Start Purge (hrs): 0930								
End Purge (hrs): 0925								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 15.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	WL 16.89 1(2) L Glass Amber 11/6/03	Yes
Micellaneous Explosives SW-846 8330	4°C	11/7 - 0845 (2) L Glass Amber 11/7 @ 0/03	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/9 - 0910 (1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/19 @ 0820 (1) L HDPE 11/19 @ 0815	YES -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	11/20 @ 1610 (1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	N/O

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

17.95 - 7.99 = 9.96 X .163 = 1.62 gal or 6.1 L
Historically this well dries out! W.L. will not stabilize... Pump to dry
WL = 17.53 on 11/9/03 @ 0910
REPURGED ON 11/20/03 by S. Grier - DRIED OUT WELL ~2L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Ty Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MW725
DATE: 11-05-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0830	7.99	200	–	–	–	–	–	–	–	0000ml CLEAR
0840	9.53	200	5.32	0.407	19.5	1.33	16.32	–	266	2000ml "
0850	10.60	200	5.56	0.332	6.07	3.88	16.27	–	361	4000ml "
0900	11.63	200	5.61	0.306	3.61	4.26	16.24	–	386	6000ml "
0905	12.00	100 *	High draw down - pump to dryness					–	–	6500ml "
0910	12.95	300	5.67	0.291	6.29	3.27	16.44	–	366	8000ml "
0920	15.95	480	5.29	0.341	39	0.96	16.70	–	333	12800ml "
0925	DRY								→	15200ml "
	REPURGED	11-18-03								
1345									→	Dried out WELL (S.Grier)

SIGNATURE(S): [signature]

* Historically this well pumps to dryness... unstable W.L.

PAGE 2 OF 2

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2602
Sample Location: 13GWLT26
Sampled By: T ROJAHN
C.O.C. No.: 4821
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11/19/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1140								
Method: SAME	CLEAR	5.95	6.333	15.68	9.81	1.70	+354	—

PURGE DATA

Date: 11-19-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" Ø			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.18								
Static Water Level (WL): 9.96								
One Casing Volume(gal/L): 2.5								
Start Purge (hrs): 0855								
End Purge (hrs): 1135								
Total Purge Time (min): 160								
Total Vol. Purged (gal/L): 13.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[] No[X]

22.18
9.96
12.22 x 0.163 = 2 gal or 7.5L

Circle if Applicable

MS/MSD ✓ Duplicate ID No.: —

Signature(s): Ty Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT26
DATE: 11/19/03
WEATHER: Mostly Sunny 49°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (ml)	Flowrate (ml/min)	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0855	9.96	—	—	—	—	—	—	—	—	Start Purge
0905	11.49	1000	100	5.75	0.205	29.7	2.33	14.59	335	CLEAR
0915	12.35	1.850	85	5.76	0.206	8.27	2.05	14.53	336	CLEAR
0925	12.85	2.700	85	5.76	0.205	5.84	1.97	14.68	338	CLEAR
0935	13.13	3.550	85	5.76	0.206	4.78	1.97	14.61	338	CLEAR
0945	13.36	4.400	85	5.78	0.211	6.07	1.92	14.70	336	CLEAR
0955	13.61	5.200	80	5.77	0.217	8.41	1.77	14.88	336	CLEAR
1005	13.86	6.000	80	5.77	0.221	13.00	1.63	14.90	336	CLEAR
1015	14.11	6.800	80	5.80	0.232	18.9	1.52	15.25	338	CLEAR
1025	14.35	7.600	80	5.81	0.235	21.1	1.52	15.38	340	CLEAR
1035	14.57	8.400	80	5.82	0.252	19.7	1.50	15.48	342	CLEAR
1045	14.79	9200	80	5.85	0.265	19.8	1.48	15.39	344	CLEAR
1055	14.97	10.000	80	5.88	0.274	20.2	1.52	15.38	346	CLEAR
1105	15.14	10.800	80	5.90	0.293	19.5	1.58	15.45	348	CLEAR
1115	15.33	11.600	80	5.92	0.313	17.4	1.61	15.79	352	CLEAR
1120	15.39	12.000	80	5.92	0.316	15.7	1.60	15.89	353	CLEAR
1125	15.49	12.400	80	5.95	0.321	15.6	1.63	15.87	354	CLEAR
1130	15.55	12.800	80	5.95	0.328	16.6	1.68	15.70	364	CLEAR
1135	15.59	13.200	80	5.95	0.333	16.3	1.70	15.68	354	CLEAR
1140	—	—	—	—	—	—	—	—	—	Start Sampling
1251						9.87	prior	to sampling		Total metals

Water Quality Meter (S/N) 998 1412 AA
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317-2402

Pump Intake Depth MID SCREEN ~17'

SIGNATURE(S): [signature]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: 9060
Sampled By: TROJAHN
Field Analyst: TROJAHN
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT2602
Sample Location: 13MWT26
Duplicate: ☐
Blank: ☐

Date: 11/19/03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1140	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: PERISTALTIC	CLEAR	5.95	0.333	15.68	9.81	1.70	—	+354

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 1.7 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	1.7

Analysis Time: 1145

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 60 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	60
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1155

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 50 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	50
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1204

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-820 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.0 ppm

Analysis Time: 1230

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Concentration: 0.0 ppm

Exceeded 5.0 mg/L range on color chart: ☐

Analysis Time: 1223

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT2602
Project No.:	9060	Sample Location:	13MWT26
Sampled By:	TRojahn	Duplicate:	☐
Field Analyst:	TRojahn	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 53 Range: 0 - 0.70 mg/L Concentration: 0.05 ppm

Program/Module: 610nm 93 Analysis Time: 1240 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.010 ppm

Equipment: DR-850 DR-8 53 Range: 0 - 0.350 mg/L Analysis Time: 1206 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.3 ppm

Equipment: DR-850 DR-8 20 Range: 0 - 20.0 mg/L Analysis Time: 1242 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2701
Sample Location: SWMU 13
Sampled By: S. GRIER
C.O.C. No.: 48-27
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-25-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1425								
Method: SAME	Cloudy	4.40	0.288	14.29	110	1.67	223.2	—

PURGE DATA

Date: 11/25/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristoltic Pump								
Monitor Reading (ppm): 0.6								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.40								
Static Water Level (WL): 10.05								
One Casing Volume (gal/L): 2.0								
Start Purge (hrs): 1005								
End Purge (hrs): 1415								
Total Purge Time (min): 250								
Total Vol. Purged (gal/L): 8.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X]

After filling the ~~SVOC's~~ Explosives, Nitrate/Nitrite, etc. the turbidity was checked again before filling the Diss. Metals @ 1510 → TURBIDITY = 9.8 therefore the Diss Metals was NOT filtered
1520 → TURB = 7.6

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13 MWT 27
DATE: 11/25/03
WEATHER: SUNNY, ~~st. BREEZE~~, 28°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Gal.)	Flowrate (mL/min)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1005	10.05	0	100	5.33	0.298	70	2.87	13.94	109.7	Clear, No odor
1015	11.10	—	80	4.88	0.259	59	1.92	13.28	172.6	Pumping slow as
1025	12.10	—	80	4.41	0.294	39	2.17	12.76	223.5	pump allows.
1035	12.65	—	80	4.22	0.227	20	2.23	13.37	263.4	
1045	12.75	1.25	80	4.19	0.207	16	2.24	13.43	281.0	
1055	13.10	—	80	4.24	0.200	12	2.21	13.67	287.0	
1105	13.45	—	80	4.32	0.195	36	2.21	13.69	291.1	
1115	13.65	—	80	4.39	0.196	28	2.26	13.94	284.2	
1125	13.80	2.5	80	4.43	0.199	20	2.16	13.98	283.3	
1135	14.18	—	80	4.45	0.207	17	1.82	14.16	279.7	
1145	14.45	—	80	4.40	0.217	18	1.33	14.02	280.8	
1155	14.70	—	80	4.27	0.224	20	1.12	13.83	288.4	
1205	14.98	3.75	80	4.17	0.227	39	0.98	13.88	296.8	
1215	15.20	—	80	3.82	0.242	75	0.77	14.00	332.6	
1225	15.40	—	80	3.75	0.235	100	0.90	12.79	344.9	
1235	15.60	—	80	3.90	0.241	130	0.77	14.09	328.6	
1245	15.83	5.0	80	4.08	0.239	310	0.79	14.61	296.2	
1255	16.25	—	80	4.55	0.255	450	0.80	14.39	205.4	
1305	16.55	—	80	4.65	0.257	478	0.76	14.34	193.6	
1315	16.85	—	80	4.67	0.268	500	0.61	14.38	195.0	
1325	17.02	7.5	80	4.56	0.278	394	0.58	14.55	203.7	
1335	17.40	—	80	4.46	0.285	330	0.73	14.53	214.3	

Water Quality Meter (S/N) ~~3106-1402~~ 02B0141
Control Box Type (S/N) N/A Peristaltic pump
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 19.5'

SIGNATURE(S): Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT 27
DATE: 11/25/03
WEATHER: Cold, Sunny, Windy, 28°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Gallon)	Flowrate (ml/min)	pH (Unit)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1345	17.80	~~80~~	80	4.44	0.284	410	0.82	14.39	208.1	
1355	18.85	—	80	4.39	0.285	500	1.15	14.41	216.0	
1405	18.08	—	80	4.37	0.292	300	1.47	14.66	220.0	
1415	18.25	8.5	80	4.40	0.288	110	1.67	14.29	223.2	
1425	sampled									sample 13GWT27 taken @ 1425

Water Quality Meter (S/N) 0280141
Control Box Type (S/N) Peristaltic pump
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 19.5'

SIGNATURE(S): Scott Brin

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2801
Sample Location: SWMU 13
Sampled By: SG
C.O.C. No.: 4834, 4833
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 12-7-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1410								
Method: SAME	Cloudy	9.15	0.495	13.59	260	0.57	-34.1	---

PURGE DATA

Date: 12/7/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 91.70								
Static Water Level (WL): 80.90								
One Casing Volume (gal/L): 1.84								
Start Purge (hrs): 0930								
End Purge (hrs): 1400								
Total Purge Time (min): 235								
Total Vol. Purged (gal/L): 3.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(1) Collected 12-7 (2) L Glass Amber (1) Collected 12-8	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

1500 - After collecting 1 L well dried up to pump intake.

(1) Explosive sample collected 12/7 remainder of sample collected 12/8

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13 MWT 28
DATE: 12/7/03
WEATHER: P. SUNNY, FOG, 35°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Gal.)	Flowrate (mL/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0930	80.88'	0	—	—	—	—	—	—	—	GREY, SLIGHTLY CLOUDY
0935	81.23'	~~80~~	80	8.70	0.504	1000	4.38	8.98	135.8	NO ODOR
0945	81.51'	~~60~~	60	9.25	0.506	900	1.79	8.98	121.8	
0955	81.74'		60	9.31	0.511	900	1.36	9.35	114.2	
1005	82.19'		60	9.35	0.523	850	1.19	9.72	106.3	
1015	82.35'	1.0	60	9.35	0.532	750	1.00	9.82	99.4	
1025	82.72'		60	9.34	0.550	750	1.03	9.89	94.8	
1035	83.01		60	9.32	0.555	725	1.00	9.72	90.9	
1045	83.28'		60	9.30	0.559	700	0.98	9.57	88.0	
1055	83.50		60	9.29	0.565	628	0.91	9.81	84.3	
1105	83.82		60	9.28	0.570	650	0.86	9.93	81.6	
1115	84.12	2.0	60	9.30	0.560	522	0.77	9.81	70.8	
1125	84.42		60	9.34	0.561	450	0.69	9.78	69.9	
1135	84.60			9.34	0.531	400	0.75	9.34	66.6	
1145	—	—	—	—	—	—	—	—	→	1140 Stopped
1215	84.55'		60	9.05	0.530	380	1.32	11.38	26.5	pumping to change
1225	84.78		60	9.18	0.524	370	0.81	11.43	21.8	Nitrogen bottle
1235	84.97		60	9.28	0.521	360	0.63	11.52	19.5	
1245	85.16		60	9.01	0.515	328	0.55	11.55	6.9	1215 BEGAN
1255	85.36		60	8.81	0.497	310	0.51	11.48	-2.5	PUMPING
1305	85.61		60	8.86	0.499	320	0.55	12.00	-16.0	
1315	85.85	3.0	60	8.93	0.501	330	0.57	12.10	-24.8	

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) MPU-1550
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 87.0'

SIGNATURE(S): Scott Dres

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT28
DATE: 12/17/03
WEATHER: SUNNY, LT. BREEZE, 45°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Gallons)	Flowrate (ml/min)	pH (Units)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1325	86.06		60	8.91	0.493	310	0.40	12.33	-33.9	
1335	86.21		60	8.99	0.474	300	0.46	12.09	-38.1	
1345	86.40		60	9.04	0.481	300	0.66	12.94	-39.1	
1355	86.50		60	9.07	0.496	270	0.56	13.84	-36.6	
1400	86.61	3.5	60	9.15	0.495	260	0.57	13.59	-34.1	
										PURGED 4 HRS.

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) MP10-1550
Turbidity Meter (S/N) 3106-1482

Pump Intake Depth 87.0'

SIGNATURE(S): Scott Brice

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: S. GRIER
Field Analyst: TR / JG
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT2801
Sample Location: 13MWT28
Duplicate: ☐
Blank: ☐

Date: 12-7-03 & 12/8	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 1410	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: Bladder Pump	Cloudy	9.15	0.495	13.59	260	0.57	—	-321

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.5 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	0.5
☐	1 to 12 ppm	K-7512	

Analysis Time: 1419 12/7

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 150 ppm (175)

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	
☑	50 to 500 ppm	K-9815	150
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1426 12/7 (1347)

Filtered: ☑ 12/9

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	<10
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1433 12/7

Notes:

Ferrous Iron (Fe^{2+}): 12/9

Equipment: DR-850 DR-8 __ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.01 ppm

Analysis Time: 1400

Filtered: ☑

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L 12/9

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1402

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT2801
Project No.:	N9060	Sample Location:	13MWT28
Sampled By:	S. Grier	Duplicate:	☐
Field Analyst:	TR / JG	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L Concentration: 0.00 ppm

Program/Module: 610nm 93 Analysis Time: 1411 Filtered: ☑ 12/9

Notes:

Nitrite (NO_2^--N):

Concentration: 0.007 ppm

Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L Analysis Time: 1428 HZ/7 Filtered: ☑ 12/9

Program/Module: 82

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐ 0.108 1354

Notes:

Manganese (Mn^{2+}):

Concentration: 0.0 ppm

Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L Analysis Time: 1417 Filtered: ☑ 12/9

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☑ HA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13MWT2901
Sample Location: 13MWT29
Sampled By: T. ROJAHN
C.O.C. No.: 4817
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-7-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1205								
Method: SAME	CLEAR	5.56	0.589	15.52	9.36	0.44	-473	—

PURGE DATA

Date: 11-7-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.20								
Static Water Level (WL): 6.08								
One Casing Volume(gal/L): 9.3								
Start Purge (hrs): 0935								
End Purge (hrs): 1205								
Total Purge Time (min): 150								
Total Vol. Purged (gal/L) 15								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

21.2 - 6.08 = 15.12 x 0.163 = 2.46 or 9.3 L

Intake MID SCREEN

Circle if applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MW T29
DATE: 11/7/03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0935	6.08	–	–	–	–	–	–	–	–	Start Purge
0945	6.68	100	5.58	1.37	206	1.39	13.63	–	-470	1000 CLOUDY
0955	6.81	100	5.71	0.812	155	1.17	13.72	–	-469	2000 Sl Cloudy
1005	6.93	100	5.80	0.585	83	0.91	13.81	–	-467	3000 V. Sl Cloudy
1015	6.98	100	5.80	0.597	49.3	0.71	13.87	–	-460	4000 CLEAR
1025	7.03	100	5.83	0.602	30.7	0.63	14.08	–	-450	5000 CLEAR
1035	7.06	100	5.78	0.600	24.8	0.60	14.23	–	-470	6000 CLEAR
1045	7.09	100	5.74	0.599	20.2	0.57	14.41	–	-484	7000 CLEAR
1055	7.12	100	5.71	0.589	16.4	0.67	14.40	–	-494	8000 CLEAR
1105	7.12	100	5.69	0.588	16.2	0.60	14.50	–	-494	9000 CLEAR
1115	7.12	100	5.67	0.588	16.0	0.55	14.55	–	-494	10000 CLEAR
1125	7.15	100	5.67	0.595	14.0	0.52	15.16	–	-479	11000 CLEAR
1135	7.18	100	5.68	0.592	12.3	0.50	15.14	–	-488	12000 CLEAR
1145	7.18	100	5.62	0.590	11.4	0.46	15.20	–	-488	13000 CLEAR
1155	7.19	100	5.59	0.587	11.7	0.45	15.42	–	-473	14000 CLEAR
1205	7.22	100	5.56	0.589	9.36	0.44	15.52	–	-473	15000 CLEAR
1205									→	Sample Time

SIGNATURE(S): [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. ROJAHN
Field Analyst: T. ROJAHN
Field Form Checked as per QA/QC Checklist (Initials): TKR

Sample ID No.: 13GWT2901
Sample Location: 13MWT29
Duplicate: ☐
Blank: ☐

Date: 11/7/03 Time: 1205	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Method: PERISTALTIC	CLEAR	5.56	0.589	15.52	9.36	0.04	—	-473

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI 600XLM

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 0.02 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	

Analysis Time: 1214

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	
☑	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1220

Filtered: ☐

Notes: Colorless @ 55 but No Green

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 150 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-1910	
☑	100 to 1000 ppm	K-1920	150
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1234

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-850 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 9.15 ppm

Analysis Time: 1245

Notes: Dilute 2 3.05 x 3 = 9.15

Filtered: ☐

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1303

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT2901
Project No.:	9060	Sample Location:	13MWT29
Sampled By:	TK	Duplicate:	☐
Field Analyst:	TK	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 50 Range: 0 - 0.70 mg/L Concentration: 0.04 ppm

Program/Module: 610nm 93 Analysis Time: 1315 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.000 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 1225 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 1.3 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L Analysis Time: 1322 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1ST page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3001
Sample Location: SWMU 13
Sampled By: S. GRIER
C.O.C. No.: 4827
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLE DATA

Date: 11/24/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1615								
Method: Peristaltic pump	Clear	3.34	0.568	9.18	7.0	0.88	346.6	—

PURGE DATA

Date: 11/24/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 26.65								
Static Water Level (WL): 12.11								
One Casing Volume(gal/L):								
Start Purge (hrs): 1415								
End Purge (hrs): 1605								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 2.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

CIRCLE IF APPLICABLE:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13 MWT 30
DATE: 11/24/03
WEATHER: Cloudy, Snow Flurries, 30°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Gallon)	Flowrate (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1415	12.11	0	100	3.26	0.555	33	3.08	8.15	413.2	Clear, No odor
1425	12.65	.20	90	3.22	0.556	29	2.45	7.50	418.9	
1435	13.24	.40	90	3.22	0.560	25	2.16	7.47	420.6	Pumping as
1445	13.60	—	80	3.22	0.564	21	1.96	7.53	421.8	Slow as pump allows.
1455	13.62	.90	80	3.22	0.567	17	1.40	7.67	418.4	
1505	13.68	1.10	80	3.25	0.566	13	1.00	7.89	412.0	
1515	13.70	—	—	3.22	0.554	10	1.06	7.43	409.4	
1525	13.72	—	—	3.29	0.558	8.0	0.99	8.02	403.3	
1535	13.72	1.60	—	3.30	0.558	7.9	0.82	8.13	398.6	
1545	13.73	—	—	3.32	0.564	7.6	0.85	9.08	396.0	
1555	13.73	—	—	3.34	0.567	7.3	0.88	9.20	396.1	
1605	13.73	2.0	—	3.34	0.568	7.0	0.88	9.18	396.6	

Water Quality Meter (S/N) 0280141
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth ~21.65'

SIGNATURE(S): Scott Sin

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3101
Sample Location: 13GWT31
Sampled By: Goerdt
C.O.C. No.: 4825
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-24-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1118								
Method: Peristaltic	Clear	5.67	0.793	10.09	4.69	5.66	246.7	—

PURGE DATA

Date: 11-24-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.50								
Static Water Level (WL): 10.91								
One Casing Volume(gal/L): 7.15								
Start Purge (hrs): 0903								
End Purge (hrs): 1113								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): 12.7								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[] No[X]

22.50
10.91
11.59 (.163) = 1.89 gal = 7.15 L

Check if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT31
DATE: 11-24-03
WEATHER: Cloudy 30°

Time (HH:MM)	Water Level (ft. below TOC)	Volume (liters)	Flowrate (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0903	10.91	—	—	—	—	—	—	—	—	Start purge
0913	12.25	1.3	1300	5.99	0.845	670	4.10	11.75	223.4	Cloudy
0923	12.69	2.5	1200	5.89	0.797	381	6.00	11.13	223.4	"
0933	12.75	3.7	1200	5.88	0.773	363	6.40	10.05	225.2	"
0943	12.81	4.6	900	5.86	0.800	273	6.47	9.74	228.0	"
0953	12.85	5.5	900	5.84	0.824	181	6.52	9.60	231.7	"
1003	12.87	6.4	900	5.82	0.835	132	6.54	9.95	234.7	"
1013	13.00	7.3	900	5.80	0.838	62.9	6.70	9.70	237.9	"
1023	13.05	8.2	900	5.79	0.839	36.7	6.52	10.26	240.1	clearer
1033	13.10	9.1	900	5.76	0.834	25.7	6.40	10.02	243.2	Clear
1043	13.15	10.0	900	5.74	0.818	17.4	6.22	9.86	245.3	"
1053	13.19	10.9	900	5.72	0.804	12.4	5.83	10.01	244.7	"
1103	13.23	11.8	900	5.70	0.800	10.71	5.70	10.10	245.2	"
1113	13.35	12.7	900	5.67	0.793	4.69	5.66	10.09	246.7	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth 17.5'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3201
Sample Location: 13GWT32
Sampled By: Gorski
C.O.C. No.: 1821
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-19-01 03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1543								
Method: Peristaltic	Clear	6.26	0.386	14.73	3.45	8.98	223.6	—

PURGE DATA

Date: 11-19-01	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2"Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.90								
Static Water Level (WL): 9.91								
One Casing Volume(gal/l): 6.78								
Start Purge (hrs): 1409								
End Purge (hrs): 1539								
Total Purge Time (min): 90								
Total Vol. Purged (gal/l): 8.25								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[] No[X]

20.90
9.91
10.99 (.163) = 1.79 gal = 6.78

QAQC if Applicable

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT3201
DATE: 11-19-03
WEATHER: Sun 60° F

Time (Hrs.)	Water Level (ft. below TOC)	Volume (gallons)	Flowrate (mL/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1409	9.91	–	–	–	–	–	–	–	–	Start purge
1419	10.49	1.0	1000	6.14	0.271	2.98	7.91	15.08	156.1	Clear
1429	10.59	2.0	1000	6.21	0.341	3.40	7.23	15.03	192.0	"
1439	10.62	3.0	1000	6.23	0.357	2.88	7.63	14.98	209.3	"
1449	10.58	4.0	1000	6.24	0.369	3.83	8.07	14.77	222.4	"
1459	10.54	4.85	850	6.26	0.375	2.88	8.41	14.65	228.7	"
1509	10.54	5.7	850	6.26	0.378	2.67	8.69	14.72	216.0	"
1519	10.53	6.55	850	6.26	0.381	3.08	8.92	14.61	219.3	"
1529	10.54	7.40	850	6.26	0.382	3.31	8.93	14.66	220.5	"
1539	10.52	8.25	850	6.26	0.386	3.45	8.98	14.73	223.6	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) N/A
Turbidity Meter (S/N) 0920-4298

Pump Intake Depth 15.9'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT330
Sample Location: 13GWT33
Sampled By: Gorski
C.O.C. No.: 4827
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-24-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1732								
Method: Peristaltic	Clear							—

PURGE DATA

Date: 11-24-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
22.5 Total Well Depth (TD): 22.5								
Static Water Level (WL): 14.32								
One Casing Volume(gal/L): 5.05								
Start Purge (hrs): 1330								
End Purge (hrs): 1730								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 21.7								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes 11/24/03
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes 11/25/03
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes 11/25/03
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes 11/25/03
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes 11/25/03 0845
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[] Filtered metals sample taken.

22.50
14.32
8.18 (.163) = 1.33 gal = 5.05 L

Stopped sampling after collecting (2) explosive samples due to well dry.

11/25/03 started sampling again at 0845. Turbidity @ 22.8

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT3301
DATE: 11-24-03
WEATHER: Cloudy 30°

Time (Hrs.)	Water Level (ft. below TOC)	Volume (Gallons)	Flowrate (mL/min)	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1330	14.32	—	—	—	—	—	—	—	—	Start purge
1340	14.82	1.0	1000	5.45	.096	500	6.29	11.16	221.5	Cloudy
1350	15.29	1.9	900	5.40	.089	700	6.23	11.40	226.8	"
1400	15.82	2.8	900	5.41	.091	900	5.84	11.47	219.7	"
1410	16.29	3.7	900	5.51	.107	>1000	4.97	11.66	166.0	Red-brown
1420	16.63	4.6	900	5.49	.109	>1000	4.52	11.58	168.3	"
1430	17.35	5.5	900	5.50	.113	>1000	4.07	11.43	169.8	"
1440	17.73	6.4	900	5.50	.119	>1000	3.32	11.48	162.1	"
1450	18.09	7.3	900	5.52	.125	>1000	2.97	11.93	163.0	"
1500	18.41	8.2	900	5.57	.131	>1000	2.75	11.29	151.9	"
1510	18.90	9.1	900	5.61	.139	>1000	2.81	10.82	142.1	"
1520	19.51	10.0	900	5.66	.153	>1000	2.48	10.63	139.3	"
1530	19.31	10.9	900	5.67	.156	>1000	3.54	10.37	134.2	"
1540	20.05	11.8	900	5.69	.173	1100	3.21	10.39	128.3	"
1550	20.48	12.7	900	5.71	.191	1090	2.79	10.42	121.7	"
1600	20.65	13.6	900	5.75	.209	1080	1.38	11.25	111.6	"
1610	20.78	14.5	900	5.81	.234	350	1.73	10.43	104.2	Cloudy
1620	20.79	15.4	900	5.84	.236	160	2.36	9.99	98.5	less cloudy
1630	20.79	16.3	900	5.86	.236	110	2.77	9.60	94.3	"
1640	20.79	17.2	900	5.87	.234	110	3.03	9.29	93.0	"
1650	20.79	18.1	900	5.87	.228	110	3.26	9.19	94.0	"
1700	20.79	19.0	900	5.87	.229	100	3.41	9.12	94.0	Clear

Water Quality Meter (S/N) 98F047848
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth ~21.5

1' off bottom
Well dries out

SIGNATURE(S):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: Swmu 13

WELL ID.: 13GWT 3301
DATE: 11-24-03
WEATHER: Cloudy 30°

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1710	20.79	19.9	900	5.88	.230	98	3.58	9.07	93.6	Clear
1720	20.79	20.8	900	5.88	.231	90	3.63	8.89	92.7	"
1730	20.79	21.7	900	5.88	.234	80	3.75	8.83	91.7	Stop purging

Water Quality Meter (S/N) 98F047848
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth ~~26.5~~ 1' off Bottom

SIGNATURE(S):

PAGE ~~2~~ 3 OF ~~2~~ 3

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3401
Sample Location: 13MWT34
Sampled By: T. ROJAHN
C.O.C. No.: 4828
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 12/4/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1150								
Method: SAME	CLEAR	4.97	0.312	10.94	6.07	2.35	+276	—

PURGE DATA

Date: 12/4/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): -								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.90								
Static Water Level (WL): 5.65								
One Casing Volume(gal/L) 10.6								
Start Purge (hrs): 0955								
End Purge (hrs): 1145								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L) 10.5+								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

22.9 - 5.65 = 17.25 x 0.163 = 2.8 gal or 10.6 L

Check If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	Tey Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT34
DATE: 12/04/03
WEATHER: OVERCAST & 38°F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0955	5.65	—	—	—	—	—	—	—	—	Start Purge
1005	6.57	1.200	120	5.15	0.319	51.1	2.09	11.20	+212	V. Sl. Cloudy
1015	6.80	2.400	120	5.10	0.319	51.5	2.20	11.53	+232	" " "
1025	6.71	3.400	100	5.04	0.311	34.7	2.30	10.63	+246	CLEAR
1035	6.63	4.300	90	5.03	0.309	21.1	2.37	10.64	+254	"
1045	6.56	5.100	80	5.02	0.308	18.7	2.23	10.48	+259	"
1055	6.61	6.000	90	5.01	0.311	14.0	2.24	10.90	+264	"
1105	6.65	6.900	90	4.99	0.311	10.91	2.28	10.94	+268	"
1115	6.65	7.800	90	4.98	0.312	9.21	2.26	11.01	+272	"
1125	6.67	8.700	90	4.98	0.312	9.34	2.26	10.96	+273	"
1135	6.68	9.600	90	4.97	0.312	6.79	2.33	10.98	+275	"
11.45	6.69	10.500	90	4.97	0.312	6.07	2.35	10.94	+276	"
1150	—	—	—	—	—	—	—	—	—	Start Sampling

Water Quality Meter (S/N) 998 1412 AA
Control Box Type (S/N) NA
Turbidity Meter (S/N) 0920 4298

Pump Intake Depth ~18'

SIGNATURE(S): Terry [illegible]

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: T. ROJAHN
Field Analyst: T.R.
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT3401
Sample Location: 13MWT34
Duplicate: ☐
Blank: ☐

Date: 12/4/03 Time: 1150 Method: peristaltic	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
	CLEAR	4.97	0.312	10.94	6.07	2.35	—	+276

ORP (Eh) (+/- mv) Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 1 ppm

Range Used:	Range	Method	Concentration ppm
☑	0 to 1 ppm	K-7510	1
☑	1 to 12 ppm	K-7512	1

Analysis Time: 1157

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10
☑	50 to 500 ppm	K-9815	—
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1205

Filtered: ☐

Notes: No change from pink

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 32 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	32
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1214

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.18 ppm

Analysis Time: 1220

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1224

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT3401
Project No.:	N9060	Sample Location:	13MWT34
Sampled By:	TRujano	Duplicate:	☐
Field Analyst:	TR	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-890 Range: 0 - 0.70 mg/L Concentration: 0.00 ppm

Program/Module: 610nm 93 Analysis Time: 1232 Filtered: ☐

Notes:

Nitrite (NO_2^--N):

Concentration: 0.005 ppm

Equipment: DR-850 DR-890 Range: 0 - 0.350 mg/L Analysis Time: 12:07 Filtered: ☐

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.8 ppm

Equipment: DR-850 DR-890 Range: 0 - 20.0 mg/L Analysis Time: 1239 Filtered: ☐

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3501
Sample Location: 13MWT35
Sampled By: JG/TR
C.O.C. No.: 4836
Type of Sample:
[X] Low Concentration
[] High Concentration

GAUGING DATA

Date: 12-10-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1145								
Method: Dis. Bailer	Grey	9.08	0.781	13.60	>1000	5.28	105.2	—

PURGE DATA

Date: 12-09-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Dis. Bailer								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 1443								
End Purge (hrs): 1530								
Total Purge Time (min): 47								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	1 (2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes — F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[]

QA/QC / COMMENTS:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT 35 ~~01~~ 25
DATE: 12-9-03
WEATHER: Cloudy 57° lt. rain

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1443	64.63	–	–	–	–	–	–	–	–	Start purge
–	–	1.0	–	–	–	–	–	–	–	
–	–	2.0	–	–	–	–	–	–	–	
1500	66.04	3.0	–	9.47	0.711	–	3.39	13.78	81.5	Grey
–	–	4.0	–	–	–	–	–	–	–	
–	–	5.0	–	–	–	–	–	–	–	
1515	67.49	6.0	–	9.41	0.718	>1000	1.68	13.72	88.1	Grey
–	–	7.0	–	–	–	–	–	–	–	
–	–	8.0	–	–	–	–	–	–	–	
1525	–	9.0	–	9.25	0.783	>1000	5.17	13.86	96.3	Grey
1530	DRY	12.0	–	9.08	0.781	>1000	5.28	13.60	105.2	Well dry

Water Quality Meter (S/N) 98F0479 AB
Control Box Type (S/N) NA
Turbidity Meter (S/N) NA

Pump Intake Depth NA

SIGNATURE(S): [signature]

TD 70.20
SWL 64.63
5.57(.163) = .908 gal = 3.4 L

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: JG / TK
Field Analyst: JG / TK
Field Form Checked as per QA/QC Checklist (initials): TK

Sample ID No.: 13GMWT 3501
Sample Location: 13MWT 35
Duplicate: ☐
Blank: ☐

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Date: 12-09-03 Time: 1530 Method: Dis Bailer	Grey	9.08	0.781	13.60	>1000	5.28	—	105.2

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 5.5 ppm JG

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	5.5

Analysis Time: 1214

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 200 ppm

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-9810	
☑	50 to 500 ppm	K-9815	200
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1216

Filtered: ☑

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm TK

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	<10
☑	100 to 1000 ppm	K-1920	—
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1244

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-850 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.02 ppm

Analysis Time: 1225

Filtered: ☑

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm

Analysis Time: 1233

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060
Sampled By: JG/TK
Field Analyst: JG/TK

Sample ID No.: 13GWT3501
Sample Location: 13MW735
Duplicate: ☐
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-850 Range: 0 - 0.70 mg/L
Program/Module: 610nm 93
Concentration: 0.01 ppm
Analysis Time: 1242
Filtered: ☑

Notes:

Nitrite (NO_2^--N):

Equipment: DR-850 DR-850 Range: 0 - 0.350 mg/L
Program/Module: 62
Concentration: 0.000 ppm
Analysis Time: 1219
Filtered: ☑

Standard Solution: ☐ Results: _____
Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Equipment: DR-850 DR-850 Range: 0 - 20.0 mg/L
Program/Module: 525nm 41
Concentration: 0.0 ppm
Analysis Time: 1247
Filtered: ☑

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3601
Sample Location: 13GWT36
Sampled By: GOBKOT
C.O.C. No.: 4834
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-8-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1050								
Method: Peristalic	Clear	5.68	0.721	12.24	9.06	4.91	252.1	—

Date: 12-8-03	Volume L	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristalic	13.0	5.68	0.721	12.24	9.06	4.91	—	—
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.40								
Static Water Level (WL): 19.02								
One Casing Volume(gal/L): 5.17								
Start Purge (hrs): 0840								
End Purge (hrs): 1040								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 13.0								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

Filtered Sample Collected Yes[] No[X]

Pump shut down 1230-1330. Resumed sampling at 1330. Turbidity at 1345 was 1.66.

27.40
19.02
8.38 (.163) = 1.37 gal = 5.17 L

QC/QA Applicable:
MS/MSD
Duplicate ID No.: ~~13GW~~ 12080303

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT3601
DATE: 12-5-03
WEATHER: P. Cloudy 38° F

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0840	19.02	1.0	1000	–	–	–	–	–	–	Start purge
0850	19.60	2.0	1000	5.67	0.714	22.4	6.86	11.45	221.9	clear
0900	19.83	3.0	1000	5.70	0.720	21.8	5.75	11.46	230.9	"
0910	20.00	4.0	1000	5.73	0.719	20.1	5.57	11.49	230.7	"
0920	20.01	5.0	1000	5.76	0.717	24.4	5.33	11.52	230.1	"
0930	20.42	6.0	1000	5.76	0.717	24.8	5.24	11.54	232.6	"
0940	20.61	7.0	1000	5.76	0.719	26.8	5.16	11.67	236.3	"
0950	20.73	8.0	1000	5.74	0.720	22.4	5.11	11.78	238.5	"
1000	20.82	9.0	1000	5.72	0.722	20.8	4.96	11.90	240.2	"
1010	20.89	10.0	1000	5.71	0.722	18.5	4.92	11.97	243.3	"
1020	20.97	11.0	1000	5.68	0.722	16.0	4.82	12.08	248.5	"
1030	21.08	12.0	1000	5.68	0.721	10.8	4.83	12.11	251.4	"
1040	21.15	13.0	1000	5.68	0.721	9.06	4.91	12.24	252.1	Stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth 22'

SIGNATURE(S):

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goard
Field Analyst: Goard
Field Form Checked as per QA/QC Checklist (initials): TR

Sample ID No.: 13GWT3601
Sample Location: 13GWT36
Duplicate: ☑ M TR
Blank: ☐

Date: 12-8-03 Time:	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (Eh) (+/- mv)
Method: Peristaltic	Clear	5.68	0.721	12.24	6.06	4.91	—	252.1

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI

Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 5.5/5.5 ppm

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	5.5/5.5

Analysis Time: 1125/1129

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: <10/<10 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-9810	<10/<10
☐	50 to 500 ppm	K-9815	
☐	100 to 1000 ppm	K-9820	

Analysis Time: 1136/1139

Filtered: ☐

Notes:

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: 40/40 ppm

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	40/40
☐	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 1143/1145

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 3.00 mg/L

Program/Module: 500nm 33

Concentration: 0.03/0.05 ppm

Analysis Time: 1152/1154

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other: _____

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: ~~0.01~~ ppm 0.00/0.00

Analysis Time: ~~1215/1220~~ 1158/1201

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N9060 CTO 279
Sampled By: Goeydt
Field Analyst: Goeydt

Sample ID No.: 13GWT3601
Sample Location: 13GWT36
Duplicate: ☑ /M (TC)
Blank: ☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 __ Range: 0 - 0.70 mg/L
Program/Module: 610nm 93
Concentration: 0.01/0.01 ppm
Analysis Time: 1212/1214 Filtered: ☐
Notes:

Nitrite (NO_2^--N):

Equipment: DR-850 DR-8 __ Range: 0 - 0.350 mg/L
Program/Module: 62
Concentration: 0.003/.000 ppm
Analysis Time: 1117/1119 Filtered: ☐
Standard Solution: ☐ Results: 0.003/
Reagent Blank Correction: ☐
Notes:

Manganese (Mn^{2+}):

Equipment: DR-850 DR-8 __ Range: 0 - 20.0 mg/L
Program/Module: 525nm 41
Concentration: 0.3/0.2 ppm
Analysis Time: 1221/1225 Filtered: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite interference treatment was used for Nitrate test if Nitrite was detected: ☑ NA
Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13FWT3701
Sample Location: 13MWT37
Sampled By: FCW
C.O.C. No.: 4817
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLE DATA

Date: 11-6-03	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1550	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(mV)	NA
Method: PERISTALTIC	CLEAR	5.75	0.309	13.32	3.2	4.82	-144.9	—

PURGE DATA

Date: 11-6-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.15								
Static Water Level (WL): 14.29								
One Casing Volume(gal/L): 2.1								
Start Purge (hrs): 1400								
End Purge (hrs): 1550								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 2.3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	—
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vials	—

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X]
Intake into screen

Check if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	FCW —

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT37
DATE: 11-6-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1400	14.29									START
1410	14.63	80	5.96	0.351	29.5	4.70	13.35	–	-217.3	
1420	14.79		5.87	0.349	18.8	4.59	13.19	–	-195.6	
1430	14.89		5.82	0.333	11.9	4.70	13.24	–	-177.3	
1440	14.97		5.80	0.327	9.2	4.74	13.25	–	-169.2	
1450	15.02		5.79	0.317	6.7	4.72	13.27	–	-165.6	
1500	15.07		5.77	0.316	6.22	4.76	13.46	–	-159.7	
1510	15.10		5.77	0.311	5.9	4.78	13.41	–	-156.0	
1520	15.07		5.75	0.304	3.8	4.87	13.21	–	-148.3	
1530	15.07		5.75	0.308	3.7	4.80	13.30	–	-147.3	
1540	15.10		5.75	0.308	3.2	4.81	13.36	–	-144.7	
1550	15.10	↓	5.75	0.307	3.2	4.82	13.30	–	-144.9	SAMPLE
1705										END

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3801
Sample Location: 13MWT38
Sampled By: FOW
C.O.C. No.: 4818
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-10-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 0915								
Method: BLADDER	GREY	4.39	0.332	13.18	>999	4.70	10.3	—

PURGE DATA

Date: 11-9-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: BLADDER								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.7								
Static Water Level (WL): 62.26								
One Casing Volume(gal/L) 67.7 - 62.26 = 5.44								
Start Purge (hrs): 1005								
End Purge (hrs): 1213								
Total Purge Time (min): 128								
Total Vol. Purged (gal/L): 2.4								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	✓ -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	—

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[X] No[]

WL = 6.25 on 11-10-03
Low yield well intake + bottle ORC bottom

QC/QA Analysis

MS/MSD ✓ | Duplicate ID No.: —

Signature(s): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT38
DATE: 11-9-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1005	62.26									START
1015	62.72	70	11.59	0.302	999	6.44	8.97	–	26.0	
1025	63.03		11.57	0.316	999	4.45	10.56	–	13.8	
1035	63.36		11.55	0.325	999	4.09	11.42	–	6.7	-CLEAN OUT CELL
1045	63.84		11.52	0.330	999	4.23	11.72	–	5.0	
1055	64.29		11.53	0.327	999	4.46	11.49	–	8.2	
1105	64.74		11.53	0.328	999	6.27	11.56	–	11.8	
1115	65.13		11.52	0.327	999	6.95	11.49	–	10.7	-CLEAN OUT CELL
1125	65.57		11.44	0.315	999	7.95	11.48	–	23.8	
1135	65.90		11.39	0.316	999	7.36	12.04	–	14.6	
1145	66.30		11.35	0.315	999	6.78	12.40	–	11.3	
1155	>66.40 *		11.37	0.320	999	5.90	12.55	–	10.3	* WATER LEVEL BELOW
1205	–		11.39	0.332	999	4.70	13.18	–	10.3	PUMP
1208	DRY									
0915	6.23									SAMPLE - 11-10-03
										70 PSI
										CPM-2 20, 10

SIGNATURE(S): [illegible]

PAGE 2 OF 2

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC CRANE
Project No.: N906
Sampled By: F.W
Field Analyst: T. Rosand / FW
Field Form Checked as per QA/QC Checklist (Initials): TR

Sample ID No.: 13GWT3801
Sample Location: 13MWT38
Duplicate: ☐
Blank: ☐

Date: 11-10-03	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP (Eh)
Time: 0915	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	(+/- mv)
Method: BLADDER	Grey	11.39	0.332	13.18	7999	4.70	–	10.3

ORP (Eh) (+/- mv)

Electrode Make & Model: YSI
Reference Electrode (circle one): Silver-Silver Chloride / Calomel / Hydrogen

Dissolved Oxygen:

Equipment: Chemetrics Test Kit

Concentration: 3.5 ppm TR

Range Used:	Range	Method	Concentration ppm
☐	0 to 1 ppm	K-7510	
☑	1 to 12 ppm	K-7512	3.5

Analysis Time: 0824

Notes:

Alkalinity:

Equipment: Chemetrics Test Kit

Concentration: 108 ppm FW

Range Used:	Range	Method	Concentration ppm
☐	10 to 100 ppm	K-9810	
☐	50 to 500 ppm	K-9815	
☑	100 to 1000 ppm	K-9820	108

Analysis Time: 0846

Filtered: ☑

Notes: pH was high

Carbon Dioxide:

Equipment: Chemetrics Test Kit

Concentration: <10 ppm FW

Range Used:	Range	Method	Concentration ppm
☑	10 to 100 ppm	K-1910	<10
☑	100 to 1000 ppm	K-1920	
☐	250 to 2500 ppm	K-1925	

Analysis Time: 0832

Notes: Sample turned Pink w/ Activator solution

Ferrous Iron (Fe^{2+}):

Equipment: DR-850 DR-890 Range: 0 - 3.00 mg/L
Program/Module: 500nm 33

Concentration: 0.00 ppm

Analysis Time: 0851

Notes:

Filtered: ☐

Hydrogen Sulfide (H_2S): Range: 0 - 5 mg/L

Equipment: HS-C Other:

Exceeded 5.0 mg/L range on color chart: ☐

Concentration: 0.0 ppm FW

Analysis Time: 0850

Notes:

Note: Analyte, method, and/or equipment may be deleted from form if not being performed.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	NSWC CRANE	Sample ID No.:	13GWT3801
Project No.:	9060	Sample Location:	13MWT38
Sampled By:	F. W.	Duplicate:	☐
Field Analyst:	T. Rosahn / FW	Blank:	☐

Sulfide (S^{2-}):

Equipment: DR-850 DR-8 30 Range: 0 - 0.70 mg/L Concentration: 0.00 ppm

Program/Module: 610nm 93 Analysis Time: 0859 Filtered: ☑

Notes:

Nitrite (NO_2^--N):

Concentration: 0.000 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 0.350 mg/L Analysis Time: 0858 Filtered: ☑

Program/Module: 62

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Notes:

Manganese (Mn^{2+}):

Concentration: 0.1 ppm

Equipment: DR-850 DR-8 50 Range: 0 - 20.0 mg/L Analysis Time: 0908 Filtered: ☑

Program/Module: 525nm 41

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Values cited in the SAMPLING DATA block are consistent with the Groundwater Sample Log Sheet: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer (HACH) instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment was used for Nitrate test if Nitrite was detected: ☐ NA

Title block on ~~each~~ 1st page of form is initialized by person who performed this QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3901
Sample Location: 13MWT39
Sampled By: FCW
C.O.C. No.: 4817
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-7-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1400								
Method: PERISTALTIC	CLEAR	6.40	0.391	13.29	17.9	5.35	135.1	—

PURGE DATA

Date: 11-7-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 26.7								
Static Water Level (WL): 17.03								
One Casing Volume(gal/L): 1.6								
Start Purge (hrs): 0913								
End Purge (hrs): 1400								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 5.1								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	✓ -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	—

OBSERVATIONS / NOTES

Filtered Sample Collected Yes [X] No[]
INTAKE @ MID SCREEN

CHECK IF APPLICABLE

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT39
DATE: 11-7-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
0913	17.03									START
0923	17.32	95	6.50	0.370	28.3	5.18	11.61	–	174.0	
0933	17.64	↓	6.54	0.383	38.1	3.38	12.61	–	148.6	
0943	17.93		6.43	0.387	52.3	2.47	12.95	–	144.9	
0953	18.07	90	6.42	0.387	69.8	2.35	12.47	–	142.8	
1003	18.21		6.41	0.374	86.5	2.53	12.09	–	138.4	
1013	18.32		6.41	0.375	68.3	2.62	12.24	–	134.6	
1023	18.41		6.41	0.379	57.4	2.84	12.49		133.9	
1033	18.53		6.42	0.382	45.7	3.11	12.36	–	132.3	
1043	18.64		6.42	0.384	38.4	3.33	12.76	–	132.0	
1053	18.72		6.41	0.384	43.1	3.50	12.66	–	131.7	
1103	18.82		6.41	0.388	42.0	3.58	13.19	–	132.0	
1113	18.90		6.40	0.388	42.2	3.67	13.12	–	132.2	
1123	18.96		6.39	0.387	35.6	3.80	12.97	–	131.9	
1133	19.04		6.38	0.386	36.4	3.91	13.03	–	130.5	
1143	19.11		6.37	0.387	34.5	3.91	13.33	–	130.8	
1153	19.17		6.37	0.390	32.3	4.18	13.59	–	131.9	
1203	19.23		6.37	0.389	35.1	4.31	13.65	–	133.5	
1212	19.29	↓	6.36	0.387	30.0	4.37	13.38		133.2	STOP
1300	18.36		6.38	0.382	22.9	5.02	13.21	–	131.5	START REPURGING
1310	↓	90	↓	↓	↓	↓	↓	–	↓	
1320	18.56		6.41	0.386	14.0	5.37	13.27	–	132.9	
1330	18.71		6.41	0.388	19.9	5.50	13.27	–	134.5	
1340	18.83		6.41	0.390	23.2	5.44	13.36	–	135.7	
1350	18.94		6.41	0.392	22.5	5.40	13.34	–	135.4	
1400	19.02	↓	6.40	0.391	17.9	5.35	13.29	–	135.1	SAMPLE
1535										END

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4001
Sample Location: 13MWT40
Sampled By: FCW
C.O.C. No.: 4816
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Date: 11-5-03								
Time: 1630								
Method: PERISTALTIC	CLEAR	5.53	0.277	13.29	6.2	6.28	100.3	—

PURGE DATA

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 11-5-03								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.70								
Static Water Level (WL): 18.37								
One Casing Volume(gal/L): 1.5								
Start Purge (hrs): 1455								
End Purge (hrs): 1630								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 2.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	—
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	—

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[] No[X]
INTAKE MID SCREEN

Circle if Applicable

MS/MSD	Duplicate ID No.:	Signature(s):
—		FCW

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT40
DATE: 11-5-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1455	18.37									START
1505	18.61	100	5.60	0.273	83	7.22	13.52	–	102.5	
1515	18.65	↓	5.60	0.272	39	7.01	13.55	–	82.1	
1525	18.69	90	5.56	0.269	27.7	6.64	13.44	–	76.0	
1535	18.70		5.53	0.270	24	6.45	13.41	–	79.3	
1545	18.72		5.53	0.271	18.4	6.38	13.41	–	84.5	
1555	18.70		5.54	0.271	15.4	6.23	13.27	–	91.6	
1605	18.70		5.54	0.272	13.3	6.25	13.23	–	91.7	
1615	18.70		5.54	0.272	10.6	6.29	13.28	–	91.9	
1625	18.70		5.54	0.272	7.1	6.26	13.31	–	95.1	
1630	18.71		5.53	0.273	6.2	6.28	13.28	–	100.3	SAMPLE
1750										END

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4101
Sample Location: 13AWT41
Sampled By: T. Rodgers
C.O.C. No.: 4825
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11-23-03	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1530	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(mV)	NA
Method: Dis. Bailer	Greyish	8.36	0.394	14.01	>1000	3.72	+170	—

PURGE DATA

Date: 11-23-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other ORP
Method: Bailer	INT	8.48	0.430	15.89	>1000	1.71	~~>1000~~	165
Monitor Reading (ppm): 23	I	8.36	0.394	14.01	>1000	3.72	—	170
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.8								
Static Water Level (WL): 66.29								
One Casing Volume(gal/L):								
Start Purge (hrs): 1025								
End Purge (hrs): 1030								
Total Purge Time (min): 5								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	11/23 2 (2) L Glass Amber @ 1530	Yes
Micellaneous Explosives SW-846 8330	4°C	11/24 1 (2) L Glass Amber @ 1000	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/24 (1) L HDPE @ 1000	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/24 (1) L HDPE @ 1000	YES -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	11/24 (1) L HDPE @ 1000	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[]

VERY LOW YIELDING WELL

Check If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4201
Sample Location: 13MWT42
Sampled By: T. ROJAHN
C.O.C. No.: 48168 & 4817
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 11/6/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1500								
Method: SAME	Tannish	6.39	0.190	14.03	71000	1.86	205	—

PURGE DATA

Date: 11-05-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): -								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 23.45								
Static Water Level (WL): 20.80								
One Casing Volume(gal/L) 1.6								
Start Purge (hrs): 1535								
End Purge (hrs): 1614								
Total Purge Time (min): 39								
Total Vol. Purged (gal/L) 3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	11/6/03 (2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	11/6/03 (2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/7/03 (1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	11/7/03 (1) L HDPE	YES -F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	11/6/03 (1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

Slow Recharge
23.45 - 20.80 = 2.65 x 0.163 = 0.43 gal or 1.6 L
Intake near bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N9060, CTO 0279

WELL ID.: 13MWT42
DATE: 11-05-03

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	Salinity	ORP	Comments
1535	20.80	—	—	—	—	—	—	NA	—	GREY
1545	21.65	100	6.46	0.185	>1000	3.41	14.03	NA	115	1000ml BRN
1555	22.11	100	6.38	0.188	>1000	1.79	13.93	NA	115	2000ml TAN
1605	22.75	100	6.39	0.190	>1000	1.46	14.03	NA	105	3000ml TAN
1614	23.45	—	—	—	—	—	—	—	—	DRY
1626	23.30	—	—	—	—	—	—	—	—	RECHARGE
1636	22.77	—	—	—	—	—	—	—	—	"
1646	22.50	—	—	—	—	—	—	—	—	"
—	—	—	—	—	—	—	—	—	—	WI BA Sample 11/6

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4301
Sample Location: 13 MWT 43
Sampled By: S GRIER
C.O.C. No.: 4828
Type of Sample:
[X] Low Concentration
[] High Concentration

FAIL BING DATA

Date: 12/4/03	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1050	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(mV)	NA
Method: Peristoltic	Clear	4.47	0.303	12.83	1.9	4.37	248.5	--

PURGE DATA

Date: 12/4/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristoltic pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.50								
Static Water Level (WL): 9.20								
One Casing Volume (gal/L): 2.17								
Start Purge (hrs): 0900								
End Purge (hrs): 1040								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[] No[]

QA/QC

MS/MSD

Duplicate ID No.:

Signature(s): S Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT43
DATE: 12/4/03
WEATHER: Cloudy, Rain -33°F

Time (Hrs.)	Water Level (ft. below TOPC)	Volume (Gallons)	Flowrate (mL/min)	pH (Units)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0900	9.20	0	100	4.45	0.372	55	1.68	12.69	239.1	Slightly Cloudy –
0910	10.75		100	4.25	0.368	20	1.48	12.75	257.7	No odor
0920	11.85		100	4.20	0.345	13	1.73	12.71	303.4	Clear
0930	12.84		100	4.37	0.319	6.4	4.40	12.61	307.3	"
0940	13.12		100	4.42	0.313	6.5	4.76	12.48	305.9	"
0950	13.55	1.5	100	4.44	0.308	3.9	4.76	12.53	301.9	"
1000	13.78		100	4.45	0.304	3.5	4.69	12.18	299.4	"
1010	13.91		100	4.46	0.303	3.1	4.59	12.11	299.1	"
1020	14.50		100	4.47	0.305	2.7	4.30	12.87	298.0	"
1030	14.80		100	4.47	0.304	2.3	4.36	12.71	298.3	"
1040	15.20	3.0	100	4.47	0.303	1.9	4.37	12.83	298.5	"
										Sampled 13MWT43 @ 1050

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) Peristaltic pump #400
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 18.0'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4401
Sample Location: 13MWT44
Sampled By: S GRIER
C.O.C. No.: 4828
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 12/4/03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1700								
Method: Bladder pump	Clear	7.77	0.595	11.37	4.6	0.79	-70.0	—

PURGE DATA

Date: 12/4/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 85.81								
Static Water Level (WL): 64.49								
One Casing Volume (gal/L): 3.5								
Start Purge (hrs): 1430								
End Purge (hrs): 1650								
Total Purge Time (min): 140								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[] No[]

QC Use If Applicable

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT 44
DATE: 12/4/03
WEATHER: Cloudy, Rain, 33°F

Time (Hrs.)	Water Level (ft. below TOC)	Volume (gallons)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
1430	64.49	0	100	7.16	0.489	60	4.18	10.94	119.8	Clear, no odor
1440	65.70		100	7.28	0.587	39	3.86	11.11	130.5	Slightly Cloudy,
1450	66.20		100	7.56	0.597	21	3.12	11.51	133.5	Clear
1500	66.50		100	7.73	0.595	24	2.16	11.44	52.0	"
1510	66.80		80	7.77	0.593	19	1.94	11.39	8.7	"
1520	66.90		80	7.81	0.593	14	1.84	11.35	-15.7	"
1530	66.69		80	7.83	0.594	9.6	1.72	11.36	-34.7	"
1540	66.72		80	7.82	0.597	7.5	1.46	11.43	-50.4	"
1550	66.74		80	7.81	0.597	6.9	1.24	11.45	-56.4	"
1600	66.75		80	7.79	0.597	5.3	1.11	11.39	-61.1	"
1610	66.77		80	7.78	0.596	4.9	0.99	11.30	-63.7	"
1620	66.80		80	7.77	0.595	4.6	0.92	11.35	-67.0	"
1630	66.83		80	7.77	0.596	3.1	0.85	11.37	-68.1	"
1640	66.87		80	7.77	0.596	5.2	0.83	11.35	-69.0	"
1650	66.90	4 gal	80	7.77	0.595	4.6	0.79	11.37	-70.0	"
										13 MWT 44
										Sampled @ 1700

Water Quality Meter (S/N) 02B0141
Control Box Type (S/N) NA
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 79.0'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13 GWT 4501
Sample Location: SWMU 13
Sampled By: SGrier
C.O.C. No.: 4836
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
TR → Date: 12/8/03								
Time: 1558								
Method: BLADDER PUMP	V.Sl. Cloudy	8.19	0.357	13.36	75	0.55	+55.5	—

PURGE DATA

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
SG → Date: 12/7/03								
Method: Bladder pump								
Monitor Reading (ppm): -								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 83.00								
Static Water Level (WL): 73.84								
One Casing Volume (gal/L): 1.5								
Start Purge (hrs): 1615								
End Purge (hrs): 1755								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	12/8(1) (2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	12/8(1) (2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	12/9 @ 1645 (1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	12/10 @ 1300 (1) L HDPE	Yes — F
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	12/10 @ 1300 (1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[X] No[]

BLADDER PUMP ON Bottom of WELL.
WELL WAS pump dry to Intake - Will sample tomorrow.
WELL WAS sampled over a period of 3 days.

Circle if Applicable:

MS/MSD | Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13MWT45
DATE: 12/7/03
WEATHER:

Time (Hrs.)	Water Level (ft. below TOC)	Volume (liters)	Flowrate (ml/min)	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
1515	73.75	—	—	—	—	—	—	—	—	START PURGE
1525	74.23	1.0	100	8.23	0.383	250	1.92	14.04	72.9	GREY, CLOUDY,
1535	74.58		60	7.94	0.373	260	1.19	13.26	77.2	NO ODOR
1545	74.94	2.2	60	7.87	0.372	310	1.50	13.05	82.3	
1555	75.15		60	7.83	0.374	370	1.42	13.16	85.6	
1605	74.45	3.6	60	7.78	0.378	420	1.74	13.22	90.1	
1615	75.75		60	7.74	0.381	450	2.00	13.28	95.5	
1625	76.10	4.3	70	7.68	0.387	450	2.19	13.18	100.9	
1635	76.39	5.0	70	7.63	0.393	450	2.32	12.92	106.7	
1645	—	—	—	—	—	—	—	—	→	Draw down will not stabilize will dry well out
1655	77.15		110	7.55	0.395	290	1.35	13.27	111.6	Increased Flow Rate
1705	77.66		110	7.58	0.389	190	0.88	13.37	109.0	
1715	78.36		110	7.65	0.380	100	0.65	13.35	104.7	
1725	78.97		110	7.80	0.371	85	0.58	13.28	95.0	
1735	79.58		110	7.95	0.358	80	0.42	13.15	76.5	
1745	80.00		140	8.09	0.350	60	0.49	12.98	65.3	
1755	dry to pump intake	15 L	150+	8.19	0.357	75	0.55	13.36	55.5	Dry to pump Intake

Water Quality Meter (S/N) D2B0141
Control Box Type (S/N) MP10-1551
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 82'

SIGNATURE(S): Scott [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT601
Sample Location: 13GWT46
Sampled By: Gdewdt
C.O.C. No.: 4036
Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 12-9-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1124								
Method: Bladder	clear	6.60	1.021	12.45	8.72	0.99	-32.5	—

Date: 12-9-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder	11.2	6.60	1.021	12.45	8.72	0.99	—	—
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ⌀ PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.60								
Static Water Level (WL): 58.19								
One Casing Volume(gal/L): 5.81								
Start Purge (hrs): 0902								
End Purge (hrs): 1122								
Total Purge Time (min): 140								
Total Vol. Purged (gal/L): 11.2								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	No
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	No

OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[] No[X] Turbidity prior to metals sample was 7.11.

67.60
58.19
9.41 (.163) = 1.53 gal = 5.81 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13GWT4601
DATE: 12-9-03
WEATHER: 53° cloudy

Time	Water Level	Volume	Flowrate	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
0902	58.19	–	–	–	–	–	–	–	–	Start purge
0912	58.24	0.8	800	6.77	1.022	229	1.49	12.32	18.8	cloudy
0922	58.22	1.6	800	6.78	1.021	163	1.52	12.27	5.5	"
0932	58.20	2.4	800	6.78	1.019	103	1.29	12.31	-17.1	slight cloudy
0942	58.21	3.2	800	6.77	1.018	93.2	1.25	12.35	-27.9	"
0952	58.22	4.0	800	6.75	1.017	85.3	1.11	12.36	-35.8	"
1002	58.23	4.8	800	6.74	1.016	61.8	1.17	12.37	-37.3	"
1012	58.24	5.6	800	6.73	1.017	55.2	1.11	12.42	-31.9	clearer
1022	58.24	6.4	800	6.72	1.017	36.4	1.11	12.41	-31.0	"
1032	58.24	7.2	800	6.70	1.018	30.8	1.04	12.42	-35.4	"
1042	58.24	8.0	800	6.66	1.018	25.3	1.00	12.41	-38.2	"
1052	58.24	8.8	800	6.64	1.020	18.6	1.03	12.43	-36.2	clear
1102	58.24	9.6	800	6.62	1.021	13.3	0.91	12.43	-34.1	"
1107	58.24	10.0	800	6.61	1.021	12.1	0.97	12.42	-33.2	"
1112	58.24	10.4	400	6.60	1.021	11.3	0.96	12.42	-32.5	"
1117	58.24	10.8	400	6.60	1.021	10.44	0.96	12.44	-32.8	"
1122	58.24	11.2	400	6.60	1.021	8.72	0.99	12.45	-32.5	stop purge

Water Quality Meter (S/N) 98F0478 AB
Control Box Type (S/N) MP101550
Turbidity Meter (S/N) 3317 2402

Pump Intake Depth 62'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N9060 CTO 0279

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4701
Sample Location: SWMU 13
Sampled By: S. GRIER
C.O.C. No.: 4836
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 12-9-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	ORP (mV)	Other NA
Time: 1110								
Method: Peristaltic	Clear	3.46	1634	12.42	5.4	1.50	409.9	—

PURGE DATA

Date: 12/9/03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 20.20								
Static Water Level (WL): 6.68								
One Casing Volume (gal/L): 8.8								
Start Purge (hrs): 0930								
End Purge (hrs): 1100								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 9.4								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Micellaneous Explosives SW-846 8330	4°C	(2) L Glass Amber	Yes
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	NO
Nitrate + Nitrite (asN) EPA 353.2 & Ammonia (asN) EPA 350.1	4°C/H_2SO_4	(1) L HDPE	Yes
Total Organic Carbon	4°C/H_3PO_4	(2) 40ml Vails	NO

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[]

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Scott Grier

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT : NSWC CRANE
PROJECT NUMBER: N9060
PROJECT SITE NAME: SWMU 13

WELL ID.: 13 MWT 47
DATE: 12/9/03
WEATHER: Cloudy, Lt. Breeze, 51°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Liters)	Flowrate (ml/min)	pH	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments
0930	7.18	0.3	125	3.53	1555	13.9	5.48	12.55	356.6	Clear, No odor
0940	7.41	0.6	125	3.36	1607	14.0	1.45	12.46	402.3	
0950	7.46	1.7	110	3.39	1624	6.1	1.78	12.42	409.4	
1000	7.51	2.8	110	3.40	1626	6.9	1.65	12.46	409.9	
1010	7.56	3.9	110+	3.41	1628	7.3	1.60	12.50	409.3	
1020	7.63	5.0	110	3.42	1630	7.8	1.54	12.54	409.5	
1030	7.61	6.1	110	3.44	1637	6.0	1.65	12.53	410.4	
1040	7.59	7.2	110	3.44	1636	4.3	1.54	12.47	410.6	
1050	7.60	8.3	110	3.45	1635	4.9	1.52	12.45	410.1	
1100	7.61	9.4	110	3.46	1634	5.4	1.50	12.42	409.9	
										Samples 13GWT47 taken @ 1110

Water Quality Meter (S/N) 0280141
Control Box Type (S/N) Peristaltic pump #400
Turbidity Meter (S/N) 3106-1402

Pump Intake Depth 15.0

SIGNATURE(S): Scott Brun

ROUND 3

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[X] Other: Culvert Discharge
[] QA Sample Type:

Sample ID No.: 13SW0102
Sample Location: 13SW/SD01
Sampled By: SJC
C.O.C. No.: 0105

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

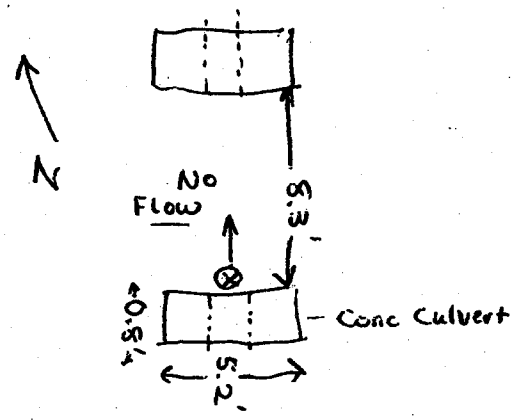
Date: 10/7/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0855								
Depth: 0-2"								
Method: Direct Fill	CLEAR	6.97	829	16.27	9.4	2.83	271.2	

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] ~~13GWT~~ _____-F
13SW0102

WATER WAS CLEAR W <10 TURB BUT TOOK FILTERED SAMPLE TO FILTER OUT GRASS, ETC

AREA RECENTLY MOWED



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW~~1402~~ (FC)
Sample Location: 13SW/SD~~02~~ 18
Sampled By: SJC/JG
C.O.C. No.: —

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/6/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1315								
Depth: NA	—	—	—	—	—	—	—	—
Method: NA								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

NO SAMPLE – DRY

SEE SUPPLEMENTAL SHEET

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): SJConti

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 13SW1402 **Date:** 10/6/04 **Time:** 1315 **Sampler:** SJC/JG

Photograph Number/Direction: NA Upstream ____ Downstream ____ East ____ West ____ North ____ South

Predominant Surrounding Land Use: (Wooded) Open Field Other

Canopy Cover: Open (Partly Open) Shaded

Dicharge Pipe Present: Yes (No)

Aquatic Vegetation Present: Yes (No) | **Stream channelized:** (Yes) No

Water flowing: Yes (No) (Not present)

Organisms Present: Fish (in) NA Other (insects, frogs, etc.): NA

Water Width (ft): NA | **Water Depth (ft):** NA | **Estimated Flow/Velocity:** NA

Channel Width (ft): 12' | **Channel Depth (ft):** 3' | BOTH SIDES.

Signs of flooding (circle all that apply) Yes (No) Water marks on trees Water-borne debris piles Other:

Deep Pools Present (>2 feet): Yes (No) If yes (approximate size)

Sediment Substrate: Bedrock (Boulder (>10 in)) (Cobble (2.5-10 in)) (Gravel (0.10-2.5 in))
(Circle all that apply) (Sand) (Silt) Clay Muck
Debris Detritus Concrete Iron deposits

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic

Sediment Oils: (Absent) Slight Moderate Profuse

Water Odors: Normal NA Sewage Petroleum Chemical Anaerobic

Water Surface Oils: None NA Droplets Sheen

Turbidity: Clear NA Slightly Turbid Turbid Opaque

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1402
Sample Location: 13SW/SD 14
Sampled By: T. ROLAHN
C.O.C. No.: 0125

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/27/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1028								
Depth: SURFACE	CLEAR	7.45	0.702	14.69	12.8	10.30	+81.7	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	1 (2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	1 (2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT NA -F

Fill From Falls

[redacted]

FLOW 750 < 100 gpm
~ 1 gal/sec

SEE FIG 3-3

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Agnew

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW1502
Sample Location: 13SW/SD15
Sampled By: SJC/JG
C.O.C. No.:

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 101604	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1305								
Depth: —	—	—	—	—	—	—	—	—
Method: —								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

SEE SUPPLEMENTAL SHEET

NO SAMPLE - DRY

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): SJ Conti

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

Sample Number: 135W1502 **Date:** 10/6/04 **Time:** 1305 **Sampler:** SJC/JG

Photograph Number/Direction: ✓ Upstream SE ____ Downstream ____ East ____ West ____ North ____ South

Predominant Surrounding Land Use: Wooded ~~Open Field~~ Other

Canopy Cover: Open Partly Open Shaded

Dicharge Pipe Present: Yes No

Aquatic Vegetation Present: Yes No | **Stream channelized:** Yes No

Water flowing: Yes No Not present

Organisms Present: Fish (in) NA Other (insects, frogs, etc.): NA

Water Width (ft): NA | **Water Depth (ft):** NA | **Estimated Flow/Velocity:** NA

Channel Width (ft): 10' | **Channel Depth (ft):** 8' | 8' E

Signs of flooding (circle all that apply) Yes No Water marks on trees Water-borne debris piles Other:

Deep Pools Present (>2 feet): Yes No If yes (approximate size)

Sediment Substrate: Bedrock Boulder (>10 in) Cobble (2.5-10 in) Gravel (0.10-2.5 in)

(Circle all that apply) Sand Silt Clay Muck

Debris Detritus Concrete Iron deposits

Sediment Odors: Normal Sewage Petroleum Chemical Anaerobic

Sediment Oils: Absent Slight Moderate Profuse

Water Odors: Normal NA Sewage Petroleum Chemical Anaerobic

Water Surface Oils: None NA Droplets Sheen

Turbidity: Clear NA Slightly Turbid Turbid Opaque

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1502
Sample Location: 13SW/SD 25
Sampled By: T. Roman
C.O.C. No.: 0125

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10-27-04 / Time: 0950 / Depth: Direct 5 / Method: SURFACE	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	CLEAR	7.41	0.361	14.22	23.8	11.97	*101.4	—

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT NA -F

Flow = <10 gpm

Direct Fill from Fall

Flow over bedrock
Depth < 1"
width ~ 1'

SEE FIG. 3-3

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rogal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[X] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW~~1602~~ 16
Sample Location: 13SW/SD 16
Sampled By: SJC/JG
C.O.C. No.: —

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 101604	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: —								
Depth: —								
Method: —	—	—	—	—	—	—	—	—

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

SEE SUPPLEMENTAL SHEET

NO SAMPLE - DRY

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): SJ Conte

SUPPLEMENTAL SURFACE WATER/SEDIMENT SAMPLE DOCUMENTATION SHEET
NSWC CRANE, INDIANA

2 of 2

Sample Number: 13SW1602	**Date:** 10/6/04	**Time:** 1245	**Sampler:** SJC/JG		
Photograph Number/Direction: ✓ Upstream (S)	Downstream	East	West	North	South
Predominant Surrounding Land Use: (Wooded)	Open Field	Other			
Canopy Cover: Open	(Partly Open)	Shaded			
Dicharge Pipe Present: Yes	(No)				
Aquatic Vegetation Present: Yes	(No)	**Stream channelized:** (Yes)	No		
Water flowing: Yes	No	(Not present)			
Organisms Present: Fish (in) NA	Other (insects, frogs, etc.): NA				
Water Width (ft): NA	**Water Depth (ft):** NA	**Estimated Flow/Velocity:** NA			
Channel Width (ft): 12	**Channel Depth (ft):** 4'	BOTH SIDES			
Signs of flooding (circle all that apply) Yes	(No)	Water marks on trees	Water-borne debris piles	Other:	
Deep Pools Present (>2 feet): Yes	(No)	If yes (approximate size)			
Sediment Substrate: (Bedrock)	(Boulder (>10 in))	(Cobble (2.5-10 in))	(Gravel (0.10-2.5 in))		
(Circle all that apply) (Sand)	(Silt)	Clay	Muck		
Debris	Detritus	Concrete	Iron deposits		
Sediment Odors: (Normal)	Sewage	Petroleum	Chemical	Anaerobic	
Sediment Oils: (Absent)	Slight	Moderate	Profuse		
Water Odors: Normal NA	Sewage	Petroleum	Chemical	Anaerobic	
Water Surface Oils: None NA	Droplets	Sheen			
Turbidity: Clear NA	Slightly Turbid	Turbid	Opaque		

Other Comments/Observations: _____

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1602
Sample Location: 13SW/SD 16
Sampled By: T. Rojahn
C.O.C. No.: 0125

- [x] Stream
- [] Spring
- [] Pond
- [] Lake
- [] Other:
- [] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [] High Concentration

SAMPLING DATA:

Date: 10-27-04 / Time: 1125 / Depth: SURFACE / Method: DIRECT	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	CLEAR	7.61	0.297	14.56	12.7	11.63	+71.5	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[] No[] 13GWT NA -F

Filled from falls over rock
Flow > 5 L 10 gpm

MAP

SEE FIG 3-3

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW —
Sample Location: 13SW/SD22
Sampled By: SJC/JG
C.O.C. No.: NA

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/7/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0930								
Depth: —	—	—	—	—	—	—	—	—
Method: —								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT — -F

NO SAMPLE - DRY

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW 2202
Sample Location: 13SW/SD 22
Sampled By: T. ROJAHN
C.O.C. No.: 0125

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/27/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1055								
Depth: 2"	Clear	7.70	0.205	15.14	21.3	10.04	+74.1	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13SW 2202 -F

Flow
½" x 3' (3sec/ft)

SEE FIG 3-3

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW —
Sample Location: 13SW/SD 28
Sampled By: SJC/JG
C.O.C. No.: NA

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/6/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: —								
Depth:	—	—	—	—	—	—	—	—
Method:								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

NO SAMPLE – DRY

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[X] Stream (Pool)
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW 2802
Sample Location: 13SW/SD 28
Sampled By: T. ROJAHN
C.O.C. No.: 0124

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 10/26/04								
Time: 1600								
Depth: 2"	Sl. Cloudy	7.99	0.059	13.75	56.4	8.05	49.0	—
Method: Direct								

SAMPLE PRESERVATION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	4 x (1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	4 x (1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/MEASUREMENTS

Filtered Sample Collected Yes[] No[] 13~~GWT~~ SW 2802 -F

Flow - NA (WATER PONDED)
Pool 4" x 2' x 8'

SEE FIG - 3-3

Circle if Applicable:

MS/MSD - YES

Duplicate ID No.: 13FD102604 01 & -F

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW —
Sample Location: 13SW/SD 30
Sampled By: SJC/JG
C.O.C. No.: NA

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/6/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: —								
Depth: —	—	—	—	—	—	—	—	—
Method: —								

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

NO SAMPLE / DRY

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW3002
Sample Location: 13SW/SD 30
Sampled By: T. Cosaho
C.O.C. No.: 0124

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/26/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1535								
Depth: 2"	CLEAR	7.52	0.359	14.39	5.69	9.44	39.6	—
Method: Direct								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	STET (2) 1 (1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	STET (2) 1 (1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	~~STET~~ (2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[] No[] 13~~GWT~~SW 3002 -F

FLOW
STORM EVENT
1" x 15' 2 sec/ft

MAP

SEE FIG 3-3

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 3102
Sample Location: 13SW/SD 31
Sampled By: SJC/JG
C.O.C. No.: 0104

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/6/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1515								
Depth: 0-2"	LT BRN	7.63	457	12.50	119	9.34	130	
Method: DIRECT FILL								

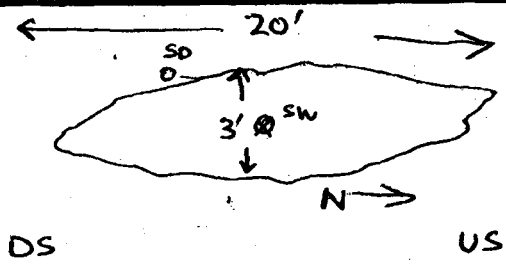
Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	$4°C/HNO_3$	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	$4°C/HNO_3$	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	$4°/H_2SO_4$	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
		(5) TOTAL	

Filtered Sample Collected Yes[] No[] ~~10GWT~~ 13SW3102 -F

CANNOT FIND ORIG STAKE

27' WIDTH

7' WEST
4' EAST



POOLED WATER
NO FLOW
SHADED
WATER BUGS

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): J Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW —
Sample Location: 13SW/SD33
Sampled By: SJC/JG
C.O.C. No.: N/A

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: / Time: / Depth: / Method:	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

NO SAMPLE TAKEN – DRY

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW3301
Sample Location: 13SW/SD 33
Sampled By: T. Rosman
C.O.C. No.: 0124

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 10/26/04 Time: 1510 Depth: 2" Method: Direct	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	Clears	7.74	0.347	14.28	5.92	11.45	39.3	—

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	Yes/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[] No[] 13GWT_____-F

FLOW
Rain Event conditions
4" x 6' 2 sec/ft

~~SEE FIG 1 3 or 3-4~~ (F4)
SEE FIG 3-3

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW3401
Sample Location: 13SW/SD34
Sampled By: SJC/JG
C.O.C. No.: 0104

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
(X) Low Concentration
[] High Concentration

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 10/6/04 Time: 1045 Depth: 0-2" Method: DIRECT FILL	CLEAR	7.12	373	10.79	1.3	10.05	166.5	—

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/(No)
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/(No)
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	(1) L HDPE	(Yes)/No
RDX Degradation Products SW-846, Modified	4°C	(2) L Glass Amber	(Yes)/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes)/No
		(5) TOTAL	

Filtered Sample Collected Yes[] No[] 13GWT NA -F

SEE DRAWING.

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW3501
Sample Location: 13SW/SD 35
Sampled By: SJC/JG
C.O.C. No.: 0104

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

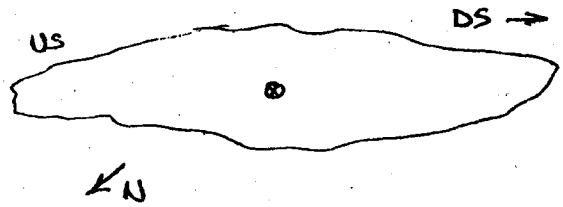
Date: 10/6/04 Time: 1345 Depth: 0-2" Method: DIRECT FILL	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	CLEAR	7.39	512	14.50	3.8	8.72	151	–

Analysis	Preservative	Container Requirements	Collected
Total Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°/H_2SO_4	4 (1) L HDPE *	Yes/No
RDX Degradation Products SW-846, Modified	4°C	8 (2) L Glass Amber	Yes/No
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	8 (2) L Glass Amber	Yes/No
		20 5 TOTAL FOR SAMPLE	
		TOTAL	

Filtered Sample Collected Yes[] No[] 13GWT_____-F

TOOK DUP AND MS/MSD

SEE DRWG.
Sample Taken in pooled water
No Flow.



Circle if Applicable:
MS/MSD
Duplicate ID No.: 13FD10060401

Signature(s): SJ Conti

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0102
Sample Location: 13MWT 01
Sampled By: Gerdt
C.O.C. No.: 0055
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-1-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1821								
Method: Del. Bladder	Clear	3.57	.255	18.75	9.5	4.2	461.2	---

PURGE DATA:

Date: 8-1-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Del. bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 7.91								
One Casing Volume(gal/L): 6.1								
Start Purge (hrs): 1618								
End Purge (hrs): 1818								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 13								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 12'

17.95
7.91
10.04 (.163) = 1.64 gal
= 6.1 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT01
DATE: 8-1-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (ml/Min)	Flowrate (ml/Min)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1618	7.91	—	—	—	—	—	—	—	—	Start purge
1628	9.42	1.9	190	3.57	.223	15	3.88	19.31	388.7	clear
1638	9.23	3.2	130	3.62	.252	9.4	6.01	19.96	416.1	"
1648	9.35	4.2	100	3.46	.249	9.1	5.54	19.33	434.6	
1658	—	Adjusting flow rate								
1708	9.21	5.1	90	3.77	.245	9.3	5.08	20.11	436.3	clear
1718	9.26	6.0	90	3.58	.258	9.2	4.33	19.41	444.2	
1728	9.43	7.4	140	3.57	.247	9.0	4.48	18.79	453.6	Unable to maintain
1738	9.24	8.4	100	3.70	.263	9.1	4.82	20.37	450.1	flowrate ~<100
1748	9.19	9.1	70	3.61	.275	8.1	4.27	19.92	452.8	clear
1758	9.25	10.4	130	3.55	.261	8.4	4.31	19.22	459.2	"
1808	9.32	11.7	130	3.57	.253	—	4.29	19.05	458.7	
1818	9.44	13.0	130	3.57	.255	9.5	4.20	18.75	461.2	end purge

Water Quality Meter (SN) 99K 0055
Control Box type (SN) MP10 1231
Turbidity Meter (SN) 4650 4300

Pump Intake 12'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0203
Sample Location: 13MWT 02
Sampled By: Gorski
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-24-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1435								
Method: Peristaltic	Clear	3.39	1501	19.59	2.3	2.19	616.2	---

PURGE DATA:

Date: 7-24-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 29.50								
Static Water Level (WL): 16.48								
One Casing Volume(gal/L): 7.9								
Start Purge (hrs): 1318								
End Purge (hrs): 1428								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 7.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 24.5'

29.50
16.48
13.02(.163) = 2.12 gal
= 7.9 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13GWT02
DATE: 7-24-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (µmhos/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1318	16.48	—	—	—	—	—	—	—	—	Start purge
1328	18.39	1.2	120	4.05	1440	6.0	1.10	18.78	305.5	Clear
1338	19.08	2.2	100	3.88	1480	5.9	.88	19.50	410.7	"
1348	20.17	3.2	100	3.81	1504	5.6	.82	20.48	540.8	"
1358	20.63	4.2	100	3.41	1490	3.7	.96	19.87	592.4	"
1408	21.11	5.2	100	3.34	1484	2.8	1.41	19.50	601.7	"
1418	21.63	6.2	100	3.34	1493	2.5	2.03	19.69	608.6	"
1423	—	6.7	50	3.32	1495	—	2.10	19.68	614.1	
1428	22.15	7.2	50	3.39	1501	2.3	2.19	19.59	616.2	end purge

Water Quality Meter (SN) 0160979
Control Box type (SN) N/A
Turbidity Meter (SN) 4560 4300

Pump Intake 24.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0303
Sample Location: 13MWT 03
Sampled By: Goerdt
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-24-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1825								
Method: peristaltic	clear	5.52	528	19.98	9.2	3.66	107.4	---

PURGE DATA:

Date: 7-24-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 18.05								
Static Water Level (WL): 11.31								
One Casing Volume(gal/L) 4.1								
Start Purge (hrs): 1605								
End Purge (hrs): 1815								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): 11.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 14.5'

18.05
11.31
6.74 (.163) = 1.10 gal
= 4.0 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT03
DATE: 7-24-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (µmhos/cm)	Turb. (NTU)	DO (mg/L)	Temp. (deg. C)	ORP (mV)	Comments (Volume & Color)
1605	11.31	—	—	—	—	—	—	—	—	YSI meter not
1615	—	0.9	90	—	—	—	—	—	—	connecting.
1625	—	1.8	90	—	—	—	—	—	—	Using T. Rejchrid
1635	—	2.7	90	—	—	—	—	—	—	meter
1645	12.96	3.6	90	6.25	496	6.5	5.13	22.29	97.6	clear
1655	13.69	4.5	90	6.20	501	25	4.55	21.89	97.8	"
1705	13.82	5.4	90	6.33	546	55	5.72	24.30	102.5	lowered pump intake
1715	—	6.3	90	6.01	542	—	5.69	24.41	103.2	—
1725	14.46	7.2	90	5.97	538	38	5.10	22.75	103.9	clear
1735	14.64	8.1	90	5.89	547	32	4.48	21.80	105.2	"
1745	14.88	9.0	90	5.65	539	27	4.26	21.42	106.4	"
1755	15.13	9.9	90	5.61	535	21	3.87	20.38	107.9	"
1805	15.28	10.8	90	5.60	535	12	3.80	20.46	107.7	"
1815	15.68	11.7	90	5.52	528	9.2	3.66	19.98	107.4	Stop purge

Water Quality Meter (SN)
Control Box type (SN) NA
Turbidity Meter (SN) 4560 4300

Pump Intake 14.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0403
Sample Location: 13MWT 04
Sampled By: Goerdt
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-24-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1205								
Method: Peristaltic	clear	5.03	201	18.86	7.9	1.62	455.2	---

PURGE DATA:

Date: 7-24-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.80								
Static Water Level (WL): 15.10								
One Casing Volume(gal/L) 1.7								
Start Purge (hrs): 1102								
End Purge (hrs): 1202								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L) 6.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 17'

17.80
15.10
2.70 (.163) = 0.44
= 1.7 L

Circle if Applicable:

MS/MSD | Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT04
DATE: 7-24-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/min.)	Flowrate (mL/min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1102	15.10	—	—	—	—	—	—	—	—	Start purge
1112	15.43	1.0	100	6.31	3	23	8.10	21.81	442.4	Clear
1122	15.48	2.0	100	5.92	123	18	2.58	18.75	410.6	"
1132	15.55	3.0	100	6.31	191	11	2.79	18.73	398.7	"
1142	15.59	4.0	100	5.14	193	9.2	1.98	18.88	409.1	"
1147	—	4.5	50	5.12	195	—	1.90	18.92	421.3	"
1152	—	5.0	50	5.09	197	—	1.71	18.86	446.5	
1157	—	5.5	50	5.06	200	—	1.65	18.83	451.8	
1202	15.60	6.0	50	5.03	201	7.9	1.62	18.86	455.2	stop purge

Water Quality Meter (SN) 01C0979
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 17'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0503
Sample Location: 13MWT 05
Sampled By: TERRY ROJAHN
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/24/04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1635	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAME	CLEAR	6.60	0.468	20.05	75	0.87	97	---

PURGE DATA: to SL cloudy

Date: 7/24/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 19.15								
Static Water Level (WL): 6.56								
One Casing Volume(gal/L): 7.8								
Start Purge (hrs): 1230								
End Purge (hrs): 1630								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 16.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT 0503 -F

Pump intake @ 14.15'

12.59' x 0.163 = 2.1 gal or 7.8 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT05
DATE: 7/24/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (milliliter)	Flowrate (ml/min)	pH (Units)	Cond. (mmhos/cm)	Turb. (NTU)	DO (mg/l)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1230	6.56	—	—	—	—	—	—	—	—	
1240	7.16	1200	120	5.75	0.232	280	3.11	20.73	142	CLOUDY
1250	7.43	2200	100	6.51	0.429	180	2.47	20.10	96	CLOUDY
1300	7.94	3200	100	6.15	0.453	40	1.71	22.23	112	CLEAR
1310	8.28	3800	60	6.00	0.469	27	1.49	23.20	110	CLEAR
1320	8.66	4400	60	6.08	0.461	23	1.53	22.49	107	CLEAR
1330	9.05	5000	60	6.16	0.457	20	1.58	22.67	105	CLEAR
1340	9.51	5600	60	6.17	0.448	22	1.75	22.81	105	CLEAR
1350	9.92	6500	90	6.21	0.439	25	2.09	22.64	105	CLEAR
1400	10.18	7100	60	6.11	0.465	27	2.11	23.80	108	CLEAR
1410	10.43	7700	60	6.13	0.485	34	2.01	23.40	106	CLEAR
1420	10.69	8300	60	6.26	0.491	39	1.87	23.26	108	CLEAR
1430	10.94	8900	60	6.29	0.490	37	1.74	23.09	107	CLEAR
1440	11.21	9500	60	6.31	0.486	39	1.61	22.75	106	CLEAR
1450	11.45	10100	60	6.33	0.483	37	1.49	22.43	105	CLEAR
1500	11.64	10700	60	6.28	0.482	50	1.45	22.40	105	CLEAR
1510	11.75	11300	60	6.36	0.478	48	1.40	21.82	101	CLEAR
1520	11.98	11950	65	6.43	0.479	45	1.29	21.43	100	CLEAR
1530	12.17	12600	65	6.45	0.493	50	1.24	21.39	98	CLEAR
1540	12.34	13250	65	6.48	0.502	55	1.19	21.07	96	V. Sl Cloudy
1550	12.50	13900	65	6.48	0.510	33	1.17	21.00	95	CLEAR
1600	12.64	14550	65	6.43	0.519	29	1.18	21.27	95	CLEAR
1610	12.78	15200	65	6.20	0.545	25	1.21	22.84	99	CLEAR
1620	12.97	15850	65	6.59	0.471	75	0.99	20.44	95	Sl. Cloudy
1630	13.18	16500	65	6.60	0.468	75	0.87	20.05	97	Sl. Cloudy
1635	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760-1800

Pump Intake 14.15'

SIGNATURE(S): Terry Rogers

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0603
Sample Location: 13MWT 06
Sampled By: Gerdt
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/25/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1405								
Method: Peristaltic	clear	6.08	399	18.85	44~~4~~ 26	6.73	441.2	—

7/24/04

PURGE DATA:

Date: 7-24-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.55'								
Static Water Level (WL): 13.10'								
One Casing Volume(gal/L): 2.7								
Start Purge (hrs): 0915								
End Purge (hrs): 1033								
Total Purge Time (min): 78								
Total Vol. Purged (gal/L): 7.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	1 ~~(2)~~ (1) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

7/25/04 1405 - Water level at 16.98'. Collected approx. 1/2 L. Well Dried out
7/26/04 - 1735 - Water level 17.25'. Collected 1/4 bottle (L).
7/27/04 - 1720 - Filled EXP. Container

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 17'

Well historically dries out. Dry on 7-24-04.

17.55
13.10
4.45 (.163) = .725 gal
= 2.7 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448 CTO 343

WELL ID.: 13MWT0603
DATE: 7-29-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/min.)	Flowrate (mL/min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments (Volume & Color)
0915	13.10	—	—	—	—	—	—	—	—	Start purge
0925	13.90	1.0	100	6.16	368	—	7.46	18.82	310.1	~~Clear~~ 0.5
0935	14.52	2.0	100	6.22	363	9.9	8.51	19.72	352.8	Clear
0945	15.02	3.0	100	6.08	364	10.5	8.00	19.46	370.1	"
0955	15.62	4.0	100	6.08	378	13.	7.17	19.32	400.5	"
1005	16.01	5.0	100	6.20	400	14	7.45	20.90	416.4	"
1015	16.53	6.0	100	6.07	397	12	6.89	18.70	432.9	"
1025	16.99	7.0	100	6.08	399	26	6.73	18.85	441.2	"
1033	17.45	Dry								Dry well

Water Quality Meter (SN) 0160929
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 17'

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0703
Sample Location: 13MWT07
Sampled By: T. RUAHN
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/25/04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1122	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAME	CLEAR	4.12	1.078	19.80	1.5	2.28	151	--

PURGE DATA:

Date: 7/25/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 3.16								
One Casing Volume(gal/L) 9.1								
Start Purge (hrs): 920								
End Purge (hrs): 1120								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L) 9.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 12.95'

14.71 x 0.163 = 2.4141 or 9.1 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: 13FD072504 01

Signature(s): Terry Rozak

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT07
DATE: 7-25-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (deg. C)	ORP (mV)	Comments (Volume & Color)
0920	3.16	—	—	—	—	—	—	—	—	Start Purge
0930	3.85	1000	100	4.25	1.114	35	3.98	19.66	165	CLEAR
0940	4.43	1800	80	4.18	1.097	5.2	3.51	20.50	161	CLEAR
0950	4.85	2600	80	4.18	1.079	4.2	3.13	20.41	160	CLEAR
1000	5.15	3400	80	4.16	1.072	3.7	3.18	20.34	160	CLEAR
1010	5.49	4200	80	4.16	1.070	3.3	3.01	20.36	160	CLEAR
1020	5.69	5000	80	4.16	1.067	2.9	2.86	20.20	160	CLEAR
1030	5.88	5800	80	4.19	1.071	2.9	2.65	19.92	159	CLEAR
1040	6.01	6600	80	4.19	1.072	2.6	2.52	19.93	158	CLEAR
1050	6.18	7400	80	4.18	1.074	2.6	2.43	19.86	158	CLEAR
1100	6.28	8200	80	4.17	1.076	2.9	2.38	19.72	158	CLEAR
1110	6.35	9000	80	4.15	1.078	1.9	2.30	19.69	158	CLEAR
1120	6.38	9700	70	4.12	1.078	1.5	2.28	19.80	159	CLEAR

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760 - 1800

Pump Intake 12.95'

SIGNATURE(S): Terry Royal

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0803
Sample Location: 13MWT 08
Sampled By: T. ROJAHN
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/24/04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1045	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAME	CLEAR	6.11	0.085	20.69	16	3.48	121	---

PURGE DATA:

Date: 7/24/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 16.60								
Static Water Level (WL): 6.19								
One Casing Volume(gal/L) 6.4								
Start Purge (hrs): 0923								
End Purge (hrs): 1043								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L) 8.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 11.6'

10.4' x 0.163 = 1.7gal or 6.4L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT08
DATE: 7/24/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
923	6.19	—	—	—	—	—	—	—	—	START PURGE
933	6.43	1300	130	6.27	0.087	14	3.63	20.73	120	CLEAR
943	6.62	2400	120	6.22	0.083	14	4.18	20.27	118	CLEAR
953	6.74	3400	100	6.19	0.084	14	3.59	19.95	121	CLEAR
1003	6.86	4400	100	6.19	0.083	15	3.54	19.92	122	CLEAR
1013	6.92	5400	100	6.15	0.084	14	3.55	20.31	121	CLEAR
1023	6.98	6400	100	6.13	0.084	15	3.55	20.52	120	CLEAR
1033	7.03	7300	90	6.12	0.085	16	3.50	20.70	121	CLEAR
1043	7.07	8200	90	6.11	0.085	16	3.48	20.69	121	CLEAR
1045	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760-1800

Pump Intake 11.6

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0904
Sample Location: 13MWT09
Sampled By: CCL
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/31/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1710								
Method: Bladder Pump	Clear	6.27	0.773	18.15	3.8	0.20	88.1	—

PURGE DATA:

Date: 7/31/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2"			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.96'								
Static Water Level (WL): 9.13'								
One Casing Volume(gal/L): 8.5								
Start Purge (hrs): 1540								
End Purge (hrs): 1710								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 7.89								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13~~GWT~~ ~~P~~

Pump intake @ 17.5' bTOC

22.96
− 9.13
13.83 x 0.163 = 2.25 gallons
OR
8.5 L

Circle If Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE , SWMU 13
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13MWTØ9
DATE: 7/31/Ø4

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
154Ø	9.13'	–	–	–	–	–	–	–	–	START PURGE
155Ø	9.38'	94Ø	94	6.87	Ø.729	2.5	Ø.29	18.47	99.2	Clear water
16ØØ	9.43'	1,79Ø	85	6.67	Ø.758	1.6	Ø.3Ø	18.51	93.3	Clear water
161Ø	9.43'	2,69Ø	9Ø	6.51	Ø.766	1.2	Ø.26	18.65	94.7	Clear water
162Ø	9.45'	3,56Ø	87	6.44	Ø.767	1.6	Ø.2Ø	18.61	92.8	Clear water
163Ø	9.5Ø'	4,43Ø	87	6.32	Ø.767	2.4	Ø.2Ø	18.59	94.3	Clear water
164Ø	9.5Ø'	5,3ØØ	87	6.23	Ø.768	3.Ø	Ø.2Ø	18.53	93.7	Clear water
165Ø	9.5Ø'	6,17Ø	87	6.35	Ø.767	3.3	Ø.2Ø	18.39	87.Ø	Clear water
17ØØ	9.5Ø'	7,Ø2Ø	85	6.33	Ø.774	3.5	Ø.2Ø	18.43	87.5	Clear water
171Ø	9.5Ø'	7,89Ø	87	6.27	Ø.773	3.8	Ø.2Ø	18.15	88.1	Clear water
←			WELL Parameters Stabilize							→
←			SAMPLING Begins							→

Water Quality Meter (SN) ØICØ134 AB
Control Box type (SN) MPIØ-1588
Turbidity Meter (SN) 176Ø-18ØØ

Pump Intake 17.5' bTOC Dedicated Bladder Pump

SIGNATURE(S): Chris C. Gill III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1003
Sample Location: 13MWT 10
Sampled By: Goerdt
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-28-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1604								
Method: Peristaltic	Clear	4.23	629	21.36	9.0	7.80	402.8	---

PURGE DATA:

Date: 7-28-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 28.13								
Static Water Level (WL): 14.18								
One Casing Volume(gal/L): 8.4								
Start Purge (hrs): 1354								
End Purge (hrs): 1559								
Total Purge Time (min): 125								
Total Vol. Purged (gal/L): 9.38								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 23'

28.13
14.18
13.95(.163) = 2.27 gal
= 8.4 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MW10
DATE: 7-28-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1354	14.18	—	—	—	—	—	—	—	—	Start purge
1404	15.44	0.75	~~85~~ 75	4.15	620	4.1	7.74	20.84	388.1	clear
1414	16.49	1.50	75	4.08	612	1.6	7.50	20.23	396.5	"
1424	17.48	2.25	75	3.81	602	1.9	8.11	20.01	416.6	"
1434	18.18	3.00	75	3.80	608	1.7	7.92	20.16	418.6	"
1444	18.65	3.75	75	3.80	609	1.4	8.26	20.20	423.1	"
1454	18.89	4.50	75	3.91	611	3.2	8.45	20.41	421.7	"
1504	19.27	5.25	75	3.97	616	7.1	8.42	20.69	418.6	"
1514	19.50	6.00	75	4.06	620	10.0	8.19	20.88	414.7	"
1524	19.62	6.75	75	4.14	624	9.0	8.19	20.97	411.3	"
1534	19.86	7.50	75	4.15	624	9.0	8.18	21.03	409.6	"
1544	20.05	8.25	75	4.20	623	8.7	8.47	21.01	405.4	"
1554	20.25	9.00	75	4.20	623	11.0	8.34	21.04	405.2	"
1559	20.31	9.38	38	4.23	629	9.0	7.80	21.36	402.8	end purge

Water Quality Meter (SN) 99X00 55
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 23'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1103
Sample Location: 13MWT 11
Sampled By: T. ROJAHN
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-23-04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1652	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAME	CLEAR	3.85	0.262	21.20	25	4.95	127	---

PURGE DATA:

Date: 7-23-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.75								
Static Water Level (WL): 8.90								
One Casing Volume(gal/L): 5.5								
Start Purge (hrs): 1545								
End Purge (hrs): 1650								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 5.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 13.5' OF DEDICATED Bladder Pump

8.85 X 0.163 = 1.44 gal or 5.5 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT11
DATE: 7-23-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (ml/Min.)	Flowrate (ml/Min.)	pH (S.U.)	Cond. (mmhos/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Deg. Celsius)	ORP (mV)	Comments (Volume & Color)
1545	8.90	1200	120	—	—	—	—	—	—	START PURGE
1555	9.24	"	"	4.24	0.257	80	5.93	20.25	123	V.Sl. Cloudy
1605	9.36	1900	70	3.89	0.263	50	5.44	20.92	132	CLEAR
1615	9.49	2800	90	3.82	0.261	40	5.09	21.06	133	CLEAR
1625	9.54	3600	80	3.89	0.261	35	5.01	20.82	136	CLEAR
1635	9.56	4400	80	3.85	0.262	26	4.87	21.07	131	CLEAR
1645	9.59	5200	80	3.92	0.260	24	4.80	21.05	124	CLEAR
1650	9.62	5700	80	3.85	0.262	25	4.95	21.20	127	CLEAR
1652	—	—	—	—	—	—	—	—	—	START SAMPLING

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10 - 1231
Turbidity Meter (SN) 1760 - 1800

Pump Intake 13.5' dedicated Pump

SIGNATURE(S): Terry Rogalski

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1203
Sample Location: 13MWT 12
Sampled By: Goerdt
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-25-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1218								
Method: Peristaltic	clear	4.66	132	16.7	9.8	3.86	444.5	--

PURGE DATA:

Date: 7-25-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.40								
Static Water Level (WL): 10.71								
One Casing Volume(gal/L): 7.1								
Start Purge (hrs): 0856								
End Purge (hrs): 1211								
Total Purge Time (min): 195								
Total Vol. Purged (gal/L): 17.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 18'

22.40
10.71
11.69(.163) = 1.91 gal
7.1 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT12
DATE: 7-25-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume ~~(mL/Min.)~~	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0856	10.71	—	—	—	—	—	—	—	—	Start purge
0906	12.50	0.9	90	4.79	130	12	1.34	16.32	302.1	Clear
0916	12.86	1.8	90	4.75	130	8.7	1.29	16.56	315.5	"
0926	13.29	2.7	90	4.74	130	5.3	1.79	16.70	326.7	"
0936	13.65	3.6	90	4.74	128	4.9	2.17	16.65	340.7	"
0946	13.96	4.5	90	4.71	129	11.0	2.05	16.69	354.9	"
0956	14.19	5.4	90	4.68	130	13.0	1.72	16.72	357.8	"
1006	14.49	6.3	90	4.59	136	14.0	1.60	16.84	382.4	"
1016	14.87	7.2	90	4.53	142	12.0	1.48	16.75	397.1	"
1026	15.05	8.1	90	4.52	144	14.0	1.50	16.77	401.8	"
1036	15.39	9.0	90	4.53	145	13.0	1.49	16.71	411.1	"
1046	15.72	9.9	90	4.51	148	16.0	1.55	16.69	413.6	"
1056	15.79	10.8	90	4.51	151	13.0	1.70	16.65	419.5	"
1106	15.91	11.7	90	4.53	153	14.0	1.76	16.64	427.5	
1116	16.07	12.6	90	4.52	154	13.0	1.77	16.65	427.0	
1126	16.21	13.5	90	4.56	146	15.0	2.11	16.65	432.1	
1136	16.44	14.4	90	4.62	135	15.0	2.81	16.56	434.2	
1146	16.63	15.3	90	4.63	135	12.0	2.76	16.57	438.4	
1156	16.86	16.2	90	4.65	133	10.0	3.68	16.60	440.6	
1206	17.09	17.1	90	4.65	132	9.4	3.83	16.66	443.1	
1211	17.16	17.55	45	4.66	132	9.8	3.86	16.70	444.5	end purge

Water Quality Meter (SN) 01C0979
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 18'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT13Ø3
Sample Location: 13MWT13
Sampled By: ccl
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/1/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1547								
Method: Bladder Pump	Clear	4.31	Ø.131	2Ø.61	Ø.7Ø	Ø.73	132.Ø	---

PURGE DATA:

Date: 8/1/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.44								
Static Water Level (WL): 4.9Ø								
One Casing Volume(gal/L): 1Ø.16								
Start Purge (hrs): 14Ø7								
End Purge (hrs): 1547								
Total Purge Time (min): 1ØØ								
Total Vol. Purged (gal/L): 11.54								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT F~~

Pump intake @ 16.Ø' bTOC

21.44
− 4.9Ø
16.54 x Ø.163 = 2.69 gallons
OR L
10.16 ~~gallons~~

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE, SWMU 13
PROJECT NUMBER: N7448, CTO 0343

WELL ID.: 13MWT13
DATE: 8/1/04
Partly cloudy, Humid, 85°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (S/m)	Turb. (NTU)	DO (mg/L)	Temp. (°C)	ORP (mV)	Comments (Volume & Color)
1407	4.90'	—	—	—	—	—	—	—	—	Initial Reading; Begin Purge
1417	5.15'	1120	112	4.69	0.154	37	0.52	20.26	163.7	Slightly cloudy water
1427	5.16'	2,320	120	4.21	0.111	8.8	0.67	20.04	160.9	Clear water
1437	5.16'	3,520	120	4.39	0.117	4.2	0.76	20.23	147.0	Clear water
1447	5.16'	4,720	120	4.26	0.120	2.9	0.80	20.40	150.0	Clear water
1457	5.16'	5,920	120	4.42	0.122	2.1	0.81	20.00	143.3	Clear water
1507	5.16'	7,120	120	4.58	0.124	1.4	0.78	19.83	136.9	Clear water
1517	5.17'	8,320	120	4.46	0.127	1.20	0.75	20.13	137.3	Clear water
1527	5.17'	9,520	120	4.22	0.130	0.85	0.73	20.40	142.0	Clear water
1537	5.17'	10,540	102	4.27	0.131	0.60	0.73	20.69	135.0	Clear water
1547	5.17'	11,540	100	4.31	0.131	0.70	0.73	20.61	132.0	Clear water
←				Well Parameters Stabilize						→
←				Sampling Begins						→

Water Quality Meter (SN) 01C 0134AB
Control Box type (SN) MP 10-1588
Turbidity Meter (SN) 1764-1000

Pump Intake 16.0' bTOC, Dedicated Bladder Pump

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1403
Sample Location: 13MWT 14
Sampled By: T. ROJAHN
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-27-04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1628	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAMS	CLEAR	6.86	0.714	17.41	3.0	6.74	71	---

PURGE DATA:

Date: 7-27-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material.								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.60								
Static Water Level (WL): 14.49								
One Casing Volume(gal/L): 6.9								
Start Purge (hrs): 1435								
End Purge (hrs): 1625								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 12.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 20'

11.11 x 0.163 = 1.8 gal / or 6.9

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13 MWT 14
DATE: 7/27/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1435	14.49	—	—	—	—	—	—	—	—	START PURGE
1445	14.80	1400	140	7.23	0.992	25	10.17	17.03	71	CLEAR
1455	14.82	2600	120	7.00	0.888	16	10.22	17.15	70	CLEAR
1505	14.80	3700	110	6.91	0.861	11	9.88	18.05	71	CLEAR
1515	14.80	4800	110	6.84	0.814	6.8	9.06	18.27	72	CLEAR
1525	14.80	5900	110	6.88	0.800	5.2	8.46	17.81	70	CLEAR
1535	14.80	7000	110	6.84	0.794	4.5	8.27	18.32	71	CLEAR
1545	14.80	8100	110	6.78	0.774	4.0	8.01	18.63	72	CLEAR
1555	14.80	9200	110	6.73	0.750	3.7	7.41	18.62	73	CLEAR
1605	14.80	10300	110	6.84	0.736	3.4	7.37	17.73	71	CLEAR
1615	14.80	11400	110	6.84	0.730	3.1	6.92	17.93	71	CLEAR
1625	14.80	12500	110	6.86	0.714	3.0	6.74	17.41	71	CLEAR
1628	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 1760-1800

Pump Intake 20' DEDICATED PUMP

SIGNATURE(S): Terry Rogers

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1503
Sample Location: 13MWT15
Sampled By: T. ROJAHN
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/29/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1704								
Method: SAME	CLEAR	3.26	0.352	15.66	10	0.53	685	---

PURGE DATA:

Date: 7/29/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.87								
Static Water Level (WL): 14.61								
One Casing Volume(gal/L): 13.20								
Start Purge (hrs): 1340								
End Purge (hrs): 1700								
Total Purge Time (min): 200								
Total Vol. Purged (gal/L): 15.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 22'

13.26' x 0.63 = 2.2 gal or 8.2 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT15
DATE: 7/29/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1340	14.61	—	—	—	—	—	—	—	—	START PURGE
1350	15.51	1300	130	3.05	0.438	25	2.25	16.04	531	CLEAR
1400	15.42	2000	70	3.20	0.427	27	1.22	16.63	563	CLEAR
1410	15.45	2700	70	3.05	0.419	27	1.11	16.94	593	CLEAR
1420	15.48	3400	70	2.78	0.410	26	0.99	17.20	631	CLEAR
1430	15.51	4100	70	2.96	0.401	28	0.87	17.21	657	CLEAR
1440	15.31	4650	55	2.73	0.401	28	0.65	17.33	663	CLEAR
1450	15.65	5600	95	2.64	0.374	28	0.49	15.70	674	CLEAR
1500	15.65	6400	80	2.88	0.373	26	0.53	15.93	671	CLEAR
1510	15.67	7200	80	2.96	0.371	25	0.57	15.85	672	CLEAR
1520	15.70	8000	80	3.02	0.368	26	0.54	15.86	673	CLEAR
1530	15.85	8800	80	2.97	0.362	25	0.58	15.61	678	CLEAR
1540	15.85	9600	80	3.00	0.362	23	0.56	15.85	682	CLEAR
1550	15.88	10400	80	3.10	0.362	20	0.52	15.96	681	CLEAR
1600	15.88	11200	80	3.10	0.357	19	0.59	15.41	684	CLEAR
1610	15.92	12000	80	3.10	0.356	19	0.60	15.42	685	CLEAR
1620	16.01	12800	80	3.16	0.353	18	0.62	15.30	684	CLEAR
1630	16.04	13600	80	3.19	0.351	14	0.62	15.31	685	CLEAR
1640	16.06	14400	80	3.22	0.351	14	0.55	15.28	685	CLEAR
1650	16.08	15200	80	3.24	0.350	14	0.53	15.26	684	CLEAR
1700	15.99	15900	70	3.26	0.352	10	0.53	15.66	685	CLEAR
1704	—	—	—	—	—	—	—	—	—	START SAMPLING

Water Quality Meter (SN) 01C0979 AA
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 3592-3502

Pump Intake 22' DEDICATED PUMP

SIGNATURE(S): Terry Lyle

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1603
Sample Location: 13MWT 16
Sampled By: Goeydt
C.O.C. No.: 0051
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-25-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1547								
Method: Peristaltic	Clear	6.05	290	18.21	1.2	3.85	386.4	---

PURGE DATA:

Date: 7-25-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.31								
Static Water Level (WL): 11.07								
One Casing Volume(gal/L) ~~4.26~~	3.8							
Start Purge (hrs): 1440								
End Purge (hrs): 1540								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 5.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	3x (2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 14.5'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
Yes	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MW716
DATE: 7-25-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Liters)	Flowrate (ml/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1440	11.07	-	—	—	—	—	—	—	-	Start purge
1450	11.89	0.90	90	6.10	312	—	4.55	17.74	279.0	
1500	11.87	1.8	90	6.09	297	11	4.44	17.87	337.0	clear
1510	12.04	2.7	90	6.07	292	8.9	4.28	17.92	365.0	"
1520	12.48	3.6	90	6.08	297	3.7	4.11	17.92	377.2	"
1530	12.62	4.5	90	6.08	295	2.2	4.11	17.99	384.2	"
1540	12.95	5.4	90	6.05	290	1.2	3.85	18.21	386.4	end purge

Water Quality Meter (SN) 01<0979
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 14.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 17Ø3
Sample Location: 13MWT 17
Sampled By: CCL
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/29/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 151Ø								
Method: Bladder Pump	Clear	5.28	Ø.159	18.57	4.1	2.Ø1	129.4	---

PURGE DATA:

Date: 7/29/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 2Ø.3Ø'								
Static Water Level (WL): 9.1Ø1								
One Casing Volume(gal/L): 6.8								
Start Purge (hrs): 124Ø								
End Purge (hrs): 151Ø								
Total Purge Time (min): 15Ø								
Total Vol. Purged (gal/L): 15.Ø								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~

Pump intake @ 15' btoc; Dedicated Bladder Pump

2Ø.3Ø
- 9.1Ø
11.2Ø x Ø.163 = 1.82 gallons
OR
6.8 Liters

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE, SWMU 13
PROJECT NUMBER: N9060 CTO 0279

WELL ID.: 13MWT17
DATE: 7/29/04
Partly cloudy, 80°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1240	9.10'	–	–	–	–	–	–	–	–	START PURGE
1250	9.13'	930	93	5.19	0.167	10.0	4.12	19.47	150.9	Clear WATER
1300	9.13'	1,910	98	5.19	0.168	7.7	3.66	19.11	142.2	Clear WATER
1310	9.15'	2,910	100	4.99	0.167	6.8	3.00	19.11	147.5	clear WATER
1320	9.15'	3,910	100	5.08	0.167	5.7	4.10	18.94	141.7	Clear WATER
1330	9.15'	4,910	100	5.02	0.167	5.4	3.05	19.14	141.8	Clear WATER
1340	9.15'	5,910	100	5.07	0.166	4.8	3.03	18.90	138.2	Clear WATER
1350	9.15'	7,010	110	5.26	0.165	5.2	3.06	18.66	130.0	Clear WATER
1400	9.15'	8,110	110	5.28	0.164	4.6	3.10	18.61	129.3	Clear WATER. DRIZZLE BEGINS
1410	9.15'	9,210	110	5.01	0.164	4.6	3.28	18.97	136.9	Clear WATER.
1420	9.15'	10,160	95	4.91	0.164	4.1	2.46	19.16	140.2	Clear WATER. DRIZZLE STOPS
1430	9.15'	11,100	94	5.01	0.163	4.3	2.25	18.95	136.2	Clear WATER.
1440	9.15'	12,100	100	5.19	0.162	4.1	2.13	18.86	131.6	Clear WATER.
1450	9.15'	13,080	98	5.35	0.161	4.0	2.09	18.72	129.5	Clear WATER. EXPLOSIONS VERY CLOSE
1500	9.15'	14,060	98	5.32	0.160	4.2	1.98	18.60	128.7	Clear WATER. Explosions END
1510	9.15'	15,040	98	5.28	0.159	4.1	2.01	18.57	129.4	Clear WATER
←				Well Parameters stabilize						→
←				Sampling Begins						→

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10-1588
Turbidity Meter (SN) 1760-1800

Pump Intake 15' bTOC Dedicated Bladder Pump

SIGNATURE(S): Chuk C. Fry III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1803
Sample Location: 13MWT 18
Sampled By: Gorzdt
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-29-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0850								
Method: Peristaltic	clear	4.44	293	16.27	6.6	5.67	361.6	---

PURGE DATA:

Date: 7-28-04/7/29/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 33.27								
Static Water Level (WL): 19.52								
One Casing Volume(gal/L): 8.3	7/29							
Start Purge (hrs): 0901	0815							
End Purge (hrs): 1231	0845							
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 20.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 28'

purging of well occurred 7/28 & 7/29/04.

33.27
19.52
13.75 (.163) = 2.24 gal
= 8.3 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448
WELL ID.: 13MWT 18
DATE: 7-28-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0901	19.52	–	–	–	–	–	–	–	–	Start purge
0911	21.40	1.10	110	4.57	311	5.5	3.12	15.77	365.3	Clear
0921	22.66	2.20	110	4.54	297	2.5	3.01	14.89	362.7	"
0931	24.23	3.30	110	4.66	289	1.7	3.01	15.28	355.7	"
0941	24.88	4.30	100	4.70	302	4.3	3.06	15.78	354.6	"
0951	25.31	5.30	100	4.65	294	32	3.40	15.94	361.0	"
1001	25.71	6.15	0.85	4.62	304	75	3.60	16.32	364.8	"
1011	25.92	7.00	0.85	4.47	335	92	3.82	17.03	373.0	Slightly cloudy
1021	26.40	8.85	0.85	4.39	367	110	3.66	17.11	376.1	"
1031	27.00	8.70	0.85	4.36	362	116	3.94	~~17.88~~	379.3	"
1041	27.15	9.55	0.85	4.29	378	120	4.14	17.03	382.6	"
1055	27.32	10.30	0.75	4.21	390	120	4.28	17.13	387.5	"
1101	27.73	11.05	0.75	4.17	417	110	4.87	17.72	394.0	"
1111	27.94	11.80	0.75	4.16	421	85	4.85	17.67	395.0	lowered intake
1121	28.10	12.55	0.75	4.16	423	75	5.02	17.79	394.6	to 29'.
1131	28.40	13.30	0.75	4.16	430	55	5.12	17.88	394.8	Clearing up
1141	28.62	14.05	0.75	4.20	432	50	5.17	17.80	392.3	Clear
1151	28.85	14.80	0.75	4.25	431	45	5.04	18.03	391.1	lowered to 30'.
1201	29.03	15.55	0.75	4.27	432	27	5.21	18.22	392.2	Clear
1206	29.13	15.87 ~~16.30~~	0.30	4.30	430	19	5.00	18.12	392.7	"
1211	29.22	16.30	0.38	4.31	428	19	5.08	18.13	392.2	"
1221	29.42	17.05	0.75	4.37	429	22	4.95	18.52	390.1	"
1231	29.58	17.80	0.75	4.56	423	21	5.12	18.41	381.0	"
~~1241~~		99 ~~18.55~~	~~0.75~~							lowered to 31'
~~1251~~	"									unable to draw
~~1301~~		Continued on page 2. (7-29-04)								any more water
										Wait for well
										to re-hydrate

Water Quality Meter (SN) 99K 5055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300
Pump Intake 28'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT18
DATE: 7-29-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (~~mL/Min.~~ L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0815	19.98	—	—	—	—	—	—	—	—	start purge
0825	21.44	0.80	80	4.44	317	31	6.78	16.60	349.5	clear
0835	22.56	1.60	80	4.40	307	8.2	6.26	16.54	358.4	"
0845	23.44	2.4	80	4.44	293	6.6	5.67	16.27	361.6	end purge

Water Quality Meter (SN) 99X0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake -28'

SIGNATURE(S): [illegible]

PAGE ~~2~~ 3 OF ~~2~~ 3

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1903
Sample Location: 13MWT 19
Sampled By: Gorski
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-27-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 09.54								
Method: Peristaltic	Clear	4.57	1397	18.49	0.4	27.18	484.2	—

PURGE DATA:

Date: 7-27-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.05								
Static Water Level (WL): 10.71								
One Casing Volume(gal/L): 6.84								
Start Purge (hrs): 0815								
End Purge (hrs): 0950								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 8.25								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 18'

22.05
10.71
11.34 (.163) = 1.85 gal
= 6.84 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT19
DATE: 7-27-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (~~mL/Min.~~ L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0815	10.71	–	–	–	–	–	–	–	–	Start purge
0825	11.39	0.75	75	5.06	1330	28	21.37	16.78	380.5	particulates
0835	11.44	1.50	75	5.03	1337	17	23.42	17.12	394.9	"
0845	11.50	2.25	75	4.73	1356	12	25.39	17.92	420.1	Clear
0855	11.57	3.00	75	4.60	1362	6.3	24.50	18.35	445.8	"
0905	11.59	3.75	75	4.60	1353	5.0	25.50	18.07	457.3	"
0915	11.72	4.55	100	4.70	1357	4.0	25.92	18.17	458.1	"
0925	11.85	5.75	100	4.64	1369	2.2	25.85	18.22	464.6	"
0935	11.91	6.75	100	4.52	1391	1.5	25.98	18.50	475.1	"
0945	11.96	7.75	100	4.57	1392	0.6	27.01	18.40	481.5	"
0950	11.99	8.25	50	4.57	1397	0.4	27.18	18.49	484.2	end purge

Water Quality Meter (SN) 99X00.55
Control Box type (SN) N/A
Turbidity Meter (SN) 4650 4360

Pump Intake 18'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2004
Sample Location: 13MWT 20
Sampled By: Goerdt
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-30-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1749								
Method: peristaltic	Clear	3.47	1288	20.04	3.8	15.56	337.2	---

PURGE DATA:

Date: 7-30-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.85								
Static Water Level (WL): 4.28								
One Casing Volume(gal/L): 11.2								
Start Purge (hrs): 1546								
End Purge (hrs): 1746								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 12.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 18.5'

22.85
4.28
18.57 (.163) = 3.03 gal
11.2 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448
WELL ID.: 13MWT20
DATE: 7-30-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1546	4.28	–	–	–	–	–	–	–	–	Start purge
1556	5.72	1.0	100	4.60	1268	6.7	4.54	19.05	310.2	clear
1606	6.20	2.0	100	3.63	1256	4.4	~~[illegible]~~	19.88	299.7	"
1616	6.51	3.0	100	3.60	1248	3.5	10.13	20.34	280.6	"
1626	6.76	4.0	100	3.57	1245	2.7	11.10	20.15	275.0	"
1636	6.87	5.0	100	3.57	1253	2.4	12.31	20.28	278.7	"
1646	7.18	6.0	100	3.54	1261	2.0	13.75	20.15	286.0	"
1656	7.27	7.0	100	3.49	1270	2.2	14.08	20.11	311.1	"
1706	7.42	8.0	100	3.51	1274	2.3	14.60	20.10	310.9	"
1716	7.51	9.0	100	3.49	1280	2.8	14.77	20.28	320.8	"
1726	7.60	10.0	100	3.48	1290	3.0	15.33	20.44	333.9	"
1736	7.66	11.0	100	3.48	1287	3.2	15.77	20.16	339.0	"
1746	7.73	12.0	100	3.47	1288	3.8	15.56	20.04	337.2	Stop purge

Water Quality Meter (SN) 99X0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300
Pump Intake 18.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 21Ø3
Sample Location: 13MWT 21
Sampled By: C. Lacy / T. Rosahn
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/28/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 13ØØ								
Method: Bladder Pump	clear	7.32	Ø.298	2Ø.Ø7	4.Ø	2.94	1Ø7.3	---

PURGE DATA:

Date: 7/28/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.76'								
Static Water Level (WL): 8.65'								
One Casing Volume(gal/L): 5.6								
Start Purge (hrs): 112Ø								
End Purge (hrs): 13ØØ								
Total Purge Time (min): 1ØØ								
Total Vol. Purged (gal/L): 8.87								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 13' bTOC

9.11' x 0.163 = 1.5 gal or 5.6 L

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Chuck C. Lacy III

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE SWMW 13
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13MWT 21
DATE: 7/28/Ø4

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (ml/Min.)	Flowrate (ml/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
112Ø	8.65'	—	—	—	—	—	—	—	—	START PURGE
113Ø	8.93'	1,000	1ØØ	6.87	Ø.368	3.6	4.88	2Ø.89	128.2	Clear water
114Ø	9.Ø1'	2,000	1ØØ	6.9Ø	Ø.364	2.4	4.6Ø	2Ø.89	12Ø.7	Clear water
115Ø	9.Ø6'	2,75Ø	75	6.86	Ø.356	2.7	4.39	2Ø.84	12Ø.7	Clear water
12ØØ	9.17'	3,85Ø	11Ø	6.91	Ø.347	2.1	4.23	2Ø.Ø9	116.3	Clear water
121Ø	9.22'	4,85Ø	1ØØ	6.90	Ø.339	2.3	3.77	2Ø.Ø7	111.9	Clear water
122Ø	9.27'	5,67Ø	82	7.12	Ø.321	2.5	3.78	2Ø.Ø9	112.4	Clear water
123Ø	9.15'	6,17Ø	5Ø	7.Ø9	Ø.334	2.4	3.34	21.51	113.2	Clear water
124Ø	9.33'	7,27Ø	11Ø	7.27	Ø.314	3.2	3.23	19.8Ø	11Ø.4	Clear water
125Ø	9.36'	8,27Ø	1ØØ	7.33	Ø.312	2.1	3.25	2Ø.Ø4	1ØØ.Ø	Clear water
13ØØ	9.35'	8,87Ø	6Ø	7.32	Ø.298	4.Ø	2.94	2Ø.Ø7	1Ø7.3	Clear water
←				Well	Parameters	Stabilize				→
←				Sampling	Begins					→

Water Quality Meter (SN) ØKCØ134 A/B
Control Box type (SN) MP10-1588
Turbidity Meter (SN) 1760-1800

Pump Intake 13' bTOC Dedicated Bladder Pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2203
Sample Location: 13MWT 20
Sampled By: Goerdt
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-27-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1554								
Method: peristaltic	Clear	3.81	294	19.61	1.5	2.51	448.2	---

PURGE DATA:

Date: 7-27-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 15.00								
Static Water Level (WL): 8.49								
One Casing Volume(gal/L): 4								
Start Purge (hrs): 14.40								
End Purge (hrs): 1550								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 6.15								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 12'

15.00
8.49
6.51(.163) = 1.06 gal
= 3.93 L

Circle if Applicable:

MS/MSD Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT 22
DATE: 7-27-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1440	8.49	—	—	—	—	—	—	—	—	Start purge
1450	8.70	0.75	75	4.17	283	6.7	2.73	20.79	410.4	clear
1500	8.79	1.50	75	4.00	296	7.1	2.50	21.09	422.0	"
1510	8.82	2.25	75	3.95	303	5.3	2.56	21.19	424.8	"
1520	8.84	3.00	75	3.93	308	4.8	2.58	21.19	431.2	"
1530	8.89	3.75	75	3.91	300	2.5	2.45	20.06	438.7	"
1540	9.05	4.85	120	3.85	293	1.8	2.33	19.19	442.1	"
1550	9.15	6.15	120	3.81	294	1.5	2.51	19.61	448.2	end purge

Water Quality Meter (SN) 99K00.55
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 121

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2303
Sample Location: 13MWT 23
Sampled By: T. ROJAHN
C.O.C. No.: 0051
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/25/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1642								
Method: SAME	CLEAR	5.48	0.315	17.26	2.1	3.37	141	---

PURGE DATA:

Date: 7/25/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 24.50								
Static Water Level (WL): 8.54								
One Casing Volume(gal/L) 9.8								
Start Purge (hrs): 1420								
End Purge (hrs): 1640								
Total Purge Time (min): 140								
Total Vol. Purged (gal/L) 10.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 19.5'

15.96' x 0.163 = 2.6 gal or 9.8 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448
WELL ID.: 13MWT23
DATE: 7-25-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1420	8.54	—	—	—	—	—	—	—	-	START PURGE
1430	9.48	1000	100	5.38	0.360	45	4.51	17.17	142	CLEAR
1440	9.92	1800	80	5.38	0.340	14	3.81	16.89	142	CLEAR
1450	10.19	2500	70	5.37	0.331	7.5	3.68	16.79	142	CLEAR
1500	10.38	3200	70	5.38	0.328	7.0	3.63	16.79	142	CLEAR
1510	10.50	3900	70	5.39	0.326	6.4	3.61	16.83	142	CLEAR
1520	10.64	4600	70	5.40	0.325	5.5	3.57	16.87	142	CLEAR
1530	10.78	5300	70	5.41	0.326	4.3	3.52	16.95	142	CLEAR
1540	10.89	6000	70	5.43	0.325	4.2	3.48	17.08	142	CLEAR
1550	10.99	6700	70	5.43	0.324	4.1	3.44	17.15	142	CLEAR
1600	11.07	7400	70	5.43	0.322	3.2	3.40	17.04	142	CLEAR
1610	11.16	8100	70	5.45	0.320	2.5	3.38	17.04	141	CLEAR
1620	11.19	8800	70	5.47	0.320	2.2	3.34	17.29	141	CLEAR
1630	11.20	9500	70	5.47	0.318	2.1	3.36	17.31	141	CLEAR
1635	11.21	9850	70	5.48	0.316	2.0	3.36	17.18	140	CLEAR
1640	11.18	10150	60	5.48	0.315	2.1	3.37	17.26	141	CLEAR
1642	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760-1800

Pump Intake 19.5'

SIGNATURE(S): Terry Rajch

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2403
Sample Location: 13MWT 24
Sampled By: Gorski
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-23-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1128								
Method: Peristaltic	clear	5.41	.669	20.16	5.82	1.07	*395	---

PURGE DATA:

Date: 7-23-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.19								
Static Water Level (WL): 9.35								
One Casing Volume(gal/L): 9.6								
Start Purge (hrs): 0948								
End Purge (hrs): 1123								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 10.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 20'

*ORP spiked at end of purge.

25.19
9.35
15.84 (.163) = 2.58 gal
= 9.55 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448
WELL ID.: 13MWT24
DATE: 7-23-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0948	9.35	—	~~250~~	—	—	~~—~~ 40.3	—	—	—	Start purge
0958	10.93	170	170	5.73	.786	~~78.8~~	1.81	18.79	94.3	clear
1008	11.90	2.4	170	5.51	.743	25.6	1.88	18.12	110.1	"
1018	12.23	3.9	150	5.48	.736	22.4	1.89	18.07	113.3	"
1028	12.61	5.4	150	5.27	.684	12.0	1.58	18.79	131.9	"
1038	12.97	6.9	150	5.47	.662	11.1	1.32	17.93	140.4	"
1048	12.76	7.4	150	5.53	.659	10.5	1.19	18.26	159.8	"
1058	12.36	8.4	100	5.67	.686	7.06	1.21	20.13	163.9	"
1108	12.14	9.4	100	5.41	.680	6.54	1.17	20.40	310.0	"
1113	11.98	9.9	50	5.42	.679	6.31	1.12	20.17	383.1	"
1118	11.95	10.4	50	5.44	.673	6.14	1.10	20.09	390.0	"
1123	11.97	10.9	50	5.41	.669	5.82	1.07	20.16	395.2	end purge
										Begin Sampling

Water Quality Meter (SN) 0150979
Control Box type (SN) NA
Turbidity Meter (SN) 4560-4300

Pump Intake 20'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2503
Sample Location: 13MWT 25
Sampled By: Goerdt
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-24-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1510								
Method: peristaltic	Clear	4.58	382	21.80	40	1.87	717	---

PURGE DATA:

Date: 7-23-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.95								
Static Water Level (WL): 8.02								
One Casing Volume(gal/L) 6.0								
Start Purge (hrs): 1250								
End Purge (hrs): 1425								
Total Purge Time (min):								
Total Vol. Purged (gal/L)								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[] 13GWT 2503 -F

Pump intake @ 13.00'

WL on 7/24/04 15.43

Turbidity prior to metals - 40 NTU

17.95
8.02
9.93(.163) = 1.62 gal
= 6.0 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 136WT2503
DATE: 7-23-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1250	8.02	—	—	—	—	—	—	—	—	Start purge
1300	9.43	1.5	150	4.73	.363	11.4	0.91	20.34	3583	clear
1310	10:09	3.0	150	4.77	.359	9.7	1.63		473	"
1320	11.34	4.5	150	4.78	.350	1.4	1.90	21.36	644	"
1330	11.84	6.0	150	4.88	.359	1.2	1.82	22.33	649	"
1340	12.61	7.5	150	4.67	.353	7.4	1.65	22.06	675	"
1350	13.80	9.0	150	4.53	.356	12.0	1.37	22.23	693	"
1400	14.19	10.5	150	4.38	.357	10.5	1.20	21.92	707	"
1410	15.33	12.0	150	4.30	.363	9.1	0.98	21.73	718	"
1415	15.75	12.75	75	4.24	.369	8.7	1.41	21.64	730	"
1420	15.83	13.50	75	4.58	.382	7.6	1.87	21.80	717	"
1425	DRY	~~14.25~~ 4H	~~75~~ 2							Well dried out

Water Quality Meter (SN) 01C0979
Control Box type (SN) NA
Turbidity Meter (SN) 4560 4300

Pump Intake 13'

SIGNATURE(S)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2603
Sample Location: 13MWT 26
Sampled By: Goerdt
C.O.C. No.: 0050
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-23-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1745 *								
Method: Peristaltic	Clear	5.27	.430	19.78	22	0.89	752	---

PURGE DATA:

Date: 7-23-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.18								
Static Water Level (WL): 10.01								
One Casing Volume(gal/L): 7.34								
Start Purge (hrs): 1448								
End Purge (hrs): 1738								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 21.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 17'

22.18
10.01
12.17 (.163) = 1.98 gal
= 7.34 L

* All parameters were continually stable for nearly one hour.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448
WELL ID.: 13MWT26
DATE: 7-23-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1448	10.01	–	–	–	–	–	–	–	–	Start Purge
1458	11.95	1.1	110	5.09	.267	63	0.89	22.28	601	Clear
1508	12.81	2.2	110	5.11	.257	37	0.75	21.53	640	"
1518	13.19	3.2	110	5.13	.263	32	0.74	21.84	603	"
1528	13.66	4.4	110	5.13	.249	27	1.25	21.85	680	"
1538	14.10	5.7	130	5.08	.251	29	1.80	21.18	697	"
1548	14.61	7.0	130	5.14	.277	26	1.22	20.94	711	"
1558	14.99	8.3	130	5.16	.279	31	1.23	21.01	712	"
1608	15.36	9.6	130	5.13	.295	27	1.12	20.96	717	"
1618	15.75	10.9	130	5.14	.329	25	0.97	20.75	723	"
1628	16.30	12.2	130	5.15	.376	35	0.91	20.62	728	"
1638	16.78	13.5	130	5.16	.377	28	0.93	20.77	729	"
1648	16.86	14.8	130	5.20	.412	34	0.95	21.48	730	"
1658	17.03	16.2	140	5.27	.423	29	0.93	19.86	733	"
1708	17.50	17.6	140	5.29	.426	24	0.93	20.13	729	"
1718	17.92	19.0	140	5.28	.429	23	0.91	19.79	732	"
1728	18.30	20.4	140	5.25	.432	18	0.88	19.83	746	"
1738	18.79	21.8	140	5.27	.430	22	0.89	19.78	752	Stop Purge

Water Quality Meter (SN) 0160979
Control Box type (SN) NA
Turbidity Meter (SN) 4560 - 4300

Pump Intake 17'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2702
Sample Location: 13MWT 27
Sampled By: Gossett
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-30-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1608								
Method: peristaltic	clear	336	294	20.10	3.3	4.96	423.5	--

PURGE DATA:

Date: 7-30-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.40								
Static Water Level (WL): 9.80								
One Casing Volume(gal/L): 7.6								
Start Purge (hrs): 1314								
End Purge (hrs): 1604								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 8.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 17.5

22.40
9.80
12.60 (.163) = 2.05 gal
= 7.6 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): J. Gossett

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT27
DATE: 7-30-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (~~mL/Min.~~ gal)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1314	9.80	–	–	–	–	–	–	–	–	Start purge
1324	11.21	0.90	90	3.24	308	35	5.72	19.17	421.3	clear
1334	12.00	1.80	90	3.23	300	7.8	5.90	19.38	423.9	"
1344	12.51	2.55	75	3.20	289	4.1	5.48	19.75	423.6	"
1354	12.66	3.30	75	3.30	285	3.8	5.37	19.84	422.8	"
1404	12.73	4.05	75	3.33	274	3.9	5.21	19.96	422.5	"
1414	12.87	4.80	75	3.34	274	3.7	4.79	20.05	423.1	"
1424	13.26	5.55	75	3.35	272	5.1	4.67	20.14	422.8	"
1434	13.41	6.30	75	3.34	273	4.2	5.02	20.32	423.5	"
1444	13.54	7.05	75	3.37	277	3.9	5.08	20.17	425.3	"
1554	13.75	7.80	75	3.35	290	5.7	5.39	19.66	424.7	"
1559	14.18	8.18	38	3.36	290	5.3	5.30	19.73	423.8	"
1604	14.65	8.55	38	3.36	294	3.3	4.96	20.10	423.5	Stop purge.

Water Quality Meter (SN) 99K0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 17.5'

SIGNATURE(S): [illegible]

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 28 Ø2
Sample Location: 13MWT 28
Sampled By: CCL
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/31/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1234								
Method: Bladder Pump	Cloudy	8.Ø8	1.217	17.98	65	Ø.26	73.5	---

PURGE DATA:

Date: 7/31/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 91.7Ø								
Static Water Level (WL): 77.85								
One Casing Volume(gal/L): 8.5								
Start Purge (hrs): Ø834								
End Purge (hrs): 1234								
Total Purge Time (min): 24Ø								
Total Vol. Purged (gal/L): 11.34								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~ ~~F~~

Pump intake @ 88' bTOC

91.7Ø
-77.85
13.85 x Ø.163 = 2.25 gallons
OR
8.5 L

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): Chris C. Ly III

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE, SWMU 13
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13GWT28
DATE: 7/31/Ø4
Overcast, Foggy, 75°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
Ø834	77.85'	—	—	—	—	—	—	—	—	Initial Reading; Begin Pump
Ø844	79.79'	96Ø	96	7.98	1.215	3.4	Ø.65	16.Ø4	88.8	Clear water
Ø854	8Ø.2Ø'	1,5ØØ	54	8.ØØ	1.256	2.Ø	Ø.57	17.14	83.9	Clear water. Drizzle Begins
Ø9Ø4	8Ø.62'	1,86Ø	36	8.Ø6	1.261	1.4	Ø.56	17.31	8Ø.2	Clear water. Drizzle.
Ø914	8Ø.81'	2,24Ø	38	8.1Ø	1.259	1.Ø	Ø.54	17.29	79.3	Clear water. Drizzle.
Ø924	81.Ø5'	2,65Ø	41	8.13	1.256	1.1	Ø.46	17.21	77.9	Clear water. Drizzle stops.
Ø934	81.24'	3,Ø6Ø	41	8.14	1.255	Ø.95	Ø.45	17.28	77.8	Clear water.
Ø944	81.43'	3,46Ø	4Ø	8.15	1.228	1.3	Ø.45	17.27	76.4	Clear water.
Ø954	81.68'	3,89Ø	43	8.14	1.19Ø	2.4	Ø.48	17.39	77.Ø	Clear water.
1ØØ4	81.9Ø'	4,33Ø	44	8.14	1.168	3.7	Ø.53	17.4Ø	76.5	Clear water.
1Ø14	82.12'	4,78Ø	45	8.14	1.161	5.Ø	Ø.51	17.53	76.4	Clear water.
1Ø24	82.36'	5,23Ø	45	8.14	1.151	7.5	Ø.47	17.34	75.8	Clear water.
1Ø34	82.58'	5,68Ø	45	8.16	1.148	12	Ø.47	17.2Ø	74.9	Clear water.
1Ø44	82.82'	6,14Ø	46	8.16	1.155	19	Ø.46	17.34	74.4	Clear water.
1Ø54	83.Ø5'	6,61Ø	47	8.16	1.167	37	Ø.43	17.53	74.2	Slightly cloudy water
11Ø4	83.25'	7,Ø8Ø	47	8.17	1.177	5Ø	Ø.41	17.6Ø	73.8	Slightly cloudy water
1114	83.5Ø'	7,56Ø	48	8.16	1.19Ø	65	Ø.39	17.77	73.1	Cloudy water
1124	83.72'	8,02Ø	46	8.13	1.2Ø4	75	Ø.4Ø	18.Ø1	74.3	Cloudy water
1134	83.94'	8,46Ø	44	8.11	1.215	8Ø	Ø.36	18.11	74.6	Cloudy water
1144	84.16'	8,94Ø	48	8.Ø3	1.231	85	Ø.34	18.59	77.2	Cloudy water
1154	84.39'	9,4ØØ	46	7.97	1.236	85	Ø.34	18.57	78.Ø	Cloudy water
12Ø4	84.61'	9,86Ø	46	7.94	1.232	8Ø	Ø.32	18.4Ø	77.9	Cloudy water
1214	84.84'	1Ø,36Ø	5Ø	7.99	1.223	8Ø	Ø.28	18.Ø6	75.7	Cloudy water
1224	85.Ø5'	1Ø,86Ø	5Ø	8.Ø3	1.221	75	Ø.27	18.11	74.6	Cloudy water
1234	85.27	11,34Ø	48	8.Ø8	1.217	65	Ø.26	17.98	73.5	Cloudy water
←			4 Hour	Purge	Limit	Reached				→
←				Sampling	Begins					→

Water Quality Meter (SN) ØICØ131 AB
Control Box type (SN) MPØ-1588
Turbidity Meter (SN) 176Ø-18ØØ

Pump Intake 88' bTOC. Dedicated Bladder Pump

SIGNATURE(S): Clark C. Fry III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2902
Sample Location: 13MWT 29
Sampled By: Goeyat
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/27/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1152								
Method: peristaltic	Clear	5.62	662	19.73	4.2	8.40	2.8	—

PURGE DATA:

Date: 7/27/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.20								
Static Water Level (WL): 5.11								
One Casing Volume(gal/L) 9.7								
Start Purge (hrs): 1029								
End Purge (hrs): ~~1159~~ 1149								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L) 10								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 16'

21.20
5.11
16.09 (.163 gal/L) = 2.62 gal
= 9.7 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT29
DATE: 7-27-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Liters)	Flowrate (ml/Min)	pH (S.U.)	Cond. (mS-cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1029	5.11	–	–	–	–	–	–	–	–	Start purge
1039	5.70	1.25	125	5.95	699	34	8.42	19.36	14.5	Clear w/ particulates
1049	5.79	2.50	125	5.87	678	14	8.35	19.25	14.6	"
1059	5.83	3.75	125	5.73	657	8.8	8.48	19.30	19.4	Clear
1109	5.85	5.00	125	5.70	659	6.2	8.74	19.22	19.6	"
1119	5.85	6.25	125	5.67	655	5.4	8.87	19.20	16.6	"
1129	5.86	7.50	125	5.65	661	4.7	8.29	19.55	10.4	"
1139	5.85	8.75	125	5.64	655	3.8	8.22	19.16	6.6	"
1149	5.85	10.00	125	5.62	662	4.2	8.40	19.73	2.8	end purge

Water Quality Meter (SN) 99K0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650-4300

Pump Intake 16'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3002
Sample Location: 13MWT 30
Sampled By: T. ROJAHN
C.O.C. No.: 0051
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/26/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1042								
Method: SAME	CLEAR	5.20	0.795	15.40	0.60	7.03	142	---

PURGE DATA:

Date: 7/26/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter & Material								
Type: 2" Ø, PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 26.65								
Static Water Level (WL): 12.10								
One Casing Volume(gal/L): 9.0								
Start Purge (hrs): 0850								
End Purge (hrs): 1040								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 9.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 21.65

14.55' x 0.163 = 2.4 gal or 9.0 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tey Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT30
DATE: 7/26/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Deg. C)	ORP (mV)	Comments (Volume & Color)
850	12.10	—	—	—	—	—	—	—	—	START PURGE
900	12.45	800	80	4.91	0.891	2.8	11.53	16.55	185	CLEAR
910	12.96	1800	100	5.20	0.845	1.9	10.41	15.60	167	CLEAR
920	13.40	2800	100	5.30	0.816	0.75	9.29	15.37	152	CLEAR
930	13.55	3600	80	5.29	0.814	0.40	8.77	15.43	148	CLEAR
940	13.66	4400	80	5.30	0.812	0.45	8.23	15.30	146	CLEAR
950	13.80	5200	80	5.28	0.811	0.40	8.06	15.32	145	CLEAR
1000	13.88	6000	80	5.25	0.810	0.45	7.73	15.34	144	CLEAR
1010	13.98	6900	90	5.25	0.804	0.55	7.32	15.25	143	CLEAR
1020	14.03	7800	90	5.24	0.800	0.75	7.07	15.22	143	CLEAR
1030	13.98	8600	80	5.20	0.798	0.80	7.17	15.40	142	CLEAR
1040	13.96	9400	80	5.20	0.795	0.60	7.03	15.40	142	CLEAR
1042	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760-1800

Pump Intake 21.65'

SIGNATURE(S): Terry Lojit

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3203 (TM)
Sample Location: 13MWT ~~32~~ 31
Sampled By: Gordon
C.O.C. No.: 0051
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA: 7-26-04

Date: 7-25-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1043								
Method: peristaltic	Clear	5.39	1444	15.98	6.1	23.40	518.6	--

PURGE DATA:

Date: 7-25-04 7/26/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.5								
Static Water Level (WL): 11.73								
One Casing Volume(gal/L) ~~1.5~~	5L							
Start Purge (hrs): 0858								
End Purge (hrs): 1038								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 8.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ ~~17.5'~~ 15.5' gw

gw ~~22.50~~ 20.00
11.73
~~10.77~~ 8.27 (.163) = ~~1.76~~ 1.35 gal
= ~~6.5~~ L
5.0 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

7-26-04 gs

PROJECT SITE NAME: NSWC CRANE

PROJECT NUMBER: 7448

WELL ID.: 13MW1 ~~33~~ 31 gs

DATE: 7-26-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0858	11.73	–	–	–	–	–	–	–	–	Start purge
0908	12.53	0.8	~~85~~ 80	5.34	1711	50	18.22	15.97	498.8	clear
0918	12.65	1.6	80	5.37	1714	45	19.89	16.02	501.6	"
0928	12.75	2.4	80	5.38	1695	38	19.65	15.98	511.1	"
0938	12.83	3.2	80	5.39	1669	32	22.34	15.93	511.9	"
0948	12.91	4.0	80	5.41	1673	26	23.21	15.95	512.8	"
0958	12.98	4.8	80	5.42	1634	23	24.05	16.00	514.1	"
1008	13.07	5.6	80	5.42	1579	22	22.89	16.03	514.7	"
1018	13.12	6.4	80	5.39	1542	18	23.63	15.96	517.0	"
1028	13.19	7.2	80	5.40	1480	9.0	23.46	15.98	518.6	"
1033	13.22	7.6	40	5.40	1472	–	23.76	15.98	518.1	"
1038	13.24	8.0	40	5.39	1444	6.1	23.40	15.98	518.6	end purge

Water Quality Meter (SN) 98X0055

Control Box type (SN) NA

Turbidity Meter (SN) 4650 4300

Pump Intake ~~12.5~~ 15.5 gs

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3202
Sample Location: 13MWT32
Sampled By: T. ROJAHN
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/27/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0954								
Method: SAME	CLEAR	6.99	0.519	18.79	2.6	10.90	71	---

PURGE DATA:

Date: 7/27/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.90								
Static Water Level (WL): 9.02								
One Casing Volume(gal/L): 7.3								
Start Purge (hrs): 0830								
End Purge (hrs): 0950								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 7.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	3x (2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] ~~13GWT 15 -F~~ TC

Pump intake @ 15.9'

11.88 x 0.163 = 1.9 gal or 7.3 L

Circle if Applicable:

MS/MSD YES

Duplicate ID No.:

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER:

WELL ID.: 13 MWT 32
DATE: 7-27-09

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0830	9.02	—								
0840	9.43	1100	110	7.25	0.508	23	8.91	17.63	70	CLEAR
0850	9.54	2100	100	7.23	0.507	6.8	8.33	17.59	71	"
0900	9.65	3100	100	7.15	0.508	5.9	8.42	17.69	72	"
0910	9.68	4100	100	7.07	0.510	5.0	9.82	17.87	73	"
0920	9.53	5000	90	7.05	0.517	4.2	10.15	18.80	72	"
0930	9.51	5900	90	7.03	0.517	3.3	10.47	18.51	72	"
0940	9.51	6800	90	7.00	0.520	2.5	10.97	18.71	72	"
0950	9.53	7700	90	6.99	0.519	2.8	10.90	18.79	71	"
0954	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) 419
Turbidity Meter (SN) 1760-1800

Pump Intake 15.9'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3302
Sample Location: 13MWT 33
Sampled By: Goerdt
C.O.C. No.: 0052
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-26-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1650								
Method: peristaltic	Clear	4.96	91	16.12	94	5.56	559.8	---

PURGE DATA:

Date: 7-26-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.5								
Static Water Level (WL): 12.48								
One Casing Volume(gal/L): 6.04								
Start Purge (hrs): 1245								
End Purge (hrs): 1645								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 18.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[] 13GWT 3302 -F

Pump intake @ 17.5'

22.50
12.48
10.02(.163) = 1.63 gal
= 6.04 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT33
DATE: 7-26-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1245	12.48	—	—	—	—	—	—	—	—	Start purge
1255	12.88	0.8	80	5.04	114	55	6.94	16.26	528.7	clear
1305	13.04	1.6	80	5.03	106	26	6.88	16.32	532.1	"
1315	13.40	2.4	80	4.94	93	14	6.72	15.78	540.1	"
1325	13.03	~~3.84~~	~~80~~	4.98	95	12	6.76	15.95	538.3	pump stopped due
1335	13.15	~~3.24~~	80	4.98	95	5.3	6.87	16.42	539.0	to low battery.
1345	13.50	~~4.84~~	80	4.95	92	11	6.98	15.79	542.3	clear
1355	13.78	5.6	80	4.95	92	15	6.97	16.02	546.2	"
1405	14.00	6.4	80	4.94	92	21	6.84	16.18	547.9	"
1415	14.18	7.2	80	4.91	90	23	6.69	16.05	546.9	"
1425	14.32	8.0	80	4.92	90	25	6.57	16.03	549.7	"
1435	14.59	8.8	80	4.91	89	29	6.27	16.05	550.1	"
1445	14.81	9.6	80	4.91	89	32	5.82	16.08	551.9	"
1455	14.93	10.4	80	4.94	90	35	5.80	16.08	553.3	"
1505	15.02	11.2	80	4.94	88	35	5.71	16.10	554.2	"
1515	15.13	12.0	80	4.96	89	37	5.72	16.14	553.1	"
1525	15.41	12.8	80	4.97	89	55	5.72	16.10	554.6	"
1535	15.56	13.0	80	5.01	91	61	5.74	16.38	553.6	"
1545	15.71	13.8	80	5.01	92	64	5.70	16.40	553.7	"
1555	15.80	14.6	80	5.00	92	68	5.62	16.48	553.9	"
1605	15.96	15.4	80	4.98	92	70	5.45	16.34	556.8	"
1615	16.18	16.2	80	4.99	92	73	5.44	16.36	556.5	"
1625	16.24	17.0	80	4.98	93	80	5.47	16.46	556.3	"
1635	16.31	17.8	80	4.95	91	86	5.55	16.17	559.0	"
1645	16.45	18.6	80	4.96	91	94	5.56	16.12	559.8	end purge

Water Quality Meter (SN)
Control Box type (SN): NA
Turbidity Meter (SN): 4650-4300

Pump Intake: 17.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 34Ø2
Sample Location: 13MWT 34
Sampled By: CCL
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/29/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1Ø47								
Method: Bladder Pump	Clear	5.Ø6	Ø.347	18.58	21	13.42	149.6	—

PURGE DATA:

Date: 7/29/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.9Ø'								
Static Water Level (WL): 5.15'								
One Casing Volume(gal/L): 1Ø.9								
Start Purge (hrs): Ø827								
End Purge (hrs): 1Ø47								
Total Purge Time (min): 14Ø								
Total Vol. Purged (gal/L): 12.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~

Pump intake @ 17.5' bTOC Dedicated Bladder Pump

22.9Ø'
- 5.15'
17.75' x Ø.163 = 2.89 gal
OR
10.9 L

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Clark C. Smith III

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE SWMU 13
PROJECT NUMBER: N9060 CTO Ø279

WELL ID.: 13MWT34
DATE: 7/29/Ø4
OVERCAST & 70°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
Ø827	5.15'	–	–	–	–	–	–	–	–	Begin Purge
Ø837	5.63'	162Ø	162	5.38	Ø.354	35	13.19	17.84	153.Ø	Slightly Cloudy water
Ø847	5.6Ø'	255Ø	93	5.37	Ø.351	65	15.88	17.73	148.6	Slightly cloudy water
Ø857	5.6Ø'	345Ø	9Ø	5.37	Ø.351	75	17.62	17.9Ø	147.3	Slightly cloudy water
Ø9Ø7	5.6Ø'	437Ø	92	5.36	Ø.351	75	18.75	18.15	148.1	Slightly cloudy water
Ø917	5.61'	525Ø	88	5.36	Ø.347	7Ø	17.6Ø	17.66	147.3	Slightly cloudy water
Ø927	5.62'	616Ø	91	5.35	Ø.345	5Ø	11.83	17.74	146.2	Slightly cloudy water
Ø937	5.62'	7ØØØ	84	5.29	Ø.348	95	17.74	18.39	147.1	Slightly cloudy water ← HORIBA FELL OVER
Ø947	5.62'	785Ø	85	5.24	Ø.353	5Ø	16.54	18.35	148.2	Slightly cloudy water,
Ø957	5.61'	867Ø	82	5.Ø3	Ø.351	35	16.33	18.31	153.9	Slightly cloudy water,
1Ø07	5.61'	953Ø	86	5.Ø5	Ø.35Ø	25	15.72	18.26	152.1	Clear water
1Ø17	5.6Ø'	1Ø,35Ø	82	5.Ø3	Ø.351	22	15.11	18.69	152.3	Clear water
1Ø27	5.6Ø'	11,17Ø	82	4.97	Ø.35Ø	21	14.61	18.9Ø	153.6	Clear water
1Ø37	5.6Ø	11,97Ø	8Ø	5.ØØ	Ø.349	21	14.12	18.82	151.8	Clear water
1Ø47	5.6Ø	12,77Ø	8Ø	5.Ø6	Ø.347	21	13.42	18.58	149.6	Clear water
←				Well	Parameters	STABILIZE				→
←				SA	MPLING	BEGINS				→

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10-1588
Turbidity Meter (SN) 1760-1800

Pump Intake 17.5' bTOC Dedicated Bladder Pump

SIGNATURE(S): Chuck C. Fry III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3502
Sample Location: 13MWT 35
Sampled By: Gorrdt
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/1/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0825								
Method: Dis. Bailer	Gray	7.58	.718	15.91	>1000	0.98	—	---

PURGE DATA:

Date: 7/31/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	~~Other~~ ORP	Time
Method: Dis. Bailer	1	7.24	0.733	17.75	71000	0.47	—	135	1501
Monitor Reading (ppm): —	2	6.85	0.716	15.91	71000	0.57	—	231	1508
Well Casing Diameter & Material	3	7.58	0.718	15.81	71000	0.98	—	203	1515
Type: 2" & PVC			See Low Flow Purge Data Sheets						
Total Well Depth (TD): 70.2	Dry	—							1519
Static Water Level (WL): 63.9									
One Casing Volume(gal/L): 3.7									
Start Purge (hrs): 1455									
End Purge (hrs): 1519									
Total Purge Time (min): 24									
Total Vol. Purged (gal/L): 13									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ NA

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3602
Sample Location: 13MWT 36
Sampled By: J. Goggdt
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-29-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1048								
Method: Peristaltic	Clear	5.51	680	15.66	9.9	16.14	350.1	---

PURGE DATA:

Date: 7-29-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.40								
Static Water Level (WL): 18.70								
One Casing Volume(gal/L): 5.3								
Start Purge (hrs): 0934								
End Purge (hrs): 1044								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 5.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ ~~4.5~~ 23'

27.40
18.70
8.70 (.163) = 1.42 gal
= 5.3 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT36
DATE: 7-29-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume ~~(mL/Min.)~~ L	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0934	18.70	–	–	–	–	–	–	–	–	Start purge
0944	19.09	0.80	80	5.49	691	28	16.18	16.14	341.2	clear
0954	19.14	1.60	80	5.52	693	21	16.04	16.24	341.8	"
1004	19.23	2.40	80	5.54	694	15	15.47	15.90	341.5	"
1014	19.43	3.20	80	5.53	684	12	16.18	15.80	344.4	"
1024	19.61	4.00	80	5.53	682	9.7	16.53	15.75	346.7	"
1034	19.69	4.80	80	5.52	681	9.6	16.34	15.71	348.4	"
1044	19.85	5.60	80	5.51	680	9.9	16.14	15.66	350.1	end purge

Water Quality Meter (SN) 99K0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 23'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 37Ø2
Sample Location: 13MWT 37
Sampled By: CCL
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/3Ø/Ø4	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 11Ø2	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Bladder Pump	clear	6.26	Ø.174	17.35	5.Ø	2.9Ø	133.5	---

PURGE DATA:

Date: 7/3Ø/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.15'								
Static Water Level (WL): 13.36'								
One Casing Volume(gal/L): 9								
Start Purge (hrs): Ø853								
End Purge (hrs): 11Ø2								
Total Purge Time (min): 129								
Total Vol. Purged (gal): 9.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~

Pump intake @ _____

27.15'
− 13.36'
13.79'

Duplicate Sample Taken @ This Location

Circle if Applicable:

MS/MSD

Duplicate ID No.: 13FDØ73ØØ4Ø1

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13GWT37
DATE: 7/3Ø/Ø4
Overcast, Humid, 75°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mmhos/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
Ø853	13.36'	—	—	—	—	—	—	—	—	Begin Pumping
Ø9Ø2	14.13'	1,17Ø	13Ø	6.23	Ø.145	5Ø	4.74	15.38	147.Ø	Slightly cloudy water
Ø912	14.15'	2,27Ø	11Ø	6.22	Ø.146	27	4.12	15.65	14Ø.6	clear w/small Particles
Ø922	14.21'	3,37Ø	11Ø	6.28	Ø.146	2Ø	3.99	15.5Ø	136.7	clear w/small Particles
Ø932	14.Ø3'	4,ØØØ	63	6.28	Ø.15Ø	14	3.86	16.58	135.6	Clear Water
Ø942	14.Ø2'	4,62Ø	62	6.31	Ø.152	11	3.85	16.74	133.8	Clear water
Ø952	14.Ø2'	5,22Ø	6Ø	6.29	Ø.154	1Ø	3.71	16.93	134.1	Clear water
1ØØ2	14.Ø2'	5,81Ø	59	6.26	Ø.156	8.8	3.52	17.Ø8	134.8	Clear water
1Ø12	14.Ø2'	6,41Ø	6Ø	6.28	Ø.159	8.1	3.44	17.Ø2	133.5	Clear water
1Ø22	14.Ø2'	7,ØØØ	59	6.27	Ø.163	7.1	3.26	17.21	133.6	Clear water
1Ø32	14.Ø2'	7,6Ø0	6Ø	6.29	Ø.165	6.4	3.16	17.1Ø	132.5	Clear water
1Ø42	14.Ø2'	8,2ØØ	6Ø	6.26	Ø.169	6.2	3.Ø5	17.17	132.9	Clear water
1Ø52	14.Ø2'	8,8ØØ	6Ø	6.27	Ø.173	4.9	2.97	17.34	132.6	Clear water
11Ø2	14.Ø2'	9,4ØØ	6Ø	6.26	Ø.174	5.Ø	2.9Ø	17.35	133.5	Clear water
← Well Parameters Stabilized →										
← Sampling Begins →										

Water Quality Meter (SN) Ø1CØ134 AB
Control Box type (SN) MP1Ø - 1588
Turbidity Meter (SN) 176Ø - 18ØØ

Pump Intake

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 38 Ø2
Sample Location: 13MWT 38
Sampled By: CCL
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/31/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1442								
Method: Bladder Pump	Clear	8.44	Ø.665	21.72	18	1.7Ø	72.9	---

PURGE DATA:

Date: 7/3Ø/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.7Ø'								
Static Water Level (WL): 61.64'								
One Casing Volume(gal/L): 3.69								
Start Purge (hrs): 1538								
End Purge (hrs): 1713								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 7.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~ F

Pump intake @ ≈ 66' from TOC

67.7Ø
-61.64
6.Ø6 x Ø.163 = Ø.98 Gallons
OR
3.69 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE SWMU 13
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13 MWT 38
DATE: 7/3Ø/Ø4
RAIN, HUMID, 80°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1354	61.64'	—	—	—	—	—	—	—	—	INITAL Reading
14Ø3	61.64'	15Ø	15	8.47	Ø.588	UNK	Ø.Ø7	22.26	85.5	cloudy water
14Ø7		PUMPING	STOPPED	TO	CHECK	PUMP				
1414		BEGIN	PUMPI	NG						
142Ø		STOP	PUMPING -	Terry Comes	over & Helps	Me.	Pump Needs a			
		SPECIAL	O-RING	@ OFFICE.						
1538	61.64'	—	—	—	—	—	—	—	—	INITAL Reading
1548	62.88'	1,35Ø	1,4ØØ	7.86	Ø.595	37Ø	1.1Ø	17.Ø6	111.5	Cloudy, Gray water. Heavy Rain
1558	63.36'	2,45Ø	9Ø	7.84	Ø.6Ø4	39Ø	1.28	17.42	1Ø5.2	cloudy water. Heavy Rain
16Ø8	63.95'	3,35Ø	9Ø	7.85	Ø.6Ø4	33Ø	1.35	17.49	1Ø2.3	Cloudy water. Heavy Rain
1618	64.35'	4,Ø4Ø	69	7.84	Ø.62Ø	28Ø	1.49	18.62	1Ø1.Ø	Cloudy water. Heavy Rain
1628	64.72'	4,71Ø	67	7.85	Ø.624	12Ø	1.33	18.57	99.3	Slightly cloudy water. Rain.
1638	65.12'	5,4ØØ	69	7.83	Ø.627	6Ø	1.Ø6	18.41	1Ø2.1	Slightly cloudy water. Rain.
1648	65.52'	6,1ØØ	7Ø	8.ØØ	Ø.627	27	Ø.89	18.22	88.2	Slightly cloudy water. Rain.
1658	65.9Ø'	6,8ØØ	7Ø	8.16	Ø.628	18	Ø.81	18.37	78.8	Slightly cloudy water. Rain.
17Ø8	66.25'	7,5ØØ	7Ø	8.23	Ø.611	14	Ø.76	18.33	77.8	Clear water. Rain
1713	>66.4Ø'	←	—	DRY	WELL -	TOP OF	PUMP			→
7/31→ 1442	61.81'	—	—	—	—	—	—	—	—	Reading on 7/31/Ø4

Water Quality Meter (SN) ØICØ134 AB
Control Box type (SN) MP1Ø-158B
Turbidity Meter (SN) 176Ø - 18ØØ

Pump Intake 66' From TOC

SIGNATURE(S): Clark C. Cay III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3902
Sample Location: 13MWT 39
Sampled By: Goerdt
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7-29-04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1359	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Peristaltic	clear	5.85	352	16.31	2.2	6.07	321.0	---

PURGE DATA:

Date: 7-29-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC		See Low Flow Purge Data Sheets						
Total Well Depth (TD): 26.70								
Static Water Level (WL): 14.85								
One Casing Volume(gal/L): 7.1								
Start Purge (hrs): 1235								
End Purge (hrs): 1355								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 8.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 22'

26.70
14.85
11.85 (.163) = 1.93 gal
= 7.1 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT 39
DATE: 7-29-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1235	14.85	—	—	—	—	—	—	—	—	start purge
1245	15.56	1.0	100	5.83	363	12	5.28	16.41	321.2	clear w/ particulate
1255	15.67	2.0	100	5.83	343	7.7	5.23	16.56	321.3	"
1305	15.79	3.0	100	5.81	341	5.1	5.47	16.61	321.9	"
1315	15.84	4.0	100	5.82	346	5.1	5.41	16.42	321.1	"
1325	15.92	5.0	100	5.82	359	5.3	5.36	16.25	321.3	"
1335	15.97	6.0	100	5.84	355	4.1	5.61	16.87	320.6	clear
1345	16.03	7.0	100	5.84	353	2.7	5.61	16.42	321.5	"
1355	16.08	8.0	100	5.85	352	2.2	6.07	16.31	321.0	end purge

Water Quality Meter (SN) 99X00055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 22'

SIGNATURE(S)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4002
Sample Location: 13MWT 40
Sampled By: T Rojahn
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/30/04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1124	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAMG	CLEAR	5.04	0.329	15.02	1.28	0.39	538	---

PURGE DATA:

Date: 7/30/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Dedicated Bladder								
Monitor Reading (ppm): -								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.70								
Static Water Level (WL): 17.87								
One Casing Volume(gal/L): 6.1								
Start Purge (hrs): 0940								
End Purge (hrs): 1120								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 8.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 23'

9.83' x 0.163 = 1.6 gal or 6.1 L

Circle if Applicable:

MS/MSD | Duplicate ID No.: —

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT40
DATE: 7/30/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0940	17.87	—	—	—	—	—	—	—	—	START PURGE
0950	18.15	800	80	5.40	0.333	4.02	1.07	15.40	291	CLEAR
1000	18.22	1800	100	5.20	0.331	3.48	0.75	14.98	430	CLEAR
1010	18.28	2800	100	5.15	0.329	3.02	0.67	14.87	466	CLEAR
1020	18.28	3800	100	5.14	0.328	2.80	0.48	14.83	423	CLEAR
1030	18.29	4800	100	5.11	0.326	2.32	0.46	14.55	507	CLEAR
1040	18.28	5800	100	5.09	0.327	1.78	0.42	14.66	509	CLEAR
1050	18.30	6800	100	5.09	0.328	1.67	0.41	14.85	529	CLEAR
1100	18.29	7800	100	5.07	0.328	1.59	0.41	14.86	530	CLEAR
1110	18.29	8300	100	5.06	0.328	1.39	0.41	14.88	535	CLEAR
1120	18.29	8800	100	5.04	0.329	1.28	0.39	15.02	538	CLEAR
1124	—	—	—	—	—	—	—	—	—	SAMPLE TIME

Water Quality Meter (SN) 01C0979 AA
Control Box type (SN) MP10 - 1231
Turbidity Meter (SN) 3592 - 3502

Pump Intake 23' Dedicated BLADDER PUMP

SIGNATURE(S): Terry [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4102
Sample Location: 13MWT 41
Sampled By: T.R. / S.C.
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 8/1/04								
Time: 0816								
Method: SAME	CLOUDY	6.85	1.001	14.73	110	0.53	149	---

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	~~Other~~ ORP
Date: 7/31/04								
Method: D.I. BAILER	I	6.85	1.001	14.73	110	0.53	—	149
Monitor Reading (ppm): —	1							DRY
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.8								
Static Water Level (WL): 66.25								
One Casing Volume(gal/L):								
Start Purge (hrs): 0820								
End Purge (hrs): 0825								
Total Purge Time (min): 5								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ NA

1.55 x .163 = 0.25 gal or 0.95 L

Circle If Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4202
Sample Location: 13MWT 42
Sampled By: Goerdt
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 7-31-04								
Time: 0822								
Method: peristaltic	tan	5.66	101	16.71	>1000	2.12	132.1	---

PURGE DATA:

Date: 7-30-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 23.45								
Static Water Level (WL): 20.34								
One Casing Volume(gal/L) 1.9								
Start Purge (hrs): 0904								
End Purge (hrs): 1016								
Total Purge Time (min): 72								
Total Vol. Purged (gal/L): 4.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 23'

7/31/04 water level 20.40

23.45
20.34
3.11 (.163) = 0.51 gal
= 1.9 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT42
DATE: 7-30-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0904	20.34	—	—	—	—	—	—	—	—	Start purge
0914	21.35	0.70	70	5.80	140	160	1.96	16.61	64.0	tannish
0924	21.61	1.40	70	5.76	133	180	2.10	16.43	81.6	"
0934	21.95	2.10	70	5.75	129	320	1.99	16.33	82.6	"
0944	22.25	2.80	70	5.78	129	550	2.12	16.49	86.8	darker tan
0954	22.60	3.50	70	5.78	127	650	2.13	16.66	94.3	"
1004	22.96	4.20	70	5.72	116	>1000	2.18	16.66	108.7	"
1014	23.39	4.9	70	5.66	101	>1000	2.12	16.71	132.1	"
1016	— well	dry								stop purge

Water Quality Meter (SN) 99X0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 23'

SIGNATURE(S) [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4302
Sample Location: 13MWT 43
Sampled By: Goodall
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-1-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0850								
Method: peristaltic	clear	4.19	.263	14.50	8.9	3.43	364.8	---

8/1/04

PURGE DATA:

Date: 7-31-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.5								
Static Water Level (WL): 9.18								
One Casing Volume(gal/L): 8.1								
Start Purge (hrs): 1450								
End Purge (hrs): 1756								
Total Purge Time (min): 186								
Total Vol. Purged (gal/L): 27.25								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 17.5'

8/1/04 Water level 9.35'

22.50
9.18
13.32(.163) = 2.17 gal
= 8.1 L

*well pumped dry

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MW-T43
DATE: 9-31-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1450	9.18	—	—	—	—	—	—	—	—	Start purge
1500	10.15	1.0	100	4.08	.238	8.0	2.22	17.60	340.4	Clear
1510	10.25	1.85	85	4.09	.201	8.7	1.93	17.69	341.9	"
1520	12.05	2.7	85	4.11	.182	12	1.84	17.56	347.8	"
1530	12.91	3.55	85	4.13	.178	10	1.95	17.46	352.9	"
1540	13.28	4.4	85	4.14	.178	7.1	1.96	17.26	354.7	"
1550	13.46	5.25	85	4.16	.185	14	2.13	17.74	355.5	"
1600	13.65	6.1	85	4.15	.187	11	2.13	17.95	357.9	"
1610	13.90	6.95	85	4.14	.191	9.2	3.00	16.94	359.8	"
1620	14.35	8.15	120	4.14	.173	6.0	2.57	16.82	361.4	increased pump
1630	14.63	9.35	120	4.15	.170	—	2.24	16.40	366.1	rate.
1640	15.15	10.55	120	4.16	.166	—	2.19	16.25	367.3	
1650	15.95	12.15	160	4.08	.242	—	2.91	15.51	373.1	
1700	17.04	14.25	210	4.16	.289	—	3.46	14.92	368.3	Attempting to
1710	18.15	16.85	260	4.11	.181	11	2.04	15.20	372.1	dry well bore
1720	19.20	19.45	260	4.05	.188	—	2.11	15.10	375.7	
1730	19.98	22.05	260	3.98	.215	—	2.40	14.98	377.9	
1740	21.20	24.65	260	4.02	.234	—	2.84	14.62	372.8	
1750	22.12	27.25	260	4.19	.263	>1000	3.43	14.50	364.8	Brown - well nearly dry.
1756	—	Well	Dry		—					
										End purge

Water Quality Meter (SN) 99K00055
Control Box type (SN) ~~4600~~ NA
Turbidity Meter (SN) 4650 4300

Pump Intake 17.5'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 44Ø2
Sample Location: 13MWT 44
Sampled By: CCL
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/1/Ø4	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1143	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Bladder Pump	cloudy	7.74	Ø.853	23.1Ø	11Ø	Ø.56	76.3	---

PURGE DATA:

Date: 8/1/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 85.81'								
Static Water Level (WL): 64.4Ø'								
One Casing Volume(gal/L): 13.15								
Start Purge (hrs): Ø913								
End Purge (hrs): 1143								
Total Purge Time (min): 15Ø								
Total Vol. Purged (gal/L): 7.56								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT-E~~

Pump intake @ 79' bTOC

85.81
− 64.40
21.41 x Ø.163 = 3.48 Gallons
OR
13.15 L

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE, SWMU13
PROJECT NUMBER: N7448 CTO 0343

WELL ID.: 13MWT44
DATE: 8/1/04
Sunny, Humid, 80°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (ml/min)	Flowrate (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (deg C)	ORP (mV)	Comments (Volume & Color)
0913	64.40'	–	–	–	–	–	–	–	–	Initial Reading. Begin Purge.
0923	64.91'	300	30	9.39	0.750	90	3.70	18.30	-47.6	Slightly cloudy water.
0933	65.67'	1,500	120	8.89	0.762	60	1.37	17.26	-10.8	Slightly cloudy water.
0943	65.50'	1,990	49	8.54	0.820	70	1.28	20.04	5.0	Slightly cloudy water.
0953	65.46'	2,440	45	8.18	0.848	85	1.15	20.84	35.6	Slightly cloudy water.
1003	65.45'	2,940	50	8.05	0.850	110	0.98	20.20	51.5	Slightly cloudy water
1013	65.50'	3,420	48	8.16	0.839	110	0.86	19.59	51.3	Slightly cloudy water
1023	65.55'	3,900	48	8.23	0.831	95	0.74	19.38	49.0	Slightly cloudy water
1033	65.61'	4,400	50	8.33	0.819	110	0.68	18.84	47.0	Slightly cloudy water
1043	65.66'	4,920	52	8.30	0.817	160	0.63	19.25	50.0	Cloudy water
1053	65.71'	5,450	53	8.02	0.834	160	0.58	20.72	62.6	Cloudy water
1103	65.75'	5,980	53	7.87	0.834	150	0.55	20.91	69.0	Cloudy water
1113	65.65'	6,390	41	7.74	0.845	130	0.53	22.14	75.1	Cloudy water
1123	65.61'	6,780	39	7.66	0.860	120	0.56	23.09	79.6	Cloudy water
1133	65.61'	7,170	39	7.73	0.852	110	0.57	22.93	77.1	Cloudy water
1143	65.61'	7,560	39	7.74	0.853	110	0.56	23.10	76.3	Cloudy water
←				Well Parameters Stabilize					→	
←				Sampling Begins					→	

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10-1588
Turbidity Meter (SN) 1760-1800

Pump Intake 79' bTOC

SIGNATURE(S): Chuck C. Fry III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 45Ø2
Sample Location: 13MWT 45
Sampled By: CCL
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/29/Ø4	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 16Ø2								
Method: Bladder Pump	Clear	6.78	Ø.7Ø3	25.29	19	7.97	116.5	---

PURGE DATA:

Date: 7/28/Ø4	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 83.ØØ'								
Static Water Level (WL): 69.34'								
One Casing Volume(gal/L): 8.37								
Start Purge (hrs): 143Ø								
End Purge (hrs): 173Ø								
Total Purge Time (min): 18Ø								
Total Vol. Purged (gal/L): 13.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT ~~F~~

Pump intake @ 8Ø' bTOC

7/29/Ø4 - DTW = 77.44' FROM TOC @ 1549.
- Pump Rate @ 5Ø mL/min

83.00
-69.34
13.66 x (2)² x Ø.Ø4Ø8 = 2.22 gals.
OR
8.37 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Mark C. Ly III

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE SWMU 13
PROJECT NUMBER: N744B CTO Ø343

WELL ID.: 13MWT45
DATE: 7/28/Ø4

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
143Ø	69.34'	—	—	—	—	—	—	—	—	INITIAL Reading
144Ø	70.95'	930	93	8.Ø5	Ø.633	15	9.94	17.62	69.Ø	Clear WATER
145Ø	72.23'	1,91Ø	98	7.81	Ø.627	9.6	9.18	17.43	87.Ø	Clear WATER
15ØØ	72.69'	2,72Ø	81	7.75	Ø.643	5.9	1Ø.53	18.58	89.1	Clear WATER
151Ø	73.Ø8'	3,42Ø	7Ø	7.52	Ø.646	4.8	9.83	18.89	98.Ø	Clear WATER
152Ø	73.49'	4,ØØØ	66	7.4Ø	Ø.649	4.4	8.8Ø	19.44	1ØØ.Ø	Clear WATER
153Ø	73.87'	4,72Ø	64	7.35	Ø.643	4.Ø	9.24	19.35	98.5	Clear WATER
154Ø	74.32'	5,36Ø	64	7.46	Ø.637	6.1	11.89	19.41	87.8	Clear WATER
155Ø	74.67'	6,ØØØ	64	7.64	Ø.633	8.1	1Ø.39	19.38	73.1	Clear WATER
16ØØ	75.ØØ'	6,59Ø	59	7.66	Ø.637	8.Ø	11.46	19.69	69.4	Clear WATER
161Ø	75.33'	7,16Ø	57	7.69	Ø.638	9.2	1Ø.28	19.7Ø	63.3	Clear WATER
162Ø	75.68'	7,77Ø	61	7.83	Ø.63Ø	13	11.Ø7	19.Ø3	55.5	Clear WATER
163Ø	76.Ø8'	8,36Ø	59	7.92	Ø.628	16	1Ø.48	18.89	44.4	Clear WATER
164Ø	76.6Ø'	9,2ØØ	84	8.Ø7	Ø.617	2Ø	9.8Ø	17.99	35.5	Clear WATER
165Ø	77.1Ø'	1Ø,Ø2Ø	82	8.11	Ø.617	2Ø	11.13	17.96	3Ø.5	Clear WATER
17ØØ	77.6Ø'	1Ø,96Ø	94	8.25	Ø.615	24	11.57	17.85	29.7	Clear WATER
171Ø	78.1Ø'	11,82Ø	86	8.17	Ø.616	22	11.62	17.84	24.9	Clear WATER
172Ø	78.65'	12,68Ø	86	8.27	Ø.616	18	11.96	17.83	18.3	Clear WATER
173Ø	79.Ø5'	13,52Ø	84	8.2Ø	Ø.616	2Ø	12.25	17.84	13.2	Clear WATER
←				END PUMP/WELL DRY					→	

Water Quality Meter (SN) 01C0134 AB
Control Box type (SN) MP10-1588
Turbidity Meter (SN) 1360-180Ø

Pump Intake 8Ø' bTOC Dedicated Bladder Pump

SIGNATURE(S): Mark C. Fox III

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4602
Sample Location: 13MWT 46
Sampled By: T. RUHAN
C.O.C. No.: 0053
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 7/30/04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1333								
Method: SAME	CLEAR	6.25	0.786	14.10	2.81	0.05	131	--

PURGE DATA:

Date: 7/30/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.60								
Static Water Level (WL): 57.14								
One Casing Volume(gal/L): 6.5								
Start Purge (hrs): 1210								
End Purge (hrs): 1330								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 7.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	~~3~~ 4 x (2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT_____-F

Pump intake @ 63'

10.46 x 0.163 = 1.704 or 6.5

Circle if Applicable:

MS/MSD Yes (TR)

Duplicate ID No.:

Signature(s):

Terry Ruhan

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT 46
DATE: 7/30/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1210	57.14	—	—	—	—	—	—	—	—	START PURGE
1220	57.16	1300	130	6.42	0.798	10.6	0.08	14.49	103	CLEAR
1230	57.16	2200	90	6.20	0.805	7.32	0.07	14.57	131	CLEAR
1240	57.16	3100	90	6.26	0.802	4.63	0.06	14.38	122	CLEAR
1250	57.16	4000	90	6.27	0.800	4.20	0.06	14.32	121	CLEAR
1300	57.16	4900	90	6.27	0.798	3.85	0.06	14.28	120	CLEAR
1310	57.17	5800	90	6.26	0.793	3.42	0.05	14.22	123	CLEAR
1320	57.17	6700	90	6.26	0.790	3.02	0.05	14.15	126	CLEAR
1330	57.18	7600	90	6.25	0.786	2.81	0.05	14.10	131	CLEAR
1333	—	—	—	—	—	—	—	—	—	START SAMPLE

Water Quality Meter (SN) 01C0979 AA
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 3592-3502

Pump Intake 63' DEDICATED BLADDER PUMP

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4702
Sample Location: 13MWT 47
Sampled By: CCL
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/1/04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1811	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Bladder Pump	Clear	3.40	1.056	18.41	7.0	0.51	181.2	---

PURGE DATA:

Date: 8/1/04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.20'								
Static Water Level (WL): 6.27'								
One Casing Volume(gal/L): 8.56								
Start Purge (hrs): 1641								
End Purge (hrs): 1811								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 7.76								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~

Pump intake @ 15.0' bTOC

20.20
− 6.27
13.93 × 0.163 = 2.27 Gallons
OR
8.56 L

Circle if Applicable:

MS/MSD ✓ Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE, SWMU13
PROJECT NUMBER: N7448 CTO Ø343

WELL ID.: 13MW T47
DATE: 8/1/Ø4
Partly cloudy, Humid, 85°F

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1641	6.27'	—	—	—	—	—	—	—	—	INITAL Reading; Begin Purge
1651	6.77'	87Ø	87	1.86	1.Ø64	2.5	Ø.4Ø	18.45	289.1	Clear water.
1701	6.95'	1,7ØØ	83	2.99	1.Ø97	5.1	Ø.31	18.18	218.Ø	Clear water,
1711	7.Ø9'	2,53Ø	83	3.26	1.Ø41	25	Ø.25	18.2Ø	194.9	Slightly cloudy water.
1721	7.19'	3,37Ø	84	3.38	1.Ø42	24	Ø.39	18.14	187.9	Slightly cloudy water.
1731	7.26'	4,22Ø	85	3.39	1.Ø46	18	Ø.46	18.17	182.3	Clear water.
1741	7.3Ø'	5,12Ø	9Ø	3.43	1.Ø49	15	Ø.51	18.19	178.2	Clear water,
1751	7.38'	6,ØØØ	88	3.43	1.Ø5Ø	1Ø	Ø.49	18.23	177.1	Clear water.
1801	7.37'	6,88Ø	86	3.38	1.Ø54	8.Ø	Ø.52	18.35	179.4	Clear water.
1811	7.36'	7,76Ø	88	3.4Ø	1.Ø56	7.Ø	Ø.51	18.41	181.2	Clear water
←			well	Parameters Stabilize						→
←				Sampling	Begins					→

Water Quality Meter (SN) ØICØ134 AB
Control Box type (SN) MPIØ-158B
Turbidity Meter (SN) 176Ø-18ØØ

Pump Intake 15.Ø' bTOC, Dedicated Bladder Pump

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4801
Sample Location: 13MWT 48
Sampled By: Gorski
C.O.C. No.: 0072
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-14-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1722								
Method: peristaltic	Clear	6.93	.719	19.88	1.95	.15	113.7	—

PURGE DATA:

Date: 8-14-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 12.75								
Static Water Level (WL): 11.75								
One Casing Volume(gal/L): .6								
Start Purge (hrs): 1600								
End Purge (hrs): 1720								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 7.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 12'

Turbidity checked prior to metal sampling and was 5.8 NTU

12.75
11.75
1.0 (.163) = .163 gal
= .6 L

Circle if Applicable:

MS/MSD

Duplicate ID No.: 13FD081404 01

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT48
DATE: 8-14-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Liters)	Flowrate (ml/Min)	pH (SU)	Cond. (S/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1600	11.75	–	–	–	–	–	–	–	–	Start purge
1610	11.75	1.30	130	6.84	.740	341	.06	20.74	31.7	cloudy
1620	11.72	2.25	95	6.87	.746	449	.07	21.33	-7.6	"
1630	11.73	3.20	95	6.87	.737	70.2	.12	20.59	36.0	clear
1640	11.73	4.15	95	6.91	.727	24.7	.14	20.30	66.2	"
1650	11.73	5.10	95	6.93	.725	12.0	.15	20.20	81.3	"
1700	11.73	6.05	95	6.93	.721	5.4	.14	20.00	94.5	"
1710	11.73	7.00	95	6.94	.720	4.29	.15	19.96	105.8	"
1715	11.73	7.48	47.5	6.93	.720	4.10	.14	19.90	110.1	"
1720	11.73	7.95	47.5	6.93	.719	1.95	.15	19.88	113.7	stop purge

Water Quality Meter (SN) 99K00055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 12'

SIGNATURE(S)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4901
Sample Location: 13MWT 49
Sampled By: Gerdt
C.O.C. No.: 0072
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-14-04	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1521								
Method: peristaltic	clear	6.37	.450	20.31	1.54	0.30	104.4	--

PURGE DATA:

Date: 8-14-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 11.87								
Static Water Level (WL): 8.75								
One Casing Volume(gal/L) 1.9								
Start Purge (hrs): 1408								
End Purge (hrs): 1518								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 7.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 11'

11.87
8.75
3.12(.163) = .51 gal
= 1.9 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MW149
DATE: 8-14-04

Time (Hrs.)	Water Level (Ft. Below TOC)	Volume (Liters)	Flowrate (ml/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Sk Volume & Color)
1408	8.75	—	—	—	—	—	—	—	—	Start purge
1418	8.80	1.1	110	6.45	.448	6.97	0.68	20.37	92.7	clear
1428	8.85	2.2	110	6.43	.456	5.18	0.51	20.50	97.9	
1438	8.82	3.3	110	6.41	.450	3.20	0.41	20.19	92.5	
1445	8.82	4.4	110	6.39	.450	2.04	0.41	20.34	97.9	
1458	8.82	5.5	110	6.39	.449	1.66	0.36	20.17	99.5	
1508	8.82	6.6	110	6.37	.448	1.65	0.33	20.21	101.5	
1513	8.82	7.15	55	6.37	.450	1.60	0.31	20.33	103.0	
1518	8.82	7.7	55	6.37	.450	1.54	0.30	20.31	104.4	End purge

Water Quality Meter (SN) 99K0055
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4300

Pump Intake 11'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 5001
Sample Location: 13MWT 50
Sampled By: Gerdt
C.O.C. No.: 0072
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-14-04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1259	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Peristaltic	Clear	7.18	.881	16.11	8.34	2.42	244.1	--

PURGE DATA:

Date: 8-14-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 28.18								
Static Water Level (WL): 8.92								
One Casing Volume(gal/L): 11.62								
Start Purge (hrs): 0855								
End Purge (hrs): 1255								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L) 18.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 23'

28.18
8.92
19.26(.163) = 3.14 gal
= 11.62 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT50
DATE: 8-14-04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (Liters)	Flowrate (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (% Volume & Color)
0855	8.92	—	—	—	—	—	—	—	-	Start purge
0905	10.42	1.00	100	7.18	.824	3.42	4.34	15.16	236.2	Clear
0915	12.01	2.00	100	7.09	.820	2.48	3.96	15.13	237.6	"
0925	12.98	2.75	75	7.12	.819	10.93	3.81	15.51	235.2	"
0935	13.72	3.50	75	7.10	.823	2.99	3.75	15.30	234.8	"
0945	15.12	4.25	75	7.08	.826	2.40	3.71	15.35	234.4	"
0955	15.83	5.00	75	7.09	.836	2.87	3.67	15.78	233.9	"
1005	16.48	5.75	75	7.10	.830	5.44	3.66	15.43	233.4	"
1015	17.38	6.50	75	7.10	.831	4.27	3.54	15.48	234.1	"
1025	17.60	7.25	75	7.10	.835	3.10	3.43	15.71	233.2	
1035	17.89	8.00	75	7.09	.834	2.48	3.52	15.59	234.0	
1045	18.12	8.75	75	7.06	.849	2.70	3.37	15.67	235.5	
1055	18.32	9.50	75	6.94	.863	2.99	3.28	15.77	239.5	
1105	18.58	10.25	75	6.83	.886	3.10	3.04	15.61	246.8	
1115	18.81	11.00	75	6.81	.912	5.03	2.84	15.93	251.3	
1125	19.08	11.75	75	6.80	.919	7.47	2.78	15.99	252.4	
1135	19.31	12.50	75	6.80	.910		2.61	15.99	254.6	
1145	19.87	13.25	75	6.82	.911		2.60	16.02	254.8	
1155	20.23	14.00	75	6.83	.912		2.59	16.52	254.3	
1205	20.70	14.75	75	6.89	.882	7.96	2.46	16.19	253.8	
1215	21.14	15.50	75	6.97	.881	6.03	2.36	16.24	252.1	
1225	21.52	16.25	75	7.07	.869	5.45	2.39	15.76	249.3	
1235	21.87	17.00	75	7.12	.884	6.02	2.37	16.35	246.6	
1245	22.09	17.75	75	7.17	.884	7.12	2.41	16.05	243.7	
1255	22.45	18.50	75	7.18	.881	8.34	2.42	16.11	244.1	End purge

Water Quality Meter (SN) 99K 00.55
Control Box type (SN) NA
Turbidity Meter (SN) 4650 4330

Pump Intake 23'

SIGNATURE(S)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 5101
Sample Location: 13MWT 51
Sampled By: Gorski
C.O.C. No.: 0054
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-1-04	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1420	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: peristaltic	clear	5.94	.278	20.57	33	8.32	299	---

PURGE DATA:

Date: 8-1-04	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.72								
Static Water Level (WL): 7.72								
One Casing Volume(gal/L): 6.1								
Start Purge (hrs): 1016								
End Purge (hrs): 1416								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 29.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes
Total Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No
Diss. Metals SW-846 6020/Mercury 7470A	4°C/HNO_3	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[X] No[] 13GWT 5101 -F

Pump intake @ ~12.5'

17.72
7.72
10.00 (.163) = 1.63 gal
= 6.1 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

ROUND 4

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Stream
[] Spring
[] Pond
[] Lake
[] Other: Culvert
[] QA Sample Type:

Sample ID No.: 13SW 1103
Sample Location: 13SW/SD 11
Sampled By: T. ROJAHN
C.O.C. No.: 3678

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-2-05								
Time: 1340								
Depth: NA	Yellow tint	7.76	1.439	2.72	7.6	12.46	282	—
Method: Direct								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

~ 2.5 oz per min or 0.02 gpm

1414 Hrs Finish @ Culvert

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s): Terry Rogal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1403
Sample Location: 13SW/SD 14
Sampled By: T. ROJAHN
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

Date: 2-2-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 0955								
Depth: SURFACE	CLEAR	7.91	0.278	2.88	4.1	13.80	178	—
Method: Direct								

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

FISH 4"

FLOW 1 ft/SEC
449 x 1 x .08' x 1.8' = 65 gpm

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1503
Sample Location: 13SW/SD 15
Sampled By: T. ROJAHN
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-2-05								
Time: 1010								
Depth: SURFACE	SL Cloudy	8.13	.132	2.44	85	13.38	195	—
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

FLOW ~1 gpm

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1603
Sample Location: 13SW/SD 16
Sampled By: TIROJAHN
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 2-2-03	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1023								
Depth: SURFACE	CLEAR	8.29	0.106	1.43	10	13.88	188	—
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

Flow 1-5 gpm

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s): Ty Nagel

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1902
Sample Location: 13SW/SD 19
Sampled By: T. ROJAHN
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 2-2-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1300								
Depth: SURFACE	CLEAR	7.90	0.236	2.64	36	13.12	220	-
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS / NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

Flow 3 - 5 gpm

MAP

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tey Rojal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW 20 02
Sample Location: 13SW/SD 20
Sampled By: T. ROLAHN
C.O.C. No.: 3678

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLE PARAMETERS

Date: 2-2-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1235								
Depth: SURFACE	CLEAR	8.17	0.154	2.24	6.1	13.25	205	–
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

Flow
6 sec / ft
.12' x 2.3' x 0.17 x 449 =
21 gpm

MAP

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Troy Rogal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 2203
Sample Location: 13SW/SD 22
Sampled By: T. Mosiman
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-2-05 Time: 0855 Depth: SURFACE Method: DIRECT	CLEAR	8.18	0.151	2.02	3.1	8.25	139	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

FLOW 1-5 gpm

MAP

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Tey Rogal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 3003
Sample Location: 13SW/SD 30
Sampled By: T. Roman
C.O.C. No.: 3678

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 2-2-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1045								
Depth: SURFACE	Clear	8.07	0.168	1.63	4.5	14.10	201	—
Method: Direct								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13GWT NA -F

Flow 1 sec/ft
.20' x 6' x 1 x 449 =
539 gal

MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0104
Sample Location: 13MWT01
Sampled By: T. ROHÄHN
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/23/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1105								
Method: SAME	CLEAR	3.98	0.192	9.98	3.0	0.81	+295	—

PURGE DATA:

Date: 1/23/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. BLADDER								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2"Φ PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 17.91								
Static Water Level (WL): 8.02								
One Casing Volume(gal/L): 6.1								
Start Purge (hrs): 0950								
End Purge (hrs): 1100								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 7.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT NA -F

9.89 x 0.163 = 1.6 gal or 6.1

Pump intake @ 12'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Ty Rohähn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT01
DATE: 1-23-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0950	8.02	0	—	—	—	—	—	—	—	START PURGE
1000	8.45	1200	120	4.02	0.184	8.3	1.50	8.71	+261	CLEAR
1010	8.73	2300	110	4.02	0.188	6.9	1.22	9.72	275	"
1020	8.74	3300	100	4.01	0.187	5.5	1.12	8.79	282	"
1030	8.61	4300	100	3.89	0.181	0.45	1.00	8.55	293	"
1040	8.76	5300	100	4.01	0.192	3.8	0.86	9.99	289	"
1050	8.74	6300	100	3.99	0.190	2.4	0.83	9.79	294	"
1100	8.74	7300	100	3.98	0.192	3.0	0.81	9.98	295	"

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 4536-3303

Pump Intake 12'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0905
Sample Location: 13MWT 09
Sampled By: CD
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/1/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1050								
Method: bladder pump	clear	5.49	.570	12.15	1.6	0.74	29.9	—

PURGE DATA:

Date: 2/1/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 22.96'								
Static Water Level (WL): 9.67'								
One Casing Volume(gal/L): 8.02								
Start Purge (hrs): 0925								
End Purge (hrs): 1045								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 9.33								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT F~~

Pump intake @ 17.61' bTOC
dedicated bladder pump

22.96
− 9.67
13.29 (.163) = 2.17 gal.
= 8.02 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT09
DATE: 2/1/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
0925	9.67	—	~~130~~	—	—	—	—	—	—	start purge
0935	10.05	1.830	130	5.54	.548	0.80	1.10	11.66	9.3	clear
0945	9.97	2.930	110	5.54	.535	0.95	1.06	10.67	15.5	clear
0955	9.98	4.030	110	5.53	.548	1.3	0.88	11.43	22.3	clear
1005	10.00	5.130	110	5.53	.558	1.3	0.78	11.80	11.4	clear
1015	10.00	6.230	110	5.51	.562	1.7	0.79	11.96	8.7	clear
1025	10.01	7.230	100	5.50	.566	1.5	0.74	12.11	21.1	clear
1035	10.01	8.330	100	5.49	.567	1.9	0.77	12.17	22.7	clear
1045	10.01	9.330	100	5.49	.570	1.6	0.74	12.15	29.9	clear, end purge
	←		well	parameters		stabalized			→	
1050	—	—	—	—	—	—	—	—	—	Start sampling

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10 - 1231
Turbidity Meter (SN) 4175-1503

Pump Intake 17.61' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1104
Sample Location: 13MWT 11
Sampled By: T. Rosahn
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: ~~1/23/05~~ 1/23/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1505								
Method: SAME	CLEAR	3.80	0.222	10.80	10	0.71	+284	—

PURGE DATA:

Date: 1/23/06	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" Ø PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 17.75								
Static Water Level (WL): 9.36								
One Casing Volume(gal/L):								
Start Purge (hrs): 1400								
End Purge (hrs): 1500								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 5.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[] 13GWT NA -F

8.39' X 0.163 = 1.36 gal 1 or 5.2

Pump intake @ 13.5'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Ty Rosahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT 11
DATE: 1/23/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1400	9.36	0	--	—	—	—	—	—	—	START PURGE
1410	9.72	1200	120	3.93	0.222	12	0.82	10.58	+274	CLEAR
1420	9.85	2200	100	3.91	0.223	12	0.70	10.42	+277	CLEAR
1430	10.00	3200	100	3.91	0.227	12	0.67	11.07	+279	CLEAR
1440	9.98	4000	80	3.88	0.219	10	0.73	10.03	+283	CLEAR
1450	9.99	4700	70	3.89	0.223	10	0.73	10.98	+283	CLEAR
1455	10.00	5100	80	3.89	0.224	11	0.73	10.93	+283	CLEAR
1500	10.00	5500	80	3.80	0.222	10	0.71	10.80	+284	CLEAR
1505	—	—	—	—	—	—	—	—	—	START SAMPLING

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) MP10 - 1231
Turbidity Meter (SN) 4536-3303

Pump Intake 13.5

SIGNATURE(S): Ty Rigd

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1364
Sample Location: 13MWT 13
Sampled By: Goerdt
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-2-05								
Time: 1510								
Method: Bladder	Clear	3.94	1.01	9.87	7.2	5.31	392.7	---

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 2-2-05								
Method: Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.44								
Static Water Level (WL): 5.5								
One Casing Volume(gal/L): 9.6								
Start Purge (hrs): 1235								
End Purge (hrs): 1455								
Total Purge Time (min): 140								
Total Vol. Purged (gal/L): 21.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ ~ 19'
Dedicated pump

21.44
5.50
15.94 (.163) = 2.6 gal
= 9.6 L

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N1245

WELL ID.: 13GW013
DATE: 2-2-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
1235	5.50	-	-	-	-	-	-	-	-	Start purge
1245	5.65	1.0	100	-	-	-	-	-	-	clear
1255	5.67	2.0	100	4.	.073	35	8.32	9.31	392.7	"
1305	5.68	3.8	180	4.08	.080	22	7.47	9.97	362.0	"
1315	5.81	5.6	180	4.08	.081	18	7.05	10.10	337.6	"
1325	6.00	7.6	200	4.03	.083	12	6.66	10.11	357.6	"
1335	6.00	9.6	200	4.01	.086	11	6.37	9.87	360.2	"
1345	6.04	11.1	150	3.99	.088	10	6.16	9.91	364.2	"
1355	6.07	12.6	150	4.00	.091	12	6.09	9.94	371.9	"
1405	6.11	14.1	150	3.97	.093	9	5.94	9.96	380.8	"
1415	6.12	15.6	150	3.96	.096	12	5.65	9.99	386.5	"
1425	6.14	17.1	150	3.94	.098	14	5.46	9.98	391.6	"
1435	6.15	18.6	150	3.94	1.01	12	5.37	9.98	394.2	"
1445	6.04	20.1	150	3.93	1.02	7.5	5.33	9.91	394.3	"
1455	6.01	21.6	150	3.94	1.01	7.2	5.31	9.87	392.7	Stop purge

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) 1588
Turbidity Meter (SN) 4536 3303

Pump Intake Dedicated pump

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT14O4
Sample Location: 13MWT14
Sampled By: CD / TR
C.O.C. No.: 3672
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/25/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1340								
Method: bladder pump	CLEAR	5.58	0.595	14.39	3.3	0.91	62.4	--

PURGE DATA:

Date: 1/25/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.60'								
Static Water Level (WL): 13.95'								
One Casing Volume(gal/L): 7.03								
Start Purge (hrs): 1210								
End Purge (hrs): 1335								
Total Purge Time (min): 85								
Total Vol. Purged (gal/L) 10.1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements			Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	Routine 3	(2) L Glass Amber	DUP 2	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	3	(2) L Glass Amber	2	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	3	(1) L HDPE	1	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT~~ ~~P~~

Pump intake @ 20.35' bTOC
dedicated bladder pump

25.60
−13.95
11.65 (.163) = 1.90 gal
= 7.03 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
yes	13FD01250501	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13 MWT R4
DATE: 1/25/09

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
1210	13.95	—	—	—	—	—	—	—	—	Start purge
1220	14.23	1.525	125	5.45	.768	4.3	1.77	14.48	115.5	clear
1230	14.19	2.525	100	5.50	.745	4.4	1.49	14.17	108.8	clear
1240	14.20	3.725	120	5.51	.714	4.4	1.31	14.46	102.5	clear
1250	14.20	4.925	120	5.54	.684	4.2	1.16	14.44	92.0	clear
1300	14.20	6.125	120	5.55	.664	3.7	1.07	14.59	78.6	clear
1310	14.21	7.325	120	5.57	.630	3.9	0.98	14.54	68.9	clear
1320	14.21	8.425	110	5.57	.607	3.6	0.91	14.56	63.4	clear
1330	14.23	9.525	110	5.58	.600	3.2	0.91	14.45	63.4	CLEAR
1335	14.23	10.075	110	5.58	.595	3.3	0.91	14.39	62.4	CLEAR
1340	—	—	—	—	—	—	—	—	-	START SAMPLING

Water Quality Meter (SN) 0100956 AA
Control Box type (SN) MP10 - 1087
Turbidity Meter (SN) 4175 - 1503

Pump Intake 20.35' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1504
Sample Location: 13MWT15
Sampled By: CD
C.O.C. No.: 3677
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2/3/05								
Time: 1115								
Method: bladder pump	clear	3.65	.314	13.29	8.31	1.57	373.3	—

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 2/3/05								
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 27.87'								
Static Water Level (WL): 14.58'								
One Casing Volume(gal/L): 8.02								
Start Purge (hrs): 0850								
End Purge (hrs): 1110								
Total Purge Time (min): 140								
Total Vol. Purged (gal/L): 15.85								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT F~~

Pump intake @ 22.38' bTOC
dedicated bladder pump

27.87
− 14.58
13.29 (.163) = 2.17 gal
= 8.02 L

Circle if Applicable:

MS/MSD —
Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N1245

WELL ID.: 13 MWT 15
DATE: 2/3/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (mL/Min.)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Volume & Color)
0850	14.58	—	—	—	—	—	—	—	—	Start purge
0900	15.66	1.650	150	3.42	.376	25.9	1.74	12.14	431.5	~~cl~~ slightly cloudy
0910	15.96	2.950	130	3.55	.350	25.7	1.44	12.41	398.7	slightly cloudy
0920	15.96	3.950	100	3.62	.331	23.8	1.95	12.06	377.4	slightly cloudy
0930	15.96	5.150	120	3.68	.318	20.1	2.01	12.09	364.0	clear
0940	15.95	6.150	100	3.68	.317	19.6	1.64	12.29	360.6	clear
0950	15.86	7.150	100	3.70	.309	16.8	2.20	12.28	353.6	clear
1000	15.93	8.356	120	3.70	.307	17.7	2.05	12.19	353.1	clear
1010	15.96	9.450	110	3.69	.309	13.9	2.01	12.46	358.1	clear
1020	15.99	10.550	110	3.69	.307	12.2	1.97	12.46	357.7	clear
1030	15.92	11.450	90	3.69	.299	11.5	2.20	11.67	357.2	clear
1040	15.91	12.650	120	3.66	.305	11.6	2.17	11.78	367.9	clear
1050	15.96	13.750	110	3.64	.316	11.2	1.73	12.70	377.7	clear
1100	16.08	14.850	110	3.64	.316	9.41	1.53	13.04	377.5	clear
1110	16.08	15.850	100	3.65	.314	8.31	1.57	13.29	373.3	clear, end purge
1115	—	—	—	—	—	—	—	—	—	Start sample

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 4175-1503

Pump Intake 22.38' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT1704
Sample Location: 13MWT 17
Sampled By: CO/TR
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/23/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1235								
Method: bladder pump	clear	5.40	.118	11.51	15	0.35	4.0	—

PURGE DATA:

Date: 1/23/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 20.30'								
Static Water Level (WL): 10.00'								
One Casing Volume(gal/L): 6.21								
Start Purge (hrs): 0935								
End Purge (hrs): 1225								
Total Purge Time (min): 170								
Total Vol. Purged (gal/L): 16.60								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes)/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	(Yes)/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	(Yes)/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No✓ ~~13GWT F~~

Pump intake @ 15.33' btoc
dedicated bladder pump

20.30
-10.00
10.30(.163) = 1.68 gal
= 6.21 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT17
DATE: 1/23/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0935	10.00	—	—	—	—	—	—	—	—	start purge
0945	10.02	.900	50	5.52	.102	33	1.10	10.57	87.9	clear
0955	10.12	2.30	140	5.49	.113	30	0.55	10.52	66.7	clear
1005	10.10	3.40	110	5.48	.110	23	0.59	9.68	57.3	clear
1015	10.10	4.30	90	5.46	.110	22	0.51	9.26	50.9	clear
1025	10.09	5.40	110	5.47	.112	20	0.48	10.12	41.3	clear
1035	10.14	6.50	110	5.46	.112	17	0.43	10.14	38.1	clear
1045	10.15	7.50	100	5.43	.114	17	0.42	10.58	32.4	clear
1055	10.27	8.50	100	5.44	.112	16	0.43	9.60	25.9	clear
1105	10.28	9.40	90	5.43	.112	15	0.44	9.51	31.6	clear
1115	11.10	10.60	120	5.42	.114	14	0.40	9.47	17.4	clear
1125	14.01	11.20	60	5.44	.106	15	0.48	7.11	19.6	clear
1135	13.98	11.80	60	5.43	.107	19	0.50	7.66	20.7	clear
1145	13.98	12.40	60	5.44	.106	15	0.50	7.84	28.1	clear
1155	10.05	13.00	60	5.44	.107	17	0.47	7.89	25.5	di water read 4.3 NTU used in different scope
1205	10.06	14.20	120	5.41	.116	17	0.39	10.96	12.3	clear
1215	10.06	15.40	120	5.40	.118	14	0.36	11.56	6.5	clear
1225	10.06	16.60	120	5.40	.118	15	0.35	11.51	4.0	clear, end purge
1235	—	—	—	—	—	—	—	—	—	start sampling

Water Quality Meter (SN): 01D0956 AA
Control Box type (SN): MP10-1027
Turbidity Meter (SN): 4175-1503

Pump Intake: 15.33'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT2104
Sample Location: 13MWT21
Sampled By: CD/TR
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/22/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1255								
Method: Bladder Pump	Clear	5.71	.148	9.15	4.0	1.56	56.1	---

PURGE DATA:

Date: 1/22/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 17.76'								
Static Water Level (WL): 9.11'								
One Casing Volume(gal/L): 5.22								
Start Purge (hrs): 1120								
End Purge (hrs): 1250								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 9.36								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes)/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	(Yes)/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	(Yes)/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] 13GWT N/A -F

Pump intake @ 13.37' bTOC

17.76
− 9.11
8.65 (.163) = 1.41 gal
= 5.22 L

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT21
DATE: 1/22/09

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1120	8.65	—	—	—	—	—	—	—	—	start purge
1130	9.49	.96	110	5.90	.148	8.9	2.80	9.60	86.1	clear
1140	9.60	2.06	110	5.85	.150	9.8	2.39	9.62	82.3	clear
1150	9.72	3.16	110	5.82	.149	9.3	2.23	9.57	77.5	clear
1200	9.76	4.26	110	5.81	.150	9.5	2.13	9.80	72.0	clear
1210	9.89	5.36	110	5.78	.151	6.7	1.90	9.73	67.8	clear
1220	9.82	6.36	100	5.77	.146	7.0	1.87	9.08	61.6	clear
1230	9.86	7.36	100	5.75	.147	6.2	1.69	9.09	59.5	clear
1240	9.95	8.36	100	5.72	.147	4.9	1.59	9.04	57.8	clear
1250	9.92	9.36	100	5.71	.148	4.0	1.56	9.15	56.1	clear, end purge
1255	—	—	—	—	—	—	—	—	—	Start sample

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) 1087
Turbidity Meter (SN) 4175 - 1503

Pump Intake 13.37'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2803
Sample Location: 13MWT 28
Sampled By: Goeydt
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-1-05								
Time: Bladder								
Method: 1345	clear	7.78	.918	13.87	50	8.87	144.6	---

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 2-1-05								
Method: Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 91.70								
Static Water Level (WL): 77.93								
One Casing Volume(gal/L): 8.30								
Start Purge (hrs): 0930								
End Purge (hrs): 1330								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 19.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(1) (2) L Glass Amber*	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(1) (2) L Glass Amber*	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

*minimum sample collected due to very slow recharge.

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ ~ 88'

Dedicated pump
WL very close to pump intake depth during sampling.

91.70
77.93
13.77 (.163) = 2.24 g
= 8.30 L

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	
—	—	

Stopped sampling after each bottle to allow for recovery.

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT 28
DATE: 2-1-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0930	77.93	–	–	–	–	–	–	–	–	Start Purge
0940	79.20	1.1	110	7.63	.904	5.9	4.81	11.74	200.7	Clear
0950	81.05	2.0	90	7.68	.927	2.8	2.64	11.88	193.7	"
1000	81.62	2.9	90	7.71	.935	1.7	1.76	12.30	186.4	"
1010	82.00	3.8	90	7.73	.942	0.9	1.41	12.66	181.1	"
1020	82.23	4.7	90	7.74	.893	1.4	1.37	12.78	174.2	"
1030	82.41	5.6	90	7.73	.876	1.7	1.32	13.11	170.3	"
1040	82.69	6.5	90	7.73	.869	8.7	1.59	13.24	168.5	"
1050	83.07	7.4	90	7.74	.874	31.0	1.47	13.32	164.3	"
1100	84.29	8.3	90	7.77	.895	45.0	1.34	13.49	161.9	"
1110	84.73	9.2	90	7.77	.917	50.0	1.21	13.53	160.7	"
1120	85.14	10.1	90	7.76	.931	63.0	1.14	13.61	159.8	"
1130	85.68	11.0	90	7.77	.945	70.0	0.94	13.73	157.4	Slightly cloudy
1140	86.04	11.9	90	7.76	.951	61.0	0.95	13.79	155.9	"
1150	86.93	12.8	90	7.74	.958	52.0	0.95	13.82	155.5	Clear
1200	87.65	13.7	90	7.72	.967	27.0	0.96	13.88	154.9	"
1210	87.95	14.6	90	7.74	.989	–	1.35	14.25	153.1	Near pump bottom.
1220	88.24	15.5	90	7.78	1.015	–	6.31	15.47	152.5	Turned flow down to try to get rid of air.
1230	–	16.1	60	–	–	–	–	–	–	
1240	–	16.6	60	–	–	–	–	–	–	
1250	–	17.2	60	–	–	–	–	–	–	
1300		17.8	60	7.81	1.020	60	7.50	21.40	142.1	Slightly cloudy
1310	87.75	18.4	60	7.80	1.109	50	7.70	19.62	142.4	"
1320	–	19.0	60	7.79	.923	–	8.96	14.44	143.5	"
1330	–	19.6	60	7.78	.918	–	8.87	13.87	144.6	↑
										End Purge

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) 1087
Turbidity Meter (SN) 4536 3303

Pump Intake ~88'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3103
Sample Location: 13MWT31
Sampled By: CD
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/1/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1450								
Method: bladder pump	Clear	5.42	1228	11.08	5.2	1.52	51.9	—

PURGE DATA:

Date: 2/1/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.5'								
Static Water Level (WL): 11.47								
One Casing Volume(gal/L): 6.65								
Start Purge (hrs): 1245								
End Purge (hrs): 1445								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 12.85								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes)/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	(Yes)/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	(Yes)/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT F~~

Pump intake @ 17.65' bTOC
dedicated bladder pump

22.5
−11.47
11.03 (.163) = 1.80 gal.
= 6.65 L

Circle if Applicable:

MS/MSD —
Duplicate ID No.: —

Signature(s): Colin Jordan

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT31
DATE: 2/1/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1245	11.47	—	—	—	—	—	—	—	—	Start Purge
1255	12.54	1.650	150	5.39	1553	75	3.48	11.55	89.2	slightly cloudy
1305	12.69	2.850	120	5.39	1579	45	3.43	11.30	93.7	slightly cloudy
1315	12.74	3.950	110	5.38	1578	35	3.20	11.10	93.2	clear
1325	12.85	5.050	110	5.38	1578	25	3.01	11.24	89.1	clear
1335	12.87	5.950	90	5.38	1549	23	2.88	10.70	85.9	clear
1345	12.89	6.850	90	5.38	1543	18	2.67	10.68	79.3	clear
1355	12.94	8.750	90	5.38	1492	11	2.33	10.64	72.5	clear
1405	12.94	9.550	80	5.39	1454	8.2	2.13	10.70	66.5	clear
1415	12.95	10.350	80	5.40	1392	6.6	1.87	10.81	60.2	clear
1425	12.95	11.150	80	5.41	1330	6.3	1.78	10.78	58.0	clear
1435	12.97	11.950	80	5.41	1286	5.6	1.59	11.00	54.4	clear
1445	12.99	12.850	80	5.42	1228	5.2	1.52	11.08	51.9	clear, end purge
← Well Parameters Stabilized →										
1450	—	—	—	—	—	—	—	—	—	Start sample

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10 - 1231
Turbidity Meter (SN) 4175 - 1503

Pump Intake 17.65' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 34 03
Sample Location: 13MWT 34
Sampled By: CD/TR
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 1/23/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1510								
Method: bladder pump	clear	5.05	.271	12.06	5.5	1.30	99.9	—

PURGE DATA:

Date: 1/23/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.40'								
Static Water Level (WL): 5.61'								
One Casing Volume(gal/L): 10.13								
Start Purge (hrs): 1345								
End Purge (hrs): 1505								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 10.60								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT F~~

Pump intake @ 17.58' bTOC dedicated bladder pump

22.40
− 5.61
16.79 (.163) = 2.74 gal.
= 10.13 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13[redacted]WT34
DATE: 1/23/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1345	5.61	—	—	—	—	—	—	—	—	start purge
1355	6.39	2.00	150	5.10	.267	6.9	2.74	11.66	183.4	clear
1405	6.18	3.00	100	5.07	.265	7.7	2.51	11.13	163.1	clear
1415	6.29	4.40	140	5.07	.269	6.5	2.06	11.92	144.0	clear
1425	6.34	5.80	140	5.06	.269	6.6	1.82	12.01	135.5	clear
1435	6.28	7.00	120	5.06	.267	6.2	1.69	11.60	125.7	clear
1445	6.29	8.20	120	5.06	.268	5.6	1.58	11.79	118.9	clear
1455	6.27	9.40	120	5.05	.270	6.1	1.41	12.02	108.3	clear
1505	6.27	10.60	120	5.05	.271	5.5	1.30	12.06	99.9	clear, end purge
1510	—	—	—	—	—	—	—	—	—	start sampling

Water Quality Meter (SN) 01 D 0956 AA
Control Box type (SN) MP10 - 1087
Turbidity Meter (SN) 4175 - 1503

Pump Intake 17.58' BTOC dedicated bladder pump

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT3703
Sample Location: 13MWT37
Sampled By: CD
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2/2/05								
Time: 1300								
Method: bladder pump	clear	5.65	.240	10.90	1.30	4.20	64.2	—

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 2/2/05								
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 27.15'								
Static Water Level (WL): 13.95'								
One Casing Volume(gal/L): 7.96								
Start Purge (hrs): 1135								
End Purge (hrs): 1255								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 8.55								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT F~~

Pump intake @ 21.83' bTOC
dedicated bladder pump

27.15
− 13.95
13.2 (.163) = 2.15 gal
= 7.96 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13 MWT 37
DATE: 2/2/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
1135	13.95	—	—	—	—	—	—	—	—	start purge
1145	14.45	1.650	100	5.70	.141	1.99	6.30	10.69	171.3	clear
1155	14.56	2.750	110	5.61	.198	1.27	5.04	10.92	117.4	clear
1205	14.57	3.750	100	5.66	.222	1.84	4.61	10.70	90.3	clear
1215	14.55	4.650	90	5.67	.229	1.79	4.39	10.60	74.2	clear
1225	14.61	5.650	100	5.66	.227	1.62	4.37	10.90	70.5	clear
1235	14.63	6.650	100	5.66	.235	1.43	4.25	10.89	67.1	clear
1245	14.65	7.650	100	5.65	.236	1.25	4.25	10.96	65.1	clear
1255	14.65	8.550	90	5.65	.240	1.30	4.20	10.90	64.2	clear, end purge
1300	—	—	—	—	—	—	—	—	—	start sample

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 4175-1503

Pump Intake 21.83' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4003
Sample Location: 13MWT 40
Sampled By: Goeyat
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/2/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1105								
Method: Bladder	Clear	6.51	.314	11.71	6.5	13.39	168.9	---

PURGE DATA:

Date: ~~0930~~ 2/2/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.70								
Static Water Level (WL): 18.22								
One Casing Volume(gal/L): 5.8								
Start Purge (hrs): 0930								
End Purge (hrs): 1100								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L) 11.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Pump intake @ 23'

27.70
18.22
9.48(.163) = 1.55 gal
= 5.72 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13GWT40
DATE: 2-2-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0930	18.22	-	-	-	-	-	-	-	-	Start purge
0940	18.49	1.0	100	6.85	.316	19	14.37	10.14	168.7	Clear
0950	18.39	2.0	100	6.79	.302	8.9	14.50	8.80	170.2	"
1000	18.34	3.0	100	6.77	.302	-	14.38	8.32	170.2	"
1010	18.81	4.8	180	6.70	.320	6.1	13.69	11.55	168.5	"
1020	18.69	5.8	100	6.55	.309	5.8	13.42	11.08	170.5	"
1030	18.79	7.3	150	6.53	.313	7.3	13.41	11.46	170.0	"
1040	18.93	8.8	150	6.53	.316	6.8	13.55	11.74	169.1	"
1050	18.79	9.9	110	6.51	.312	7.4	13.42	11.67	169.6	"
1100	—	11.0	110	6.51	.314	6.5	13.39	11.71	168.9	Stop purge

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) 1588
Turbidity Meter (SN) 4536 3303

Pump Intake 23'
Dedicated pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4503
Sample Location: 13MWT 45
Sampled By: T. ROJAHN
C.O.C. No.: 3669
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/23/05								
Time: 1250								
Method: SAME	Clear	7.08	0.491	10.13	14	0.56	-48	—

PURGE DATA:

Date: 1-22-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2"Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 84.0								
Static Water Level (WL): 69.71								
One Casing Volume(gal/L): 8.8								
Start Purge (hrs): 1100								
End Purge (hrs): 1300								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 16								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	1 ~~(2)~~ L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	1 ~~(2)~~ L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT NA -F

14.29' x 0.163 = 2.3 gal or 8.8 L

Pump intake @ 80'

Circle if Applicable:		Signature(s):
MS/MSD —	Duplicate ID No.: —	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT45
DATE: 1/22/04

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
1100	69.71	0	—	—	—	—	—	—	—	Start Purge
1110	70.97	1000	100	7.29	0.467	6.9	2.70	11.32	-13	CLEAR
1120	72.70	2000	100	6.92	0.501	4.7	0.68	11.54	-2	"
1130	73.15	3000	100	6.87	0.500	5.0	0.59	11.65	+10	"
1140	74.04	4000	100	6.80	0.496	5.3	0.55	11.60	25	"
1150	74.85	5500	150	6.75	0.463	11	1.07	11.35	31	"
1200	75.42	7000	150	6.74	0.461	15	1.09	11.10	25	"
1210	76.06	8500	150	6.78	0.467	20	0.95	11.05	9	"
1220	76.85	10000	150	6.82	0.477	25	0.83	10.79	2	"
1230	77.45	11500	150	6.83	0.478	25	0.72	10.52	-3	"
1240	78.10	13000	150	6.89	0.482	28	0.67	10.47	-15	"
1250	78.75	14500	150	7.00	0.488	19	0.61	10.42	-30	"
1300	79.43	16000	150	7.08	0.491	14	0.56	10.13	-48	"
1305				END						PURGE
		WILL	WAIT	FOR WELL	TO	RECHARGE	&	SAMPLE	1/23/05	
1250	1/23/05	—	—	—	—	—	—	—	—	START SAMPLING

Water Quality Meter (SN) 99K1014 AG
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 4536-3303

Pump Intake 80'

WELL HISTORICALLY DRIES OUT.

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4603
Sample Location: 13MWT46
Sampled By: CD
C.O.C. No.: 3673
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 2/2/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1015								
Method: bladder pump	clear	6.45	.731	10.45	1.65	1.30	-21.4	--

PURGE DATA:

Date: 2/2/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 67.60'								
Static Water Level (WL): 57.11'								
One Casing Volume(gal/L): 6.33								
Start Purge (hrs): 0850								
End Purge (hrs): 1010								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 8.93								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT_____F~~

Pump intake @ 63.0' bTOC
dedicated bladder pump

67.60
-57.11
10.49 (.163) = 1.71 gal.
= 6.33 L

Circle if Applicable:

MS/MSD —
Duplicate ID No.: _____

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT46
DATE: 2/2/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
0850	57.11	—	—	—	—	—	—	—	—	start purge
0900	57.12	1.230	130	6.57	.725	27.1	3.03	10.71	2.5	clear
0910	57.12	2.380	115	6.50	.742	11.1	2.01	10.48	-11.6	clear
0920	57.14	3.480	110	6.47	.742	4.72	1.80	10.37	-17.5	clear
0930	57.14	4.530	105	6.46	.739	3.78	1.67	10.34	-16.2	clear
0940	57.14	5.630	110	6.46	.736	3.12	1.51	10.41	-25.1	clear
0950	57.14	6.730	110	6.45	.733	2.55	1.38	10.41	-24.1	clear
1000	57.14	7.830	110	6.45	.733	2.15	1.34	10.44	-27.4	clear
1010	57.14	8.930	110	6.45	.731	1.65	1.30	10.45	-21.4	clear, end purge
1015	—	—	—	—	—	—	—	—	—	start sample

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10-1231
Turbidity Meter (SN) 4175-1503

Pump Intake 63.0' bTOC
dedicated bladder pump

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4703
Sample Location: 13MWT47
Sampled By: CD/TR
C.O.C. No.: 3672
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 1/25/05								
Time: 1040								
Method: bladder pump	clear	3.63	.673	8.87	10	0.81	353.3	—

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 1/25/05								
Method: bladder pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.20'								
Static Water Level (WL): 7.30'								
One Casing Volume(gal/L): 7.78								
Start Purge (hrs): 0910								
End Purge (hrs): 1030								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 9.65								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[✓] ~~13GWT~~ ~~F~~

Pump intake @ 14.82' bTOC
dedicated bladder pump

20.20
- 7.30
12.90 (.163) = 2.10 gal
= 7.78 L

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13 MWT 47
DATE: 1/25/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color. etc)
0910	7.30	—	—	—	—	—	—	—	—	start purge
0920	8.29	1.800	200	3.65	.679	36	1.14	9.54	360.2	clear
0930	8.29	2.950	115	3.64	.671	27	1.03	9.04	359.6	clear
0940	8.30	4.150	120	3.64	.669	20	0.92	8.93	358.9	clear
0950	8.29	5.250	110	3.64	.670	19	0.86	8.83	357.6	clear
1000	8.28	6.350	110	3.64	.671	15	0.81	8.93	356.8	clear
1010	8.29	7.450	110	3.64	.673	14	0.79	9.10	355.2	clear
1020	8.29	8.550	110	3.64	.675	13	0.80	9.07	354.2	clear
1030	8.30	9.650	110	3.63	.673	10	0.81	8.87	353.3	clear, end purge
1040	—	—	—	—	—	—	—	—	—	start sampling

Water Quality Meter (SN) 01D0956 AA
Control Box type (SN) MP10 - 1087
Turbidity Meter (SN) 4175-1503

Pump Intake 14.82' bTOC
dedicated bladder pump

SIGNATURE(S): Chris Isolan

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 5102
Sample Location: 13MWT 51
Sampled By: Gould
C.O.C. No.: 3677
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 2-3-05								
Time: Bladder								
Method: ~~1110~~ 1140	Clear	6.20	.140	5.07	9.7	10.19	254.4	--

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 2-3-05								
Method: Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.72								
Static Water Level (WL): 4.69								
One Casing Volume(gal/L): 7.9								
Start Purge (hrs): 0850								
End Purge (hrs): 1125								
Total Purge Time (min): ~~275~~ 150								
Total Vol. Purged (gal/L): ~~21.8~~ 26.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes/No
Explosives SW-846 8330, Modified RDX Degradation Products	4°C	(2) L Glass Amber	Yes/No
Nitrate + Nitrite (as N) EPA 353.2	4°C/H_2SO_4	(1) L HDPE	Yes/No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT NA -F

Pump intake @ 15'

17.72
4.69
13.03 (.163) = 2.12 gal
= 7.9 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: 7448

WELL ID.: 13MWT51
DATE: 2-3-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color, etc)
0850	4.69	–	–	–	–	–	–	–	–	Start purge
0900	4.80	1.4	140	5.85	.140	15	12.03	5.12	323.9	clear
0910	4.78	2.8	140	–	–	–	–	–	–	"
0920	4.71	4.2	140	6.00	.136	–	12.20	4.18	301.5	"
0925	Stop purge: Control box freeze up									–
0935	Restart Purge									–
0945	4.80	6.0	180	6.16	.139	13	10.96	5.02	282.4	"
0955	4.84	7.8	180	6.17	.140	14	10.80	4.98	275.9	"
1005	~~4~~ 4.91	9.8	200	6.18	.139	13	10.82	5.00	274.7	"
1015	4.82	11.8	200	6.17	.138	13	10.58	4.93	272.8	"
1025	4.89	13.8	200	6.17	.138	13	10.09	4.93	266.8	"
1035	4.88	15.8	200	6.18	.139	13	10.10	4.98	264.7	"
1045	4.90	17.8	200	6.17	.137	12	10.07	4.97	263.6	"
1055	4.88	19.8	200	6.18	.139	12	10.03	5.04	262.8	"
1105	4.87	21.8	200	6.18	.139	13	10.01	5.03	261.3	~~end purge~~
1115	4.87	23.8	200	6.19	.138	11	9.98	4.86	260.7	clear
1125	4.88	25.3	150	6.20	.140	10	10.11	4.98	255.7	"
1135	4.87	26.8	150	6.20	.140	9.7	10.19	5.07	254.4	end purge

Water Quality Meter (SN) 99K1014AG
Control Box type (SN)
Turbidity Meter (SN) 4536 3303

Pump Intake 15'

SIGNATURE(S): [illegible]

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3669 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 343 N1245 (TR) 331	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH Ho
SAMPLERS (SIGNATURE) 7448		FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857	ADDRESS: 940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 7939		CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	Nitroaromatics & Nitramines (8330)	RDX Degradation Products (Mod 8330)	Nitrate + Nitrite (as N) EPA 353.2						COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	P						
PRESERVATIVE USED									4°C	4°C	4°C/H2SO4						
1/22	1255	13GWT2104	13MW T21	–	–	GW	G	5	2	2	1						
1/23	1105	13GWT0104	13MW T01	–	–	GW	G	5	2	2	1						
1/23	1235	13GWT1704	13MW T17	–	–	GW	G	5	2	2	1						
1/23	1250	13GWT4503	13MW T45	–	–	GW	G	3	1	1	1						
1/23	1505	13GWT1104	13MW T11	–	–	GW	G	5	2	2	1						
1/23	1510	13GWT3403	13MW T34	–	–	GW	G	5	2	2	1						
~~1/24~~	~~1315~~	~~RB0124~~ (TR)															

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/24/05	1830	1. RECEIVED BY: FEDERAL EXPRESS	1/24/05	1830
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3672 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N7448 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / ANH HO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED EX AB # 8447 8135 7928		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: NITROAROMATICS & NITRAMINES (8330)	RDX DEGRADATION PRODUCTS (MOD 8330)	NITRATE + NITRITE (ASN) EPA 353.2						COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	P						
PRESERVATIVE USED									4°C	4°C	4°C/H2SO4						
1/25	1040	13GWT4703	13MW T47	-	-	GW	G	5	2	2	1						
1/25	1340	13GWT1404	13MW T14	-	-	GW	G	9	3	3	3						DO MS/MSD
1/25	0000	13FD01250501	QC	-	-	GW	G	5	2	2	1						DUP OF 13GWT1404

1. RELINQUISHED BY	DATE 1/25/05	TIME 1830	1. RECEIVED BY FEDERAL EXPRESS	DATE 1/25/05	TIME 1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTI WHITE (ACCOMPANIES SAMPLE) YELLOW (FIEL PY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

RA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3673 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N7448 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGE PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 7917		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G P
PRESERVATIVE USED: 4°C 4°C 4°C/H2SO4

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: NITROAROMATICS & NITRAMINES (8330)	RDX DEGRADATION PRODUCTS (MOD. 8330)	NITRATE + NITRITE (AS N) EPA 353.2						COMMENTS
2/01	1050	13GWT0905	13MW T09	-	-	GW	G	5	2	2	1						
2/01	1345	13GWT2803	13MW T28	-	-	GW	G	3	1	1	1						MIN VOL.
2/01	1450	13GWT3103	13MW T31	-	-	GW	G	5	2	2	1						
2/02	1015	13GWT4603	13MW T46	-	-	GW	G	5	2	2	1						
2/02	1105	13GWT4003	13MW T40	-	-	GW	G	5	2	2	1						
2/02	1300	13GWT3703	13MW T37	-	-	GW	G	5	2	2	1						
2/02	1500	13GWT1304	13MW T13	-	-	GW	G	5	2	2	1						

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	2/02/05	1800	1. RECEIVED BY FEDERAL EXPRESS	2/02/05	1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3678 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
N7448 CTO 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGE PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 7917		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: 4°C
TYPE OF ANALYSIS: NITROAROMATICS & NITRAMINES (8330)

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS		COMMENTS
2/02	0855	13SW2203	13SW 22	–	–	SW	G	2	2	
2/02	0955	13SW1403	13SW 14	–	–	SW	G	2	2	
2/02	1010	13SW1503	13SW 15	–	–	SW	G	2	2	
2/02	1023	13SW1603	13SW 16	–	–	SW	G	2	2	
2/02	1045	13SW3003	13SW 30	–	–	SW	G	2	2	
2/02	1235	13SW2002	13SW 20	–	–	SW	G	2	2	
2/02	1300	13SW1902	13SW 19	–	–	SW	G	2	2	
2/02	1340	13SW1103	13SW 11	–	–	SW	G	2	2	

1. RELINQUISHED BY Terry Rojahn	DATE 2/02/05	TIME 1800	1. RECEIVED BY FEDERAL EXPRESS	DATE 2/02/05	TIME 1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

RA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3677 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO N7448 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
[signature] FOR C.D.		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX AB # 8447 8135 7413		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G P

PRESERVATIVE USED: 4°C 4°C 4°C/H2SO4

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID (CTO)	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: NITROAROMATICS & NITRAMINES (8330)	RDX DEGRADATION PRODUCTS (MOD 8330)	NITRATE + NITRITE (AS N) EPA 353.2						COMMENTS
2/03	1115	13GWT1504	13MW T15	–	–	GW	G	5	2	2	1						
2/03	1140	13GWT5102	13MW T51	–	–	GW	G	5	2	2	1						

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	2/03/05	1830	1. RECEIVED BY FEDERAL EXPRESS	2/03/05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/C. Doolan
Weather Conditions:	Overcast and 30s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
13MWT01	1/19/2005	1711	715.34		7.24	NA	708.1	
13MWT02	1/19/2005	1706	704.72		16.07	NA	688.65	
13MWT03	1/19/2005	1713	721.10		9.84	NA	711.26	
13MWT04	1/19/2005	1704	706.84		13.57	NA	693.27	
13MWT05	1/19/2005	1658	696.44		6.02	NA	690.42	
13MWT06	1/19/2005	1715	717.93		11.37	NA	706.56	
13MWT07	1/19/2005	1701	687.22		3.92	NA	683.3	
13MWT08	1/19/2005	1703	700.56		4.15	NA	696.41	
13MWT09	1/19/2005	1417	705.90		8.16	NA	697.74	
13MWT10	1/19/2005	1517	700.15		13.65	NA	686.5	
13MWT11	1/19/2005	1511	682.29		8.61	NA	673.68	
13MWT12	1/19/2005	1506	682.12		10.52	NA	671.6	
13MWT13	1/19/2005	1317	701.98		*	NA	*NA	Problem w/value
13MWT14	1/19/2005	1321	705.50		13.51	NA	691.99	
13MWT15	1/19/2005	1503	696.65		13.71	NA	682.94	
13MWT16	1/19/2005	1451	684.35		13.04	NA	671.31	
13MWT17	1/19/2005	1449	693.01		9.15	NA	683.86	
13MWT18	1/19/2005	1500	702.92		19.04	NA	683.88	
13MWT19	1/19/2005	1334	705.82		9.45	NA	696.37	
13MWT20	1/19/2005	1421	702.07		4.48	NA	697.59	
13MWT21	1/19/2005	1446	690.74		8.94	NA	681.8	
13MWT22	1/19/2005	1437	671.96		7.71	NA	664.25	
13MWT23	1/19/2005	1424	699.14		7.96	NA	691.18	
13MWT24	1/19/2005	1426	693.93		8.83	NA	685.1	
13MWT25	1/19/2005	1432	681.57		6.65	NA	674.92	

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/C.Doolan
Weather Conditions:	Overcast and 30s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
13MWT26	1/19/2005	1430	687.49		9.60	NA	677.89	
13MWT27	1/19/2005	1505	698.13		8.20	NA	689.93	
13MWT28	1/19/2005	1418	705.55		77.82	NA	627.73	
13MWT29	1/19/2005	1311	700.44		5.25	NA	695.19	
13MWT30	1/19/2005	1327	698.94		11.08	NA	687.86	
13MWT31	1/19/2005	1336	696.21		9.71	NA	686.5	
13MWT32	1/19/2005	1343	696.04		8.40	NA	687.64	
13MWT33	1/19/2005	1330	701.97		8.93	NA	693.04	
13MWT34	1/19/2005	1442	695.93		4.98	NA	690.95	
13MWT35	1/19/2005	1510	681.73		64.30	NA	617.43	
13MWT36	1/19/2005	1410	667.21		18.73	NA	648.48	
13MWT37	1/19/2005	1406	662.29		13.67	NA	648.62	
13MWT38	1/19/2005	1408	661.04		61.78	NA	599.26	
13MWT39	1/19/2005	1401	654.44		12.76	NA	641.68	
13MWT40	1/19/2005	1351	667.18		17.89	NA	649.29	
13MWT41	1/19/2005	1356	665.67		66.28	NA	599.39	
13MWT42	1/19/2005	1358	670.31		11.45	NA	658.86	
13MWT43	1/19/2005	1620	690.9		8.06	NA	682.84	
13MWT44	1/19/2005	1616	683.82		64.46	NA	619.36	
13MWT45	1/19/2005	1445	690.59		69.81	NA	620.78	
13MWT46	1/19/2005	1403	653.61		56.87	NA	596.74	
13MWT47	1/19/2005	1300	677.23		7.20	NA	670.03	
13MWT48	1/19/2005	954	548.67		10.13	NA	538.54	
13MWT49	1/19/2005	1012	553.90		7.22	NA	546.68	
13MWT50	1/19/2005	1016	560.49		7.44	NA	553.05	

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/C. Doolan
Weather Conditions:	Overcast and 30s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments / Flow in gpm
13MWT51	1/19/2005	1018	571.36		4.07	NA	567.29	
13SG01	1/19/2005	1706	698.35		1.77	NA	696.58	<1
13SG02	1/19/2005	1709	701.95		3.70	NA	698.25	12.5
13SG03	1/19/2005	1255	696.24		Dry	NA	Dry	0
13SG04	1/19/2005	1310	688.99		2.44	NA	686.55	1.5
13SG05	1/19/2005	1319	692.94		3.88	NA	689.06	1
13SG06	1/19/2005	1325	704.88		2.35	NA	702.53	<!
13SG07	1/19/2005	1430	680.3		1.52	NA	678.78	<1
13SG08	1/19/2005	1438	665.95		5.10	NA	660.85	<5
13SG09	1/19/2005	1457	675.3		4.17	NA	671.13	<5
13SG10	1/19/2005	1515	676.1		4.96	NA	671.14	16
13SG11	1/19/2005	1304	675.36		2.45	NA	672.91	1.5
13SG12	1/19/2005	1053	595.28		6.88	NA	588.41	280
13SG13	1/19/2005	1036	572.52		5.70	NA	566.65	10
13SG14	1/19/2005	1020	567.75		6.31	NA	561.38	29
13SG15	1/19/2005	1006	544.18		4.95	NA	534.21	403
13SG16	1/19/2005	948	537.01		Dry	NA	Dry	0
13SG17	1/19/2005	938	532.48		Dry	NA	Dry	0
13SG18	1/19/2005	930	524.23		8.18	NA	516.07	1210

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

SITE NAME: SWMUs 08 &15 12/13/16

PROJECT No.: N1245, CTO 0331 6878/7448

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 01009 56 AA

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
1/5/05	JG CD	6.99	4.05	455	9.87	250.5 17.61	7.00	4.00	1000	9.50	237.4 17.33	7.0 4110 8/23/05 4.0 4098 8/18/05	
1/6/05	JG CD	7.06	3.92	1069	9.22	219.3 17.61	6.99	4.00	1001	9.10	237.6 17.69	SPC 4387 1/21/05 ORP 0332067	10/05
1/7/05	CD	7.01	4.21	1009	10.04	238.1 16.55	7.00	4.00	1000	9.61	238.0 16.68	"	
1/8/05	CD	7.10	3.79	946	9.74	250.2 15.07	7.00	4.00	1000	9.97	234.6 15.30	"	
1/9/05	CD	7.01	3.99	1054	9.54	233.8 15.47	7.00	4.00	1000	9.63	238.5 15.55	"	
1/11/05	CD	7.01	4.00	1005	7.64	227.6 17.28	7.00	4.00	1001	9.11	236.8 17.43	"	
1/12/05	TR	7.06	3.90	990	9.15	246 19.25	7.00	4.00	1000	9.07	237.4 19.32	"	
1/22/05	CD	7.04	3.96	1014	8.40	227.3 14.53	7.00	4.00	1000	8.60	238.2 14.62	"	replaced DO membrane
1/23/05	CD	7.00	4.03	998	10.53	242.2 10.63	7.00	4.00	1000	9.62	236.7 10.57	"	
1/25/05	CD	7.00	3.99	1101	10.96	227.9 15.31	7.00	4.00	1000	8.88	238.2 16.62	"	
							SWMU 13/16 R&4						
2/1/05	CD	6.98	4.01	940	10.40	240.6 17.93	7.00	4.00	1000	8.79	237.5 17.57	SPC 4599 7/27/05	
2/2/05	JG	7.06	3.97	8.65	1136	233.8 18.05	7.00	4.00	1000	9.42	237.5 18.12	"	
2/3/05	JG	6.86	4.00	1100	9.86 ~~1100~~	241.6 18.25	7.00	4.00	1000	9.45	237.6 18.10	"	
2/5/05	CD	7.10	3.99	1109	4.77	235.6 16.24	7.00	4.00	1000	9.12	237.2 16.30	"	replaced DO membrane
2/6/05	CD	7.03	4.00	1036	9.12	238.6 17.10	7.00	4.00	1000	8.77	237.5 17.04	"	
2/7/05	JG	6.98	4.02	952	9.60	241.2 18.70	7.00	4.00	1000	8.92	238.6 18.60		
2/8/05	JG	6.58	4.03	1016	9.61	242.3 19.87	7.00	4.00	1000	9.15	237.5 19.87		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: YSI

SITE NAME: SWMUs 08 &15 12/13/16

MANUFACTURER: YSI

PROJECT No.: N1245, CTO 0331 6878 & 7498

SERIAL NUMBER: 99K1014 AG

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	INITIAL READINGS PH 4	INITIAL READINGS COND	INITIAL READINGS DO	INITIAL READINGS ORP	FINAL READINGS PH 7	FINAL READINGS PH 4	FINAL READINGS COND	FINAL READINGS DO	FINAL READINGS ORP	Calibration Standard (Lot No.)	Remarks and Comments
1/5/05	JG CD	7.09	3.84	494	8.96	236.7 17.48	7.00	4.00	1000	9.40	239.8 17.51	7.00 4110 8/23/05 4.00 4098 8/18/05	
1/6/05	JG CD	7.03	3.89	536	8.63	268.7 18.38	7.00	4.01	1000	9.13	239.6 18.01	SPC 4387 1/21/05 ORP 03K0667 10/05	
1/7/05	JG	6.98	3.88	890	9.49	214.5 15.38	7.00	4.00	1000	9.66	240.0 15.63	"	
1/8/05	JG	6.92	3.90	626	9.24	220.7 14.37	7.00	4.00	1000	9.81	239.9 14.16	"	
1/10/05	CD	7.02	3.87	529	9.59	225.5 16.17	7.00	4.00	1000	9.71	251.6 16.44	"	
1/12/05	CD	7.06	3.89	1039	9.57	214.1 17.94	7.00	4.00	1000	9.26	253.1 17.89	"	
1/22/05	CD	6.99	3.89	1068	7.55	253.1 18.25	7.00	4.00	1000	8.43	235.1 18.34	"	replaced DO membrane
1/23/05	CD	7.04	3.82	1065	9.12	217.3 11.75	7.00	4.00	1000	9.91	252.5 11.75	"	
1/25/05	CD	7.08	3.84	1130	8.90	211.5 17.93	7.00	4.00	1000	8.85	252.9 17.92	"	
				SWMU			13/16		RQ	4			
2/1/05	JG	7.02	3.88	978	14.73	210.1 18.40	7.00	4.00	1010	9.27	240.2 18.40	SPC 4599 7/27/05	
2/2/05	JG	7.04	3.95	947	15.62	18.56 208.8	7.00	4.00	1000	9.35	18.48 250.9		
2/3/05	JG	6.96	3.95	1155	12.01	18.14 221.7	7.00	4.00	1000	9.41	18.37 250.7		
2/4/05	JG	7.04	3.94	952	13.65	18.39 209.3	7.00	4.00	1000	9.37	18.32 232.4		
2/5/05	JG	7.00	3.92	945	12.95	18.48 208.6	7.00	4.00	1000	9.04	19.09 252.8		
2/6/05	JG	7.11	3.88	1151	12.52	19.74 208.3	7.00	4.00	1000	8.99	19.66 252.9		
2/7/05	JG	6.98	3.92	1173	10.05	208.2 19.27	7.00	4.00	1000	8.97	19.84 252.8		
2/8/05	JG	6.97	4.07	1154	9.02	211.2 19.70	7.00	4.00	1000	9.12	19.70 252.9		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

SITE NAME: SWMUs ~~08 & 15~~ 13/16

PROJECT No.: N~~1245~~ 7448, CTO ~~0001~~ 357 / 6878 CTO 343

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 02A 0~~257~~ 527 AF

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	INITIAL READINGS PH 4	INITIAL READINGS COND	INITIAL READINGS DO	INITIAL READINGS ORP	FINAL READINGS PH 7	FINAL READINGS PH 4	FINAL READINGS COND	FINAL READINGS DO	FINAL READINGS ORP	Calibration Standard (Lot No.)	Remarks and Comments
2/2/05	JG	6.97	3.94	1095	10.26	251.6 17.28	7.00	4.00	1000	9.25	237.5 17.27	7.0 4110 8/23/05 4.0 4098 8/18/05	
2/3/05	JG	6.87	4.06	888	11.11	234.7 ~~21.79~~ 14.9	7.00	4.00	1000	9.52	237.4 18.02	SPC ~~1000~~ 7/27/05 ORP 4599 0.3% 0.667	10/05
2/5/05	JG	3.38	7.54	1153	9.39	14.11 242.6	7.00	4.00	1000	8.84	237.5 14.17	"	
2/6/05	CO	—	—	1014	6.91	236.5 17.01	—	—	1000	8.87	237.6 17.17	"	broken pH probe, replaced DO membrane
2/7/05	JG	—	—	1007	9.15	20.26 237.5	—	—	1000	9.12	20.29 237.5	"	"
2/8/05	JG	—	—	1005	9.42	18.50 236.8			1000	9.10	18.25 237.4	"	

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: YSI

SITE NAME: SWMUs 08 &15 & 12

MANUFACTURER: YSI

PROJECT No.: N1245, CTO 0331 6878

SERIAL NUMBER: 01D0956 AA

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
2/15/05	CD	7.03	3.99	1024	10.32	242.2 16.04	7.00	4.00	1000	9.47	237.7 16.08	4.0 4098 8/18/05 7.0 4594 7/28/06	
2/16/05	CD	6.97	4.03	1007	10.22	238.9 12.97	7.00	4.00	1000	9.75	236.4 13.03	SPC 4599 7/27/05 ORP 03150667	
2/17/05	CD	7.00	3.96	1015	9.38	~~216.1~~ ~~(D) 11.10~~	7.00	4.00	1000	9.48	~~237.5~~ ~~(D) 13.93~~	"	
						237.7 14.10					237.2 14.43		
2/18/05	CD	7.00	4.01	997	9.43	234.9 12.36	7.00	4.00	1000	9.77	237.3 12.36	"	
2/19/05	CD	6.99	3.97	1007	9.45	241.3 10.57	7.00	4.00	1000	9.90	237.3 10.57	"	
2/20/05	CD	7.00	4.04	1030	7.69	231.2 14.17	7.00	4.00	1000	9.56	237.5 14.17	"	
2/21/05	CD	7.03	3.99	1002	7.43	236.1 16.67	7.00	4.00	1000	9.41	237.5 16.62	"	
2/22/05	CD	7.03	4.01	1014	14.86	233.2 13.47	7.00	4.00	1000	9.55	237.5 13.74	"	
3/2/05	JG	7.02	4.18	1029	4.24	233.7 14.77	7.00	4.00	1000	9.75	237.5 14.72	"	
3/3/05	JG	6.98	3.99	974	8.80	236.3 14.26	7.00	4.00	1000	9.38	237.5 14.20	"	
3/4/05	JG	7.02	4.24	1065	5.78	234.5 17.62	7.00	4.00	1002	9.74	237.5 17.74	"	
3/5/05	JG	7.25	3.78	974	11.74	234.6 16.31	7.00	4.00	1001	9.23	237.5 16.00	"	
3/6/05	JG	6.97	3.94	995	9.25	235.7 16.72	7.00	4.00	1000	9.54	237.5 16.30	"	
3/7/05	JG	7.03	4.03	998	6.38	237.8 17.14	7.00	4.00	1001	9.15	237.5 17.10		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE

SITE NAME: SWMUs 08 &15 & 12

PROJECT No.: N1245, CTO 0331 E6876

INSTRUMENT NAME/MODEL: YSI

MANUFACTURER: YSI

SERIAL NUMBER: 99K1014 AG

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	INITIAL READINGS PH 4	INITIAL READINGS COND	INITIAL READINGS DO	INITIAL READINGS ORP	FINAL READINGS PH 7	FINAL READINGS PH 4	FINAL READINGS COND	FINAL READINGS DO	FINAL READINGS ORP	Calibration Standard (Lot No.)	Remarks and Comments
2/15/05	CD	7.10	3.84	1185	5.61	210.5 16.27	7.00	4.00	1000	9.31	252.9 16.37	4.0 4098 8/18/05 7.0 4594 7/28/06	replaced DO membrane
2/16/05	CD	7.07	3.83	1199	8.50	211.4 13.91	7.00	4.00	1000	9.53	252.9 13.73	SPC 4599 7/27/05 ORP 03K0667	
2/17/05	CD	7.00	3.95	1212	7.51	210.1 14.10	7.00	4.00	1000	9.35	252.9 13.93	"	
2/18/05	CD	7.05	3.85	1209	7.92	210.6 13.35	7.00	4.00	1000	9.49	252.9 13.29	"	
2/19/05	CD	7.06	3.90	1196	7.94	210.6 11.94	7.00	4.00	1000	9.63	252.9 11.32	"	
2/20/05	CD	6.98	3.93	1241	7.92	206.3 15.82	7.01	4.00	999	7.89	252.9 15.91	"	
2/21/05	CD	7.01	3.99	1262	8.21	203.2 16.39	7.00	4.00	1000	9.27	252.9 16.40	"	
2/22/05	CD	6.98	3.96	1268	8.88	202.2 14.46	7.00	4.00	1000	9.47	252.9 14.07	"	
3/2/05	JG	6.75	4.06	1305	10.54	201.3 16.95	7.00	4.00	1000	9.70	252.9 16.78	"	
3/3/05	JG	6.92	4.04	926	10.39	198.8 14.26	7.00	4.00	1000	9.33	252.9 14.71		
3/4/05	JG	6.94	4.04	1397	8.83	197.2 16.70	7.00	4.00	1000	9.33	252.9 16.50		

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: Swmus 08/15 12/13/16

PROJECT NO.: 1245 6878/7448

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
1-5-05	LaMotte	4175-1503	JD	0	—	9.96	10.0	NA	ok
1-6-05	"		JD	0	—	9.99	10.0		ok
1-7-05	"		JD	0	—	10.00	10.0		ok
1-8-05	"		JD	0	—	10.0	10.0		ok
1-9-05	"		CO	0.05	0	10.0	10.0		ok
1-10-05	"		CO	0	—	10.0	—		ok
1-11-05	"		CO	0	0	10.0	10.0		ok
1-12-05	"		CO	0	0	9.87	10.0		ok
1-22-05	"		CO	0	—	10.0	—		ok
1-23-05	"		TR	0	0	10.0	—		ok
1-25-05	"		CO	0.0	—	10.0	—		ok

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: Swmus 08/15 12/13/16

PROJECT NO.: 1245 6878/7448

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
1-5-05	LaMotte	4536-3303	QS	0	–	9.98	10.0		ok
1-6-05	"		QS	0	–	10.0	–		ok
1-7-05	"		QS	0	–	10.0	–		"
1-8-05	"		QS	0	–	10.0	–		ok
1-12-05	"		CD	0	–	10.0	–		OK
1-22-05	"		CD	0	–	10.0	–		OK
1-23-05	"		TK	0	0	10.0	–		OK
1-25-05	"		CD	0.0	–	10.0	–		OK

Turbidity Meter
LaMotte
0355-4197

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: NSWC CRANE

PROJECT NO.: 7440/6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-2-05	2020	0355-4197	TK	0.0	0.0	0.0	0.0	Provided by Vendor	ok
2-3-05			[illegible]	0	0	11	9.9		ok
2-5-05			[illegible]	0	0	9.2	10		
2-6-05			LD	0	0	10	10		ok
2-7-05			TK	0	0	10	10		ok

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: SWMU 13/16 12 RD4 Rd 2

PROJECT NO.: 7448/6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-1-05	Lamotte	4536-3303	QD	0	0	10	10	NA	
2-2-05			QD	0	0	10	10		
2-3-05			QD	0	0	10	10		
2-4-05			QD	0	0	11	10		
2-5-05			QD	0	0	10	10		
2-6-05			CD	0	0	10	10		OK
2-7-05			TR	0	0	10	10		
2-8-05			QD	0	0	9.8	10		
2-15-05			CD	0	0	9.9	10		OK
2-16-05			CD	0	0	10	10		OK
2-17-05			CD	0	0	9.5	10		ok
2-18-05			CD	0	0	10	10		ok
2-19-05			CD	0	0	10	10		ok
2-20-05			CD	0	0	10	10		OK
2-21-05			CD	0	0	10.31	10		OK
2-22-05			CD	0	0	10.64	10		OK

FIGURE 7-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: SWMU 13/16 RD 4 12 Rd 2

PROJECT NO.: 7448 6878

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
2-1-05	Lamotte	4175-1503	CD	0	0	10	10	NA	
2-2-05			CD	0	0	10	10		
2-3-05			CD	0	0	9.97	10		
2-4-05			CD	0	0	10.12	10		
2-5-05			CD	0.7	0	9.98	10		
2-6-05			CD	0	0	9.90	10		OK
2-7-05			TR	0	0	10	10		OK
2-15-05			CD	0	0	9.27	10		replaced battery
2-16-05			CD	0	0	10.54	10		ok
2-17-05			CD	0	0	9.41	10		ok
2-18-05			CD	0	0	9.95	10		ok
2-19-05			CD	0	0	10.26	10		OK
2-20-05			CD	0	0	10	10		OK
2-21-05			CD	0	0	10.07	10		OK
2-21-05			CD	0	0	10.56	10		OK

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Turbidity Meter	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	LaMotte 2020	**Created Date**	8/9/05
Task/Contract #	CTO 0377	**Serial Number**	3655-3802	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Date	Calibrator	Turbidity	Turbidity	Comments
8/9/05	James Goerdt	Pre: 0.0 Post: 0.0 Std: NA Exp: NA	Pre: 11.0 Post: 10.0 Std: NA Exp: NA	
8/10/05	James Goerdt	Pre: 0 Post: NA Std: Exp:	Pre: 12 Post: 10 Std: Exp:	
8/11/05	James Goerdt	Pre: 0 Post: Std: Exp:	Pre: 8.4 Post: 10 Std: Exp:	
8/12/05	James Goerdt	Pre: 0 Post: NA Std: Exp:	Pre: 12 Post: 10 Std: Exp:	
8/13/05	James Goerdt	Pre: 0 Post: Std: Exp:	Pre: 9.4 Post: 10 Std: Exp:	
8/14/05	James Goerdt	Pre: 0 Post: Std: Exp:	Pre: 9.1 Post: 10 Std: Exp:	
8/15/05	James Goerdt	Pre: 0 Post: Std: Exp:	Pre: 10 Post: Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	YSI600	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	YSI	**Created Date**	8/9/05
Task/Contract #	CTO 0377	**Serial Number**	99K1014 AB	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	YSI600	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	YSI	**Created Date**	8/9/05
Task/Contract #	CTO 0377	**Serial Number**	98H1228AB	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Date	Calibrator	pH	pH	Conductivity	ORP	DO	Comments
8/9/05	James Goerdt	Pre: 4.10 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 6.85 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 1019 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 230.4 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 24.63	Pre: 7.98 Post: 8.14 Std: NA Exp: NA	
8/[illegible]/05	James Goerdt	Pre: 6.85 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 4.10 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1019 Post: 1000 Std: Exp:	Pre: 230 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 24.63	Pre: 7.98 Post: 8.14 Std: NA Exp: NA	
8/12/05	James Goerdt	Pre: 6.98 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 3.99 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1063 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 2328.6 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 25.12	Pre: 8.00 Post: 8.14 Std: Exp:	
8/14/05	James Goerdt	Pre: 7.18 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 3.87 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1022 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 239.3 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 24.44	Pre: 8.59 Post: 8.20 Std: Exp:	
8/15/05	James Goerdt	Pre: 6.95 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 4.05 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1007 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 239.2 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 23.79	Pre: 8.15 Post: 8.23 Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	YSI600	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	YSI	**Created Date**	8/9/05
Task/Contract #	CTO 0377	**Serial Number**	98F0478AB	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Date	Calibrator	pH	pH	Conductivity	ORP	DO	Comments
8/9/05	James Goerdt	Pre: 5.05 Post: 3.93 Std: 4098 Exp: 8/18/05	Pre: 7.75 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 982 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 241.0 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 24.19	Pre: Post: Std: NA Exp: NA	
8/12/05	John Wright	Pre: 3.02 Post: 4.00 Std: Exp:	Pre: 6.45 Post: 7.00 Std: Exp:	Pre: 1079 Post: 1000 Std: Exp:	Pre: 232.5 Post: 231.2 Std: Exp: ORP: 25	Pre: 7.87 Post: 7.88 Std: Exp:	
8/14/05	James Goerdt	Pre: 6.10 Post: 7.01 Std: 4110 Exp: 8/28/05	Pre: 5.74 Post: 4.01 Std: 4098 Exp: 8/18/05	Pre: 962 Post: 999 Std: 4885 Exp: 4/16/06	Pre: 234.9 Post: 231.0 Std: 03L1234 Exp: 12/05 ORP: 24.25	Pre: 8.13 Post: 8.19 Std: Exp:	
8/15/05	James Goerdt	Pre: 6.55 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 4.51 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 997 Post: 999 Std: 4885 Exp: 4/16/06	Pre: 232.7 Post: 231.0 Std: 03L1234 Exp: 12/05 ORP: 23.92	Pre: 8.45 Post: 8.20 Std: Exp:	
8/22/05	James Goerdt	Pre: 7.63 Post: 7.00 Std: 4319 Exp: 12/18/05	Pre: 3.38 Post: 4.00 Std: 4439 Exp: 2/23/06	Pre: 1003 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 228.3 Post: 237.5 Std: 03L1234 Exp: 12/05 ORP: 22.60	Pre: 8.32 Post: 8.02 Std: Exp:	Beginning of new shift. Two monitoring wells yet to sample at SWMU 13.

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Turbidity Meter	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	LaMotte 2020	**Created Date**	8/10/05
Task/Contract #	CTO 0377	**Serial Number**	1733-1600	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Date	Calibrator	Turbidity - 0 NTU	Turbidity - 10 NTU	Comments
8/10/05	James Goerdt	Pre: 0 Post: NA Std: Exp:	Pre: 10 Post: NA Std: Exp:	
8/11/05	John Wright	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
8/12/05	Terry Rojahn	Pre: 0.00 Post: 0.00 Std: NA Exp: NA	Pre: 10.26 Post: 10.00 Std: NA Exp: NA	
8/14/05	James Goerdt	Pre: 0 Post: Std: Exp:	Pre: 11 Post: 10 Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Turbidity Meter	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**Manufacturer**	LaMotte 2020	**Created Date**	8/11/05
Task/Contract #	CTO 0377	**Serial Number**	4557-3303	**Modified By**	
WBS Code #	0000			**Modified Date**	
Client				**Printed By**	Joseph Lucas
				Printed Date	5/2/06

Calibration Records

Date	Calibrator	Turbidity - 0 NTU	Turbidity - 10 NTU	Comments
8/11/05	Terry Rojahn	Pre: 0.00 Post: 0.00 Std: NA Exp: NA	Pre: 9.4 Post: 9.9 Std: NA Exp: NA	
8/12/05	Terry Rojahn	Pre: 0.00 Post: 0.00 Std: NA Exp: NA	Pre: 10.1 Post: 10.0 Std: NA Exp: NA	
8/14/05	John Wright	Pre: 0.00 Post: 0.00 Std: NA Exp: NA	Pre: 10 Post: 10 Std: NA Exp: NA	
8/16/05	John Wright	Pre: 0.00 Post: 0.00 Std: NA Exp: NA	Pre: 9.8 Post: 10.0 Std: NA Exp: NA	

Equipment Calibration
Entered by Joseph Lucas on 05/02/2006

Project Site Name:	CRANE NSWC
TtNUS Project No.:	112G00041
Task/Contract No.	CTO 0377
WBS Code	0000

Instrument Name/Model:	**YSI600**
Manufacturer:	YSI
Serial Number:	99K1014 AB

Date	Author							Notes
8/22/2005 James Goerdt	Pre: 7.00 Post: 7.00 Std: 4319 Exp: 12/18/05	Pre: 3.98 Post: 4.00 Std: 4439 Exp: 2/23/06	Pre: 1053 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 232.3 Post: 237.5 ORP 24.89 Std: 03L1234 Exp: 12/05	Pre: 8.49 Post: 8.11 Std: Exp:	Pre: Post: Std: Exp:		Beginning of a new shift. Two monitoring wells left to sample at SWMU 13.
8/16/2005 James Goerdt	Pre: 6.97 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 3.98 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 976 Post: 1000 Std: 4885 Exp: 4/16/05	Pre: 246.9 Post: 23.4 ORP 21.65 Std: 03L1234 Exp: 12/05	Pre: 8.14 Post: 8.23 Std: Exp:	Pre: Post: Std: Exp:		
8/15/2005 James Goerdt	Pre: 7.05 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 3.99 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1011 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 241.9 Post: 237.6 ORP 22.06 Std: 03L1234 Exp: 12/05	Pre: 8.28 Post: 8.37 Std: Exp:	Pre: Post: Std: Exp:		
8/14/2005 James Goerdt	Pre: 6.29 Post: 7.00 Std: 4110 Exp: 8/28/05	Pre: 3.51 Post: 4.00 Std: 4098 Exp: 8/18/05	Pre: 1014 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 151.6 Post: 237.4 ORP 23.72 Std: 03L1234 Exp: 12/05	Pre: 8.08 Post: 8.22 Std: Exp:	Pre: Post: Std: Exp:		
8/13/2005 James Goerdt	Pre: 980 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 157.7 Post: 237.5 ORP 25.03 Std: 03L1234 Exp: 12/05	Pre: 7.58 Post: 8.24 Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:		
8/12/2005 James Goerdt	Pre: 996 Post: 1000 Std: Exp:	Pre: 246.2 Post: 237.3 ORP 24.49 Std: Exp:	Pre: 8.24 Post: 8.14 Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:		Ph bulb broken on meter. pH indicator strips being used
8/11/2005 James Goerdt	Pre: 996 Post: 1000	Pre: 236.5 Post: 237.4	Pre: 9.41 Post: 8.20	Pre: Post:	Pre: Post:	Pre: Post:		pH bulb broken on meter

	Std: 4885 Exp: 4/16/06	ORP 24.24 Std: 03L1234 Exp: 12/05	Std: NA Exp: NA	Std: Exp:	Std: Exp:	Std: Exp:	
8/10/2005 James Goerdt	Pre: 1109 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 235.1 Post: 237.5 ORP 23.69 Std: 03L1234 Exp: 12/05	Pre: 7.65 Post: 8.19 Std: NA Exp: NA	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	pH bulb broken on meter. Using pH indicator strips.
8/9/2005 James Goerdt	Pre: 7.36 Post: 7.00 Std: 4098 Exp: 8/18/05	Pre: 4.17 Post: 4.01 Std: 4110 Exp: 8/28/05	Pre: 1042 Post: 1000 Std: 4885 Exp: 4/16/06	Pre: 242.2 Post: 237.5 ORP 24.16 Std: 03L1234 Exp: 12/05	Pre: 7.20 Post: 8.17 Std: NA Exp: NA	Pre: Post: Std: Exp:	PH 4.0 AND 7.0 CALIBRATION NUMBERS CURRENTLY SWITCHED (0930)
8/9/2005 Michael Quaill	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	Pre: Post: Std: Exp:	

ROUND 5

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 0105
Sample Location: 13MWT 01
Sampled By: Gorski
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-3-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1750								
Method: Ded. Bladder	Clear	4.45	.170	11.12	1.0	0.96	403.8	---

PURGE DATA:

Date: 5-3-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.91								
Static Water Level (WL): 7.74								
One Casing Volume(gal/L): 6.13								
Start Purge (hrs): 1545								
End Purge (hrs): 1745								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 12.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 121'

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT01
DATE: 5-3-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1545	7.74	—	—	—	—	—	—	—	—	start purge
1555	8.12	1.5	150	4.52	0.161	—	1.13	11.32	327.4	clear
1605	8.43	3.0	150	4.47	0.167	—	0.97	11.46	348.0	"
1615	8.98	4.8	180	4.42	0.174	—	0.71	11.65	369.8	"
1625	9.04	6.5	170	4.46	0.171	7.8	0.76	11.90	382.1	"
1635	8.70	7.1	60	4.40	0.177	6.3	0.65	12.05	386.6	"
1645	8.72	7.7	60	4.36	0.184	5.1	0.59	11.85	389.8	"
1655	8.78	8.3	60	4.40	0.175	3.4	0.76	11.60	391.6	"
1705	8.81	9.1	80	4.42	0.171	1.7	0.81	11.54	397.8	"
1715	8.82	9.9	80	4.40	0.174	1.2	0.65	11.27	401.6	"
1725	8.80	10.7	80	4.44	0.168	1.1	0.90	11.19	402.6	"
1735	8.81	11.5	80	4.46	0.169	1.3	0.94	11.14	403.1	"
1745	8.81	12.3	80	4.45	0.170	1.0	0.96	11.12	403.8	end

Water Quality Meter (SN) 04C3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 0359 4197

Pump Intake 12'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT0906
Sample Location: 13MWT09
Sampled By: JSW
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/3/05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: ~~10:25~~ 12:00	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: BLADDER PUMP	CLEAR	5.29	0.576	12.47	0.15	1.50	250.1	---

PURGE DATA:

Date: 5/3/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: LOW FLOW BLADDER PUMP								
Monitor Reading (ppm): --								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 22.~~85~~ 96 (M)								
Static Water Level (WL): 9.15'								
One Casing Volume(gal/L): 8.32								
Start Purge (hrs): 10:25								
End Purge (hrs): 11:55								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 13.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT_____F~~

Dedicated pump intake @ 17.6' BTOC
DEDICATED BLADDER PUMP

WELL VOLUME: 22.96'
- 9.15'
13.81' * (0.163) = 2.25G
= 8.32 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWTØ9
DATE: 5/3/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
10:25	9.15	Ø	150	5.31	0.531	0.10	3.85	13.37	229.8	CLEAR - LOWEST POSS PUMP SETTING
10:35	10.00	1.5	150	5.32	0.510	0.24	1.46	12.40	246.7	
10:45	10.15	3.0	150	5.34	0.508	0.18	1.48	12.56	237.6	
10:55	10.20	4.5	150	5.29	0.515	0.15	2.33	12.37	252.5	
11:05	10.29	6.0	150	5.31	0.532	0.15	1.50	12.39	251.3	
11:15	10.29	7.5	150	5.29	0.551	0.15	1.40	12.41	252.6	
11:25	10.38	9.0	150	5.34	0.563	0.20	1.52	12.37	253.0	
11:35	10.39	10.5	150	5.31	0.566	0.18	1.51	12.38	252.7	
11:45	10.41	12.0	150	5.30	0.575	0.20	1.46	12.42	249.8	
11:55	10.41	13.5	150	5.29	0.576	0.15	1.50	12.47	250.1	
12:00	START SAMPLING		150							START SAMPLING

Water Quality Meter (SN) 03E0443 AB
Control Box type (SN) MP10 - 1334
Turbidity Meter (SN) 1728 - 1600

Pump Intake 17.6' BTOC

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1105
Sample Location: 13MWT 11
Sampled By: T. ROJAHN
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1405	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: SAME	CLEAR	3.20	0.224	15.27	6.1	0.73	+ 401	---

PURGE DATA:

Date: 5-04-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 17.75								
Static Water Level (WL): 9.80								
One Casing Volume(gal/L): 4.9								
Start Purge (hrs): 1305								
End Purge (hrs): 1400								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 5.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT NA -F 7.95' x .163 = 1.3 gal or 4.9

Dedicated pump intake @ 13.5

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT 11
DATE: 5-04-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1305	9.21	—	—	—	—	—	—	—	—	Start PURGE
1315	9.80	1600	160	3.23	0.219	17	1.31	14.25	+422	CLEAR
1325	9.84	2500	90	3.30	0.226	12	1.25	15.08	417	CLEAR
1335	9.86	3300	80	3.21	0.228	11	0.92	15.25	408	CLEAR
1345	9.91	4100	80	3.13	0.224	9.3	0.78	15.32	408	CLEAR
1355	9.91	4900	80	3.16	0.225	7.6	0.69	15.28	405	CLEAR
1400	9.92	5300	80	3.20	0.224	6.1	0.73	15.27	401	CLEAR
1405	—	—	—	—	—	—	—	—	—	Start PURGE

Water Quality Meter (SN) 99E0049 AA
Control Box type (SN) 16789 QED 400
Turbidity Meter (SN) 0359 4/97

Pump Intake 13.5'

SIGNATURE(S): Terry Royal

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1305
Sample Location: 13MWT 13
Sampled By: Goerat
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-5-05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1630	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: del Bladder	Clear	4.52	.085	13.30	1.0	3.67	421.6	---

PURGE DATA:

Date: 5-5-03	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: del. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 21.44								
Static Water Level (WL): 5.36								
One Casing Volume(gal/L): 9.7								
Start Purge (hrs): 1445								
End Purge (hrs): 1625								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L) 14.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ ~19'

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13 MWT 13
DATE: 5-5-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1445	5.36	-	-	-	-	-	-	-	-	Start purge
1455	5.46	.80	80	4.41	.080	2.8	4.38	13.91	386.5	clear
1505	5.62	2.3	150	4.54	.080	2.2	4.20	13.69	395.9	"
1515	5.62	3.8	150	4.51	.084	2.1	4.04	13.43	405.5	"
1525	5.65	5.3	150	4.53	.082	1.8	4.00	13.57	410.4	"
1535	5.68	6.8	150	4.60	.084	1.4	3.90	13.39	413.1	"
1545	5.68	8.3	150	4.69	.083	1.3	3.88	12.79	413.4	"
1555	5.69	9.8	150	4.52	.084	1.4	3.74	13.16	413.4	"
1605	5.69	11.3	150	4.50	.087	1.2	3.69	13.44	418.2	"
1615	5.68	12.8	150	4.51	.087	1.3	3.70	13.21	419.7	"
1625	5.68	14.3	150	4.52	.085	1.0	3.67	13.30	421.6	end purge

Water Quality Meter (SN) 04C3884 AB
Control Box type (SN) MP10-1600
Turbidity Meter (SN) 2843-7501

Pump Intake 19'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1405
Sample Location: 13MWT 14
Sampled By: Goerdt
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-5-05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1018	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Sed Bladder	Clear	5.84	.704	15.29	2.6	1.69	134.8	---

PURGE DATA:

Date: 5-5-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Sed Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 25.60								
Static Water Level (WL): 14.27								
One Casing Volume(gal/L): 6.8								
Start Purge (hrs): 0830								
End Purge (hrs): 1015								
Total Purge Time (min): 105								
Total Vol. Purged (gal/L): 10.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 20'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13 MWT 14
DATE: 5-5-05

Time (Hrs.)	Water Level (Ft below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
0830	14.27	–	–	–	–	–	–	–	–	Start purge
0840	14.37	0.5	50	5.84	.792	12	2.63	13.17	220.3	Clear
0850	14.49	1.75	125	5.85	.798	9.7	1.83	13.39	199.5	"
0900	14.52	2.75	100	5.89	.760	6.1	2.13	13.66	148.1	"
0910	14.51	3.75	100	5.88	.743	5.4	1.64	13.75	141.9	"
0920	14.49	4.75	100	5.88	.731	4.8	1.71	14.21	137.2	"
0930	14.49	5.75	100	5.86	.713	3.9	1.85	14.50	134.4	"
0940	14.49	6.75	100	5.85	.713	2.7	1.73	14.75	134.3	"
0950	14.48	7.75	100	5.84	.713	2.6	1.35	15.13	134.4	"
1000	14.46	8.75	100	5.84	.708	2.8	2.36	15.16	134.2	"
1005	14.46	9.25	100	5.84	.707	3.2	1.66	15.20	134.5	"
1010	14.47	9.75	100	5.85	.707	3.0	1.72	15.22	135.2	"
1015	14.45	10.25	100	5.84	.704	2.6	1.69	15.29	134.8	End purge

Water Quality Meter (SN) 04L3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 2843-4501

Pump Intake 20'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 1505
Sample Location: 13MWT 15
Sampled By: T. ROJAHN
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-05-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1625								
Method: SAME	CLEAR	3.02	0.313	13.95	15	1.00	+401	--

PURGE DATA:

Date: 05-05-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. BLADDER								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2"Φ PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.87								
Static Water Level (WL): 14.00								
One Casing Volume(gal/L): 8.6								
Start Purge (hrs): 1440								
End Purge (hrs): 1620								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 9.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT —-F

13.87 × 0.163 = 2.3 gal or 8.6 L

Dedicated pump intake @ ~22.38'

All parameter stable except turb. on the increase.

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Rojah

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT15
DATE: 5-05-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1440	14.00	0	—	—	—	—	—	—	—	START PURGE
1450	14.90	1200	120	2.90	0.351	5.0	1.22	14.00	429	CLEAR
1500	15.09	2300	110	2.95	0.338	4.7	0.92	13.89	412	CLEAR
1510	15.20	3400	110	2.99	0.326	6.0	0.75	13.70	402	CLEAR
1520	15.03	4200	80	2.96	0.323	6.2	0.97	14.10	401	CLEAR
1530	15.97	5000	80	2.99	0.319	7.1	1.61	14.06	399	CLEAR
1540	15.95	5800	80	2.98	0.319	7.5	1.64	14.13	400	CLEAR
1550	15.93	6600	80	2.98	0.320	8.9	0.95	14.01	402	CLEAR
1600	15.91	7400	80	2.99	0.317	10	1.00	14.15	401	CLEAR
1610	15.91	8200	80	3.01	0.316	12	1.04	14.19	401	CLEAR
1620	15.90	9000	80	3.02	0.313	15	1.00	13.95	401	CLEAR
1625	—	—	—	—	—	—	—	—	—	START SAMPLING
1650	—	—	—	—	—	18	—	—	—	FINISH "

Water Quality Meter (SN) 99E0049 AA
Control Box type (SN) 16789 QED 400
Turbidity Meter (SN) 0359-4197

Pump Intake ~ 22.38'

SIGNATURE(S): Terry Rojek

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 17Ø5
Sample Location: 13MWT 17
Sampled By: JSW
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/05 Time: 2:20	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Method: Bladder Pump	CLEAR	5.16	0.135	13.52	0.40	0.18	289.6	---

PURGE DATA:

Date: 5/4/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): NA								
Well Casing Diameter & Material Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.30'								
Static Water Level (WL): 10.31								
One Casing Volume(gal/L): 5.91								
Start Purge (hrs): 12:50								
End Purge (hrs): 2:10								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~ -F

Dedicated pump intake @ 15.33' BTOC

20.30
−10.31
9.99' x .163 = 1.63 GAL
= 5.91L

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT17
DATE: 5/4/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
12:50	10.31	Ø	100	5.06	0.133	2.1	1.14	13.53	268.8	CLEAR
1:00	10.39	1	100	5.15	0.131	1.3	0.45	12.99	270.9	
1:10	10.39	2	100	5.16	0.133	1.00	0.41	13.26	273.5	
1:20	10.39	3	100	5.13	0.134	0.75	0.38	13.51	276.9	
1:30	10.39	4	100	5.16	0.133	0.60	0.23	13.53	283.6	
1:40	10.39	5	100	5.12	0.133	0.40	0.21	13.49	291.2	
1:50	10.39	6	100	5.18	0.133	0.35	0.20	13.42	293.8	
2:00	10.39	7	100	5.16	0.134	0.30	0.19	13.58	292.8	
2:10	10.39	8	100	5.16	0.135	0.48	0.18	13.52	289.6	
2:20	END PURGE - SAMPLE									

Water Quality Meter (SN) ~~60~~ Ø1LØ7Ø2 AF
Control Box type (SN) MP10-1334
Turbidity Meter (SN) 1728-1600

Pump Intake 15.33' BTOC

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2105
Sample Location: 13MWT 21
Sampled By: JSW
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/4/05 Time: 10:50	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Method: BLADDER PUMP	CLEAR	5.42	0.176	13.10	2.8	0.42	283.7	---

PURGE DATA:

Date: 5/4/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: BLADDER PUMP								
Monitor Reading (ppm): NA								
Well Casing Diameter & Material								
Type: 2" PVC		See Low Flow Purge Data Sheets						
Total Well Depth (TD): 17.76'								
Static Water Level (WL): 9.62								
One Casing Volume(gal/L): 4.82								
Start Purge (hrs): 9:30								
End Purge (hrs): 10:40								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~ ~~F~~

Dedicated pump intake @ 13.37' BTOC

17.76
− 9.62
8.14'
× .163
1.33 Gal × 3.625 G/L
= 4.82 Gallons

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT21
DATE: 5/4/05

Time (Hrs.)	Water Level (Ft below TOC)	Volume (L)	Flowrate (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
9:30	10.0	Ø	100	5.38	0.173	9.3	1.32	13.42	286.4	CLEAR
9:40	10.24	1	100	5.63	0.173	18.0	0.94	12.86	266.7	
9:50	10.43	2	100	5.61	0.178	18.0	0.76	12.90	273.6	
10:00	10.59	3	100	5.48	0.178	9.6	0.58	12.99	283.0	
10:10	10.68	4	100	5.53	0.177	7.2	0.51	12.98	276.8	
10:20	10.75	5	100	5.41	0.177	4.7	0.46	13.02	279.5	
10:30	10.76	6	100	5.44	0.176	3.1	0.39	13.13	281.4	
10:40	10.76	7	100	5.42	0.176	2.8	0.42	13.10	283.7	
	END PURGE - START SAMPLE									

Water Quality Meter (SN) ØIL Ø7Ø2 AF
Control Box type (SN) MP10-1334
Turbidity Meter (SN) 1728-1600

Pump Intake 13.37' BTOC

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 2804
Sample Location: 13MWT 28
Sampled By: Gould
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-3-05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1420	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: ded. bladder	clear	7.58	.771	14.09	42	0.59	191.3	---

PURGE DATA:

Date: 5-3-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 91.70								
Static Water Level (WL): 77.88								
One Casing Volume(gal/L): 8.33								
Start Purge (hrs): 1015								
End Purge (hrs): 1415								
Total Purge Time (min): 240								
Total Vol. Purged (gal/L): 22.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(1) (2) L Glass Amber	(Yes) No
		Minimum vol. of 1L collected on 5-3-05	

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 88'

Upon completing 4-hr purge, WL was near pump intake. Well was allowed to recharge several times during sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT28
DATE: 5-3-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1015	77.88	-	-	-	-	-	-	-	-	clear
1025	77.46	1.5	150	7.61	.986	4.8	2.73	16.43	201.7	
1035	78.85	3.0	150	7.60	.934	3.2	2.65	16.03	204.4	
1045	79.60	3.9	90	7.55	.916	1.7	1.33	15.38	207.1	
1055	80.16	4.8	90	7.52	.914	1.2	1.04	15.36	207.5	
1105	80.56	5.7	90	7.51	.911	0.86	0.95	15.40	207.9	
1115	80.97	6.6	90	7.53	.909	0.41	0.79	15.38	207.9	
1125	81.36	7.5	90	7.54	.906	0.25	0.75	15.18	207.4	
1135	81.47	8.4	90	7.54	.906	0.42	0.75	15.28	207.1	
1145	81.80	9.3	90	7.53	.896	0.95	0.73	15.30	206.2	
1155	82.62	10.2	90	7.54	.846	15	1.18	14.98	205.3	
1205	83.17	11.1	90	7.55	.857	-	1.21	15.21	204.9	
1215	83.58	12.0	90	7.56	.865	-	1.23	15.46	204.6	
1225	83.97	12.9	90	7.58	.873	37	1.06	15.06	200.4	
1235	84.67	13.8	90	7.58	.882	55	0.95	15.46	200.3	sl. cloudy
1245	-	14.7	90	7.59	.879	-	0.81	15.27	199.1	"
1255	-	15.6	90	7.59	.867	-	0.79	15.06	198.8	"
1305	-	16.5	90	7.58	.862	-	0.76	14.87	198.7	"
1315	-	17.4	90	7.60	.856	37	0.75	14.30	198.5	"
1325	86.76	18.3	90	7.59	.824	28	0.69	14.23	196.2	"
1335	86.87	19.2	90	7.59	.819	-	0.68	14.21	195.8	"
1345	87.12	20.1	90	7.61	.811	-	0.65	14.16	194.3	"
1355	87.48	21.0	90	7.60	.807	-	0.66	14.07	194.1	"
1405	87.87	21.9	90	7.60	.787	37	0.63	14.11	192.7	"
1415	88.27	22.8	90	7.58	.771	42	0.59	14.09	191.3	Stop purge

Water Quality Meter (SN) 04C3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 0359-4197

Pump Intake 88'

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3104
Sample Location: 13MWT 31
Sampled By: Gorski
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-5-05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1250	(Visual)	(S. U.)	(mS/cm)	(°C)	(NTU)	(mg/L)	(mV)	NA
Method: Ded. Bladder	clear	5.74	1.119	13.77	3.4	2.39	271.8	---

PURGE DATA:

Date: 5-5-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" pvc			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 22.5'								
Static Water Level (WL): 11.04								
One Casing Volume(gal/L): 6.9								
Start Purge (hrs): 1045								
End Purge (hrs): 1245								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 12.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 17.65'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT31
DATE: 5-5-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1045	11.04	-	-	-	-	-	-	-	-	Start purge
1055	12.24	1.50	150	5.66	1.270	8.4	2.24	12.23	210.0	Clear
1105	12.38	2.75	125	5.71	1.304	8.1	2.52	12.51	228.4	"
1115	12.46	3.75	100	5.74	1.309	7.9	2.99	12.57	237.6	"
1125	12.52	4.75	100	5.78	1.303	7.2	4.09	12.27	246.6	"
1135	12.58	5.75	100	5.82	1.293	6.3	2.77	12.24	254.0	"
1145	12.61	6.75	100	5.81	1.252	6.1	2.52	12.12	258.3	"
1155	12.69	7.75	100	5.82	1.200	5.7	2.52	12.06	262.5	"
1205	12.78	8.75	100	5.82	1.146	5.2	2.62	11.99	266.5	"
1215	12.73	9.75	100	5.80	1.125	4.8	2.49	12.48	268.9	"
1225	12.61	10.75	100	5.80	1.116	4.1	2.44	12.71	270.4	"
1235	12.49	11.75	100	5.77	1.114	3.7	2.42	13.82	271.5	"
1245	12.35	12.75	100	5.74	1.119	3.4	2.39	13.77	271.8	End purge

Water Quality Meter (SN) 04C 3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 2843-4501

Pump Intake 17.65'

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3404
Sample Location: 13MWT 35
Sampled By: T. ROJAHN
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-05-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1330								
Method: SAME	CLEAR	3.87	0.311	15.29	28	0.62	+ 640	--

PURGE DATA:

Date: 5-05-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: DED. BLADDER								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: ~~DED~~ TR 2"Ø PVC		See Low Flow Purge Data Sheets						
Total Well Depth (TD): 22.40								
Static Water Level (WL): 5.44								
One Casing Volume(gal/L): 10.5								
Start Purge (hrs): 1055								
End Purge (hrs): 1325								
Total Purge Time (min): 150								
Total Vol. Purged (gal/L): 18.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	DUP	Container Requirements	MS/MSD	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2)	~~(2)~~ TR L Glass Amber	(4)	(Yes) / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT ——— -F

16.96' x .163 = 2.8 gal or 10.5

Dedicated pump intake @ ~17.58'

Circle if Applicable:

MS/MSD (YES) Duplicate ID No.: 13FD050505 01

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT34
DATE: 5-05-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1055	5.44	0	–	–	–	–	–	–	–	Start Purge
1105	5.74	1300	130	4.28	0.332	5.4	1.54	16.24	347	Clear
1115	5.84	2300	100	3.69	0.315	5.4	0.86	15.28	548	"
1125	5.87	3600	130	3.55	0.315	5.3	0.71	15.29	582	"
1135	5.88	4900	130	3.90	0.314	7.2	0.71	15.20	586	"
1145	5.88	6200	130	4.11	0.313	8.4	0.74	15.12	592	"
1155	5.87	7400	120	4.11	0.313	9.3	0.61	15.23	598	"
1205	5.87	8600	120	3.86	0.314	15	0.66	15.26	612	"
1215	5.87	9800	120	3.86	0.313	13	0.71	15.39	618	"
1225	5.87	11000	120	4.05	0.313	14	0.72	15.35	618	"
1235	5.87	12200	120	4.09	0.312	20	0.70	15.14	612	"
1245	5.87	13400	120	3.78	0.311	22	0.61	15.22	630	"
1255	5.87	14600	120	3.78	0.311	24	0.60	15.30	635	"
1305	5.87	15800	120	3.87	0.312	23	0.57	15.26	635	"
1315	5.87	17000	120	3.90	0.311	25	0.58	15.18	635	"
1325	5.87	18200	120	3.87	0.311	28	0.62	15.29	640	"
1330	–	–	–	–	–	–	–	–	–	Start Sampling
1524	–	–	–	–	–	32	–	–	–	Finish "

Water Quality Meter (SN) 99E0049 AA
Control Box type (SN) 16789 QED 400
Turbidity Meter (SN) 0359-4197

Pump Intake ~ 17.58'

All parameters stable but Turb. on increase.

SIGNATURE(S): Terry Rogers

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 3704
Sample Location: 13MWT 37
Sampled By: Gerald
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-4-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1658								
Method: Ded. Bladder	Clear	5.37	.127	13.50	2.8	4.64	300.8	---

PURGE DATA:

Date: 5-4-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.15								
Static Water Level (WL): 13.81								
One Casing Volume(gal/L): 8.0								
Start Purge (hrs): 1505								
End Purge (hrs): 1655								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 14.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 22'

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13 GWT 37
DATE: 5-4-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1505	13.81	–	–	–	–	–	–	–	–	Start purge
1515	14.17	1.5	150	5.18	.127	3.2	5.01	13.98	272.4	Clear
1525	14.52	3.0	150	5.21	.112	–	4.86	13.83	281.0	"
1535	14.59	4.4	140	5.22	.110	2.9	4.80	13.40	286.1	"
1545	14.68	5.8	140	5.21	.110	1.9	4.79	13.33	291.5	"
1555	14.71	7.2	140	5.22	.111	1.7	4.76	13.30	294.6	"
1605	14.75	8.6	140	5.25	.112	1.2	4.72	13.29	297.9	"
1615	14.69	9.8	120	5.29	.115	2.3	4.66	13.65	298.7	"
1625	14.69	11.0	120	5.33	.117	2.1	4.66	13.69	299.0	"
1635	14.69	12.2	120	5.38	.122	–	4.62	13.61	299.0	"
1645	14.71	13.4	120	5.39	.124	2.4	4.69	13.58	300.0	"
1655	14.70	14.6	120	5.37	.127	2.8	4.64	13.50	300.8	Stop purge

Water Quality Meter (SN) 04<3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 2843 4501

Pump Intake 22'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4004
Sample Location: 13MWT 40
Sampled By: Goeydt
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-4-05 Time: 1118 Method: Ded. Bladder	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	Clear	6.10	.287	11.87	2.3	8.41	256.7	---

PURGE DATA:

Date: 5-4-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 27.70								
Static Water Level (WL): 18.35								
One Casing Volume(gal/L): 5.64								
Start Purge (hrs): 0945								
End Purge (hrs): 1115								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 8.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 23'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MW07 40
DATE: 5-4-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
0945	18.35	–	–	–	–	–	–	–	–	Start purge
0955	18.64	0.90	90	6.32	0.300	5.1	8.46	11.90	228.5	clear
1005	18.79	1.8	90	6.20	.293	3.5	8.41	11.94	237.2	"
1015	18.83	2.7	90	6.18	.289	3.4	8.42	11.80	241.0	"
1025	18.99	3.6	90	6.16	.286	3.2	8.37	12.02	247.7	"
1035	18.84	4.5	90	6.20	.297	3.0	8.37	12.76	248.2	"
1045	18.78	5.4	90	6.26	.301	2.7	8.39	12.20	250.8	"
1055	18.81	6.3	90	6.16	.293	2.6	8.38	11.96	253.6	"
1105	18.80	7.3	100	6.12	.291	–	8.40	11.91	256.2	"
1115	18.81	8.3	100	6.10	.287	2.3	8.41	11.87	256.7	

Water Quality Meter (SN) 04C 3884 AB
Control Box type (SN) MP10 1600
Turbidity Meter (SN) 2843-4501

Pump Intake 23'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT4504
Sample Location: 13MWT45
Sampled By: T. ROSAHN
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5-05-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1015								
Method: SAME	CLEAR	6.70	0.518	16.63	13	0.91	+71	---

PURGE DATA:

Date: 5-04-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 2" Ø PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 84.0								
Static Water Level (WL): 70.65								
One Casing Volume(gal/L):								
Start Purge (hrs): 0923								
End Purge (hrs): 1040								
Total Purge Time (min): 77								
Total Vol. Purged (gal/L): 9.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT NA -F

13.35 x 0.163 = 2.17 gal or 8.2 L

Dedicated pump intake @ 80'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Rosahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT45
DATE: 5-04-05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
0923	70.81	—	—	—	—	—	—	—	—	START PURGE
0933	72.65	1000	100	6.59	0.498	5.5	1.20	15.06	+88	CLEAR
0943	73.95	2500	150	6.25	0.470	0.6	0.77	14.78	+245	CLEAR
0953	75.38	4000	150	5.97	0.456	10	1.21	14.88	371	CLEAR
1003	76.84	5500	150	6.09	0.468	20	0.93	14.82	346	CLEAR
1013	78.40	7000	150	6.45	0.487	17	0.69	14.87	116	CLEAR
1023	*	8500	150	6.63	0.504	13	0.62	15.73	80	CLEAR
1033	*	9300	80	6.70	0.518	13	0.91	16.63	71	CLEAR
1040					DRY					W.L. below PUMP

Water Quality Meter (SN) 99E0049 AA
Control Box type (SN) 16789 QED 400
Turbidity Meter (SN) 0359-4197

Pump Intake 80'

Well DRIES out - Historically

* W.L. below TOP of PUMP

SIGNATURE(S): Terry Nagel

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 4604
Sample Location: 13MWT 46
Sampled By: Goerdt
C.O.C. No.: 3713
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 5-4-05								
Time: 1425								
Method: Ded. Bladder	Clear	6.44	.596	13.64	3.5	0.99	64.7	--

PURGE DATA:

Date: 5-4-05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Ded. Bladder								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 67.60								
Static Water Level (WL): 56.83								
One Casing Volume(gal/L): 6.5								
Start Purge (hrs): 1250								
End Purge (hrs): 1420								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 9.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] 13GWT_____-F

Dedicated pump intake @ 63'

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13GWT46
DATE: 5-4-03

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (~~mL/Min.~~)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
1250	56.83	-	-	-	-	-	-	-	-	Start purge
1300	56.85	1.0	100	6.47	.627	33	2.72	13.65	85.8	Clear
1310	56.88	2.0	100	6.47	.617	27	1.14	13.48	77.3	"
1320	56.89	3.0	100	6.47	.616	16	1.07	13.49	73.3	"
1330	56.89	4.0	100	6.47	.606	12	0.94	13.52	71.2	"
1340	56.91	5.0	100	6.46	.602	8.7	0.89	13.57	68.3	"
1350	56.91	6.0	100	6.45	.599	5.5	0.91	13.50	68.2	"
1400	56.91	7.0	100	6.44	.597	4.8	0.88	13.54	66.7	"
1410	56.91	8.0	100	6.44	.595	3.7	0.91	13.60	65.4	"
1420	56.90	9.0	100	6.44	.596	3.5	0.92	13.64	64.7	end purge

Water Quality Meter (SN) 04C3884 AB
Control Box type (SN) MP10-1600
Turbidity Meter (SN) 2843-4501

Pump Intake 63'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT 47 Ø4
Sample Location: 13MWT 47
Sampled By: JSW
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/5/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 13:55								
Method: Bladder Pump	Clear	3.41	0.751	11.59	0.18	0.07	320.1	---

PURGE DATA:

Date: 5/5/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): NA								
Well Casing Diameter & Material								
Type: 2" PVC			See Low Flow Purge Data Sheets					
Total Well Depth (TD): 20.2'								
Static Water Level (WL): 7.90'								
One Casing Volume(gal/L): 7.3								
Start Purge (hrs): 12:25								
End Purge (hrs): 13:45								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 9.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT~~ ~~F~~

Dedicated pump intake @ 14.82' BTOC

20.20'
− 7.90
12.30 (0.163) = 2.01 GAL
= 7.3 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT47
DATE: 5/5/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
12:25	JSW ~~Ø~~ 7.92'	Ø	120	3.40	0.743	0.04	0.14	11.33	343.6	CLEAR
12:35	8.45	1.2	120	3.41	0.750	1.7	0.11	11.59	335.8	" "
12:45	8.52	2.4	120	3.38	0.752	2.5	0.15	11.70	333.4	" "
12:55	8.65	3.6	120	3.39	0.752	1.8	0.13	11.62	329.7	" "
13:05	8.72	4.8	120	3.42	0.750	0.95	0.11	11.63	323.6	" "
13:15	8.80	6.0	120	3.40	0.751	0.60	0.10	11.59	320.8	" "
13:25	8.69	7.2	120	3.41	0.752	0.21	0.08	11.69	320.9	" "
13:35	8.71	8.4	120	3.41	0.752	0.23	0.08	11.65	319.5	" "
13:45	8.72	9.6	120	3.41	0.751	0.18	0.07	11.59	320.1	" "
13:55	END PURGE AND COLLECT SAMPLES									

Water Quality Meter (SN) Ø1L07Ø2 AF
Control Box type (SN) MP1Ø - 1334
Turbidity Meter (SN) 1728 - 16ØØ

Pump Intake 14.82' BTOC

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 13GWT5103
Sample Location: 13MWT51
Sampled By: JSW
C.O.C. No.: 3714
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/5/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 11:30								
Method: Bladder Pump	Clear	5.93	0.131	11.07	8.3	0.17	249.6	---

PURGE DATA:

Date: 5/5/05	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Bladder Pump								
Monitor Reading (ppm): NA								
Well Casing Diameter & Material								
Type: 2" PVC	See Low Flow Purge Data Sheets							
Total Well Depth (TD): 17.72								
Static Water Level (WL): 6.77'								
One Casing Volume(gal/L): 6.5								
Start Purge (hrs): 10:00								
End Purge (hrs): 11:20								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS / NOTES:

Filtered Sample Collected Yes[] No[X] ~~13GWT F~~

Dedicated pump intake @ 15' BTOC

17.72
- 6.77
10.95 (0.163) = 1.79 GAL
= 6.5 L

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC CRANE
PROJECT NUMBER: N7448

WELL ID.: 13MWT51
DATE: 5/5/05

Time (Hrs.)	Water Level (Ft. below TOC)	Volume (L)	Flowrate (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments (Color)
10:00	6.90	Ø	100	5.98	0.136	9.8	0.76	11.63	228.7	CLEAR
10:10	6.98	1	100	5.88	0.133	9.2	0.35	11.18	257.5	
10:20	6.98	2	100	5.86	0.131	8.6	0.28	11.10	263.2	
10:30	JSW ~~6~~ 7.01	3	100	5.89	0.130	8.8	0.21	10.94	258.9	
10:40	7.01	4	100	5.88	0.130	8.7	0.20	10.98	252.6	
10:50	7.02	5	100	5.91	0.130	8.3	0.19	10.88	249.7	
11:00	7.02	6	100	5.92	0.130	8.4	0.18	10.93	248.4	
11:10	7.03	7	100	5.94	0.130	8.3	0.17	11.02	247.6	
11:20	7.03	8	100	5.93	0.131	8.3	0.17	11.07 JSW ~~249~~	249.6	
11:30	END PURGE AND COLLECT SAMPLES									

Water Quality Meter (SN) Ø1LØ7Ø2 AF
Control Box type (SN) MP1Ø-1334
Turbidity Meter (SN) 1728-16ØØ

Pump Intake 15' BTOC

SIGNATURE(S):

PAGE 2 OF 2

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1404
Sample Location: 13SW/SD 14
Sampled By: JG / TK
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 5/8/05 Time: 1350 Depth: SURFACE Method: DIRECT	Clear	7.51	0.223	15.05	*<10	11.85	+208	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW_____-F

Flow ~5gpm

PHOTO# 1773

* TURB, METER MALFUNCTION values est.

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s): Terry Nazak

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1504
Sample Location: 13SW/SD 15
Sampled By: JG/TC
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Date: 5/8/05 Time: 1338 Depth: SURFACE Method: Direct	Clear	7.40	0.140	16.88	*<10	10.43	+194	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW_____-F

Flow None

Pool 2'x3'x4"

* Turb Meter malfunction value est.

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s): Terry Lyal

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1604
Sample Location: 13SW/SD 16
Sampled By: JG / TL
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5-08-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1315								
Depth: SURFACE	Clear	7.53	0.134	14.24	*<10	11.35	173	—
Method: DIRECT								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW —-F

Flow 1-3 gpm

PHOTO # 1772

*TURB. METER MALFUNCTION VALUE EST.

MAP

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Lopat

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 1903
Sample Location: 13SW/SD 19
Sampled By: JG/TK
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5-08-05 Time: 1448	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Depth: SURFACE Method: Direct	Clear	7.13	0.316	15.03	*<10	1158	+213	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW_____-F

PHOTO# 1775

* Turb. meter malfunction value est.

MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 2003
Sample Location: 13SW/SD 20
Sampled By: JG / TK
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5-8-05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1433								
Depth: SURFACE								
Method: Direct	Clear	7.21	0.174	14.94	*<10	11.18	+214	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW_____-F

Flow: 1-5gpm

* Turb. meter malfunction value est.

MAP

Circle if Applicable:

MS/MSD Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

Sample ID No.: 13SW 2204
Sample Location: 13SW/SD 22
Sampled By: JG/TR
C.O.C. No.: 3716

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5/8/05	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
Time: 1410								
Depth: Surface	Clear	7.03	0.184	13.53	*<10	6.86	+199	—
Method: Direct								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	(Yes) / No

OBSERVATIONS/NOTES

Filtered Sample Collected Yes[ ] No[X] 13SW_____-F

Flow ~ 1gpm 3" depth

PHOTO # 1774

* Turb. meter malfunction value est.

MAP

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): Ty Rogers

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSWC CRANE, SWMU13
Project No.: N7448 CTO 0343

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

Sample ID No.: 13SW 3004
Sample Location: 13SW/SD 30
Sampled By: JG / TK
C.O.C. No.: 3716

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA

Date: 5/8/05 Time: 1300 Depth: SURFACE Method: DIRECT	Color (Visual)	pH (S. U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Other NA
	CLEAR	8.06	0.234	19.29	3.5	11.30	+165	—

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Explosives SW-846 8330 Nitroaromatics and Nitramines	4°C	(2) L Glass Amber	Yes / No

OBSERVATIONS/NOTES:

Filtered Sample Collected Yes[ ] No[X] 13SW —-F

Flow:
.2' x 5.5 x 1 sec/ft = 494 gpm
PHOTO # 1770

MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.: —

Signature(s):

TRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3713 PAGE 1 O

PROJECT NO: CTO 7448 343	FACILITY: NSWC CRANE	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308
LABORATORY NAME AND CONTACT: H. PRENTICE / LAUCKS	SAMPLERS (SIGNATURE): TR for JIM GOERDT	FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857
ADDRESS: 940 SOUTH HARNEY ST.	CARRIER/WAYBILL NUMBER: FED. EX. AB # 8447 8135 4642	CITY, STATE: SEATTLE WA 98108	

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: 4°C
TYPE OF ANALYSIS: Nitroaromatics & Nitramines SW8468330

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	Nitroaromatics & Nitramines SW8468330	COMMENTS
5/03	1200	13GWT0906	13MW T09	-	-	GW	G	2	2	
5/03	1420	13GWT2804	13MW T28	-	-	GW	G	1	1	
5/03	1750	13GWT0105	13MW T01	-	-	GW	G	2	2	
5/04	1050	13GWT2105	13MW T21	-	-	GW	G	2	2	
5/04	1118	13GWT4004	13MW T40	-	-	GW	G	2	2	
5/04	1405	13GWT1105	13MW T11	-	-	GW	G	2	2	
5/04	1420	13GWT1705	13MW T17	-	-	GW	G	2	2	
5/04	1425	13GWT4604	13MW T46	-	-	GW	G	2	2	

1. RELINQUISHED BY	DATE 5/4/05	TIME 1800	1. RECEIVED BY FEDERAL EXPRESS	DATE 5/4/05	TIME 1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3714 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 7448 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	H. PRENTICE / LAUCKS
SAMPLERS (SIGNATURE) TR FOR J. WRIGHT		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 4697		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G
PRESERVATIVE USED: 4°C 4°C/HCl

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Nitroaromatics & Nitramines SW8468330	TYPE OF ANALYSIS: VOLATILES SW 846 8260B	COMMENTS
5/04	1658	13GWT3704	13GW T37	–	–	GW	G	2	2		
5/05	1015	13GWT4504	13GW T45	–	–	GW	G	2	2		
5/05	1018	13GWT1405	13GW T14	–	–	GW	G	2	2		
5/05	1130	13GWT5103	13GW T51	–	–	GW	G	2	2		
5/05	1250	13GWT3104	13GW T31	–	–	GW	G	2	2		
5/05	1330	13GWT3404	13GW T34	–	–	GW	G	4	4		DO MS/MSD
5/05	1355	13GWT4704	13GW T47	–	–	GW	G	2	2		
5/05	1625	13GWT1505	13GW T15	–	–	GW	G	2	2		
5/05	1630	13GWT1305	13GW T13	–	–	GW	G	2	2		
5/05	0000	13FD050505 01	QC	–	–	GW	G	2	2		FROM 13GWT3404
5/06	0700	T8050605 01	QC	–	–	QC	G	2	–	2	
5/06	1140	16GW0405	16MW 04	–	–	GW	G	5	2	3	
5/06	1145	16GW0205	02	–	–	GW	G	5	2	3	
5/06	1655	16GW0305	05	–	–	GW	G	5	2	3	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	5-06-05	1900	1. RECEIVED BY FEDERAL EXPRESS	5-06-05	1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTI WHITE (ACCOMPANIES SAMPLE) YELLOW (FIEL. PY) PINK (FILE COPY) 4/02R

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3715 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 7448 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	940 SOUTH HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 8447 8135 4653		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G
PRESERVATIVE USED: 4°C / HCl 4°C

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOLATILES SW846 8260B	EXP. NITROAROMATICS & NITRAMINES SW8468330							COMMENTS
5/07	0800	TB05070501	QC	-	-	QC	G	2	2	-							TRIP BLANK
5/07	1025	16GWT0405	16MW T04	-	-	GW	G	13	9	4							DO MS/MSD
5/07	1103	16GWT0904	16MW T09	-	-	GW	G	5	3	2							
5/07	1400	16GWT1004	16MW T10	-	-	GW	G	5	3	2							
5/07	1600	16GWT1204	16MW T12	-	-	GW	G	5	3	2							
5/07	1610	16GWT1504	16MW T15	-	-	GW	G	5	3	2							
5/07	1715	16GWT0606	16MW T06	-	-	GW	G	5	3	2							
5/07	1925	16GWT1704	TR ~~16MW T06~~ 17	-	-	GW	G	5	3	2							
5/07	0000	16FD05070501	QC	-	-	GW	G	5	3	2							DUP OF 16GWT0904
5/06	0845	16GWT1104	16MW T11	-	-	GW	G	1	-	1							VERY SLOW RECOVERY WELL
5/08	0910	16GWT1104	↓	-	-	GW	G	1	1	-							↓ MIN. VOL
5/08	0810	16GWT1304	16MW T13	-	-	GW	G	5	3	2							
5/08	0935	16SW1304	16SW SD13	-	-	SW	G	5	3	2							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	05-09-05	1830	1. RECEIVED BY FEDERAL EXPRESS	05-09-05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3716 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
7448 CTO 343	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Terry Rojahn		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 844781354653		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: EXP. NITROAROMATICS & NITRAMINES SW8330	TYPE OF ANALYSIS: VOLATILES SW8260B							COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G							
PRESERVATIVE USED									4°C	4°C/HCl							
5/08	0950	16SW1204	16SW/SD12	–	–	SW	G	5	2	3							
5/08	1025	16SW1003	16SW/SD10	–	–	SW	G	5	2	3							
5/08	1100	16SW3003	16SW/SD30	–	–	SW	G	13	4	9							DO MS/MSD
5/08	1300	13SW3004	13SW/SD30	–	–	SW	G	2	2	–							
5/08	1315	13SW1604	13SW/SD16	–	–	SW	G	2	2	–							
5/08	1338	13SW1504	13SW/SD15	–	–	SW	G	2	2	–							
5/08	1350	13SW1404	13SW/SD14	–	–	SW	G	2	2	–							
5/08	1410	13SW2204	13SW/SD22	–	–	SW	G	2	2	–							
5/08	1433	13SW2003	13SW/SD20	–	–	SW	G	2	2	–							
5/08	1448	13SW1903	13SW/SD19	–	–	SW	G	2	2	–							
5/08	0000	16FD05080501	QC	–	–	SW	G	5	2	3							FROM 16SW3003

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
Terry Rojahn	05-09-05	1830	FEDERAL EXPRESS	05-09-05	1830
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBU WHITE (ACCOMPANIES SAMPLE) YELLOW (FIL OPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 3717 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 343 7448	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB # 8447 8135 4756		SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: 4°C

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT) (IN) TR	BOTTOM DEPTH (FT) (IN) TR	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals (Except Hg) SW-846 6020								COMMENTS
5/17	0943	13SD4201	13SW SD42	0	4	SD	G	1	1								
5/17	1028	13SD4101	13SW SD41	0	4	SD	G	1	1								
5/17	1105	13SD4001	13SW SD40	0	4	SD	G	1	1								
5/17	1125	13SD3901	13SW SD39	0	4	SD	G	1	1								
5/17	1140	13SD3801	13SW SD38	0	4	SD	G	1	1								
5/17	1150	13SD3701	13SW SD37	0	4	SD	G	1	1								
5/17	1205	13SD3601	13SW SD36	0	4	SD	G	2	2								DO MS/MSD
5/17	1320	13SD4301	13SW SD43	0	4	SD	G	1	1								
5/17	1335	13SD4401	13SW SD44	0	4	SD	G	1	1								
5/17	1355	13SD4501	13SW SD45	0	4	SD	G	1	1								
5/17	0000	13FD051705 01	QC	0	4	SD	G	1	1								FROM 13SD3601

1. RELINQUISHED BY	DATE 5-18-05	TIME 1800	1. RECEIVED BY FEDERAL EXPRESS	DATE 5-18-05	TIME 1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/J. Wright
Weather Conditions:	Mostly Sunny and 60s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well Number	Date	Time	Measuring Point Elevation (feet)	Total Well Depth (feet)	Water Level Indicator Reading (feet)	Thickness of Free Product (feet)	Groundwater Elevation (feet)	Comments
13MWT01	5/3/2005	1103	715.34	15.00	7.71	NA	707.63	
13MWT02	5/3/2005	1118	704.72	27.00	16.19	NA	688.53	
13MWT03	5/3/2005	1100	721.10	15.00	9.72	NA	711.38	
13MWT04	5/3/2005	1130	706.84	15.00	14.27	NA	692.57	
13MWT05	5/3/2005	1125	696.44	16.00	5.96	NA	690.48	
13MWT06	5/3/2005	1056	717.93	15.00	11.66	NA	706.27	
13MWT07	5/3/2005	1140	687.22	15.00	3.44	NA	683.78	
13MWT08	5/3/2005	1133	700.56	15.00	4.85	NA	695.71	
13MWT09	5/3/2005	1025	705.90	20.00	9.15	NA	696.75	
13MWT10	5/3/2005	1136	700.15	25.00	13.68	NA	686.47	
13MWT11	5/3/2005	1150	682.29	15.00	9.03	NA	673.26	
13MWT12	5/3/2005	1154	682.12	20.00	10.14	NA	671.98	
13MWT13	5/3/2005	1802	701.98	19.00	5.13	NA	696.85	
13MWT14	5/3/2005	1750	705.50	23.00	14.10	NA	691.4	
13MWT15	5/3/2005	1200	696.65	25.00	13.88	NA	682.77	
13MWT16	5/3/2005	1400	684.35	15.00	12.33	NA	672.02	
13MWT17	5/3/2005	1405	693.01	18.00	9.91	NA	683.1	
13MWT18	5/3/2005	1203	702.92	30.00	19.41	NA	683.51	
13MWT19	5/3/2005	1745	705.82	19.00	10.40	NA	695.42	
13MWT20	5/3/2005	1452	702.07	20.00	4.94	NA	697.13	
13MWT21	5/3/2005	1410	690.74	15.00	9.30	NA	681.44	
13MWT22	5/3/2005	1434	671.96	15.00	8.21	NA	663.75	
13MWT23	5/3/2005	1449	699.14	22.00	8.60	NA	690.54	
13MWT24	5/3/2005	1447	693.93	22.00	9.27	NA	684.66	
13MWT25	5/3/2005	1439	681.57	15.00	6.65	NA	674.92	

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/J. Wright
Weather Conditions:	Mostly Sunny and 60s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well Number	Date	Time	Ground Elevation (feet)	Total Well Depth (feet)	Water Level Below Ground Surface (feet)	Free Product Thickness (feet)	Ground Water Elevation (feet)	Comments
13MWT26	5/3/2005	1443	687.49	20.00	9.81	NA	677.68	
13MWT27	5/3/2005	1157	698.13	21.00	9.27	NA	688.86	
13MWT28	5/3/2005	1015	705.55	88.00	77.88	NA	627.67	
13MWT29	5/3/2005	1806	700.44	20.00	5.61	NA	694.83	
13MWT30	5/3/2005	1758	698.94	25.00	11.55	NA	687.39	
13MWT31	5/3/2005	1733	696.21	20.00	10.74	NA	685.47	
13MWT32	5/3/2005	1730	696.04	25.00	9.02	NA	687.02	
13MWT33	5/3/2005	1740	701.97	20.00	10.41	NA	691.56	
13MWT34	5/3/2005	1432	695.93	20.50	5.26	NA	690.67	
13MWT35	5/3/2005	1149	681.73	69.00	63.94	NA	617.79	
13MWT36	5/3/2005	1458	667.21	26.00	18.83	NA	648.38	
13MWT37	5/3/2005	1509	662.29	25.00	13.64	NA	648.65	
13MWT38	5/3/2005	1507	661.04	80.00	61.81	NA	599.23	
13MWT39	5/3/2005	1517	654.44	25.00	13.36	NA	641.08	
13MWT40	5/3/2005	1529	667.18	25.50	18.15	NA	649.03	
13MWT41	5/3/2005	1524	665.67	66.00	66.52	NA	599.15	
13MWT42	5/3/2005	1545	670.31	25.00	20.38	NA	649.93	
13MWT43	5/3/2005	1352	690.9	21.00	8.17	NA	682.73	
13MWT44	5/3/2005	1339	683.82	88.00	64.36	NA	619.46	
13MWT45	5/3/2005	1408	690.59	84.00	70.76	NA	619.83	
13MWT46	5/3/2005	1516	653.61	68.00	56.61	NA	597.00	
13MWT47	5/3/2005	1820	677.23	21.00	7.15	NA	670.08	
13MWT48	5/3/2005	1605	548.67	10.50	10.29	NA	538.38	
13MWT49	5/3/2005	1608	553.90	9.50	7.25	NA	546.65	
13MWT50	5/3/2005	1611	560.49	26.00	7.90	NA	552.59	
13MWT51	5/3/2005	1614	571.36	16.00	5.80	NA	565.56	

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	NSWC CRANE	**Project No.:**	N7448
Location:	SWMU 13	**Personnel:**	T. Rojahn/J. Wright
Weather Conditions:	Mostly Sunny and 60s	**Measuring Device:**	M-Scope
Tidally Influenced:	Yes ___ No _X_	**Remarks:**	----

Well (Piezometer) Number	Date	Time	Elevation of Reference Point (ft-msl)	Total Well Depth (ft-bgs)	Water Level Indicator Reading (ft-bgs)*	Thickness of Free Product (ft-bgs)	Groundwater Elevation (ft-msl)	Recharge Rate in Hours
STAFF GAUGES							Surface Water Elevation	
13SG01	5/3/2005	1122	698.35		1.77	NA	696.58	<1
13SG02	5/3/2005	1111	701.95		3.73	NA	698.22	1-2
13SG03	5/3/2005	1809	696.24		1.96	NA	694.28	0
13SG04	5/3/2005	1812	688.99		2.45	NA	686.54	<1
13SG05	5/3/2005	1816	692.94		3.89	NA	689.05	<1
13SG06	5/3/2005	1739	704.88		DRY	NA	DRY	0
13SG07	5/3/2005	1455	680.3		1.69	NA	678.61	Stagnate
13SG08	5/3/2005	1437	665.95		5.13	NA	660.82	1-5
13SG09	5/3/2005	1430	675.3		4.21	NA	671.09	1-5
13SG10	5/3/2005	1144	676.1		4.84	NA	671.26	1-5
13SG11	5/3/2005	1830	675.36		2.51	NA	672.85	~1
13SG12	5/3/2005	1621	595.28		6.85	NA	588.43	148
13SG13	5/3/2005	1634	572.52		6.06	NA	566.46	6
13SG14	5/3/2005	1636	567.75		6.41	NA	561.34	5-10
13SG15	5/3/2005	1641	544.18		5.24	NA	538.94	377
13SG16	5/3/2005	1725	537.01		Dry	NA	Dry	0
13SG17	5/3/2005	1708	532.48		Dry	NA	Dry	0
13SG18	5/3/2005	1726	524.23		8.19	NA	516.04	404

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE Summer 09 INSTRUMENT NAME/MODEL: YSI / 600 XL

SITE NAME: Mine Fill B (13) Mine Fill A (2) MANUFACTURER: YSI

PROJECT No.: 7448/00042/6878 SERIAL NUMBER: 04C 3884 AB

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
5-3-05	JG/JW	7.12	3.89	1093	8.85	226.5 15.35	6.99	4.00	1000	9.50	237.5 15.98		
5-4-05	JG/JW	7.05	3.92	1021	9.62	236.5 17.41	7.00	4.00	1000	9.53	237.5 17.35		
5-5-05	JG	7.06	3.94	987	9.38	234.6 17.60	7.00	4.00	1000	9.36	237.5 17.48		
5-6-05	JG	6.99	3.94	1012	9.76	234.5 18.18	7.00	4.00	1000	9.32	237.5 18.23		
5-7-05	JG	7.02	4.06	1101	8.21	232.7 19.01	7.00	4.00	1000	9.51	237.5 18.83		
5-8-05	JG	7.09	3.92	982	8.99	234.5 19.57	7.00	4.00	1000	8.83	237.5 19.41	replaced DO membrane	
5-17-05	JG	6.89	3.88	963	9.20	237.7 15.48	7.00	4.00	1001	8.88	237.5 18.40	"not used"	
5-18-05	JG		Not used				–	–	–	–	–		
5-19-05	JG	6.99	4.01 checked				–	–	–	–	–		
5-21-05	JG	6.99	4.02	988	7.41	235.8 19.11	4.00 → 7.00		999	8.96	237.5 19.20		
5-22-05	JG	–	–	1082	9.78	236.9 18.26	–	–	999	8.98	237.5 18.33	pH bulb is broken	
5-23-05	JG	–	–	1004	9.93	236.2 19.53	–	–	1000	8.82	237.5 19.54		
6-1-05	CD	10.00	4.39	938	6.66	213.7 18.86	7.00	4.00	1000	8.96	~~237.7 18.56~~	237.5 18.58	replaced DO membrane replaced pH bulb
											~~237.5 18.46~~	CD	
6-2-05	CD	5.68	6.73	1007	8.90	237.6 18.98	7.01	4.02	1000	8.80	237.5 18.87		
6-3-05	CD	5.35	3.92	1041	8.97	236.1 20.20	7.11	4.01	1000	8.76	237.5 20.01		
6-4-05	CD	7.13	4.14	1010	8.83	237.0 20.33	7.05	4.00	1000	8.76	237.5 20.02		
6-5-05	CD	7.10	3.25	1044	8.56	232.2 22.35	7.00	4.00	1000	8.34	237.5 22.29		

summer 8

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE SWMU 09

INSTRUMENT NAME/MODEL: YSI / 650 XLM

SITE NAME: Mine Fill B (13) Mine Fill A (12)

MANUFACTURER: YSI

PROJECT No.: 7448/00042/6878

SERIAL NUMBER: 01L0702AF

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
5-3-05	JG/JW	6.83	3.92	1136	9.71	241.2 16.76	7.00	4.00	1000	9.54	235.0 16.65	PH 4 4098 PH 7 4110	pH
5-4-05	JG/JW	7.06	3.99	1001	10.46	235.7 16.56	7.00	4.00	1000	9.61 ~~100~~	237.9 16.61	SpC 4554 ORP 0341234	
5-5-05	JW/JG	7.03	4.09	990	6.54	232.0 17.26	7.00	4.00	1000	9.48	235.0 17.25		
5-6-05	JW	7.05	3.87	1122	11.65	234.6 19.68	7.00	4.00	1000	8.98	234.4 19.95		
5-7-05	JW	—	-	—	—	—	—	-	—	—	—		USE 5/6/05 CALIBRATION DO NOT USE INSTRUMENT
5-9-05	JW	6.93	4.16	992	4.93	229.6 19.37	7.00	4.00	1000	8.85	235.1 19.02		
5-18-05	TR	7.08	3.89	992	8.13	236.1 19.02	7.00	4.00	1000	9.10	235.0 18.0		
5-19-05	JG	6.90	3.79	1160	8.52	236.3 19.35	7.00	4.00	999	8.72	235.0 19.61		
5-20-05	JG	6.99	4.04	1002	9.10	241.3 19.94	7.00	4.00	999	8.88	235.0 19.95		
5-21-05	JG	7.12	3.98	995	11.07	232.3 18.93	7.00	4.00	1000	9.00	235.0 18.89		
5-22-05	JG	7.17	4.24	1040	8.61	227.0 19.55	7.00	4.00	1000	8.78	235.0 19.57		
5-23-05	JG	7.02	3.97	1016	6.77	235.2 19.70	7.00	4.00	1000	8.85	235.0 19.61		
5-24-05	JG	6.80	4.11	962	7.35	237.9 18.96	7.00	4.00	1000	9.06	235.0 18.83		
SWMU 8 6-1-05	CD	6.85	3.72	1063	11.47	229.8 17.79	7.00	4.00	1000	8.88	235.0 17.86	PH 4 4098 PH 7 4110	replaced DO membrane
6-2-05	CD	6.99	4.01	991	9.06	234.7 19.07	7.00	4.00	1000	8.80	235.0 18.91		
6-3-05	CD	6.94	3.97	997	8.66	235.4 20.01	7.00	4.00	1000	8.72	235.1 19.93		
6-4-05	CD	7.04	4.02	1000	8.83	234.0 20.08	7.00	4.00	1000	8.76	235.0 20.03		

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : NSWC CRANE SWMU 09

INSTRUMENT NAME/MODEL: YSI / 600 XL

SITE NAME: Mine Fill B (13)

MANUFACTURER: YSI

PROJECT No.: 7448/00042

SERIAL NUMBER: 99E00409AA

Date of Calibration	Person Performing Calibration	INITIAL READINGS PH 7	PH 4	COND	DO	ORP	FINAL READINGS PH 7	PH 4	COND	DO	ORP	Calibration Standard (Lot No.)	Remarks and Comments
5-3-05	JG/JW	7.00	3.95	1025	9.24	242.3 16.64	7.00	4.00	1000	9.58	237.5 16.70		
5-4-05	JG/JW	7.01	4.08	971	9.89	236.4 17.55	7.00	4.00	1000	9.52	237.5 17.63		
5-5-05	JG	6.98	4.12	991	10.30	235.8 17.70	7.01	4.00	1000	9.38	237.5 17.82		
5-6-05	JG	7.10	3.99	989	6.30	232.9 18.97	7.00	4.00	1000	9.26	237.5 19.01		
5-7-05	JG	NA*	4.16*	1105	7.20	366.8 19.56	N/A*	4.00*	1000	9.42	237.5 19.54		* pH bulb broken

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSWC CRANE

SITE NAME: SW MU 9 Mine Fill B (13) Mine Fill A (12)

PROJECT No.: 7448/00042/6878

INSTRUMENT NAME/MODEL: Turbidimeter

MANUFACTURER: Lamotte

SERIAL NUMBER: 1728-1600

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
5/3/05		JW / JG	0.00	0.00	9.7	10		
5/4/05		JSW	0.00	0.00	9.86	10		
5/5/05		JSW	0.00	0.00	10	10		
5/6/05		JSW	0.00	0.00	10	10		
5/7/05		JSW	–	–	–	–		USE 5/6/05 CALIBRATION - DID NOT USE INSTRUMENT
5/8/05		JSW	0.00	0.00	9.8	10		
5/18/05		TK	0.00	0.00	10	10		
5/19/05		JG	0	0	11	10		
5/20/05		TK	0.00	0.00	10	10		
5/21/05		JG	0	0	10	10		
5/22/05		JG	0	0	10	10		
5/23/05		JG	0	0	9.9	10		
5/24/05		JG	0	0	10	10		
6-1-05		CD	0	0	10	10		
6-2-05		CD	0	0	10	10		
6-3-05		CD	0	0	10	10		
6-4-05		CD	0	0	10	10		
6-5-05		CD	0	0	10.40	10.00		

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: Turbidimeter

SITE NAME: Mine Fill B(13)

MANUFACTURER: LaMotte

PROJECT No.: 7448

SERIAL NUMBER: 2843-4501

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
5-3-05		JG/JW	0	0	9.5	9.9		OK
5-4-05		JG	0	0	10	10		
5-5-05		JG	0	0	9.9	10		
5-6-05		JG	0	0	10	10		
5-7-05		JG	0	0	9.9	10		
5-19-05		JG	0	0	10	10		
5-21-05		JG	0.65	0	9.7	10		
5-22-05		JG	0	0	10	10		
5-23-05		JG	0	0	10	10		
6-1-05		CD	0	0	9.38	10		
6-2-05		CD	0	0	10.45	10		
6-3-05		CD	0	0	8.89	10		
6-4-05		CD	0	0	10.59	10		

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: Turbidimeter

SITE NAME: Mine Fill B (J3)

MANUFACTURER: LaMotte

PROJECT No.: 7448

SERIAL NUMBER: 0359-4197

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
5-3-05		JG	0	0	9.7	10.0		
5-4-05		JG	0	0	9.7	10.0		
5-5-05		JG	0.5	0	10	10		
5-6-05		JG	0	0	10	10		
5-7-05		JG	0	0	10	10		
5-8-05		JG	0	0	10	10		

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSWC CRANE

INSTRUMENT NAME/MODEL: MINI RAE 2000

SITE NAME: SWMU 13, 16 & 12

MANUFACTURER: RAE SYSTEMS

PROJECT No.: 7448 & 6878

SERIAL NUMBER: 110-003829

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
5/3/05	SAME	TR	—	—	0.0/100	0.0/100	00324-04	EXP. DATE 11/15/05
5/6/05	"	TR	—	—	0.0/100	0.0/100	"	"
5/13/05	"	TR	—	—	0.0/116	0.0/100	"	"

ROUND 6

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	**Printed By**	Joseph Lucas
Created Date	8/9/05	**Modified Date**	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4505
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/9/05	**Static Water Level (ft.)**	70.55	**Water Quality Meter**	99K 1014 AB
Purge Method	-Select-	**Total Well Depth (ft.)**	84.0	**Pump Control Box**	MP10-1588
Sampling Method		**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/9/05	10:30	70.55	160	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/9/05	10:40	72.23	160	Clear	5.04	509	3.68	1.1	17.15	333.7	NA	NA	1600
8/9/05	10:50	NA	160	Clear	NA	NA	NA	NA	NA	NA	NA	NA	1600
8/9/05	11:00	73.82	160	Clear	5.05	476	0.90	0.0	16.71	589.9	NA	NA	1600
8/9/05	11:10	74.84	160	Clear	4.99	461	1.34	3.4	16.69	603.0	NA	NA	1600
8/9/05	11:20	72.18	160	Clear	4.95	459	1.73	6.3	16.71	607.9	NA	NA	1600
8/9/05	11:30	76.60	160	Clear	4.9	463	1.57	14	16.83	607.5	NA	NA	1600
8/9/05	11:40	77.42	160	Clear	4.87	471	1.26	14	16.80	609.0	NA	NA	1600

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/9/05	11:50	78.08	160	Clear	4.84	477	1.11	17	16.84	607.6	NA	NA	1600
8/9/05	12:00	NA	160	Clear	4.79	492	0.81	21	16.78	591.2	NA	NA	1600
8/9/05	12:07	NA	160	Clear	4.76	505	0.72	34	17.09	580.3	NA	NA	1120

Final Purge / Sample Data

One Casing Volume	8.11	**Method**		**Dissolved Oxygen (mg/L)**	0.72
Total Vo. Purge (L)	15.52	**Waterlevel (ft.)**	NA	**Turbidity (NTUs)**	34
Start Purge (hrs.)	8/9/05	**Flowrate (mL/min)**	160	**Temp (C)**	17.09
End Purge (hrs.)	8/9/05	**Color**	Clear	**ORP (mV)**	580.3
Total Purge Time (min.)	0	**pH (S.U.)**	4.76	**Salinity**	
		Conductivity (mS/cm)	505	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/10/05	08:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-1
✓	8/10/05	08:40	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-1
✓	8/10/05	08:40	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	**Printed By**	Joseph Lucas
Created Date	8/9/05	**Modified Date**	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2805
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/9/05	**Static Water Level (ft.)**	77.76	**Water Quality Meter**	99K1014AB
Purge Method	-Select-	**Total Well Depth (ft.)**	91.70	**Pump Control Box**	MP10 1588
Sampling Method				**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Riser Diameter (in.)**	2"		
Duplicate Sample Collected?	N	**Well Volumes Req.**			
Corresponding Duplicate Sample ID		**Monitor Reading (ppm)**	NA		

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/9/05	14:05	71.76	100	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/9/05	14:15	77.25	100	Clear	4.40	907	8.02	5.3	30.06	332.9	NA	NA	1000
8/9/05	14:25	79.08	100	Clear	4.26	900	2.84	4.7	18.59	563.4	NA	NA	1000
8/9/05	14:35	80.1	100	Clear	4.23	909	1.78	0.0	18.18	605.7	NA	NA	1000
8/9/05	14:45	80.63	100	Clear	4.23	902	1.25	0.0	18.04	623.4	NA	NA	1000
8/9/05	14:55	80.99	100	Clear	4.21	899	1.08	0.0	18.01	632.4	NA	NA	1000
8/9/05	15:05	81.38	100	Clear	4.20	896	0.98	0.0	17.93	648.7	NA	NA	0
8/9/05	15:15	82.02	110	Clear	4.20	872	0.85	0.0	17.75	653.4	NA	NA	1100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/9/05	15:25	82.70	110	Clear	4.21	892	0.92	0.0	17.86	643.2	NA	NA	3300
8/9/05	15:35	82.98	110	Clear	4.20	838	1.31	12	17.41	672.5	NA	NA	1100
8/9/05	15:45	83.92	110	Clear	4.19	838	1.30	22	17.35	676.4	NA	NA	1100
8/9/05	15:55	84.73	110	Clear	4.17	845	1.20	34	17.31	683.6	NA	NA	1100
8/9/05	16:05	85.90	110	Clear	4.17	840	0.93	41	16.86	668.2	NA	NA	1100
8/9/05	16:15	86.23	100	Clear	4.18	843	0.86	63	16.93	664.1	NA	NA	1000
8/9/05	16:25	87.32	100	Clear	4.17	840	0.73	49	16.76	659.8	NA	NA	1000
8/9/05	16:35	88.17	100	Clear	4.16	825	0.66	31	16.42	657.0	NA	NA	1000
8/9/05	16:45	NA	100	Clear	4.14	810	0.55	24	16.38	603.6	NA	NA	1000
8/9/05	16:48	NA	100	Clear	4.14	808	0.49	11	16.40	564.4	NA	NA	300

Final Purge / Sample Data

Casing Volume	8.4	**Method**		**Dissolved Oxygen (mg/L)**	0.49
Total Vo. Purge (L)	16.9	**Waterlevel (ft.)**	NA	**Turbidity (NTUs)**	11
Start Purge (hrs.)	8/9/05	**Flowrate (mL/min)**	100	**Temp (C)**	16.40
End Purge (hrs.)	8/9/05	**Color**	Clear	**ORP (mV)**	564.4
Total Purge Time (min.)	0	**pH (S.U.)**	4.14	**Salinity**	
		Conductivity (mS/cm)	808	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/10/05	13:00	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-1
✓	8/10/05	13:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-1
✓	8/10/05	13:00	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/10/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

..VMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4605
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/10/05	**Static Water Level (ft.)**	57.12	**Water Quality Meter**	99K1014 AB
Purge Method	-Select-	**Total Well Depth (ft.)**	67.60	**Pump Control Box**	MP10-1588
Sampling Method		**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	Y	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/10/05	13:45	57.12	.13	Clear									0
8/10/05	13:55	57.21	.13	Clear	6.0	577	4.57	16	16.67	302.6			0
8/10/05	14:05	57.22	.13	Clear		559	1.33	12	15.28	356.9			0
8/10/05	14:15	57.23	.13	Clear		561	1.00	1.9	15.18	441.3			0
8/10/05	14:25	57.23	.13	Clear		565	0.94	1.6	15.26	496.8			0
8/10/05	14:35	57.23	.13	Clear	6.0	563	0.91	1.7	15.23	532.7			0
8/10/05	14:45	57.22	.13	Clear		559	0.85	1.5	15.08	558.7			0
8/10/05	15:05	57.21	.13	Clear		554	0.84	.35	15.05	597.6			0

Final Purge / Sample Data

One Casing Volume	6.3	**Method**		**Dissolved Oxygen (mg/L)**	0.84
Total Vo. Purge (L)		**Waterlevel (ft.)**	57.21	**Turbidity (NTUs)**	.35
Start Purge (hrs.)	8/10/05	**Flowrate (mL/min)**	0.13	**Temp (C)**	15.05
End Purge (hrs.)	8/10/05	**Color**	Clear	**ORP (mV)**	597.6
Total Purge Time (min.)	0	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)	554	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/10/05	15:15	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	4	Glass	1L Amber		112G00041-8122005-1
✓	8/10/05	15:15	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	3	Plastic	1L HDPE		112G00041-8122005-1
✓	8/10/05	15:15	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	2	Glass	1L Amber		112G00041-8122005-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	Joseph Lucas
Created Date	8/10/05	**Modified Date**	1/19/06	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2106
TtNUS Project #	112G00041	**Well ID**	13MWT21
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/10/05	**Static Water Level (ft.)**	10.45	**Water Quality Meter**	99K1014 AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	17.76	**Pump Control Box**	MP 10-1588
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/10/05	09:50	10.45	150	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/10/05	10:00	10.74	150	Clear	6.0	NA	NA	4.4	NA	NA	NA	NA	0
8/10/05	10:10	10.78	150	Clear	NA	136	0.90	3.5	22.58	608.8	NA	NA	0
8/10/05	10:20	10.80	90	Clear	NA	133	0.72	3.1	21.14	640.6	NA	NA	0
8/10/05	10:30	10.82	90	Clear	NA	144	0.69	5.3	21.41	700.8	NA	NA	0
8/10/05	10:40	10.85	90	Clear	5.0	150	0.68	3.7	21.47	708.8	NA	NA	0
8/10/05	10:50	10.96	90	Clear	NA	159	0.66	3.9	21.62	724.1	NA	NA	0
8/10/05	11:00	11.02	90	Clear	5.0	164	0.67	2.6	22.09	739.4	NA	NA	0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/10/05	11:10	11.03	90	Clear	5.0	168	0.65	3.8	22.09	746.3	NA	NA	0
8/10/05	11:20	11.02	90	Clear	5.0	171	0.65	4.2	22.30	748.2	NA	NA	0

Final Purge / Sample Data

One Casing Volume	4.4	**Method**		**Dissolved Oxygen (mg/L)**	0.65
Total Vo. Purge (L)		**Waterlevel (ft.)**	11.02	**Turbidity (NTUs)**	4.2
Start Purge (hrs.)	8/10/05	**Flowrate (mL/min)**	90	**Temp (C)**	22.30
End Purge (hrs.)	8/10/05	**Color**	Clear	**ORP (mV)**	748.2
Total Purge Time (min.)	0	**pH (S.U.)**	5.0	**Salinity**	NA
		Conductivity (mS/cm)	171	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/10/05	11:25	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-1
✓	8/10/05	11:25	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-1
✓	8/10/05	11:25	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3405
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	John Wright
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	5.9	**Water Quality Meter**	98F0478AB
Purge Method	-Select-	**Total Well Depth (ft.)**	22.40	**Pump Control Box**	US100
Sampling Method				**Turbidity Meter**	1733-1600
MS/MSD Collected?	N	**Well Riser Diameter (in.)**	2		
Duplicate Sample Collected?	Y	**Well Volumes Req.**			
Corresponding Duplicate Sample ID		**Monitor Reading (ppm)**	NA		

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	09:00	5.9	120	Clear									0
8/11/05	09:10	6.64	120	Clear	6.93	.320	1.14	6.8	17.85	229.7	NA	NA	0
8/11/05	09:20	6.84	120	Clear	7.43	.303	.66	3.7	17.45	218.9	NA	NA	0
8/11/05	09:30	6.77	120	Clear	6.33	.296	0.59	2.2	17.32	200.9	NA	NA	0
8/11/05	09:40	6.97	120	Clear	5.85	.288	0.55	1.8	17.29	207.5	NA	NA	0
8/11/05	09:51	6.96	120	Clear	5.80	.288	0.53	2.2	17.16	216.2	NA	NA	0
8/11/05	10:00	7.03	120	Clear	5.75	.287	0.50	2.5	17.08	216.1	NA	NA	0
8/11/05	10:09	7.06	120	Clear	5.63	.285	0.48	1.7	17.05	218.6	NA	NA	0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	10:19	7.08	120	Clear	5.44	.285	0.47	1.8	17.00	222.6	NA	NA	0
8/11/05	10:30	7.09	120	Clear	5.29	.286	0.46	1.6	16.94	226.9	NA	NA	0
8/11/05	10:40	7.13	120	Clear	5.24	.287	0.44	1.3	16.90	230.6	NA	NA	0
8/11/05	10:51	7.16	120	Clear	4.99	.290	0.44	1.6	16.92	243.1	NA	NA	0
8/11/05	11:02	7.17	120	Clear	4.83	.284	0.43	1.2	16.88	259.2	NA	NA	0
8/11/05	11:10	7.21	120	Clear	1.17	.292	0.40	1.4	16.87	339.8	NA	NA	0
8/11/05	11:21	7.21	120	Clear	0.58	.291	0.38	1.1	16.83	355.5	NA	NA	0
8/11/05	11:30	7.18	120	Clear	1.37	.291	0.38	0.95	16.80	329.4	NA	NA	0
8/11/05	11:39	7.22	120	Clear	4.61	.291	0.36	1.3	16.79	253.6	NA	NA	0
8/11/05	11:50	7.28	120	Clear	4.63	.289	0.36	0.85	16.85	247.2	NA	NA	0
8/11/05	12:00	7.21	120	Clear	4.49	.289	0.36	1.1	16.85	244.6	NA	NA	0

Final Purge / Sample Data

One Casing Volume	10.19	**Method**		**Dissolved Oxygen (mg/L)**	0.36
Total Vo. Purge (L)	calc	**Waterlevel (ft.)**	7.21	**Turbidity (NTUs)**	1.1
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	120	**Temp (C)**	16.85
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	244.6
Total Purge Time (min.)	0	**pH (S.U.)**	4.49	**Salinity**	
		Conductivity (mS/cm)	.289	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	12:22	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	12:22	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✓	8/11/05	12:22	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13FD08110501
TtNUS Project #	112G00041	**Well ID**	-Select-
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	John Wright
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**		**Water Quality Meter**	
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**		**Pump Control Box**	
Sampling Method	Low flow - Bladder			**Turbidity Meter**	
MS/MSD Collected?	N	**Well Riser Diameter (in.)**	2"		
Duplicate Sample Collected?	Y	**Well Volumes Req.**			
Corresponding Duplicate Sample ID		**Monitor Reading (ppm)**	NA		

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)

Final Purge / Sample Data

One Casing Volume		**Method**		**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)		**Waterlevel (ft.)**		**Turbidity (NTUs)**	
: Purge (hrs.)		**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)		**Color**	error	**ORP (mV)**	
Total Purge Time (min.)	0	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	00:00	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	00:00	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✗	8/11/05		SW-846 8330	Energetics	4 ° C	2	Glass	1L Amber		
✗	8/11/05		SW-846 8330 (mod) LC/MS	Energetics	4 ° C	1	Glass	1L Amber		

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1106
TtNUS Project #	112G00041	**Well ID**	13MWT11
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	John Wright
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	10.09	**Water Quality Meter**	98F0478AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	17.75	**Pump Control Box**	US 100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2	**Turbidity Meter**	1733-1600
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	14:15	10.09	100	Clear									0
8/11/05	14:25	10.58	100	Cloudy	4.45	.249	1.12	30	22.68	186.8	NA	NA	0
8/11/05	14:35	10.86	100	Cloudy	4.38	.234	0.87	60	20.90	189.2	NA	NA	0
8/11/05	14:45	11.38	100	Cloudy	4.44	.226	0.65	130	20.24	189.9	NA	NA	0
8/11/05	14:55	11.62	100	Cloudy	4.21	.237	0.47	80	19.74	200.1	NA	NA	0
8/11/05	15:05	12.03	100	Cloudy	4.18	.244	0.43	120	19.17	190.6	NA	NA	0
8/11/05	15:15	12.41	100	Cloudy	4.14	.246	0.43	170	19.05	193.0	NA	NA	0
8/11/05	15:25	12.27	80	Cloudy	4.12	.258	0.39	90	21.18	183.6	NA	NA	0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	15:35	11.98	80	Cloudy	4.14	.267	0.41	22	23.40	179.9	NA	NA	0
8/11/05	15:45	11.83	80	Cloudy	4.15	.254	0.40	7.0	22.81	154.4	NA	NA	0
8/11/05	15:56	11.74	80	Cloudy	4.09	.253	0.39	7.0	22.81	156.1	NA	NA	0
8/11/05	16:05	11.72	80	Clear	4.09	.253	0.39	6.3	23.00	154.1	NA	NA	0

Final Purge / Sample Data

One Casing Volume	4.73	**Method**		**Dissolved Oxygen (mg/L)**	0.39
Total Vo. Purge (L)	calc	**Waterlevel (ft.)**	11.72	**Turbidity (NTUs)**	6.3
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	80	**Temp (C)**	23.00
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	154.1
Total Purge Time (min.)	0	**pH (S.U.)**	4.09	**Salinity**	NA
		Conductivity (mS/cm)	.253	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	16:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	16:10	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✓	8/11/05	16:10	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1706
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	11.41	**Water Quality Meter**	98H1228-AB
Purge Method	-Select-	**Total Well Depth (ft.)**	20.30	**Pump Control Box**	MP10-1088
Sampling Method		**Well Riser Diameter (in.)**	2	**Turbidity Meter**	4557-3303
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	11:27	11.41	130	Clear									0
8/11/05	11:37	11.45	120	Clear	4.86	0.226	1.53	0.15	21.66	333			0
8/11/05	11:47	11.45	120	Clear	4.79	0.228	1.33	0.20	22.08	425			0
8/11/05	11:57	11.45	120	Clear	4.79	0.230	1.11	0.20	21.94	451			0
8/11/05	12:07	11.45	120	Clear	4.65	0.229	1.10	0.15	21.70	469			0
8/11/05	12:17	11.45	120	Clear	4.53	0.230	1.10	0.10	21.83	498			0
8/11/05	12:27	11.45	120	Clear	4.48	0.231	0.95	0.20	21.72	512			0
8/11/05	12:37	11.45	120	Clear	4.44	0.232	0.95	0.00	21.71	520			0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	12:47	11.45	120	Clear	4.43	0.233	0.96	0.00	21.81	517			0

Final Purge / Sample Data

One Casing Volume	5.5	**Method**		**Dissolved Oxygen (mg/L)**	0.96
Total Vo. Purge (L)	9.7	**Waterlevel (ft.)**	11.45	**Turbidity (NTUs)**	0.00
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	120	**Temp (C)**	21.81
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	517
Total Purge Time (min.)	0	**pH (S.U.)**	4.43	**Salinity**	
		Conductivity (mS/cm)	0.233	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	12:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	12:50	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✓	8/11/05	12:50	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

JMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1506
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	15.91	**Water Quality Meter**	98H1228-AB
Purge Method	-Select-	**Total Well Depth (ft.)**	27.87	**Pump Control Box**	MP-1088
Sampling Method		**Well Riser Diameter (in.)**	2	**Turbidity Meter**	4557-3303
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	14:45	15.91	120	Clear									0
8/11/05	14:55	16.80	120	Clear	2.85	0.358	1.86	2.8	18.34	341			0
8/11/05	15:05	16.86	90	Clear	2.95	0.342	1.13	3.5	18.87	335			0
8/11/05	15:15	16.84	90	Clear	3.03	0.331	1.08	2.3	18.74	336			0
8/11/05	15:25	16.85	90	Clear	3.04	0.322	0.91	5.3	18.84	338			0
8/11/05	15:35	16.85	90	Clear	3.14	0.316	0.91	5.4	18.72	339			0
8/11/05	15:45	16.86	90	Clear	3.13	0.312	0.87	5.6	18.49	341			0
8/11/05	15:55	16.86	90	Clear	3.10	0.312	0.90	4.5	18.38	342			0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	16:05	16.86	90	Clear	3.14	0.309	0.91	4.4	18.40	342			0

Final Purge / Sample Data

One Casing Volume	7.4	**Method**		**Dissolved Oxygen (mg/L)**	0.91
Total Vo. Purge (L)	7.8	**Waterlevel (ft.)**	16.86	**Turbidity (NTUs)**	4.4
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	90	**Temp (C)**	18.40
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	342
Total Purge Time (min.)	0	**pH (S.U.)**	3.14	**Salinity**	
		Conductivity (mS/cm)	0.309	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	16:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	16:10	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	16:10	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4005
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	17.95	**Water Quality Meter**	99K1014AB
Purge Method	-Select-	**Total Well Depth (ft.)**	27.70	**Pump Control Box**	MP10-1588
Sampling Method		**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?		**Well Volumes Req.**			
Duplicate Sample Collected?		**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	11:45	17.95	90	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/11/05	11:55	18.11	90	Clear	6.0	253	8.35	0.0	16.70	431.2	NA	NA	0
8/11/05	12:05	18.21	90	Clear	NA	257	8.18	0.0	17.50	469.5	NA	NA	0
8/11/05	12:15	18.24	90	Clear	NA	264	8.04	0.0	18.66	508.3	NA	NA	0
8/11/05	12:25	18.16	50	Clear	6.0	256	8.15	1.1	17.21	542.0	NA	NA	0
8/11/05	12:35	18.27	50	Clear	NA	247	8.04	1.5	16.00	556.5	NA	NA	0
8/11/05	12:45	18.33	110	Clear	NA	246	7.94	1.9	15.88	563.8	NA	NA	0
8/11/05	12:55	18.36	110	Clear	NA	245	7.91	0.0	15.89	564.2	NA	NA	0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	13:05	18.39	110	Clear	6.0	246	7.88	0.0	15.90	575.4	NA	NA	0
8/11/05	13:15	18.37	110	Clear	NA	245	7.80	1.8	15.93	578.6	NA	NA	0
8/11/05	13:25	18.39	110	Clear	NA	243	7.82	0.0	15.63	579.7	NA	NA	0
8/11/05	13:35	18.38	110	Clear	NA	246	7.79	1.2	15.95	580.1	NA	NA	0
8/11/05	13:45	18.39	110	Clear	6.0	248	7.84	1.4	15.03	588.7	NA	NA	0

Final Purge / Sample Data

One Casing Volume	5.9	**Method**		**Dissolved Oxygen (mg/L)**	7.84
Total Vo. Purge (L)	11.4	**Waterlevel (ft.)**	18.39	**Turbidity (NTUs)**	1.4
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	110	**Temp (C)**	15.03
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	588.7
Total Purge Time (Min.)	0	**pH (S.U.)**	6.0	**Salinity**	
		Conductivity (mS/cm)	248	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	13:50	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✓	8/11/05	13:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	13:50	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT5104
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	13.97	**Water Quality Meter**	99K1014AB
Purge Method	-Select-	**Total Well Depth (ft.)**	17.72	**Pump Control Box**	MP10 1588
Sampling Method		**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	14:45	13.97	140	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/11/05	14:55	14.92	140	Clear	6.0	334	0.64	33	17.70	430.7	NA	NA	0
8/11/05	15:03	NA	140	Clear	6.0	344	0.52	110	17.78	356.2	NA	NA	0

Final Purge / Sample Data

One Casing Volume	2.3	**Method**		**Dissolved Oxygen (mg/L)**	0.52
Total Vo. Purge (L)	2.52	**Waterlevel (ft.)**	NA	**Turbidity (NTUs)**	110
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	140	**Temp (C)**	17.78
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	356.2
Total Purge Time (min.)	0	**pH (S.U.)**	6.0	**Salinity**	
		Conductivity (mS/cm)	344	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/12/05	08:35	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8152005-2
✓	8/12/05	08:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	1	Glass	1L Amber		112G00041-8152005-2
✓	8/13/05	17:00	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8152005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/11/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3705
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/11/05	**Static Water Level (ft.)**	13.65	**Water Quality Meter**	99K1014AB
Purge Method	-Select-	**Total Well Depth (ft.)**	27.15	**Pump Control Box**	MP10 1588
Sampling Method				**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Riser Diameter (in.)**	2"		
Duplicate Sample Collected?	N	**Well Volumes Req.**			
Corresponding Duplicate Sample ID		**Monitor Reading (ppm)**	NA		

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	08:30	13.65	110	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/11/05	08:40	14.21	110	Clear	4.5	105	5.12	0.0	15.65	327.9	NA	NA	0
8/11/05	08:50	14.32	110	Clear	NA	100	4.78	0.0	15.63	370.7	NA	NA	0
8/11/05	09:00	14.40	110	Clear	NA	100	4.75	0.0	15.55	386.2	NA	NA	0
8/11/05	09:10	14.51	110	Clear	5.0	101	4.65	0.0	15.59	403.1	NA	NA	0
8/11/05	09:20	14.55	110	Clear	NA	102	4.58	0.0	15.65	414.1	NA	NA	0
8/11/05	09:30	14.59	130	Clear	5.0	106	4.36	0.0	15.87	427.3	NA	NA	0
8/11/05	09:40	14.58	130	Clear	NA	108	4.30	0.0	15.65	435.6	NA	NA	0

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/11/05	09:50	14.60	130	Clear	NA	119	4.26	0.0	15.91	453.7	NA	NA	0
8/11/05	10:00	14.60	130	Clear	NA	122	4.23	0.0	16.03	465.0	NA	NA	0
8/11/05	10:10	14.59	130	Clear	5.0	124	4.37	1.1	16.40	469.2	NA	NA	0
8/11/05	10:20	14.58	130	Clear	5.0	127	4.39	1.6	16.53	472.7	NA	NA	0

Final Purge / Sample Data

One Casing Volume	8.1	**Method**		**Dissolved Oxygen (mg/L)**	4.39
Total Vo. Purge (L)	13.3	**Waterlevel (ft.)**	14.58	**Turbidity (NTUs)**	1.6
Start Purge (hrs.)	8/11/05	**Flowrate (mL/min)**	130	**Temp (C)**	16.53
End Purge (hrs.)	8/11/05	**Color**	Clear	**ORP (mV)**	472.7
Total Purge Time (min.)	0	**pH (S.U.)**	5.0	**Salinity**	
		Conductivity (mS/cm)	127	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/11/05	10:23	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8122005-2
✓	8/11/05	10:23	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8122005-2
✓	8/11/05	10:23	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8122005-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/15/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1306
TtNUS Project #	112G00041	**Well ID**	13MWT13
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/15/05	**Static Water Level (ft.)**	6.31	**Water Quality Meter**	99K1014 AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	21.44	**Pump Control Box**	MP10 1588
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/15/05	13:35	6.31	150	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/15/05	13:45	6.55	150	Clear	3.67	89	4.07	0.6	19.04	629.6	NA	NA	1500
8/15/05	13:55	6.55	150	Clear	3.53	86	4.04	0.0	19.74	678.4	NA	NA	1500
8/15/05	14:05	6.55	150	Clear	3.52	88	3.81	0.0	19.54	686.6	NA	NA	1500
8/15/05	14:15	6.51	150	Clear	3.54	91	3.63	0.0	19.52	687.4	NA	NA	1500
8/15/05	14:25	6.50	150	Clear	3.55	92	3.52	0.0	19.46	688.3	NA	NA	1500
8/15/05	14:35	6.51	150	Clear	3.54	93	3.38	0.0	19.58	691.6	NA	NA	1500
8/15/05	14:45	6.50	150	Clear	3.58	97	3.30	0.0	19.47	688.9	NA	NA	1500

Final Purge / Sample Data

One Casing Volume	9.1	**Method**		**Dissolved Oxygen (mg/L)**	3.30
Total Vo. Purge (L)	10.5	**Waterlevel (ft.)**	6.50	**Turbidity (NTUs)**	0.0
Start Purge (hrs.)	8/15/05	**Flowrate (mL/min)**	150	**Temp (C)**	19.47
End Purge (hrs.)	8/15/05	**Color**	Clear	**ORP (mV)**	688.9
Total Purge Time (min.)	0	**pH (S.U.)**	3.58	**Salinity**	NA
		Conductivity (mS/cm)	97	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/15/05	14:50	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8162005-3
✓	8/15/05	14:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8162005-3
✓	8/15/05	14:50	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8162005-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/15/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0106
TtNUS Project #	112G00041	**Well ID**	13MWT01
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/15/05	**Static Water Level (ft.)**	9.75	**Water Quality Meter**	99K1014 AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	17.91	**Pump Control Box**	MP10 1588
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/15/05	08:55	9.75		Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/15/05	09:05	9.94	60	Clear	4.00	170	2.03	0.0	20.49	519.8	NA	NA	600
8/15/05	09:15	9.95	50	Clear	3.88	170	1.46	0.0	20.73	595.4	NA	NA	500
8/15/05	09:25		60	Clear	3.81	190	1.19	0.0	20.77	628.6	NA	NA	600
8/15/05	09:35	9.95	50	Clear	3.80	176	1.16	0.0	20.87	635.5	NA	NA	500
8/15/05	09:45	9.50	50	Clear	3.57	174	1.20	0.0	19.83	663.9	NA	NA	500
8/15/05	09:55	10.17	110	Clear	3.51	169	1.60	0.0	19.70	677.6	NA	NA	1100
8/15/05	10:05	10.01	50	Clear	3.54	181	1.48	0.0	21.25	681.1	NA	NA	500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/15/05	10:15	10.02	50	Clear	3.34	192	0.93	0.0	21.26	691.1	NA	NA	500
8/15/05	10:25		50	Clear	3.55	188	0.82	0.0	20.73	680.2	NA	NA	500
8/15/05	10:35	10.01	50	Clear	3.53	189	0.79	0.0	21.07	687.2	NA	NA	500
8/15/05	10:45	10.02	50	Clear	3.51	189	0.76	0.0	21.15	691.5	NA	NA	500
8/15/05	10:55	10.01	50	Clear	3.56	188	0.73	0.73	20.97	687.8	NA	NA	500

Final Purge / Sample Data

One Casing Volume	4.9	**Method**		**Dissolved Oxygen (mg/L)**	0.73
Total Vo. Purge (L)	6.8	**Waterlevel (ft.)**	10.01	**Turbidity (NTUs)**	0.73
Start Purge (hrs.)	8/15/05	**Flowrate (mL/min)**	50	**Temp (C)**	20.97
End Purge (hrs.)	8/15/05	**Color**	Clear	**ORP (mV)**	687.8
Total Purge Time (min.)	0	**pH (S.U.)**	3.56	**Salinity**	NA
		Conductivity (mS/cm)	188	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/15/05	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8162005-3
✓	8/15/05	11:00	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8162005-3
✓	8/15/05	11:00	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8162005-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**		**Printed By**	Joseph Lucas
Created Date	8/15/05	**Modified Date**		**Printed Date**	5/2/06

Project Information

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4705
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	8/15/05	**Static Water Level (ft.)**	7.10	**Water Quality Meter**	98H1228 AB
Purge Method	-Select-	**Total Well Depth (ft.)**	20.20	**Pump Control Box**	MP10-1088
Sampling Method		**Well Riser Diameter (in.)**	2	**Turbidity Meter**	1733-1600
MS/MSD Collected?		**Well Volumes Req.**			
Duplicate Sample Collected?		**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/15/05	11:00	7.10		Clear									0
8/15/05	11:10	7.62	110	Clear	3.38	0.789	3.12	0.70	18.57	371			1100
8/15/05	11:20	7.85	100	Clear	3.41	.0778	3.26	40	18.31	352			1000
8/15/05	11:30	7.96	100	Clear	3.34	0.777	4.95	60	18.40	357			1000
8/15/05	11:40	8.05	100	Clear	3.37	0.781	5.10	37	18.41	359			1000
8/15/05	11:50	8.04	100	Clear	3.37	0.779	*	32	18.39	358			1000
8/15/05	12:00	8.10	100	Clear	3.39	0.7871	*	25	18.78	357			1000
8/15/05	12:10	8.09	80	Clear	3.40	0.788	*	23	18.87	354			800

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/15/05	12:20	8.05	80	Clear	3.40	0.787	*	16	18.96	353			800
8/15/05	12:30	8.05	80	Clear	3.39	0.792	*	13	19.12	353			800
8/15/05	12:40	8.05	80	Clear	3.38	0.793	*	10	19.16	353			800

Final Purge / Sample Data

One Casing Volume	8.1	**Method**		**Dissolved Oxygen (mg/L)**	*
Total Vo. Purge (L)	9.3	**Waterlevel (ft.)**	8.05	**Turbidity (NTUs)**	10
Start Purge (hrs.)	8/15/05	**Flowrate (mL/min)**	80	**Temp (C)**	19.16
End Purge (hrs.)	8/15/05	**Color**	Clear	**ORP (mV)**	353
Total Purge Time (min.)	0	**pH (S.U.)**	3.38	**Salinity**	
		Conductivity (mS/cm)	0.793	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/15/05	12:45	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8162005-3
✓	8/15/05	12:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8162005-3
✓	8/15/05	12:45	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8162005-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/16/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1406
TtNUS Project #	112G00041	**Well ID**	13MWT14
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/16/05	**Static Water Level (ft.)**	16.33	**Water Quality Meter**	99K1014 AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	25.60	**Pump Control Box**	MP10 1588
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3892
MS/MSD Collected?	Y	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/16/05	10:15	16.33	80	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/16/05	10:25	16:42	80	Clear	5.55	747	2.59	9.2	18.21	237.6	NA	NA	800
8/16/05	10:35	16.46	80	Clear	5.49	749	1.16	7.3	18.12	309.8	NA	NA	640
8/16/05	10:45	16.55	80	Clear	5.49	719	0.83	6.2	18.08	355.5	NA	NA	800
8/16/05	10:55	16.50	80	Clear	5.50	681	0.76	3.2	18.15	380.4	NA	NA	800
8/16/05	11:05	16.48	80	Clear	5.51	652	0.69	2.7	18.22	402.7	NA	NA	-800
8/16/05	11:15	16.49	80	Clear	5.49	634	0.65	2.0	18.55	456.3	NA	NA	1600
8/16/05	11:25	16.50	80	Clear	5.47	628	0.63	1.9	18.72	482.6	NA	NA	-800

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/16/05	11:35	16.49	80	Clear	5.48	601	0.61	1.8	18.95	515.7	NA	NA	1600
8/16/05	11:45	16.49	80	Clear	5.46	594	0.61	1.3	19.02	521.8	NA	NA	800
8/16/05	11:55	16.50	80	Clear	5.48	586	0.54	0.8	19.15	526.8	NA	NA	800

Final Purge / Sample Data

One Casing Volume	5.6	**Method**		**Dissolved Oxygen (mg/L)**	0.54
Total Vo. Purge (L)	8.0	**Waterlevel (ft.)**	16.50	**Turbidity (NTUs)**	0.8
Start Purge (hrs.)	8/16/05	**Flowrate (mL/min)**	80	**Temp (C)**	19.15
End Purge (hrs.)	8/16/05	**Color**	Clear	**ORP (mV)**	526.8
Total Purge Time (min.)	0	**pH (S.U.)**	5.48	**Salinity**	NA
		Conductivity (mS/cm)	586	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/16/05	12:00	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	3	Plastic	1L HDPE		112G00041-8162005-3
✓	8/16/05	12:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	6	Glass	1L Amber		112G00041-8162005-3
✓	8/16/05	12:00	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	3	Glass	1L Amber		112G00041-8162005-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	Joseph Lucas
Created Date	8/27/05	**Modified Date**	1/7/06	**Printed Date**	5/2/06

Project Information

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0907
TtNUS Project #	112G00041	**Well ID**	13MWT09
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	8/27/05	**Static Water Level (ft.)**	10.34	**Water Quality Meter**	99K1014 AB
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	23.0	**Pump Control Box**	MP10 1588
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	3655-3802
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/27/05	16:15	10.34	140	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
8/27/05	16:25	10.69	140	Clear	4.37	.408	1.67	0.6	18.74	483.0	NA	NA	1400
8/27/05	16:35	10.70	140	Clear	4.14	.417	1.20	0.5	18.88	528.1	NA	NA	1400
8/27/05	16:45	10.73	140	Clear	4.60	.414	0.82	0.3	18.18	531.9	NA	NA	1400
8/27/05	16:55	10.74	140	Clear	4.60	.416	0.78	0.4	18.32	536.2	NA	NA	-4200
8/27/05	17:05	10.74	140	Clear	4.59	.416	0.74	0.3	18.41	539.1	NA	NA	2800
8/27/05	17:15	10.74	140	Clear	4.67	.417	0.65	0.9	17.86	543.0	NA	NA	1400
8/27/05	17:25	10.75	140	Clear	4.73	.421	0.64	1.3	17.61	542.8	NA	NA	2100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/27/05	17:35	10.75	140	Clear	4.73	.427	.065	1.1	17.69	544.3	NA	NA	1400

Final Purge / Sample Data

One Casing Volume	7.6	**Method**		**Dissolved Oxygen (mg/L)**	.065
Total Vo. Purge (L)	11.2	**Waterlevel (ft.)**	10.75	**Turbidity (NTUs)**	1.1
Start Purge (hrs.)	8/27/05	**Flowrate (mL/min)**	140	**Temp (C)**	17.69
End Purge (hrs.)	8/27/05	**Color**	Clear	**ORP (mV)**	544.3
Total Purge Time (min.)	0	**pH (S.U.)**	4.73	**Salinity**	NA
		Conductivity (mS/cm)	.427	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/27/05	17:40	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8292005-4
✓	8/27/05	17:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8292005-4
✓	8/27/05	17:40	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8292005-4
✓	8/27/05	17:40	SW-846 9060	Total Organic Carbon	-Select-	2	Glass	40ml vials		112G00041-8292005-4

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	**Printed By**	Joseph Lucas
Created Date	8/29/05	**Modified Date**	**Printed Date**	5/2/06

Project Information

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3105
TtNUS Project #	112G00041	**Well ID**	
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well Data
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	8/29/05	**Static Water Level (ft.)**	13.18	**Water Quality Meter**	98F0478 AB
Purge Method	-Select-	**Total Well Depth (ft.)**	22.50	**Pump Control Box**	MP10-1088
Sampling Method		**Well Riser Diameter (in.)**	2	**Turbidity Meter**	4557-3303
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/29/05	08:30	13.18	0	Clear	NA	NA	NA	NA	NA	NA			0
8/29/05	08:40	13.61	140	Clear	5.5*	0.871	2.05	0.80	16.25	120			1400
8/29/05	08:50	13.95	120	Clear	5.5*	0.819	2.33	16	16.47	119			1200
8/29/05	09:00	14.08	100	Clear	5.5*	0.826	2.32	16	16.94	120			1000
8/29/05	09:10	14.21	70	Clear	5.5*	0.830	2.05	14	16.86	120			700
8/29/05	09:20	14.25	70	Clear	5.5*	0.834	1.92	12	16.94	121			700
8/29/05	09:30	14.34	70	Clear	5.5*	0.838	1.81	10	17.12	122			700
8/29/05	09:40	14.39	70	Clear	5.5*	0.836	1.71	7.2	17.33	122			700

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
8/29/05	09:50	14.45	70	Clear	5.5*	0.832	1.60	8.1	17.53	123			700
8/29/05	10:00	14.49	70	Clear	5.5*	0.825	1.49	8.39	17.64	123			700
8/29/05	10:10	14.54	70	Clear	5.5*	0.799	1.29	7.84	17.76	124			700
8/29/05	10:20	14.54	60	Clear	5.5*	0.783	1.16	7.45	17.87	125			600
8/29/05	10:30	14.56	70	Clear	5.5*	0.760	1.05	7.65	17.91	126			700
8/29/05	10:40	14.54	60	Clear	5.5*	0.751	1.01	7.06	19.00	126			600
8/29/05	10:50	14.52	50	Clear	5.5*	0.749	0.98	4.40	19.09	126			500

Final Purge / Sample Data

One Casing Volume	5.8	**Method**		**Dissolved Oxygen (mg/L)**	0.98
Total Vo. Purge (L)	10.9	**Waterlevel (ft.)**	14.52	**Turbidity (NTUs)**	4.40
Start Purge (hrs.)	8/29/05	**Flowrate (mL/min)**	50	**Temp (C)**	19.09
Purge (hrs.)	8/29/05	**Color**	Clear	**ORP (mV)**	126
Total Purge Time (min.)	0	**pH (S.U.)**	5.5*	**Salinity**	
		Conductivity (mS/cm)	0.749	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	8/29/05	10:55	SW-846 9060	Total Organic Carbon	4 ° C / H3PO4	2	Glass	40ml vials		112G00041-8292005-4
✓	8/29/05	10:55	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber		112G00041-8292005-4
✓	8/29/05	10:55	EPA 353.2	Nitrate + Nitrite (as N)	4 ° C / H2SO4	1	Plastic	1L HDPE		112G00041-8292005-4
✓	8/29/05	10:55	Modified SW-846-8330	Explosives RDX Degradation Products	4 ° C	1	Glass	1L Amber		112G00041-8292005-4

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

.a Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW11-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD11
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	-Select-	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	DRY	do	DRY
Time: [Set Now:]	13:20	ph	DRY	salinity	DRY
Depth (ft.)		sc	DRY	orp	
Method:	Other	temp	DRY	other	DRY
		turbidity	DRY		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

:ted	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
X	08/16/2005		SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber	Location was dry.	
X	08/16/2005		SW-846-8330	Explosives Nitroaromatics and	4 ° C	2	Glass	3	Dry location - no surface water. No	

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13FD08160501**
TtNUS Project No.:	112G00041	Sample Location ID	QC
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:	Duplicate of 13SW3005		

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	do
Time: [Set Now:]	11:36	ph	salinity
Depth (ft.)		sc	orp
Method:	Other	temp	other
		turbidity	

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Collected	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	00:00	SW-846-	Explosives	4 ° C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

FOOTER

MS/MSD: N	Duplicate ID No. Y	Signature(s): John Wright

SURFACE WATER SAMPLE LOG SHEET

Tetra Tech NUS, INC.

Entered by John Wright on 08/16/2005

Log Status:

Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW1405**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD14
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	clear	do	7.78
Time: [Set Now:]	10:21	ph	8.23	salinity	NA
Depth (ft.)		sc	0.323	orp	78.6
Method:	Direct Bottle	temp	21.68	other	
		turbidity	9.1		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
08/16/2005	10:30	SW-846-	Explosives	4°C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

Estimated flow with light rain 1-5 gpm.
Sampled a pool 3.5' by 8' depth of 8-12inches.
Very little flow out of pool.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): James Goerdt

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW1505**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD15
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	cloudy	do	8.56
Time: [Set Now:]	10:48	ph	8.60	salinity	NA
Depth (ft.)		sc	0.181	orp	74.6
Method:	Direct Bottle	temp	21.47	other	
		turbidity	655		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Collected	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	10:50	SW-846-	Explosives	4°C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

Note - small pool of standing water.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

e. ..a Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW1605**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD16
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	clear/slight turbid	do	5.40
Time: [Set Now:]	11:11	ph	7.91	salinity	NA
Depth (ft.)		sc	0.215	orp	92.3
Method:	Direct Bottle	temp	21.08	other	
		turbidity	24.5		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Collected	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	11:15	SW-846-	Explosives	4°C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

Note - 3" deep x 12" w x 2.5' long pool.
Very little to no flow out of pool.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Tetra Tech NUS, INC.

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW1904**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD19
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	Clear	do	12.02
Time: [Set Now:]	13:40	ph	8.51	salinity	NA
Depth (ft.)		sc	0.376	orp	134.2
Method:	Direct Bottle	temp	21.35	other	
		turbidity	12		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Collected	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	13:45	SW-846-	Explosives	4°C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

Note - flow est 5 gpm.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

e..a Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW2004**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD20
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	clear	do	2.54
Time: [Set Now:]	13:30	ph	7.58	salinity	NA
Depth (ft.)		sc	0.231	orp	103.3
Method:	Direct Bottle	temp	21.73	other	
		turbidity	3.71		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

..cted	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	13:30	SW-846-	Explosives	4°C	2	Glass	1L Amber		112G00041-

GENERAL OBSERVATIONS AND NOTES

Note - pool 4'x3' x 8" no flow.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Tetra Tech NUS, INC.

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW22-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD22
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	DRY	do	DRY
Time: [Set Now:]	13:12	ph	DRY	salinity	DRY
Depth (ft.)		sc	DRY	orp	
Method:	Other	temp	DRY	other	DRY
		turbidity	DRY		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

Collected	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chai
X	08/16/2005	13:12	SW-846-8330	Explosives Nitroaromatics and Nitramines	4 ° C	2	Glass	1L Amber	Dry location - no surface water. No samples collected	

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by John Wright on 08/16/2005

Log Status:

a Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**13SW3005**
TtNUS Project No.:	112G00041	Sample Location ID	13SW/SD30
Task/Contract No.	CTO 0377	Sampled By:	John Wright
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:	13FD08160501		

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/16/2005	color	clear	do	10.21
Time: [Set Now:]	11:25	ph	8.59	salinity	NA
Depth (ft.)		sc	0.364	orp	71.0
Method:	Direct Bottle	temp	22.52	other	
		turbidity	2.18		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

ted	Date	Time	Analysis	Description	Preservative	Count	Type	Requirements	Observations	Chain#
✔	08/16/2005	11:30	SW-846-	Explosives	4°C	6	Glass	1L Amber	Do	112G00041-

GENERAL OBSERVATIONS AND NOTES

Note - flowing water approx 20 gpm.
Width is 2.2 feet x 0.09 feet v = 2 sec per ft of flow.

FOOTER

MS/MSD: Y	Duplicate ID No. Y	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by Terry Rojahn on 08/27/2005

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**16SW10-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	16SW/SD10
Task/Contract No.	CTO 0377	Sampled By:	Terry Rojahn
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/27/2005	color	Dry	do	Dry
Time: [Set Now:]	09:35	ph	Dry	salinity	Dry
Depth (ft.)	DRY	sc	Dry	orp	
Method:	Other	temp	Dry	other	Dry
		turbidity	Dry		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

No documents found

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by Terry Rojahn on 08/27/2005

Log Status:

Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**16SW12-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	16SW/SD12
Task/Contract No.	CTO 0377	Sampled By:	Terry Rojahn
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/27/2005	color	Dry	do	Dry
Time: [Set Now:]	09:25	ph	Dry	salinity	Dry
Depth (ft.)	DRY	sc	Dry	orp	
Method:	Other	temp	Dry	other	Dry
		turbidity	Dry		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

documents found

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD: N	Duplicate ID No. N	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by Terry Rojahn on 08/27/2005

Log Status:

eData Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**16SW13-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	16SW/SD13
Task/Contract No.	CTO 0377	Sampled By:	Terry Rojahn
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* *Complete all fields in this section before adding sample or analysis data.*

FINAL SAMPLE DATA

Date: [Set Today]	08/27/2005	color	Dry	do	Dry
Time: [Set Now:]	09:20	ph	Dry	salinity	Dry
Depth (ft.)	DRY	sc	Dry	orp	
Method:	Other	temp	Dry	other	Dry
		turbidity	Dry		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

No documents found

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD:	Duplicate ID No.	Signature(s): John Wright

Tetra Tech NUS, INC.

SURFACE WATER SAMPLE LOG SHEET

Entered by Terry Rojahn on 08/27/2005

Log Status:

el a Read-Only

Project Site Name:	CRANE NSWC	Sample ID No	**16SW30-DRY**
TtNUS Project No.:	112G00041	Sample Location ID	16SW/SD30
Task/Contract No.	CTO 0377	Sampled By:	Terry Rojahn
WBS Code:	0000	Concentration:	Low Concentration
Source Type:	Stream	Log Completed:	Y
QA SampleType:			

* Complete all fields in this section before adding sample or analysis data.

FINAL SAMPLE DATA

Date: [Set Today]	08/27/2005	color	Dry	do	Dry
Time: [Set Now:]	09:00	ph	Dry	salinity	Dry
Depth (ft.)	DRY	sc	Dry	orp	
Method:	Other	temp	Dry	other	Dry
		turbidity	Dry		

ANALYSIS ENTRY

Read Only Mode - Click Edit to Add New Data

ANALYSIS DATA

All Entered Analysis Data

N documents found

GENERAL OBSERVATIONS AND NOTES

Location dry - No sample collected.

FOOTER

MS/MSD:	Duplicate ID No.	Signature(s): John Wright

TRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 3261 | PAGE 1 OF ___

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 00041 377	NSWC CRANE	RALPH BASINSKI	(412) 921-8308	LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		TERRY ROJAHN	(412) 921-8857	940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED. EX. AB# 844781356472		SEATTLE, WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G P

PRESERVATIVE USED: 4°C 4°C 4°C/H_2SO_4

TYPE OF ANALYSIS: Exp. Nitroaromatics & Nitramines (8330) RDX Degradation Products (MOD 8330) Nitrate + Nitrite (as N) EPA 353.2

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	Exp. Nitroaromatics & Nitramines (8330)	RDX Degradation Products (MOD 8330)	Nitrate + Nitrite (as N) EPA 353.2						COMMENTS
8/10	0840	13GWT4505	13MW T45	–	–	GW	G	1	2	1	1						MIN. VOL.
8/10	1125	13GWT2106	13MW T21	–	–	GW	G	1	2	1	1						
8/10	1300	13GWT2805	13MW T28	–	–	GW	G	1	2	1	1						
8/10	1515	13GWT4605	13MW T46	–	–	GW	G	1	4	2	3						DO MS/MSD

1. RELINQUISHED BY [signature]	DATE 8/10/05	TIME 1900	1. RECEIVED BY FEDERAL EXPRESS	DATE 8/10/05	TIME 1900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3262 | PAGE 1 OF 1

PROJECT NO: CTO 00041 377	FACILITY: NSWC	PROJECT MANAGER: RALPH BASINSKI	PHONE NUMBER: (412) 921-8308	LABORATORY NAME AND CONTACT: LAUCKS / HUGH PRENTICE
SAMPLERS (SIGNATURE): TR for J. Goerdt		FIELD OPERATIONS LEADER: TERRY ROJAHN	PHONE NUMBER: (412) 921-8857	ADDRESS: 940 S. HARNEY ST.
		CARRIER/WAYBILL NUMBER: FED. EX. AB# 844781356483		CITY, STATE: SEATTLE WA 98108

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G P

PRESERVATIVE USED: 4°C 4°C 4°C/H2SO4

TYPE OF ANALYSIS: EXP. Nitroaromatics + Nitramines (8330) | RDX DEGRADATION PRODUCTS (MOD 8330) | Nitrate + Nitrite EPA 353.2 (ABN)

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	EXP. Nitroaromatics + Nitramines (8330)	RDX DEGRADATION PRODUCTS (MOD 8330)	Nitrate + Nitrite EPA 353.2 (ABN)							COMMENTS
8/11	1023	13GWT3705	13MW T37	–	–	GW	G	4	2	1	1							
8/11	1250	13GWT1706	13MW T17	–	–	GW	G	4	2	1	1							
8/11	1222	13GWT3405	13MW T34	–	–	GW	G	4	2	1	1							
8/11	1350	13GWT4005	13MW T40	–	–	GW	G	4	2	1	1							
8/11	1610	13GWT1106	13MW T11	–	–	GW	G	4	2	1	1							
8/11	1610	13GWT1506	13MW T15	–	–	GW	G	4	2	1	1							
8/11	0000	13FD08110501	QC	–	–	GW	G	4	2	1	1							

1. RELINQUISHED BY	DATE 8/12/05	TIME 1800	1. RECEIVED BY FEDERAL EXPRESS	DATE 8/12/05	TIME 1800
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS:

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	John Wright
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	8/15/05
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-8152005-2	**Carrier**	Fedex	**Printed By**	Joseph Lucas
		Carrier/Waybill No.	8447 8135 6494	**Printed Date**	5/2/06

Chain of Custody Information

Chain of Custody #	**112G00041-8152005-2**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	John Wright
Carrier	Fedex	**Address**	940 South Harney Street	**Date**	8/15/05
Carrier/Waybill No.	8447 8135 6494	**City, State, Zip**	Seattle, WA 98108	**Time**	17:32
		Lab Contact		**Received By:**	Fedex
		Lab Telephone		**Date**	8/15/05
				Time	18:32

Sample Records

	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/12/05	13GWT5104	08:35	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT51	GW	4 ° C	1	Glass	1L Amber	Well dry after collecting approximately 400 ml. (min. volume)
8/12/05	13GWT5104	08:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT51	GW	4 ° C	1	Glass	1L Amber	WL prior to collecting sample on 8/12/05 was 14.73. Water color was tannish.
8/12/05	16GWT0607	16:20	EPA 353.2	Nitrate + Nitrite (as N)	16MWT06	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/12/05	16GWT0607	16:20	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT06	GW	4 ° C	1	Glass	1L Amber	
8/12/05	16GWT0607	16:20	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT06	GW	4 ° C	2	Glass	1L Amber	
8/12/05	16GWT0607	16:20	SW846 9056	Sulfate and Chloride	16MWT06	GW	4 ° C	1	Plastic	1L HDPE	
8/12/05	16GWT0607	16:20	SW-846 8260B	Volatile Organic Compounds	16MWT06	GW	4 ° C / HCL	3	Glass	40ml vials	
8/12/05	16GWT1105	09:50	SW-846 8260B	Volatile Organic Compounds	16MWT11	GW	4 ° C / HCL	3	Glass	40ml vials	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/12/05	16GWT1105	09:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT11	GW	4 ° C	1	Glass	1L Amber	Well dried out after collecting this 1 L amber
8/12/05	16TB08120501	08:30	SW-846 8260B	Volatile Organic Compounds		GW	4 ° C / HCL	2	Glass	40ml vials	Trip Blank
8/13/05	13GWT5104	17:00	EPA 353.2	Nitrate + Nitrite (as N)	13MWT51	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	Water level on 8/13/05 = 14.81.
8/13/05	16GW0306	10:40	EPA 353.2	Nitrate + Nitrite (as N)	16MW03	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/13/05	16GW0306	10:40	SW846 9056	Sulfate and Chloride	16MW03	GW	4 ° C	1	Plastic	1L HDPE	
8/13/05	16GW0306	10:40	SW-846 8260B	Volatile Organic Compounds	16MW03	GW	4 ° C / HCL	3	Glass	40ml vials	
8/13/05	16GW0306	10:40	Modified SW-846-8330	Explosives RDX Degradation Products	16MW03	GW	4 ° C	1	Glass	1L Amber	
8/13/05	16GW0306	10:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW03	GW	4 ° C	2	Glass	1L Amber	
8/13/05	16GW0406	10:45	Modified SW-846-8330	Explosives RDX Degradation Products	16MW04	GW	4 ° C	1	Glass	1L Amber	
8/13/05	16GW0406	10:45	SW846 9056	Sulfate and Chloride	16MW04	GW	None	1	Plastic	1L Amber	
8/13/05	16GW0406	10:45	SW-846 8260B	Volatile Organic Compounds	16MW04	GW	4 ° C / HCL	3	Glass	40ml vials	
8/13/05	16GW0406	10:45	EPA 353.2	Nitrate + Nitrite (as N)	16MW04	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/13/05	16GW0406	10:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW04	GW	4 ° C	2	Glass	-SELECT-	
8/13/05	16GWT1005	15:15	SW846 9056	Sulfate and Chloride	16MWT10	GW	4 ° C	1	Plastic	1L HDPE	
8/13/05	16GWT1005	15:15	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT10	GW	4 ° C	1	Glass	1L Amber	
8/13/05	16GWT1005	15:15	EPA 353.2	Nitrate + Nitrite (as N)	16MWT10	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/13/05	16GWT1005	15:15	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT10	GW	4 ° C	2	Glass	1L Amber	
8/13/05	16GWT1005	15:15	SW-846 8260B	Volatile Organic Compounds	16MWT10	GW	4 ° C / HCL	3	Glass	40ml vials	
8/13/05	16GWT1105	16:10	Modified SW-846-	Explosives RDX Degradation	16MWT11	GW	4 ° C	1	Glass	1L Amber	Water level on 8/13/05 =

			8330	Products							95.91
8/13/05	16GWT1205	11:24	EPA 353.2	Nitrate + Nitrite (as N)	16MWT12	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/13/05	16GWT1205	11:24	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT12	GW	4 ° C	2	Glass	1L Amber	
8/13/05	16GWT1205	11:24	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT12	GW	4 ° C	1	Glass	1L Amber	
8/13/05	16GWT1205	11:24	SW-846 8260B	Volatile Organic Compounds	16MWT12	GW	4 ° C / HCL	3	Glass	40ml vials	
8/13/05	16GWT1205	11:24	SW846 9056	Sulfate and Chloride	16MWT12	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16FD08140501	00:00	SW-846 8260B	Volatile Organic Compounds	DUP	GW	4 ° C / HCL	3	Glass	40ml vials	Potential high VOC concentration (TCE)
8/14/05	16FD08140501	00:00	Modified SW-846-8330	Explosives RDX Degradation Products	DUP	GW	4 ° C	1	Glass	1L Amber	
8/14/05	16FD08140501	00:00	EPA 353.2	Nitrate + Nitrite (as N)	DUP	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/14/05	16FD08140501	00:00	SW846 9056	Sulfate and Chloride	DUP	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16FD08140501	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	DUP	GW	4 ° C	2	Glass	1L Amber	
8/14/05	16GW0206	10:50	SW846 9056	Sulfate and Chloride	16MW02	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16GW0206	10:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW02	GW	4 ° C	2	Glass	1L Amber	
8/14/05	16GW0206	10:50	SW-846 8260B	Volatile Organic Compounds	16MW02	GW	4 ° C / HCL	3	Glass	40ml vials	
8/14/05	16GW0206	10:50	EPA 353.2	Nitrate + Nitrite (as N)	16MW02	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/14/05	16GW0206	10:50	Modified SW-846-8330	Explosives RDX Degradation Products	16MW02	GW	4 ° C	1	Glass	1L Amber	
8/14/05	16GWT0406	10:55	EPA 353.2	Nitrate + Nitrite (as N)	16MWT04	GW	4 ° C / H2SO4	3	Plastic	1L HDPE	DO MS/MSD
8/14/05	16GWT0406	10:55	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT04	GW	4 ° C	3	Glass	1L Amber	DO MS/MSD
8/14/05	16GWT0406	10:55	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT04	GW	4 ° C	6	Glass	1L Amber	DO MS/MSD
8/14/05	16GWT0406	10:55	SW-846 8260B	Volatile Organic Compounds	16MWT04	GW	4 ° C / HCL	9	Glass	40ml vials	DO MS/MSD
8/14/05	16GWT0406	10:55	SW846	Sulfate and	16MWT04	GW	4 ° C	3	Plastic	1L	DO MS/MSD

			9056	Chloride						HDPE	
8/14/05	16GWT0905	14:30	EPA 353.2	Nitrate + Nitrite (as N)	16MWT09	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/14/05	16GWT0905	14:30	SW-846 8260B	Volatile Organic Compounds	16MWT09	GW	4 ° C / HCL	3	Glass	40ml vials	
8/14/05	16GWT0905	14:30	SW846 9056	Sulfate and Chloride	16MWT09	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16GWT0905	14:30	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT09	GW	4 ° C	1	Glass	1L Amber	
8/14/05	16GWT0905	14:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT09	GW	4 ° C	2	Glass	1L Amber	
8/14/05	16GWT1105	15:35	EPA 353.2	Nitrate + Nitrite (as N)	16MWT11	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/14/05	16GWT1105	15:35	SW846 9056	Sulfate and Chloride	16MWT11	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16GWT1305	14:20	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT13	GW	4 ° C	2	Glass	1L Amber	
8/14/05	16GWT1305	14:20	SW846 9056	Sulfate and Chloride	16MWT13	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16GWT1305	14:20	SW-846 8260B	Volatile Organic Compounds	16MWT13	GW	4 ° C / HCL	3	Glass	40ml vials	Potential high VOC concentration (TCE)
8/14/05	16GWT1305	14:20	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT13	GW	4 ° C	1	Glass	1L Amber	
8/14/05	16GWT1305	14:20	EPA 353.2	Nitrate + Nitrite (as N)	16MWT13	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/14/05	16GWT1505	14:30	SW-846 8260B	Volatile Organic Compounds	16MWT15	GW	4 ° C / HCL	3	Glass	40ml vials	
8/14/05	16GWT1505	14:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT15	GW	4 ° C	2	Glass	1L Amber	
8/14/05	16GWT1505	14:30	EPA 353.2	Nitrate + Nitrite (as N)	16MWT15	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/14/05	16GWT1505	14:30	SW846 9056	Sulfate and Chloride	16MWT15	GW	4 ° C	1	Plastic	1L HDPE	
8/14/05	16GWT1505	14:30	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT15	GW	4 ° C	1	Glass	1L Amber	
8/14/05	16GWT1705	10:40	SW-846 8260B	Volatile Organic Compounds	16MWT17	GW	4 ° C / HCL	3	Glass	40ml vials	Potential high VOC concentration (TCE)
8/14/05	16GWT1705	10:40	Modified SW-846-8330	Explosives RDX Degradation Products	16MWT17	GW	4 ° C	1	Glass	1L Amber	
			SW-846-	Explosives						1L	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	John Wright
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	8/16/05
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-8162005-3	**Carrier**	Fedex	**Printed By**	Joseph Lucas
		Carrier/Waybill No.	8447 8135 6520	**Printed Date**	5/2/06

Chain of Custody Information

Chain of Custody #	**112G00041-8162005-3**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	John Wright
Carrier	Fedex	**Address**	940 South Harney Street	**Date**	8/16/05
Carrier/Waybill No.	8447 8135 6520	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice	**Received By:**	Fedex
		Lab Telephone	206-767-5060 x 1028	**Date**	8/16/05
				Time	

Sample Records

C	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/15/05	13GWT0106	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT01	GW	4 ° C	2	Glass	1L Amber	
8/15/05	13GWT0106	11:00	EPA 353.2	Nitrate + Nitrite (as N)	13MWT01	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/15/05	13GWT0106	11:00	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT01	GW	4 ° C	1	Glass	1L Amber	
8/15/05	13GWT1306	14:50	EPA 353.2	Nitrate + Nitrite (as N)	13MWT13	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/15/05	13GWT1306	14:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT13	GW	4 ° C	2	Glass	1L Amber	
8/15/05	13GWT1306	14:50	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT13	GW	4 ° C	1	Glass	1L Amber	
8/15/05	13GWT4705	12:45	EPA 353.2	Nitrate + Nitrite (as N)	13MWT47	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/15/05	13GWT4705	12:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT47	GW	4 ° C	2	Glass	1L Amber	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/15/05	13GWT4705	12:45	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT47	GW	4 ° C	1	Glass	1L Amber	
8/16/05	13FD08160501	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	QC	SW	4 ° C	2	Glass	1L Amber	
8/16/05	13GWT1406	12:00	EPA 353.2	Nitrate + Nitrite (as N)	13MWT14	GW	4 ° C / H2SO4	3	Plastic	1L HDPE	Do MS/MSD.
8/16/05	13GWT1406	12:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT14	GW	4 ° C	6	Glass	1L Amber	Do MS/MSD.
8/16/05	13GWT1406	12:00	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT14	GW	4 ° C	3	Glass	1L Amber	Do MS/MSD.
8/16/05	13SW1405	10:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD14	SW	4°C	2	Glass	1L Amber	
8/16/05	13SW1505	10:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD15	SW	4°C	2	Glass	1L Amber	
8/16/05	13SW1605	11:15	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD16	SW	4°C	2	Glass	1L Amber	
8/16/05	13SW1904	13:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD19	SW	4°C	2	Glass	1L Amber	
8/16/05	13SW2004	13:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD20	SW	4°C	2	Glass	1L Amber	
8/16/05	13SW3005	11:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SW/SD30	SW	4°C	6	Glass	1L Amber	Do MS/MSD.

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	8/29/05
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-8292005-4	**Carrier**	Federal Express	**Printed By**	Joseph Lucas
		Carrier/Waybill No.	8447 8135 6542	**Printed Date**	5/2/06

Chain of Custody Information

Chain of Custody #	**112G00041-8292005-4**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	8/29/05
Carrier/Waybill No.	8447 8135 6542	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x 1028	**Date**	8/29/05
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/27/05	13GWT0907	17:40	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT09	GW	4 ° C	1	Glass	1L Amber	
8/27/05	13GWT0907	17:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT09	GW	4 ° C	2	Glass	1L Amber	
8/27/05	13GWT0907	17:40	EPA 353.2	Nitrate + Nitrite (as N)	13MWT09	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/27/05	13GWT0907	17:40	SW-846 9060	Total Organic Carbon	13MWT09	GW	-Select-	2	Glass	40ml vials	
8/29/05	13GWT3105	10:55	SW-846 9060	Total Organic Carbon	13MWT31	GW	4 ° C / H3PO4	2	Glass	40ml vials	
8/29/05	13GWT3105	10:55	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT31	GW	4 ° C	2	Glass	1L Amber	
8/29/05	13GWT3105	10:55	EPA 353.2	Nitrate + Nitrite (as N)	13MWT31	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	
8/29/05	13GWT3105	10:55	Modified SW-846-8330	Explosives RDX Degradation Products	13MWT31	GW	4 ° C	1	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

8/14/05	16GWT1705	10:40	8330	Nitroaromatics and Nitramines	16MWT17	GW	4 ° C	2	Glass	Amber	
8/14/05	16GWT1705	10:40	EPA 353.2	Nitrate + Nitrite (as N)	16MWT17	GW	4 ° C / H2SO4	1	Plastic	1L HDPE	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
8/14/05	16GWT1705	10:40	SW846 9056	Sulfate and Chloride	16MWT17	GW	4 ° C	1	Plastic	1L HDPE	

General Observations and Notes

Three sample IDs for 16MWT0607 should be changed to 16GWT0607

- End of Report -

Ground Water Level
Entered by John Wright on 08/09/2005

Project Site Name:	CRANE NSWC
TtNUS Project No.:	112G00041
Task/Contract No.	CTO 0377
WBS Code:	0000
Weather Conditions	Hazy, Hot, Humid/90+ oF
Measuring Device:	M-Scope

Sample ID No	
Sample Location ID	SWMU 13
Sampled By:	James Goerdt
Log Completed:	

Well ID	Date	Time	Ref. Elev.	Tot. Depth	Level Ind.	Elevation	Thickness	PID/FID	Tidally Influenced	Comments
13MWT01	08/09/2005	12:10	715.34		9.79	705.55	NA	NA	N	NO PID,Ref Toc
13MWT02	08/09/2005	12:07	704.72	27	16.00	688.72	NA	NA		Reference elevation is TOC
13MWT03	08/09/2005	14:27	721.10		11.18	709.92	NA	NA		Reference elevation is TOC
13MWT04	08/09/2005	11:51	706.84	15	15.83	691.01	NA	NA		Reference elevation is TOC
13MWT05	08/09/2005	11:56	696.44	16	8.31	688.13	NA	NA		Reference elevation is TOC
13MWT06	08/09/2005	14:28	717.93		14.95	702.98	NA	NA		Reference elevation is TOC
13MWT07	08/09/2005	11:54	687.22		3.35	683.87	NA	NA		Reference elevation is TOC
13MWT08	08/09/2005	11:48			8.77	e	NA	NA		Reference elevation is TOC
13MWT09	08/09/2005	14:32	705.90	20	10.40	695.5	NA	NA		Reference elevation is TOC
13MWT10	08/09/2005	11:46			15.32	e	NA	NA		Reference elevation is TOC
13MWT11	08/09/2005	11:42	682.29	15	10.14	672.15	NA	NA		Reference elevation is TOC
13MWT12	08/09/2005	11:29	682.12	20	11.93	670.19	NA	NA		Reference

										elevation is TOC
13MWT13	08/09/2005	14:48	701.98		6.04	695.94	NA	NA		
13MWT14	08/09/2005	15:12	705.5	23	16.09	689.41	NA	NA		
13MWT15	08/09/2005	11:33	696.65	25	15.89	680.76	NA	NA		Reference elevation is TOC
13MWT16	08/09/2005	11:27	684.35	15	14.76	669.59	NA	NA		Reference elevation is TOC
13MWT17	08/09/2005	11:24	693.01	18	11.23	681.78	NA	NA		Reference elevation is TOC
13MWT18	08/09/2005	11:37	702.92	30	20.31	682.61	NA	NA		Reference elevation is TOC
13MWT19	08/09/2005	15:06	705.82		12.08	693.74	NA	NA		Reference elevation is TOC
13MWT20	08/09/2005	14:35	702.07		4.96	697.11	NA	NA		Reference elevation is TOC
13MWT21	08/09/2005	11:21			10.37	e	NA	NA		Reference elevation is TOC
13MWT22	08/09/2005	11:09			9.92	e	NA	NA		Reference elevation is TOC
13MWT23	08/09/2005	14:37	699.14		9.39	689.75	NA	NA		Reference elevation is TOC
13MWT24	08/09/2005	14:39	693.93		10.52	683.41	NA	NA		Reference elevation is TOC
13MWT25	08/09/2005	11:07			9.27	e	NA	NA		Reference elevation is TOC
13MWT26	08/09/2005	11:04			10.79	e	NA	NA		Reference elevation is TOC
13MWT27	08/09/2005	11:31	698.13	20	10.97	687.16	NA	NA		Reference elevation is TOC
13MWT28	08/09/2005	14:05	705.55		71.76	633.79	NA	NA		
13MWT29	08/09/2005	14:50	700.44		6.32	694.12	NA	NA		Reference elevation is TOC
13MWT30	08/09/2005	15:14	698.94	24	13.13	685.81	NA	NA		Reference elevation is TOC
13MWT31	08/09/2005	15:09	696.21	20	13.00	683.21	NA	NA		Reference elevation is

										TOC
13MWT32	08/09/2005	15:19	696.04	18	10.16	685.88	NA	NA		Reference elevation is TOC
3MWT33	08/09/2005	15:04	701.97		13.92	688.05	NA	NA		Reference elevation is TOC
13MWT34	08/09/2005	14:42	695.93		5.81	690.12	NA	NA		Reference elevation is TOC
13MWT35	08/09/2005	16:09	681.73	67	63.98	617.75	NA	NA		Reference elevation is TOC
13MWT36	08/09/2005	15:24	667.21	25	18.80	648.41	NA	NA		Reference elevation is TOC
13MWT37	08/09/2005	15:28	662.29	24.5	13.56	648.73	NA	NA		Reference elevation is TOC
13MWT38	08/09/2005	15:27	661.04	65	61.63	599.41	NA	NA		Reference elevation is TOC
13MWT39	08/09/2005	15:33	654.44	24	16.31	638.13	NA	NA		Reference elevation is TOC
13MWT40	08/09/2005	15:37	667.18	25	17.93	649.25	NA	NA		Reference elevation is TOC
13MWT41	08/09/2005	15:38	665.67	65	66.21	599.46	NA	NA		Reference elevation is TOC
13MWT42	08/09/2005	15:42	670.31	21	20.28	650.03	NA	NA		Reference elevation is TOC
13MWT43	08/09/2005	12:02	690.90		10.05	680.85	NA	NA		Reference elevation is TOC
13MWT44	08/09/2005	12:00	683.82		64.47	619.35	NA	NA		Reference elevation is TOC
13MWT45	08/09/2005	10:30			70.55	e	NA	NA		Reference elevation is TOC
13MWT46	08/09/2005	15:32	653.61	65	57.12	596.49	NA	NA		Reference elevation is TOC
13MWT47	08/09/2005	14:57	677.23	18	3.95	673.28	NA	NA		Reference elevation is TOC
3MWT48	08/09/2005	15:53	NA		12.21	e	NA	NA		No well tag installed.
13MWT49	08/09/2005	15:49	NA		8.65	e	NA	NA		No well tag installed on

										this well (13MWT49).
13MWT50	08/09/2005	15:56	NA		8.76	e	NA	NA		No well tag installed.
13MWT51	08/09/2005	15:58	NA	17.72	14.00	e	NA	NA		No well tag installed.

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

'MU 12 Routine Sampling - August 2005 Round 4 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	John Wright
TtNUS Project #	112GN6878	**PM Telephone**	412-921-8308	**Created Date**	8/16/05
Task/Contract #	CTO 0357	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	NA	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID		**Carrier**		**Printed By**	Joseph Lucas
		Carrier/Waybill No.		**Printed Date**	5/2/06

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
12SG01	8/10/05	13:49	Dry	Dry				
12SG02	8/10/05	14:07	Dry	Dry				
'G03	8/10/05	14:10	Dry	Dry				
12SG04	8/10/05	14:23	Dry	Dry				
12SG05	8/10/05	14:40	Dry	Dry				
12SG06	8/10/05	14:59	Dry	Dry				
12SG07	8/10/05	15:22	Dry	Dry	Dry			
12SG08	8/10/05	13:01	Dry	Dry				

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

SWMU 12 Routine Sampling - August 2005 Round 4 - CRANE NSWC

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
12SG09	8/10/05	13:25	<5 GPM	Estimated	17.55	NA	NA	NA
12SG10	8/10/05	13:10	0.0 GPM	Stagnant	15.05	21	1.85	No flow
12SG11	8/10/05	13:18	<10 GPM	Estimated	20.05	1.3	0.25	1
12SG12	8/10/05	13:30	Dry	Dry				

General Observations and Notes

No Notes

- End of Report -

ROUND 7

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW1104			**Printed By**	James Goerdt
Sample Location ID	13SWSD11			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	yellow	**Temp (C)**	5.22
Time	10:25	**pH (S.U.)**	7.49	**ORP (mV)**	200
Depth (ft.)		**S.C. (mS/cm)**	2.34	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	10.18		
MS/MSD Collected	N	**Turbidity (NTUs)**	14		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	10:25	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

0.1 gpm

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW1406			**Printed By**	James Goerdt
Sample Location ID	13SWSD14			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	5.21
Time	08:44	**pH (S.U.)**	6.63	**ORP (mV)**	233
Depth (ft.)	0.1	**S.C. (mS/cm)**	.605	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	10.91		
MS/MSD Collected	Y	**Turbidity (NTUs)**	6.5		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	08:44	Explosives Nitroaromatics and Nitramines	SW-846-8330	4	Glass	1L Amber	4° C	Do MS/MSD	112G00041-162006-1

General Observations and Notes

l.0 wide

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW1506			**Printed By**	James Goerdt
Sample Location ID	13SWSD15			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	4.88
Time	09:00	**pH (S.U.)**	6.98	**ORP (mV)**	209
Depth (ft.)	.06	**S.C. (mS/cm)**	0.276	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	11.02		
MS/MSD Collected	N	**Turbidity (NTUs)**	34		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	09:00	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

2.0 gpm

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW1606			**Printed By**	James Goerdt
Sample Location ID	13SWSD16			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	5.0
Time	09:22	**pH (S.U.)**	6.87	**ORP (mV)**	244
Depth (ft.)	.05	**S.C. (mS/cm)**	0.614	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	10.67		
MS/MSD Collected	N	**Turbidity (NTUs)**	12		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	09:22	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

1.0 ft/sec.

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW1905			**Printed By**	James Goerdt
Sample Location ID	13SWSD19			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	4.90
Time	11:05	**pH (S.U.)**	7.67	**ORP (mV)**	136
Depth (ft.)	.11	**S.C. (mS/cm)**	0.562	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	9.91		
MS/MSD Collected	N	**Turbidity (NTUs)**	0.50		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	11:05	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

2.0 ft/sec

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW2005			**Printed By**	James Goerdt
Sample Location ID	13SWSD20			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	Clear	**Temp (C)**	5.40
Time	10:46	**pH (S.U.)**	8.11	**ORP (mV)**	163
Depth (ft.)	1.08	**S.C. (mS/cm)**	0.396	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	10.44		
MS/MSD Collected	N	**Turbidity (NTUs)**	3.3		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	10:44	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

0.5' wide

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW2205			**Printed By**	James Goerdt
Sample Location ID	13SWSD22			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	5.12
Time	10:11	**pH (S.U.)**	7.24	**ORP (mV)**	188
Depth (ft.)	0.05	**S.C. (mS/cm)**	0.342	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	9.72		
MS/MSD Collected	N	**Turbidity (NTUs)**	6.7		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	10:11	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

7' wide

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Sample ID Number	13SW3006			**Printed By**	James Goerdt
Sample Location ID	13SWSD30			**Printed Date**	8/3/06

Sample Collection Records

Date	1/5/06	**Color**	clear	**Temp (C)**	4.91
Time	09:37	**pH (S.U.)**	7.15	**ORP (mV)**	199
Depth (ft.)	0.16	**S.C. (mS/cm)**	0.389	**Salinity (%)**	
Method	Direct Bottle	**DO (mg/L)**	11.18		
MS/MSD Collected	N	**Turbidity (NTUs)**	40		
Duplicate Collected	Y				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	1/5/06	09:37	Explosives Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-162006-1

General Observations and Notes

13FD01050601

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	John Wright	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	2/9/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0107
TtNUS Project #	112G00041	**Well ID**	13MWT01
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/23/06	**Static Water Level (ft.)**	6.86	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2	**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/22/06	09:05	6.86	0	Clear	NA	NA	NA	NA	NA	NA			0
1/23/06	09:15	7.32	120	Clear	4.18	0.281	1.48	3.0	6.40	292			1200
1/23/06	09:25	7.15	60	Clear	4.25	0.276	1.25	2.3	6.40	295			600
1/23/06	09:35	7.11	50	Clear	4.29	0.279	1.19	1.2	6.50	299			500
1/23/06	09:45	7.11	50	Clear	4.30	0.270	1.15	1.3	8.88	3.02			500
1/23/06	09:55	7.35	100	Clear	4.35	0.271	0.92	0.60	8.58	305			1000
1/23/06	10:05	7.30	70	Clear	4.35	0.272	0.99	0.55	8.52	307			700
1/23/06	10:15	7.32	80	Clear	4.36	0.273	0.87	0.65	9.15	309			800

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/23/06	10:25	7.30	70	Clear	4.35	0.275	0.88	0.80	8.88	310			700
1/23/06	10:35	7.30	70	Clear	4.39	0.273	0.86	0.45	9.46	309			700
1/23/06	10:45	7.30	70	Clear	4.39	0.274	0.84	0.70	9.12	309			700
1/23/06	10:55	7.30	70	Clear	4.39	0.273	0.81	0.40	9.30	308			700

Final Purge / Sample Data

One Casing Volume	5.03	**Method**	**Dissolved Oxygen (mg/L)**
Total Vo. Purge (L)	8.1	**Waterlevel (ft.)**	**Turbidity (NTUs)**
Start Purge (hrs.)	9:05:00 AM	**Flowrate (mL/min)**	**Temp (C)**
End Purge (hrs.)	10:55:00 AM	**Color**	**ORP (mV)**
Total Purge Time (min.)	110	**pH (S.U.)**	**Salinity**
		Conductivity (mS/cm)	**Other**

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/23/06	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1232006-5

General Observations and Notes

Sample pH (paper) = ~4.5 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/9/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0908
TtNUS Project #	112G00041	**Well ID**	13MWT09
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/9/06	**Static Water Level (ft.)**	9.10	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	23.0	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	Y	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	08:30	9.10		Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/9/06	08:40	9.35	90	Clear	5.51	.769	2.66	25	11.02	319	NA	NA	900
1/9/06	08:50	9.45	150	Clear	5.48	.746	1.49	16	11.94	328	NA	NA	1500
1/9/06	09:00	9.58	150	Clear	5.59	.757	1.00	15	12.38	330	NA	NA	1500
1/9/06	09:10	9.62	150	Clear	5.61	.760	0.92	9.7	12.30	325	NA	NA	1500
1/9/06	09:20	9.66	150	Clear	5.61	.767	0.89	7.6	12.21	321	NA	NA	1500
1/9/06	09:30	9.68	130	Clear	5.63	.776	0.83	3.2	12.13	317	NA	NA	0
1/9/06	09:40	9.64	130	Clear	5.63	.779	0.78	5.7	12.15	310	NA	NA	1300

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	09:50	9.63	130	Clear	5.62	.782	0.76	9.6	12.20	306	NA	NA	2600
1/9/06	10:00	9.64	130	Clear	5.62	.784	0.73	7.8	12.22	302	NA	NA	3900

Final Purge / Sample Data

One Casing Volume	8.4	**Method**		**Dissolved Oxygen (mg/L)**	0.73
Total Vo. Purge (L)	8202.6	**Waterlevel (ft.)**	9.64	**Turbidity (NTUs)**	7.8
Start Purge (hrs.)	1/9/06	**Flowrate (mL/min)**	130	**Temp (C)**	12.22
End Purge (hrs.)	1/9/06	**Color**	Clear	**ORP (mV)**	302
Total Purge Time (min.)	0	**pH (S.U.)**	5.62	**Salinity**	NA
		Conductivity (mS/cm)	.784	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/9/06	10:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-192006-2

General Observations and Notes

13FD01090601

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Michael Quaill	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	6/13/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1107
TtNUS Project #	112G00041	**Well ID**	13MWT11
Task/Contract #	CTO 0377	**Well Type**	-Select-
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/24/06	**Static Water Level (ft.)**	8.41	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/24/06	08:40	8.41	0	Slightly Turbid	NA	NA	NA	NA	NA	NA			0
1/24/06	08:50	9.03	200	Clear	4.23	0.315	1.13	120	9.84	292			2000
1/24/06	09:00	9.33	150	Clear	4.15	0.311	1.00	45	9.75	291			1500
1/24/06	09:10	9.41	110	Clear	4.17	0.312	1.00	15	9.77	292			1100
1/24/06	09:20	9.54	110	Clear	4.18	0.311	0.87	8.9	9.72	291			1100
1/24/06	09:30	9.51	100	Clear	4.18	0.308	0.83	8.3	9.52	290			1000
1/24/06	09:35	9.49	100	Clear	4.19	0.307	0.82	8.8	9.55	290			500

Final Purge / Sample Data

One Casing Volume	5.8	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.82
Total Vo. Purge (L)	7.2	**Waterlevel (ft.)**	9.49	**Turbidity (NTUs)**	8.8
Start Purge (hrs.)	8:40:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	9.55
End Purge (hrs.)	9:35:00 AM	**Color**	Clear	**ORP (mV)**	290
Total Purge Time (min.)	55	**pH (S.U.)**	4.19	**Salinity**	
		Conductivity (mS/cm)	0.307	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/24/06	09:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1242006-6

General Observations and Notes

Sample pH (paper) = ~4.2 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/8/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1307
TtNUS Project #	112G00041	**Well ID**	13MWT13
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/8/06	**Static Water Level (ft.)**	4.65	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	21.40	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/8/06	11:20	4.65	110	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/8/06	11:30	4.86	110	Slightly Turbid	4.27	.124	3.74	85	11.29	393	NA	NA	1100
1/8/06	11:40	4.89	110	Clear	4.28	.126	3.46	39	11.18	398	NA	NA	1100
1/8/06	11:50	4.89	110	Clear	4.28	.127	3.38	22	11.05	398	NA	NA	1100
1/8/06	12:00	4.89	110	Clear	4.26	.127	3.34	16	11.12	400	NA	NA	1100
1/8/06	12:10	4.88	110	Clear	4.26	.126	3.30	9.5	11.26	399	NA	NA	1100
1/8/06	12:20	4.89	110	Clear	4.28	.126	3.23	7.7	11.43	400	NA	NA	1100
1/8/06	12:30	4.89	110	Clear	4.27	.129	3.18		11.42	400	NA	NA	1100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/8/06	12:40	4.87	110	Clear	4.27	.128	3.17	5.2	11.66	400	NA	NA	1100
1/8/06	12:50	4.85	110	Clear	4.27	.127	3.14	5.1	11.91	396	NA	NA	1100
1/8/06	13:00	4.88	110	Clear	4.28	.127	3.12	4.3	12.32	396	NA	NA	1100

Final Purge / Sample Data

One Casing Volume	10.1	**Method**		**Dissolved Oxygen (mg/L)**	3.12
Total Vo. Purge (L)	8801.1	**Waterlevel (ft.)**	4.88	**Turbidity (NTUs)**	4.3
Start Purge (hrs.)	1/8/06	**Flowrate (mL/min)**	110	**Temp (C)**	12.32
End Purge (hrs.)	1/8/06	**Color**	Clear	**ORP (mV)**	396
Total Purge Time (min.)	0	**pH (S.U.)**	4.28	**Salinity**	NA
		Conductivity (mS/cm)	.127	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/8/06	13:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-192006-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/9/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1407
TtNUS Project #	112G00041	**Well ID**	13MWT14
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/9/06	**Static Water Level (ft.)**	14.57	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	25.55	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	13:45	14.57	60	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/9/06	13:55	14.78	60	Clear	5.83	1.37	4.80	27	11.43	246	NA	NA	600
1/9/06	14:05	14.71	60	Clear	5.76	1.29	4.45	8.5	10.58	149	NA	NA	0
1/9/06	14:15	14.73	60	Clear	5.74	1.24	4.19	10	10.88	128	NA	NA	600
1/9/06	14:25	14.73	60	Clear	5.75	1.22	4.05	6.9	10.87	122	NA	NA	1200
1/9/06	14:35	14.72	60	Clear	5.75	1.21	3.94	5.7	10.78	118	NA	NA	1800
1/9/06	14:45	14.70	60	Clear	5.75	1.17	9.8	3.72	11.01	114	NA	NA	2400
1/9/06	15:05	14.72	60	Clear	5.76	1.17	3.23	5.9	10.62	108	NA	NA	3600

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	15:15	14.71	60	Clear	5.75	1.15	3.21	6.4	10.58	110	NA	NA	4200
1/9/06	15:25	14.73	60	Clear	5.76	1.12	3.32	5.3	10.67	106	NA	NA	4800
1/9/06	15:35	14.72	60	Clear	5.75	1.09	3.21	4.7	10.73	108	NA	NA	4860
1/9/06	15:45	14.72	60	Clear	5.76	1.07	1.50	4.7	11.05	102	NA	NA	600
1/9/06	15:55	14.73	60	Clear	5.77	1.06	1.46	4.2	10.95	98	NA	NA	0
1/9/06	16:05	14.74	60	Clear	5.77	1.03	1.43	4.1	10.98	97	NA	NA	600

Final Purge / Sample Data

One Casing Volume	6.6	**Method**		**Dissolved Oxygen (mg/L)**	1.43
Total Vo. Purge (L)	24060.6	**Waterlevel (ft.)**	14.74	**Turbidity (NTUs)**	4.1
Start Purge (hrs.)	1/9/06	**Flowrate (mL/min)**	60	**Temp (C)**	10.98
End Purge (hrs.)	1/9/06	**Color**	Clear	**ORP (mV)**	97
Total Purge Time (min.)	0	**pH (S.U.)**	5.77	**Salinity**	NA
		Conductivity (mS/cm)	1.03	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/9/06	16:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1112006-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/19/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1507
TtNUS Project #	112G00041	**Well ID**	13MWT15
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	T. Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/19/06	**Static Water Level (ft.)**	14.48	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	27.87	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/19/06	12:05	14.48	0	Clear	NA	NA	NA	NA	NA	NA			0
1/19/06	12:15	14.95	60	Clear	3.76	0.570	1.97	20	13.69	359			600
1/19/06	12:25	15.62	120	Clear	3.77	0.547	1.07	23	13.89	364			1200
1/19/06	12:35	15.70	100	Clear	3.84	0.510	1.04	19	13.79	345			1000
1/19/06	12:45	16.15	120	Clear	3.84	0.498	0.77	15	13.45	344			1200
1/19/06	12:55	15.80	70	Clear	3.91	0.477	0.69	15	13.76	330			700
1/19/06	13:05	15.80	80	Clear	3.91	0.464	0.63	16	13.48	326			800
1/19/06	13:15	15.80	80	Clear	3.92	0.457	0.60	14	13.70	325			800

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/19/06	13:25	15.80	80	Clear	3.91	0.454	0.62	13	13.60	326			800
1/19/06	13:35	15.80	80	Clear	3.91	0.452	0.60	11	13.62	327			800
1/19/06	13:45	15.80	80	Clear	3.92	0.449	0.58	10	13.60	326			800

Final Purge / Sample Data

One Casing Volume	8.3	**Method**		**Dissolved Oxygen (mg/L)**	0.58
Total Vo. Purge (L)		**Waterlevel (ft.)**	15.80	**Turbidity (NTUs)**	10
Start Purge (hrs.)	1/19/06	**Flowrate (mL/min)**	80	**Temp (C)**	13.60
End Purge (hrs.)	1/19/06	**Color**	Clear	**ORP (mV)**	326
Total Purge Time (min.)	0	**pH (S.U.)**	3.92	**Salinity**	
		Conductivity (mS/cm)	0.449	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/19/06	13:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1192006-4

General Observations and Notes

Sample pH (paper) = ~4.0 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Lee Leck	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	7/7/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1707
TtNUS Project #	112G00041	**Well ID**	13MWT17
Task/Contract #	CTO 0377	**Well Type**	-Select-
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/24/06	**Static Water Level (ft.)**	8.28	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	18.00	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/24/06	10:25	8.28	0	Clear	NA	NA	NA	NA	NA	NA			0
1/24/06	10:35	8.29	40	Clear	5.28	0.346	1.82	7.5	10.61	262			400
1/24/06	10:45	8.31	110	Clear	5.32	0.363	0.79	3.9	10.97	256			1100
1/24/06	10:55	8.31	110	Clear	5.33	0.359	0.59	1.9	11.60	250			1100
1/24/06	11:05	8.31	110	Clear	5.32	0.360	0.59	1.9	11.64	245			1100
1/24/06	11:15	8.31	110	Clear	5.32	0.362	0.53	1.5	11.84	240			0
1/24/06	11:25	8.32	110	Clear	5.32	0.359	0.49	1.0	12.11	235			1100
1/24/06	11:35	8.32	110	Clear	5.29	0.366	0.48	1.0	12.11	232			1100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/24/06	11:45	8.32	110	Clear	5.28	0.368	0.48	1.1	12.05	230			1100

Final Purge / Sample Data

One Casing Volume	7.3	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.48
Total Vo. Purge (L)	2601.1	**Waterlevel (ft.)**	8.32	**Turbidity (NTUs)**	1.1
		Flowrate (mL/min)	110	**Temp (C)**	12.05
Start Purge (hrs.)		**Color**	Clear	**ORP (mV)**	230
End Purge (hrs.)	12:00:00 AM	**pH (S.U.)**	5.28	**Salinity**	
Total Purge Time (min.)	0	**Conductivity (mS/cm)**	0.368	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/24/06	11:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1242006-6

General Observations and Notes

Sample pH (paper)= ~5.25 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/19/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2107
TtNUS Project #	112G00041	**Well ID**	13MWT21
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	T. Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/19/06	**Static Water Level (ft.)**	7.97	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	17.76	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/19/06	08:55	7.97	0	Clear	NA	NA	NA	NA	NA	NA			0
1/19/06	09:05	8.55	140	Clear	6.54	0.376	6.52	14	10.40	239			1400
1/19/06	09:15	8.43	100	Clear	6.66	0.376	6.50	12	10.20	246			1000
1/19/06	09:25	8.55	110	Clear	6.76	0.374	6.46	8.6	10.51	252			1100
1/19/06	09:35	8.58	100	Clear	6.80	0.374	6.41	7.8	10.51	255			1000
1/19/06	09:45	8.59	100	Clear	6.82	0.373	6.39	5.6	10.65	257			1000
1/19/06	09:55	8.61	100	Clear	6.83	0.371	6.41	5.0	10.70	259			1000

Final Purge / Sample Data

One Casing Volume	6.0	**Method**		**Dissolved Oxygen (mg/L)**	6.41
Total Vo. Purge (L)	4501	**Waterlevel (ft.)**	8.61	**Turbidity (NTUs)**	5.0
Start Purge (hrs.)	1/19/06	**Flowrate (mL/min)**	100	**Temp (C)**	10.70
End Purge (hrs.)	1/19/06	**Color**	Clear	**ORP (mV)**	259
Total Purge Time (min.)	0	**pH (S.U.)**	6.83	**Salinity**	
		Conductivity (mS/cm)	0.371	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/19/06	10:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1192006-4

General Observations and Notes

Sample pH (paper) = ~6.5 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/10/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2806
TtNUS Project #	112G00041	**Well ID**	13MWT28
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/9/06	**Static Water Level (ft.)**	77.52	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	90.40	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	10:35	77.52		Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/9/06	10:45	78.45	150	Clear	7.55	1.09	5.04	55	12.71	228	NA	NA	1500
1/9/06	10:55	80.55	150	Clear	7.63	1.24	1.11	21	12.50	203	NA	NA	1500
1/9/06	11:05	81.09	150	Clear	7.65	1.24	0.96	11	12.61	190	NA	NA	150
1/9/06	11:15	82.12	150	Clear	7.67	1.20	1.39	78	12.75	177	NA	NA	1500
1/9/06	11:25	82.75	150	Clear	7.68	1.20	1.49	150	12.88	170	NA	NA	3000
1/9/06	11:45	84.96	150	Clear	7.72	1.24	0.83	110	12.81	146	NA	NA	6000
1/9/06	11:55	85.55	150	Clear	7.72	1.24	0.78	98	12.90	141	NA	NA	7500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/9/06	12:05	86.17	160	Clear	7.73	1.23	0.82	110	12.28	134	NA	NA	9600
1/9/06	12:15	87.59	160	Clear	7.73	1.22	0.75	74	12.27	127	NA	NA	11200
1/9/06	12:25		160	Clear	7.75	1.22	0.78	55	12.07	119	NA	NA	12800
1/9/06	12:35		160	Clear	7.75	1.23	1.78	54	11.52	112	NA	NA	1600

Final Purge / Sample Data

One Casing Volume	7.8	**Method**		**Dissolved Oxygen (mg/L)**	1.78
Total Vo. Purge (L)	54751.6	**Waterlevel (ft.)**		**Turbidity (NTUs)**	54
Start Purge (hrs.)	1/9/06	**Flowrate (mL/min)**	160	**Temp (C)**	11.52
End Purge (hrs.)	1/9/06	**Color**	Clear	**ORP (mV)**	112
Total Purge Time (min.)	0	**pH (S.U.)**	7.75	**Salinity**	NA
		Conductivity (mS/cm)	1.23	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/10/06	08:25	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1112006-3

General Observations and Notes

Well historically dries out. Well was purged dry on 1/9/06 and sampled 1/10/06.

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/10/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3106
TtNUS Project #	112G00041	**Well ID**	13MWT31
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/10/06	**Static Water Level (ft.)**	11.09	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	22.35	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?		**Well Volumes Req.**			
Duplicate Sample Collected?		**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/10/06	09:05	11.09		Slightly Turbid	NA	NA	NA	NA	NA	NA	NA	NA	0
1/10/06	09:15	12.22	60	Slightly Turbid	5.43	2.07	4.44	200	9.70	237	NA	NA	600
1/10/06	09:25	12.18	60	Slightly Turbid	5.43	2.07	4.33	150	8.97	245	NA	NA	600
1/10/06	09:35	12.20	60	Slightly Turbid	5.43	2.08	4.24	98	8.75	255	NA	NA	600
1/10/06	09:45	12.30	60	Clear	5.45	2.09	4.12	84	8.90	260	NA	NA	1200
1/10/06	09:55	12.36	60	Clear	5.46	2.06	3.99	87	8.87	265	NA	NA	1800
1/10/06	10:05	12.36	60	Clear	5.47	2.08	3.91	82	8.41	268	NA	NA	2400
1/10/06	10:15	12.28	60	Clear	5.47	2.04	3.77	80	8.21	271	NA	NA	2400

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/10/06	10:25	12.32	60	Clear	5.49	2.04	3.58	59	8.25	272	NA	NA	3600
1/10/06	10:35	23.34	60	Clear	5.50	2.00	3.34	42	8.39	271	NA	NA	4200
1/10/06	10:45	12.36	60	Clear	5.50	1.92	3.05	35	8.10	272	NA	NA	4800
1/10/06	10:55	12.34	60	Clear	5.52	1.87	2.78	30	8.62	271	NA	NA	5400
1/10/06	11:05	12.33	60	Clear	5.52	1.81	2.58	28	8.60	271	NA	NA	6000
1/10/06	11:15	12.35	60	Clear	5.54	1.73	2.22	26	8.55	270	NA	NA	6600
1/10/06	11:25	12.35	60	Clear	5.54	1.69	2.16	25	8.51	272	NA	NA	7200
1/10/06	11:35	12.35	60	Clear	5.54	1.68	2.12	18	8.76	273	NA	NA	6600
1/10/06	11:45	12.37	60	Clear	5.55	1.65	2.09	14	8.52	273	NA	NA	600
1/10/06	11:55	12.38	60	Clear	5.55	1.63	2.02	11	8.69	274	NA	NA	1200
1/10/06	12:05	12.36	60	Clear	5.56	1.58	1.93	8.8	8.65	272	NA	NA	1800

Final Purge / Sample Data

One Casing Volume	6.8	**Method**		**Dissolved Oxygen (mg/L)**	1.93
Total Vo. Purge (L)	54601.2	**Waterlevel (ft.)**	12.36	**Turbidity (NTUs)**	8.8
Start Purge (hrs.)	1/10/06	**Flowrate (mL/min)**	60	**Temp (C)**	8.65
End Purge (hrs.)	1/10/06	**Color**	Clear	**ORP (mV)**	272
Total Purge Time (min.)	0	**pH (S.U.)**	5.56	**Salinity**	NA
		Conductivity (mS/cm)	1.58	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/10/06	12:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1112006-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/10/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3406
TtNUS Project #	112G00041	**Well ID**	13MWT34
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/10/06	**Static Water Level (ft.)**	6.01	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	22.90	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/10/06	13:30	6.01		Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/10/06	13:40	6.63	130	Clear	5.13	.394	4.67	43	10.76	308	NA	NA	1300
1/10/06	13:50	6.61	130	Clear	5.13	.393	2.25	32	10.52	313	NA	NA	1300
1/10/06	14:00	6.61	130	Clear	5.12	.393	1.89	26	10.76	317	NA	NA	0
1/10/06	14:10	6.61	130	Clear	5.13	.390	1.68	28	10.70	318	NA	NA	2600
1/10/06	14:20	6.62	130	Clear	5.13	.392	1.48	21	11.10	321	NA	NA	1300
1/10/06	14:30	6.63	130	Clear	5.13	.392	1.32	18	11.19	323	NA	NA	1300
1/10/06	14:40	6.60	130	Clear	5.13	.392	1.28	16	11.18	323	NA	NA	1300

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/10/06	14:50	6.61	130	Clear	5.12	.389	1.17	18	10.84	325	NA	NA	1300
1/10/06	15:00	6.62	130	Clear	5.11	.392	1.14	17	10.63	326	NA	NA	1300
1/10/06	15:10	6.59	130	Clear	5.13	.390	1.04	12	11.05	327	NA	NA	1300
1/10/06	15:20	6.63	130	Clear	5.12	.391	1.00	17	10.87	NA	NA		1300
1/10/06	15:30	6.61	130	Clear	5.13	.390	0.98	19	10.89	328	NA	NA	1300
1/10/06	15:40	6.66	130	Clear	5.12	.392	0.92	17	10.61	328	NA	NA	1300
1/10/06	15:50	6.60	130	Clear	5.12	.389	0.87	4.8	10.84	328	N	NA	1300
1/10/06	16:00	6.63	130	Clear	5.12	.391	0.84	5.2	10.75	329	NA	NA	15600

Final Purge / Sample Data

One Casing Volume	10.2	**Method**	1	**Dissolved Oxygen (mg/L)**	0.84
Total Vo. Purge (L)	19.5	**Waterlevel (ft.)**	6.63	**Turbidity (NTUs)**	5.2
Start Purge (hrs.)	1:30:00 PM	**Flowrate (mL/min)**	130	**Temp (C)**	10.75
End Purge (hrs.)	4:00:00 PM	**Color**	Clear	**ORP (mV)**	329
Total Purge Time (min.)	150	**pH (S.U.)**	5.12	**Salinity**	NA
		Conductivity (mS/cm)	.391	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/10/06	16:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1112006-3

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/9/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3706
TtNUS Project #	112G00041	**Well ID**	13MWT37
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/6/06	**Static Water Level (ft.)**	14.46	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	27.20	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	14:50	14.46	120	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/6/06	15:00	14.80	120	Clear	5.61	.163	9.58	44	9.87	225	NA	NA	1200
1/6/06	15:10	15.21	120	Clear	5.61	.236	6.76	20	11.25	221	NA	NA	1200
1/6/06	15:20	15.30	120	Clear	5.61	.267	8.52	18	11.08	220	NA	NA	1200
1/6/06	15:30	15.46	120	Clear	5.59	.271	8.25	17	11.36	229	NA	NA	1200
1/6/06	15:40	15.51	120	Clear	5.60	.280	9.50	12	11.14	226	NA	NA	1200
1/6/06	15:50	15.57	120	Clear	5.60	.284	9.21	5.5	10.84	224	NA	NA	1200
1/6/06	16:00	15.18	90	Clear	5.63	.343	10.99	5.9	8.42	218	NA	NA	900

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	16:10	15.22	100	Clear	5.59	.323	9.71	8.9	9.59	228	NA	NA	1000
1/6/06	16:20	15.18	100	Clear	5.59	.318	9.54	7.6	9.38	231	NA	NA	1000
1/6/06	16:30	15.20	100	Clear	5.59	.312	9.32	5.2	9.57	233	NA	NA	1000
1/6/06	16:40	15.17	100	Clear	5.60	.309	9.29	4.3	9.61	235	NA	NA	1000

Final Purge / Sample Data

One Casing Volume	7.7	**Method**		**Dissolved Oxygen (mg/L)**	9.29
Total Vo. Purge (L)	11101	**Waterlevel (ft.)**	15.17	**Turbidity (NTUs)**	4.3
Start Purge (hrs.)	1/6/06	**Flowrate (mL/min)**	100	**Temp (C)**	9.61
End Purge (hrs.)	1/6/06	**Color**	Clear	**ORP (mV)**	235
Total Purge Time (min.)	0	**pH (S.U.)**	5.60	**Salinity**	NA
		Conductivity (mS/cm)	.309	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/6/06	16:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-192006-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/6/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4006
TtNUS Project #	112G00041	**Well ID**	13MWT40
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	Low Concentration

Well and Sample Data

Date	1/6/06	**Static Water Level (ft.)**	18.51	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	27.75	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/3/06	08:55	18.51	100	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/6/06	09:05	18.84	100	Clear	5.68	.384	9.02	21	11.50	268	NA	NA	1000
1/6/06	09:15	18.87	100	Clear	5.67	.382	8.73	18	11.58	268	NA	NA	1000
1/6/06	09:25	18.89	100	Clear	5.68	.384	8.64	11	11.70	270	NA	NA	1000
1/6/06	09:35	18.92	100	Clear	5.67	.383	8.55	10	11.80	270	NA	NA	1000
1/6/06	09:45	18.97	100	Clear	5.68	.383	8.57	7.5	11.69	270	NA	NA	1000
1/6/06	09:55	18.96	100	Clear	5.67	.383	8.54	7.3	11.59	270	NA	NA	1000
1/6/06	10:05	18.97	100	Clear	5.68	.383	8.46	6.4	11.65	269	NA	NA	1000

Final Purge / Sample Data

One Casing Volume	5.6	**Method**		**Dissolved Oxygen (mg/L)**	8.46
Total Vo. Purge (L)	5001	**Waterlevel (ft.)**	18.97	**Turbidity (NTUs)**	6.4
Start Purge (hrs.)	1/6/06	**Flowrate (mL/min)**	100	**Temp (C)**	11.65
End Purge (hrs.)	1/3/06	**Color**	Clear	**ORP (mV)**	269
Total Purge Time (min.)	-4320	**pH (S.U.)**	5.68	**Salinity**	NA
		Conductivity (mS/cm)	.383	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/6/06	10:08	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-162006-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	6/1/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4506
TtNUS Project #	112G00041	**Well ID**	13MWT45
Task/Contract #	CTO 0377	**Well Type**	CRA
WBS Code #	0000	**Sampled By**	T. Rojahn
		Concentration	-Select-

Well and Sample Data

Date	1/18/06	**Static Water Level (ft.)**	70.50	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	84.00	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/18/06	14:50	70.50	0	Clear	NA	NA	NA	NA	NA	NA			0
1/18/06	15:00	72.43	130	Clear	6.87	0.696	1.17	16	12.85	143			1300
1/18/06	15:10	73.00	150	Clear	6.80	0.656	0.96	9.0	12.77	129			1500
1/18/06	15:20	73.73	120	Clear	6.73	0.636	0.80	4.4	12.38	128			1200
1/18/06	15:30	74.50	130	Clear	6.70	0.616	1.37	9.6	12.91	131			1300
1/18/06	15:40	75.28	150	Clear	6.72	0.617	1.48	14	12.78	137			1500
1/18/06	15:50	76.10	150	Clear	6.77	0.622	1.21	19	12.82	137			1500
1/18/06	16:00	76.93	150	Clear	6.79	0.635	1.04	20	12.88	135			1500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/18/06	16:10	77.75	150	Clear	6.82	0.648	0.88	23	12.90	130			1500
1/18/06	16:20	78.58	150	Clear	6.91	0.674	0.74	18	12.58	158			1500
1/18/06	16:30	*	150	Clear	7.03	0.698	0.71	15	11.81	155			1500
1/18/06	16:40	*	150	Clear	7.10	0.714	0.75	16	10.40	153			1500
1/18/06	16:50	*	150	Clear	7.14	0.724	0.85	13	9.25	149			1500
1/18/06	16:55	*	100	Clear	7.17	0.733	0.94	14	9.10	146			500

Final Purge / Sample Data

One Casing Volume	8.3	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.94
Total Vo. Purge (L)	17.8	**Waterlevel (ft.)**	*	**Turbidity (NTUs)**	14
Start Purge (hrs.)	2:50:00 PM	**Flowrate (mL/min)**	100	**Temp (C)**	9.10
End Purge (hrs.)	4:55:00 PM	**Color**	Clear	**ORP (mV)**	146
Total Purge Time (min.)	125	**pH (S.U.)**	7.17	**Salinity**	
		Conductivity (mS/cm)	0.733	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/19/06	10:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1192006-4

General Observations and Notes

Sample pH (paper) = ~6.8 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	John Wright	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	5/22/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4606
TtNUS Project #	112G00041	**Well ID**	13MWT46
Task/Contract #	CTO 0377	**Well Type**	-Select-
WBS Code #	0000	**Sampled By**	James Goerdt
		Concentration	-Select-

Well and Sample Data

Date	1/6/06	**Static Water Level (ft.)**	57.56	**Water Quality Meter**	4143006
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**		**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	4073-1103
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	12:35	57.56	110	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
1/6/06	12:45	57.59	110	Clear	6.59	.987	8.85	94	10.43	-22	NA	NA	1100
1/6/06	12:55	57.55	110	Clear	6.59	.994	8.06	58	10.22	-25	NA	NA	1100
1/6/06	13:05	57.58	110	Clear	6.57	1.02	6.21	12	10.21	-26	NA	NA	1100
1/6/06	13:15	57.57	110	Clear	6.57	1.08	5.01	13	10.19	-29	NA	NA	1100
1/6/06	13:25	57.57	110	Clear	6.56	1.07	4.62	9.5	10.13	-28	NA	NA	1100
1/6/06	13:35	57.58	110	Clear	6.56	1.07	4.02	10	10.09	-28	NA	NA	1100
1/6/06	13:45	57.59	110	Clear	6.56	1.07	3.31	7.8	10.18	-29	NA	NA	1100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	13:55	57.58	110	Clear	6.56	1.07	2.73	7.6	10.25	-30	NA	NA	1100
1/6/06	14:05	57.58	110	Clear	6.56	1.07	2.68	6.4	10.31	-30	NA	NA	1100
1/6/06	14:15	57.57	110	Clear	6.56	1.07	2.64	6.2	10.28	-31	NA	NA	1100

Final Purge / Sample Data

One Casing Volume	6.1	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	2.64
Total Vo. Purge (L)	11	**Waterlevel (ft.)**	57.57	**Turbidity (NTUs)**	6.2
		Flowrate (mL/min)	110	**Temp (C)**	10.28
Start Purge (hrs.)	12:35:00 PM	**Color**	Clear	**ORP (mV)**	-31
End Purge (hrs.)	2:15:00 PM	**pH (S.U.)**	6.56	**Salinity**	NA
Total Purge Time (min.)	100	**Conductivity (mS/cm)**	1.07	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/6/06	14:20	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-192006-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	John Wright	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/9/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4706
TtNUS Project #	112G00041	**Well ID**	13MWT47
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/6/06	**Static Water Level (ft.)**	7.64	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	20.23	**Pump Control Box**	MP10-1578
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	0359-4197
MS/MSD Collected?	Y	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	09:25	7.64	0	Clear	na	na	na	na	na	na	na	na	0
1/6/06	09:35	8.8	170	Clear	3.74	1.31	0.99	60	9.36	321			1700
1/6/06	09:45	8.78	160	Clear	3.75	1.32	1.01	55	8.67	316			1600
1/6/06	09:55	8.76	120	Clear	3.75	1.31	0.90	45	8.46	313			1200
1/6/06	10:05	8.78	120	Clear	3.77	1.31	0.78	29	8.69	310			1200
1/6/06	10:15	8.78	120	Clear	3.78	1.32	0.75	26	8.75	309			1200
1/6/06	10:25	8.78	120	Clear	3.79	1.32	0.71	19	8.69	307			1200
1/6/06	10:35	8.78	120	Clear	3.79	1.32	0.64	16	8.72	306			1200

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/6/06	10:45	8.80	120	Clear	3.79	1.32	0.64	12	8.72	304			1200
1/6/06	10:55	8.81	120	Clear	3.79	1.32	0.64	10	8.66	303			1200

Final Purge / Sample Data

One Casing Volume	7.8
Total Vo. Purge (L)	4501.2
Start Purge (hrs.)	1/6/06
End Purge (hrs.)	1/6/06
Total Purge Time (min.)	0

Method	
Waterlevel (ft.)	8.81
Flowrate (mL/min)	120
Color	Clear
pH (S.U.)	3.79
Conductivity (mS/cm)	1.32

Dissolved Oxygen (mg/L)	0.64
Turbidity (NTUs)	10
Temp (C)	8.66
ORP (mV)	303
Salinity	
Other	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✗	1/3/06	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		
✓	1/6/06	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	4	Glass	1L Amber		112G00041-162006-1
✗	1/6/06	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	4	Glass	1L Amber		

General Observations and Notes

Sample pH paper ~3.9 SUs

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	James Goerdt	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	1/3/06	**Modified Date**	1/20/06	**Printed Date**	7/11/06

Project Information

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT5105
TtNUS Project #	112G00041	**Well ID**	13MWT51
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #	0000	**Sampled By**	Terry Rojahn
		Concentration	Low Concentration

Well and Sample Data

Date	1/20/06	**Static Water Level (ft.)**	4.30	**Water Quality Meter**	4103008
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	17.75	**Pump Control Box**	MP10-1334
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2"	**Turbidity Meter**	0359-4197
MS/MSD Collected?	N	**Well Volumes Req.**			
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/20/06	15:10	4.30	0	Clear	NA	NA	NA	NA	NA	NA			0
1/20/06	15:20	4.45	110	Clear	7.17	0.241	5.88	110	8.65	206			1100
1/20/06	15:30	4.44	80	Clear	7.09	0.236	5.76	90	8.53	210			800
1/20/06	15:40	4.44	80	Clear	7.10	0.233	5.65	50	8.47	209			800
1/20/06	15:50	4.45	80	Clear	7.12	0.233	5.62	37	8.36	208			800
1/20/06	16:00	4.45	80	Clear	7.14	0.232	5.56	24	8.32	208			800
1/20/06	16:10	4.46	80	Clear	7.16	0.231	5.53	19	8.25	208			800
1/20/06	16:20	4.45	80	Clear	7.16	0.231	5.51	18	8.26	208			800

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
1/20/06	16:30	4.45	80	Clear	7.17	0.231	5.49	18	8.17	208			800
1/20/06	16:40	4.45	80	Clear	7.17	0.231	5.49	13	8.18	208			800
1/20/06	16:50	4.45	80	Clear	7.17	0.231	5.48	8.9	8.22	208			0

Final Purge / Sample Data

One Casing Volume	8.3	**Method**		**Dissolved Oxygen (mg/L)**	5.48
Total Vo. Purge (L)	6700.8	**Waterlevel (ft.)**	4.45	**Turbidity (NTUs)**	8.9
Start Purge (hrs.)	1/20/06	**Flowrate (mL/min)**	80	**Temp (C)**	8.22
End Purge (hrs.)	1/20/06	**Color**	Clear	**ORP (mV)**	208
Total Purge Time (min.)	0	**pH (S.U.)**	7.17	**Salinity**	
		Conductivity (mS/cm)	0.231	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	1/20/06	16:55	SW-846-8330	Explosives Nitroaromatics and Nitramines	4° C	2	Glass	1L Amber		112G00041-1232006-5

General Observations and Notes

Sample pH (paper) = ~7.0 SUs

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/24/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-1242006-6	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7735	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-1242006-6**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/24/06
Carrier/Waybill No.	8494 1921 7735	**City, State, Zip**	Seattle, WA 98108	**Time**	12:57
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/24/06
				Time	13:57

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/24/06	13GWT1107	09:40	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT11	GW	4°C	2	Glass	1L Amber	
1/24/06	13GWT1707	11:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/11/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-1112006-3	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7790	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-1112006-3**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/11/06
Carrier/Waybill No.	8494 1921 7790	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/11/06
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/9/06	13GWT1407	16:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT14	GW	4°C	2	Glass	1L Amber	
1/10/06	13GWT2806	08:25	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT28	GW	4°C	2	Glass	1L Amber	
1/10/06	13GWT3106	12:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass	1L Amber	

1/10/06	13GWT3406	16:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT34	GW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/19/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-1192006-4	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7779	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-1192006-4**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/19/06
Carrier/Waybill No.	8494 1921 7779	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/19/06
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/19/06	13GWT1507	13:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT15	GW	4°C	2	Glass	1L Amber	
1/19/06	13GWT2107	10:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass	1L Amber	
1/19/06	13GWT4506	10:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/6/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-162006-1	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8244 4672 4260	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-162006-1**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/6/06
Carrier/Waybill No.	8244 4672 4260	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/6/06
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/5/06	13SW1104	10:25	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD11	SW	4°C	2	Glass	1L Amber	

1/5/06	13SW1406	08:44	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD14	SW	4°C	4	Glass	1L Amber	Do MS/MSD
1/5/06	13SW1506	09:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD15	SW	4°C	2	Glass	1L Amber	
1/5/06	13SW1606	09:22	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD16	SW	4°C	2	Glass	1L Amber	
1/5/06	13SW1905	11:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD19	SW	4°C	2	Glass	1L Amber	
1/5/06	13SW2005	10:44	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD20	SW	4°C	2	Glass	1L Amber	
1/5/06	13SW2205	10:11	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD22	SW	4°C	2	Glass	1L Amber	
1/5/06	13SW3006	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	QC	SW	4°C	2	Glass	1L Amber	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/5/06	13SW3006	09:37	SW-846-8330	Explosives Nitroaromatics and Nitramines	13SWSD30	SW	4°C	2	Glass	1L Amber	
1/5/06	16SW1004	15:49	SW-846-8330	Explosives Nitroaromatics and Nitramines	16SWSD10	SW	4°C	2	Glass	1L Amber	
1/5/06	16SW1004	15:49	SW-846 8260B	Volatile Organic Compounds	16SWSD10	SW	4°C/HCL	3	Glass	40ml vials	
1/5/06	16SW1205	14:44	SW-846 8260B	Volatile Organic Compounds	16SWSD12	SW	4°C/HCL	3	Glass	40ml vials	
1/5/06	16SW1205	14:44	SW-846-8330	Explosives Nitroaromatics and Nitramines	16SWSD12	SW	4°C	2	Glass	1L Amber	
1/5/06	16SW1305	14:31	SW-846 8260B	Volatile Organic Compounds	16SWSD13	SW	4°C/HCL	3	Glass	40ml vials	
1/5/06	16SW1305	14:31	SW-846-8330	Explosives Nitroaromatics and Nitramines	16SWSD13	SW	4°C	2	Glass	1L Amber	
1/5/06	16SW3004	00:00	SW-846 8260B	Volatile Organic Compounds	QC	SW	4°C/HCL	3	Glass	40ml vials	
1/5/06	16SW3004	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	QC	SW	4°C	2	Glass	1L Amber	
1/5/06	16SW3004	12:56	SW-846-8330	Explosives Nitroaromatics and Nitramines	16SWSD30	SW	4°C	4	Glass	1L Amber	DO MS/MSD
1/5/06	16SW3004	12:56	SW-846 8260B	Volatile Organic Compounds	16SWSD30	SW	4°C/HCL	9	Glass	40ml vials	DO MS/MSD
1/5/06	TB01050601	07:30	SW-846 8260B	Volatile Organic Compounds	QC	AQ	4°C/HCL	2	Glass	40ml vials	Trip Blank
1/6/06	13GWT4006	10:08	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass	1L Amber	
1/6/06	13GWT4706	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT47	GW	4°C	4	Glass	1L Amber	Do MS/MSD

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/9/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-192006-2	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8244 4672 4281	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-192006-2**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/9/06
Carrier/Waybill No.	8244 4672 4281	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/9/06
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/6/06	13GWT3706	16:45	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT37	GW	4°C	2	Glass	1L Amber	
1/6/06	13GWT4606	14:20	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT46	GW	4°C	2	Glass	1L Amber	
1/7/06	16GW0307	11:00	SW-846 8260B	Volatile Organic Compounds	16MW03	GW	4°C/HCL	3	Glass	40ml vials	

1/7/06	16GW0307	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW03	GW	4°C	2	Glass	1L Amber	
1/7/06	16GW0407	11:10	SW-846 8260B	Volatile Organic Compounds	16MW04	GW	4°C/HCL	3	Glass	40ml vials	
1/7/06	16GW0407	11:10	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW04	GW	4°C	2	Glass	1L Amber	
1/7/06	16GWT0906	16:25	SW-846 8260B	Volatile Organic Compounds	16MWT09	GW	4°C/HCL	3	Glass	40ml vials	
1/7/06	16GWT0906	16:25	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT09	GW	4°C	2	Glass	1L Amber	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/7/06	16GWT1206	15:20	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT12	GW	4°C	2	Glass	1L Amber	
1/7/06	16GWT1206	15:20	SW-846 8260B	Volatile Organic Compounds	16MWT12	GW	4°C/HCL	3	Glass	40ml vials	
1/7/06	TB01070601	07:00	SW-846 8260B	Volatile Organic Compounds	QC	AQ	4°C/HCL	2	Glass	40ml vials	Trip Blank
1/8/06	13GWT1307	13:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT13	GW	4°C	2	Glass	1L Amber	
1/8/06	16GW0207	10:30	SW-846 8260B	Volatile Organic Compounds	16MW02	GW	4°C/HCL	3	Glass	40ml vials	
1/8/06	16GW0207	10:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MW02	GW	4°C	2	Glass	1L Amber	
1/8/06	16GWT0608	13:35	SW-846 8260B	Volatile Organic Compounds	16MWT06	GW	4°C/HCL	3	Glass	40ml vials	Hot sample in past!
1/8/06	16GWT0608	13:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT06	GW	4°C	2	Glass	1L Amber	
1/9/06	13GWT0908	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass	1L Amber	Field Dup
1/9/06	13GWT0908	10:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT09	GW	4°C	2	Glass	1L Amber	
1/9/06	16GWT1006	10:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT10	GW	4°C	2	Glass	1L Amber	
1/9/06	16GWT1006	10:50	SW-846 8260B	Volatile Organic Compounds	16MWT10	GW	4°C/HCL	3	Glass	40ml vials	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/23/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID	112G00041-1232006-5	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7746	**Printed Date**	7/11/06

Chain of Custody Information

Chain of Custody #	**112G00041-1232006-5**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	1/23/06
Carrier/Waybill No.	8494 1921 7746	**City, State, Zip**	Seattle, WA 98108	**Time**	
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	1/23/06
				Time	

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/20/06	13GWT5105	16:55	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass	1L Amber	
1/21/06	16GWT0407	17:35	SW-846 8260B	Volatile Organic Compounds	16MWT04	GW	4°C/HCL	9	Glass	40ml vials	Do MS/MSD
1/21/06	16GWT0407	17:35	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT04	GW	4°C	4	Glass	1L Amber	Do MS/MSD

1/21/06	16GWT1506	09:05	SW-846 8260B	Volatile Organic Compounds	16MWT15	GW	4°C/HCL	3	Glass	40ml vials	
1/21/06	16GWT1506	09:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT15	GW	4°C	2	Glass	1L Amber	
1/21/06	TB01210601	07:10	SW-846 8260B	Volatile Organic Compounds	QC	AQ	4°C/HCL	2	Glass	40ml vials	Trip Blank
1/22/06	16GWT1106	09:30	SW-846 8260B	Volatile Organic Compounds	16MWT11	GW	4°C/HCL	3	Glass	40ml vials	
1/22/06	16GWT1106	09:30	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT11	GW	4°C	2	Glass	1L Amber	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
1/22/06	16GWT1306	08:50	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT13	GW	4°C	2	Glass	1L Amber	
1/22/06	16GWT1306	08:50	SW-846 8260B	Volatile Organic Compounds	16MWT13	GW	4°C/HCL	3	Glass	40ml vials	Hot in past!
1/22/06	16GWT1706	00:00	SW-846 8260B	Volatile Organic Compounds	QC	GW	4°C/HCL	3	Glass	40ml vials	DUP - Hot in past!
1/22/06	16GWT1706	00:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass	1L Amber	DUP
1/22/06	16GWT1706	12:05	SW-846 8260B	Volatile Organic Compounds	16MWT17	GW	4°C/HCL	3	Glass	40ml vials	Hot in past!
1/22/06	16GWT1706	12:05	SW-846-8330	Explosives Nitroaromatics and Nitramines	16MWT17	GW	4°C	2	Glass	1L Amber	
1/23/06	13GWT0107	11:00	SW-846-8330	Explosives Nitroaromatics and Nitramines	13MWT01	GW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Sample ID #**	SWMU 13	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Well ID**		**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Sampled By**	James Goerdt/Terry Rojahn	**Modified By**	
WBS Code #	0000			**Modified Date**	
Well Type		**Concentration**		**Printed By**	James Goerdt
QA Sample Type				**Printed Date**	7/11/06

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT01	1/4/06	09:44	7.20	17.90	NA	NA		e	N
13MWT02	1/4/06	09:55	15.37	29.47	NA	NA		e	N
13MWT03	1/4/06	11:50	9.63	18.00	NA	NA		e	N
13MWT04	1/4/06	10:20	14.31	17.80	NA	NA		e	N
13MWT05	1/4/06	09:59	5.75	19.07	NA	NA		e	N
13MWT06	1/4/06	11:48	13.91	17.60	NA	NA		e	N
13MWT07	1/4/06	10:29	4.32	17.95	NA	NA		e	N
13MWT08	1/4/06	10:22	3.35	16.60	NA	NA		e	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT09	1/4/06	11:44	8.10	23.00	NA	NA		e	N
13MWT10	1/4/06	10:26	15.14	28.14	NA	NA		e	N
13MWT11	1/4/06	10:37	8.64	17.72	NA	NA		e	N
13MWT12	1/4/06	10:41	11.27	22.30	NA	NA		e	N
13MWT13	1/4/06	15:18	4.49	21.40	NA	NA		e	N
13MWT14	1/4/06	14:53	14.00	25.55	NA	NA		e	N
13MWT15	1/4/06	10:46	14.92	27.65	NA	NA		e	N
13MWT16	1/4/06	10:56	13.39	17.25	NA	NA		e	N
13MWT17	1/4/06	11:02	8.48	20.25	NA	NA		e	N
13MWT18	1/4/06	10:53	20.02	33.20	NA	NA		e	N
13MWT19	1/4/06	14:48	10.78	22.03	NA	NA		e	N
13MWT20	1/4/06	11:38	4.76	22.75	NA	NA		e	N
13MWT21	1/4/06	11:08	8.30	17.70	NA	NA		e	N
13MWT22	1/4/06	11:22	8.40	17.70	NA	NA		e	N
13MWT23	1/4/06	11:36	8.90	24.45	NA	NA		e	N
13MWT24	1/4/06	11:34	9.41	25.15	NA	NA		e	N
13MWT25	1/4/06	11:27	5.86	17.95	NA	NA		e	N
13MWT26	1/4/06	11:30	10.51	22.15	NA	NA		e	N
13MWT27	1/4/06	10:44	8.80	22.45	NA	NA		e	N
13MWT28	1/4/06	11:41	77.21	90.40	NA	NA		e	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT29	1/4/06	15:22	5.51	21.25	NA	NA		e	N
13MWT30	1/4/06	14:57	11.13	26.65	NA	NA		e	N
13MWT31	1/4/06	14:43	10.39	22.35	NA	NA		e	N
13MWT32	1/4/06	14:37	10.00	20.75	NA	NA		e	N
13MWT33	1/4/06	14:40	12.21	21.80	NA	NA		e	N
13MWT34	1/4/06	11:16	5.64	22.90	NA	NA		e	N
13MWT35	1/4/06	10:34	63.65	70.25	NA	NA		e	N
13MWT36	1/4/06	14:05	18.61	27.35	NA	NA		e	N
13MWT37	1/4/06	14:10	14.14	27.20	NA	NA		e	N
13MWT38	1/4/06	14:08	61.41	67.70	NA	NA		e	N
13MWT39	1/4/06	14:20	3.47	26.75	NA	NA		e	N
13MWT40	1/4/06	14:23	18.16	27.75	NA	NA		e	N
13MWT41	1/4/06	14:26	66.03	67.85	NA	NA		e	N
13MWT42	1/4/06	14:30	20.77	23.50	NA	NA		e	N
13MWT43	1/4/06	10:13	8.77	22.53	NA	NA		e	N
13MWT44	1/4/06	10:08	64.13	85.88	NA	NA		e	N
13MWT45	1/4/06	11:11	70.39	82.20	NA	NA		e	N
13MWT46	1/4/06	14:16	57.34	67.65	NA	NA		e	N
13MWT47	1/4/06	15:02	7.68	20.23	NA	NA		e	N
13MWT48	1/4/06	13:37	9.78	12.75	NA	NA		e	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT49	1/4/06	13:35	7.19	11.90	NA	NA		e	N
13MWT50	1/4/06	13:32	7.43	28.20	NA	NA		e	N
13MWT51	1/4/06	13:26	5.80	17.75	NA	NA		e	N

General Observations and Notes

Water levels and total well depths measured. Dedicated well pump depths also measured where applicable.

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	Terry Rojahn	**Modified By**	
WBS Code #	0000	**FOL Phone**	412-921-8857	**Modified Date**	
Chain of Custody ID		**Carrier**		**Printed By**	James Goerdt
		Carrier/Waybill No.		**Printed Date**	7/11/06

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
13SG01	1/4/06	09:57	< 1	Estimated	1.77			
13SG02	1/4/06	09:51	3.5	Estimated	3.69			
13SG03	1/4/06	15:12	<1	Estimated	1.94			
13SG04	1/4/06	15:14	1.5	Measured	2.42			
13SG05	1/4/06	15:16	1.5	Measured	3.90			
13SG06	1/4/06	14:50		Stagnant	2.35			
13SG07	1/4/06	11:32	<1	Estimated	1.48			
13SG08	1/4/06	11:24		Measured	5.10	1.1	.03	1.0

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
13SG09	1/4/06	10:58		Measured	4.15	1.0	.05	1
13SG10	1/4/06	10:31		Measured	4.80	0.8	.05	1
13SG11	1/4/06	15:08	1.5	Measured	2.15			
13SG12	1/4/06	13:07		Measured	6.81	11.0	.04	2
13SG13	1/4/06	13:16	30	Measured	5.58			
13SG14	1/4/06	13:21		Stagnant	6.32			
13SG15	1/4/06		Destroyed					
13SG16	1/4/06	13:49		Dry				
13SG17	1/4/06	13:46		Dry				
13SG18	1/4/06	13:55		Measured	8.16	17.0	.05	2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Water Quality Meter U22	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Serial Number**	4143006	**Modified By**	John Wright
WBS Code #	0000			**Modified Date**	8/18/06
Client				**Printed By**	John Wright
				Printed Date	8/18/06

Calibration Records

Date	Calibrator	pH	Conductivity	DO	ORP	Turbidity	Comments
1/5/06	James Goerdt	Pre: 3.98 Post: 3.99 Std: 4920 Exp: 5/10/07	Pre: 4.50 Post: 4.50 Std: 4920 Exp: 5/10/07	Pre: 8.19 Post: 8.46 Std: Exp:	Pre: 285 Post: 294 Std: Exp: ORP: 19.05	Pre: 0 Post: Std: 4920 Exp: 5/10/07	
1/6/06	James Goerdt	Pre: 3.96 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.61 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 6.63 Post: 8.05 Std: Exp:	Pre: 303 Post: 303 Std: Exp: ORP: 16.68	Pre: 4 Post: 0 Std: 4920 Exp: 5/10/07	
1/7/06	James Goerdt	Pre: 3.98 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.28 Post: 4.48 Std: 4920 Exp: 5/10/07	Pre: 10.62 Post: 9.36 Std: Exp:	Pre: 296 Post: 294 Std: Exp: ORP: 18.08	Pre: 1 Post: 1 Std: 4920 Exp: 5/10/07	
1/8/06	James Goerdt	Pre: 4.04 Post: 3.99 Std: 4920 Exp: 5/10/07	Pre: 4.46 Post: 4.48 Std: 4920 Exp: 5/10/07	Pre: 9.30 Post: 9.25 Std: Exp:	Pre: 289 Post: 289 Std: Exp: ORP: 18.67	Pre: 1 Post: 1 Std: 4920 Exp: 5/10/07	
1/9/06	James Goerdt	Pre: 3.98 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.51 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 8.76 Post: 9.03 Std: Exp:	Pre: 276 Post: 275 Std: Exp: ORP: 19.55	Pre: 1 Post: 0 Std: 4920 Exp: 5/10/07	
1/10/06	T. Rojahn	Pre: 4.01 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.66 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 8.52 Post: 8.70 Std: Exp:	Pre: 344 Post: 342 Std: Exp: ORP: 19.64	Pre: 6 Post: 0 Std: 4920 Exp: 5/10/07	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Water Quality Meter U22	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Serial Number**	4103008	**Modified By**	John Wright
WBS Code #	0000			**Modified Date**	8/18/06
Client				**Printed By**	John Wright
				Printed Date	8/18/06

Calibration Records

Date	Calibrator	pH	Conductivity	DO	ORP	Turbidity	Comments
1/6/06	James Goerdt	Pre: 3.86 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.65 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 11.45 Post: 10.09 Std: Exp:	Pre: 380 Post: 376 Std: Exp: ORP: 16.80	Pre: 2 Post: 0 Std: 4920 Exp: 5/10/07	
1/7/06	James Goerdt	Pre: 4.02 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.38 Post: 4.48 Std: 4920 Exp: 5/10/07	Pre: 8.97 Post: 9.09 Std: Exp:	Pre: 316 Post: 313 Std: Exp: ORP: 18.44	Pre: 0 Post: 0 Std: 4920 Exp: 5/10/07	
1/8/06	James Goerdt	Pre: 3.97 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.54 Post: 4.48 Std: 4920 Exp: 5/10/07	Pre: 8.93 Post: 9.01 Std: Exp:	Pre: 380 Post: 371 Std: Exp: ORP: 19.21	Pre: 9 Post: 0 Std: 4920 Exp: 5/10/07	
1/9/06	James Goerdt	Pre: 4.06 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.45 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 8.99 Post: 8.90 Std: Exp:	Pre: 344 Post: 339 Std: Exp: ORP: 20.37	Pre: 13 Post: 0 Std: 4920 Exp: 5/10/07	
1/18/06	T. Rojahn	Pre: 3.97 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.47 Post: 4.49 Std: 4920 Exp: 5/10/07	Pre: 8.18 Post: 8.55 Std: 4920 Exp: 5/10/07	Pre: 312 Post: 309 Std: 4920 Exp: 5/10/07 ORP: 20.76	Pre: NA Post: NA Std: Exp:	
1/19/06	T. Rojahn	Pre: 3.98 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.33 Post: 4.50 Std: 4920 Exp: 5/10/07	Pre: 9.12 Post: 9.20 Std: 4920 Exp: 5/10/07	Pre: 308 Post: 300 Std: 4920 Exp: 5/10/07 ORP: 19.02	Pre: NA Post: NA Std: Exp:	
1/20/06	T. Rojahn	Pre: 4.03 Post: 4.00 Std: 4920 Exp:	Pre: 4.75 Post: 4.49 Std: 4920 Exp:	Pre: 9.05 Post: 9.11 Std: 4920 Exp:	Pre: 423 Post: 417 Std: 4920 Exp:	Pre: NA Post: NA Std:	

		5/10/07	5/10/07	5/10/07	5/10/07 ORP: 19.85	Exp:	
1/21/06	T. Rojahn	Pre: 4.02 Post: 4.00 Std: 4920 Exp: 05/10/07	Pre: 4.39 Post: 4.49 Std: 4920 Exp: 05/10/07	Pre: 9.32 Post: 9.25 Std: 4920 Exp: 05/10/07	Pre: 174 Post: 172 Std: 4920 Exp: 05/10/07 ORP: 19.41	Pre: NA Post: NA Std: Exp:	Checked ORP with Zobell Solution (should read ~238) reading = 201mV
1/22/06	T. Rojahn	Pre: 4.00 Post: 4.00 Std: 4920 Exp: 05/10/07	Pre: 4.52 Post: 4.49 Std: 4920 Exp: 05/10/07	Pre: 9.32 Post: 9.38 Std: 4920 Exp: 05/10/07	Pre: 299 Post: 298 Std: 4920 Exp: 05/10/07 ORP: 18.78	Pre: NA Post: NA Std: Exp:	
1/23/06	T. Rojahn	Pre: 4.02 Post: 4.00 Std: 4920 Exp: 05-10-2007	Pre: 4.47 Post: 4.49 Std: 4920 Exp: 05-10-2007	Pre: 9.44 Post: 9.45 Std: 4920 Exp: 05-10-2007	Pre: 299 Post: 300 Std: 4920 Exp: 05-10-2007 ORP: 18.83	Pre: NA Post: NA Std: Exp:	
1/24/06	T. Rojahn	Pre: 4.00 Post: 4.00 Std: 4920 Exp: 05/10/2007	Pre: 4.40 Post: 4.49 Std: 4920 Exp: 05/10/2007	Pre: 9.27 Post: 9.49 Std: 4920 Exp: 05/10/2007	Pre: 334 Post: 330 Std: 4920 Exp: 05/10/2007 ORP: 18.66	Pre: NA Post: NA Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Turbidity Meter	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	LaMotte 2020	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Serial Number**	0359-4197	**Modified By**	John Wright
WBS Code #	0000			**Modified Date**	8/18/06
Client				**Printed By**	John Wright
				Printed Date	8/18/06

Calibration Records

Date	Calibrator	Turbidity - 0 NTU	Turbidity - 10 NTU	Comments
1/2/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.95 Post: 10.00 Std: Exp:	
1/4/06	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/7/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 9.9 Post: 9.9 Std: Exp:	
1/8/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/9/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/18/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 10.25 Post: 10.00 Std: Exp:	
1/19/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.95 Post: 10.0 Std: Exp:	
1/20/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.90 Post: 10.00 Std: Exp:	
1/21/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.88 Post: 10.00 Std: Exp:	

1/22/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.9 Post: 10.00 Std: Exp:	
1/23/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 9.95 Post: 10.00 Std: Exp:	
1/24/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 10.05 Post: 10.00 Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Turbidity Meter	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	LaMotte 2020	**Created Date**	1/4/06
Task/Contract #	CTO 0377	**Serial Number**	4073-1103	**Modified By**	John Wright
WBS Code #	0000			**Modified Date**	8/18/06
Client				**Printed By**	John Wright
				Printed Date	8/18/06

Calibration Records

Date	Calibrator	Turbidity - 0 NTU	Turbidity - 10 NTU	Comments
1/4/06	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 9.9 Post: 10 Std: Exp:	
1/6/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/7/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 9.7 Post: 10.0 Std: Exp:	
1/8/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/9/06	James Goerdt	Pre: 0 Post: 0 Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
1/10/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: Exp:	Pre: 10.06 Post: 10.00 Std: Exp:	

ROUND 8

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/2/06	**Modified Date**	6/2/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0108
TtNUS Project #	112G00041	**Well ID**	13MWT01
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/2/06	**Static Water Level (ft.)**	7.67	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**	2	**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/2/06	10:15	7.67	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/2/06	10:25	8.35	130	Clear	4.13	0.239	0.96	0.40	14.0	421	NA	NA	1300

6/2/06	10:35	8.31	100	Clear	4.08	0.251	0.88	0.05	14.0	428			1000
6/2/06	10:45	8.31	100	Clear	4.11	0.255	0.84	0.01	14.0	431			1000
6/2/06	10:55	8.31	100	Clear	4.16	0.256	0.76	0.05	14.0	429			1000
6/2/06	11:05	8.31	100	Clear	4.18	0.255	0.73	0.10	14.1	428			1000
6/2/06	11:15	8.31	100	Clear	4.20	0.256	0.69	0.05	14.0	426			1000
6/2/06	11:25	8.31	100	Clear	4.21	0.255	0.67	0.00	14.1	427			1000

Final Purge / Sample Data

One Casing Volume	4.53	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.67
Total Vo. Purge (L)	7.3	**Waterlevel (ft.)**	8.31	**Turbidity (NTUs)**	0.00
Start Purge (hrs.)	10:15:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	14.1
End Purge (hrs.)	11:25:00 AM	**Color**	Clear	**ORP (mV)**	427
Total Purge Time (min.)	70	**pH (S.U.)**	4.21	**Salinity**	
		Conductivity (mS/cm)	0.255	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/2/06	11:30	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-622006-12
✓	6/2/06	11:30	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-622006-12

General Observations and Notes

TD = 17.91 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/3/06	**Modified Date**	6/3/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0909
TtNUS Project #	112G00041	**Well ID**	13MWT09
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/3/06	**Static Water Level (ft.)**	8.40	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	20.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	Y	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	08:45	8.40	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/3/06	08:55	8.76	130	Clear	5.48	0.806	1.15	0.30	14.2	253	NA	NA	1300

6/3/06	09:05	8.91	130	Clear	5.56	0.815	0.60	0.45	14.3	255			1300
6/3/06	09:15	8.91	130	Clear	5.58	0.806	0.56	0.00	14.4	256			1300
6/3/06	09:25	8.91	130	Clear	5.61	0.800	0.55	0.05	14.4	255			1300
6/3/06	09:35	8.91	130	Clear	5.63	0.804	0.54	0.05	14.5	255			1300
6/3/06	09:45	8.92	130	Clear	5.63	0.811	0.53	0.15	14.5	255			1300
6/3/06	09:55	8.92	130	Clear	5.67	0.818	0.53	0.00	14.5	254			1300

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.53
Total Vo. Purge (L)	9.1	**Waterlevel (ft.)**	8.92	**Turbidity (NTUs)**	0.00
Start Purge (hrs.)	8:45:00 AM	**Flowrate (mL/min)**	130	**Temp (C)**	14.5
End Purge (hrs.)	9:55:00 AM	**Color**	Clear	**ORP (mV)**	254
Total Purge Time (min.)	70	**pH (S.U.)**	5.67	**Salinity**	
		Conductivity (mS/cm)	0.818	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/3/06	10:00	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	3	Plastic	500ml PE		112G00041-642006-13
✓	6/3/06	10:00	SW-846-8330	Nitroaromatics and Nitramines	4°C	4	Glass	1L Amber		112G00041-642006-13

General Observations and Notes

TD = 23' - CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/2/06	**Modified Date**	6/2/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1108
TtNUS Project #	112G00041	**Well ID**	13MWT11
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/2/06	**Static Water Level (ft.)**	9.10	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/2/06	12:00	9.10	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/2/06	12:10	9.60	140	Clear	4.22	0.279	1.30	1.1	15.1	271	NA	NA	1400

6/2/06	12:20	9.96	110	Clear	4.30	0.279	1.28	2.0	15.0	274			1100
6/2/06	12:30	10.10	110	Clear	4.27	0.277	1.25	3.6	15.0	282			1100
6/2/06	12:40	10.08	100	Clear	4.19	0.276	0.83	2.1	15.7	287			1000
6/2/06	12:50	10.09	100	Clear	4.16	0.281	0.67	1.2	15.2	287			1000
6/2/06	13:00	10.09	100	Clear	4.16	0.288	0.65	0.85	15.2	287			1000
6/2/06	13:10	10.09	100	Clear	4.16	0.286	0.64	1.7	15.3	288			1000

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.64
Total Vo. Purge (L)	7.6	**Waterlevel (ft.)**	10.09	**Turbidity (NTUs)**	1.7
Start Purge (hrs.)	12:00:00 PM	**Flowrate (mL/min)**	100	**Temp (C)**	15.3
End Purge (hrs.)	1:10:00 PM	**Color**	Clear	**ORP (mV)**	288
Total Purge Time (min.)	70	**pH (S.U.)**	4.16	**Salinity**	
		Conductivity (mS/cm)	0.286	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/2/06	13:15	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-622006-12
✓	6/2/06	13:15	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-622006-12

General Observations and Notes

TD = 17.75 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	5/23/06	**Modified Date**	5/23/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1308
TtNUS Project #	112G00041	**Well ID**	13MWT13
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	5/23/06	**Static Water Level (ft.)**	4.35	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	19.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	12:20	4.35	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
5/23/06	12:30	4.60	120	Clear	4.35	0.128	4.53	1.3	14.5	425	NA	NA	1200

5/23/06	12:40	4.64	120	Clear	4.25	0.131	3.95	1.1	14.5	443			1200
5/23/06	12:50	4.52	110	Clear	4.34	0.133	4.25	0.80	14.9	438			1100
5/23/06	13:00	4.52	100	Clear	4.35	0.132	3.99	0.65	15.2	441			1000
5/23/06	13:10	4.52	100	Clear	4.25	0.134	3.78	0.85	14.9	446			1000
5/23/06	13:20	4.52	100	Clear	4.22	0.133	3.81	0.80	15.3	453			1000
5/23/06	13:30	4.52	100	Clear	4.25	0.136	3.95	1.30	15.4	449			1000

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GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	13:40	4.52	100	Clear	4.27	0.135	3.89	0.30	15.1	450			1000
5/23/06	13:50	4.52	100	Clear	4.29	0.134	3.78	0.15	15.2	451			1000
5/23/06	14:00	4.52	100	Clear	4.34	0.138	3.75	0.00	15.1	449			1000

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)	10.5	**Waterlevel (ft.)**		**Turbidity (NTUs)**	
Start Purge (hrs.)	12:20:00 PM	**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)	2:00:00 PM	**Color**		**ORP (mV)**	
Total Purge Time (min.)	100	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	5/23/06	14:05	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-5232006-11
✓	5/23/06	14:05	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-5232006-11

General Observations and Notes

TD = 21.40

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	David Hickey	**Modified By**	David Hickey	**Printed By**	James Goerdt
Created Date	5/23/06	**Modified Date**	5/23/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1408
TtNUS Project #	112G00041	**Well ID**	13MWT14
Task/Contract #	CTO 377	**Well Type**	-Select-
WBS Code #	TP00050125	**Sampled By**	David Hickey
		Concentration	Low concentration

Well and Sample Data

Date	5/23/06	**Static Water Level (ft.)**	13.92	**Water Quality Meter**	406032
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**		**Pump Control Box**	MP10-1335
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3327-2402
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?		**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	13:15	13.92	60	Clear	4.17	0.003	NA	20.8	18.07	251	NA	NA	0
5/23/06	13:25	14.03	60	Clear	5.25	1.18	NA	3.60	17.41	199	NA	NA	600

5/23/06	13:35	14.04	50	Clear	5.44	1.15	NA	4.83	17.52	165	NA	NA	500
5/23/06	13:45	14.06	70	Clear	5.49	1.14	NA	1.92	16.06	156	NA	NA	700
5/23/06	13:55	14.11	75	Clear	5.58	1.11	NA	1.85	15.77	147	NA	NA	750
5/23/06	14:05	14.12	75	Clear	5.67	1.08	NA	0.00	15.71	137	NA	NA	750
5/23/06	14:15	14.12	75	Clear	5.75	1.03	NA	0.42	15.98	129	NA	NA	750
5/23/06	14:25	14.13	75	Clear	5.77	1.01	NA	0.28	15.87	127	NA	NA	750

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GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	14:35	14.14	90	Clear	5.74	1.00	NA	0.00	15.72	133	NA	NA	900
5/23/06	14:45	14.14	90	Clear	5.73	1.00	NA	0.64	15.97	134	NA	NA	900
5/23/06	14:55	14.15	90	Clear	5.76	0.98	NA	0.00	15.91	129	NA	NA	900

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	NA
Total Vo. Purge (L)	7.5	**Waterlevel (ft.)**	14.15	**Turbidity (NTUs)**	0.00
Start Purge (hrs.)	1:15:00 PM	**Flowrate (mL/min)**	90	**Temp (C)**	15.91
End Purge (hrs.)	2:55:00 PM	**Color**	Clear	**ORP (mV)**	129
Total Purge Time (min.)	100	**pH (S.U.)**	5.76	**Salinity**	NA
		Conductivity (mS/cm)	0.98	**Other**	NA

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GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	5/23/06	15:00	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-5232006-11
✓	5/23/06	15:00	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-5232006-11

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/4/06	**Modified Date**	6/4/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1508
TtNUS Project #	112G00041	**Well ID**	13MWT15
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/4/06	**Static Water Level (ft.)**	13.49	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	25.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/4/06	13:10	13.49	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/4/06	13:20	14.38	100	Clear	3.82	0.422	1.71	3.2	14.4	316			1000

6/4/06	13:30	14.67	110	Clear	3.87	0.402	0.91	1.7	16.2	309			1100
6/4/06	13:40	14.18	40	Clear	3.91	0.411	1.06	2.0	18.3	308			400
6/4/06	13:50	14.21	70	Clear	3.90	0.410	0.78	1.2	16.8	310			700
6/4/06	14:00	14.40	80	Clear	3.87	0.402	0.70	1.5	15.2	309			800
6/4/06	14:10	14.56	80	Clear	3.85	0.393	0.74	3.6	15.7	309			800
6/4/06	14:20	14.51	70	Clear	3.86	0.391	0.64	1.1	16.1	307			700

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/4/06	14:30	14.49	70	Clear	3.85	0.399	0.62	1.2	15.1	308			700
6/4/06	14:40	14.54	80	Clear	3.82	0.387	0.55	1.1	15.4	309			800
6/4/06	14:50	14.54	80	Clear	3.81	0.385	0.56	2.3	15.0	306			800
6/4/06	15:00	14.54	80	Clear	3.83	0.382	0.61	1.3	14.6	305			800
6/4/06	15:10	14.54	80	Clear	3.84	0.383	0.60	1.1	15.0	304			800

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)	9.4	**Waterlevel (ft.)**		**Turbidity (NTUs)**	
Start Purge (hrs.)	1:10:00 PM	**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)	3:10:00 PM	**Color**		**ORP (mV)**	
Total Purge Time (min.)	120	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/4/06	15:15	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13
✓	6/4/06	15:15	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13

General Observations and Notes

TD = 27.87 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/4/06	**Modified Date**	6/4/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1708
TtNUS Project #	112G00041	**Well ID**	13MWT17
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/4/06	**Static Water Level (ft.)**	9.26	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	18.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/4/06	11:25	9.26	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/4/06	11:35	9.31	130	Clear	5.52	0.158	1.77	2.8	15.1	250	NA	NA	1300

6/4/06	11:45	9.32	130	Clear	5.46	0.160	0.76	2.6	15.1	249	NA	NA	1300
6/4/06	11:55	9.32	130	Clear	5.45	0.162	0.68	2.7	15.4	251			1300
6/4/06	12:05	9.32	130	Clear	5.44	0.163	0.65	3.0	15.4	252			1300
6/4/06	12:15	9.32	130	Clear	5.43	0.164	0.62	4.0	15.3	254			1300
6/4/06	12:25	9.32	130	Clear	5.43	0.165	0.60	2.7	15.3	255			1300

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)	7.8	**Waterlevel (ft.)**		**Turbidity (NTUs)**	
Start Purge (hrs.)	11:25:00 AM	**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)	12:25:00 PM	**Color**		**ORP (mV)**	
Total Purge Time (min.)	60	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/4/06	12:30	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13
✓	6/4/06	12:30	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13

General Observations and Notes

TD = 20.30 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/1/06	**Modified Date**	6/1/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2108
TtNUS Project #	112G00041	**Well ID**	13MWT21
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/1/06	**Static Water Level (ft.)**	9.48	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/1/06	12:15	9.48	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/1/06	12:25	10.09	140	Clear	5.72	0.230	0.86	7.9	14.8	211			1400

6/1/06	12:35	10.22	110	Clear	5.61	0.246	0.75	17	15.4	223			1100
6/1/06	12:45	10.18	100	Clear	5.62	0.250	0.66	14	15.8	229			1000
6/1/06	12:55	10.19	100	Clear	5.66	0.255	0.64	10	15.7	236			1000
6/1/06	13:05	10.19	100	Clear	5.71	0.256	0.60	7.1	15.6	236			1000
6/1/06	13:15	10.19	100	Clear	5.75	0.258	0.58	5.8	15.7	236			1000

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.58
Total Vo. Purge (L)	6.5	**Waterlevel (ft.)**	10.19	**Turbidity (NTUs)**	5.8
Start Purge (hrs.)	12:15:00 PM	**Flowrate (mL/min)**	100	**Temp (C)**	15.7
End Purge (hrs.)	1:15:00 PM	**Color**	Clear	**ORP (mV)**	236
Total Purge Time (min.)	60	**pH (S.U.)**	5.75	**Salinity**	
		Conductivity (mS/cm)	0.258	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/1/06	13:20	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-622006-12
✓	6/1/06	13:20	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-622006-12

General Observations and Notes

TD = 17.76 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/3/06	**Modified Date**	6/4/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2807
TtNUS Project #	112G00041	**Well ID**	13MWT28
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/3/06	**Static Water Level (ft.)**	77.35	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	88.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	10:55	77.35	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/3/06	11:05	79.19	160	Clear	7.61	1.16	1.30	3.1	15.7	199			1600

6/3/06	11:15	80.59	150	Clear	7.55	1.17	0.82	2.5	16.1	173			1500
6/3/06	11:25	81.03	150	Clear	7.55	1.17	0.72	1.1	16.1	163			1500
6/3/06	11:35	81.68	150	Clear	7.55	1.16	0.70	0.25	16.1	155			1500
6/3/06	11:45	82.30	150	Clear	7.56	1.13	1.30	5.5	16.2	148			1500
6/3/06	11:55	82.95	150	Clear	7.60	1.11	1.42	14	16.3	143			1500
6/3/06	12:05	83.51	150	Clear	7.61	1.12	1.24	20	16.2	138			1500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	12:15	84.11	150	Clear	7.64	1.13	1.05	18	16.1	132			1500
6/3/06	12:25	84.83	150	Clear	7.66	1.15	0.84	15	16.1	125			1500
6/3/06	12:35	85.38	150	Clear	7.68	1.15	0.75	16	16.2	120			1500
6/3/06	12:45	85.82	150	Clear	7.70	1.15	0.66	16	16.3	115			1500
6/3/06	12:55	86.69	150	Clear	7.73	1.12	0.60	18	16.0	109			1500
6/3/06	13:05	**	140	Clear	7.75	1.12	0.62	12	16.5	104			1400
6/3/06	13:15	**	120	Clear	7.75	1.14	0.79	11	17.1	103			1200
6/3/06	13:25	**	100	Clear	7.74	1.16	0.96	11	18.0	104			1000
6/3/06	13:35	**	80	Clear	7.76	1.16	0.79	12	19.4	109			800
6/3/06	13:41	DRY	80	Clear	7.75	1.14	0.80	12	19.6	114			480

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)	22.98	**Waterlevel (ft.)**		**Turbidity (NTUs)**	
Start Purge (hrs.)	10:55:00 AM	**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)	1:41:00 PM	**Color**		**ORP (mV)**	
Total Purge Time (min.)	166	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/4/06	10:30	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13
✓	6/4/06	10:30	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13

General Observations and Notes

WELL HISTORICALLY DRIES OUT - WILL SAMPLE ON 6/04/06.

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/4/06	**Modified Date**	6/4/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3107
TtNUS Project #	112G00041	**Well ID**	13MWT31
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/4/06	**Static Water Level (ft.)**	11.40	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	20.0	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/4/06	08:25	11.40	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/4/06	08:35	12.60	130	Clear	5.35	1.73	1.75	3.5	12.8	258	NA	NA	1300

6/4/06	08:45	12.77	120	Clear	5.34	1.69	1.76	0.40	12.8	259			1200
6/4/06	08:55	12.90	110	Clear	5.38	1.64	1.72	0.20	13.0	257			1100
6/4/06	09:05	12.97	100	Clear	5.42	1.63	1.86	0.75	13.2	255			1000
6/4/06	09:15	12.94	80	Clear	5.44	1.63	1.94	1.2	13.3	257			800
6/4/06	09:25	12.92	70	Clear	5.45	1.61	1.88	1.1	13.8	258			700
6/4/06	09:35	12.92	80	Clear	5.46	1.59	1.82	0.75	13.5	258			800

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	1.82
Total Vo. Purge (L)	6.9	**Waterlevel (ft.)**	12.92	**Turbidity (NTUs)**	0.75
Start Purge (hrs.)	8:25:00 AM	**Flowrate (mL/min)**	80	**Temp (C)**	13.5
End Purge (hrs.)	9:35:00 AM	**Color**	Clear	**ORP (mV)**	258
Total Purge Time (min.)	70	**pH (S.U.)**	5.46	**Salinity**	
		Conductivity (mS/cm)	1.59	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/4/06	09:40	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13
✓	6/4/06	09:40	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13

General Observations and Notes

TD = 22.35 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/3/06	**Modified Date**	6/3/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3407
TtNUS Project #	112G00041	**Well ID**	13MWT34
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/3/06	**Static Water Level (ft.)**	4.73	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	20.50	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	Y	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	17:00	4.73	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/3/06	17:10	5.07	100	Clear	5.07	0.418	2.55	0.85	15.2	195	NA	NA	1000

6/3/06	17:20	5.21	130	Clear	5.06	0.415	1.25	0.45	14.9	217			1300
6/3/06	17:30	5.23	130	Clear	5.05	0.416	0.56	0.75	14.7	225			1300
6/3/06	17:40	5.23	130	Clear	5.07	0.413	0.39	1.5	14.9	238			1300
6/3/06	17:50	5.24	130	Clear	5.07	0.415	0.32	1.1	15.1	228			1300
6/3/06	18:00	5.23	130	Clear	5.07	0.415	0.27	1.4	15.0	220			1300
6/3/06	18:10	5.23	130	Clear	5.07	0.416	0.29	1.2	15.0	219			1300

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	18:20	5.23	130	Clear	5.08	0.418	0.25	1.2	14.5	228			1300
6/3/06	18:30	5.23	130	Clear	5.07	0.414	0.24	0.50	14.6	229			1300

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.24
Total Vo. Purge (L)	11.4	**Waterlevel (ft.)**	5.23	**Turbidity (NTUs)**	0.50
Start Purge (hrs.)	5:00:00 PM	**Flowrate (mL/min)**	130	**Temp (C)**	14.6
End Purge (hrs.)	6:30:00 PM	**Color**	Clear	**ORP (mV)**	229
Total Purge Time (min.)	90	**pH (S.U.)**	5.07	**Salinity**	
		Conductivity (mS/cm)	0.414	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/3/06	18:35	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13
✓	6/3/06	18:35	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13

General Observations and Notes

TD = 22.90 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	David Hickey	**Modified By**	David Hickey	**Printed By**	James Goerdt
Created Date	5/21/06	**Modified Date**	5/21/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3707
TtNUS Project #	112G00041	**Well ID**	13MWT37
Task/Contract #	CTO 377	**Well Type**	-Select-
WBS Code #	TP00050125	**Sampled By**	David Hickey
		Concentration	Low concentration

Well and Sample Data

Date	5/21/06	**Static Water Level (ft.)**	13.29	**Water Quality Meter**	406032
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**		**Pump Control Box**	MP10-1335
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3327-2402
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/21/06	09:00	13.29	120	Clear	4.20	0.275	NA	2.17	12.55	335	NA	NA	0
5/21/06	09:10	13.98	160	Clear	3.80	0.235	NA	1.45	12.35	351	NA	NA	1600

5/21/06	09:20	14.11	140	Clear	3.64	0.203	NA	0.46	12.53	367	NA	NA	1400
5/21/06	09:30	14.19	120	Clear	3.60	0.198	NA	0.22	12.50	371	NA	NA	1200
5/21/06	09:40	14.28	120	Clear	3.56	0.196	NA	0.31	12.53	376	NA	NA	1200
5/21/06	09:50	14.31	120	Clear	3.55	0.197	NA	0.46	12.63	377	NA	NA	1200
5/21/06	10:05	14.38	120	Clear	3.51	0.201	NA	0.75	12.62	381	NA	NA	1800
5/21/06	10:10	14.39	120	Clear	3.50	0.202	NA	0.06	12.69	381	NA	NA	600

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/21/06	10:20	14.40	120	Clear	3.55	0.206	NA	0.39	12.70	379	NA	NA	1200

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	
Total Vo. Purge (L)	9	**Waterlevel (ft.)**		**Turbidity (NTUs)**	
Start Purge (hrs.)	9:00:00 AM	**Flowrate (mL/min)**		**Temp (C)**	
End Purge (hrs.)	10:10:00 AM	**Color**		**ORP (mV)**	
Total Purge Time (min.)	70	**pH (S.U.)**		**Salinity**	
		Conductivity (mS/cm)		**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	5/21/06	10:25	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-5222006-10
✓	5/21/06	10:25	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-5222006-10

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/1/06	**Modified Date**	6/1/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4007
TtNUS Project #	112G00041	**Well ID**	13MWT40
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/1/06	**Static Water Level (ft.)**	17.97	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	25.50	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/1/06	09:00	17.95	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/1/06	09:10	18.51	150	Clear	5.50	0.390	8.06	1.1	12.8	285	NA	NA	1500

6/1/06	09:20	18.44	100	Clear	5.54	0.390	7.45	0.80	13.5	275			1000
6/1/06	09:30	18.35	100	Clear	5.60	0.391	6.84	1.2	13.4	276			1000
6/1/06	09:40	18.34	100	Clear	5.68	0.392	7.80	1.4	13.9	277			1000
6/1/06	09:50	18.34	100	Clear	5.73	0.394	7.24	0.80	13.8	277			1000
6/1/06	10:00	18.34	100	Clear	5.85	0.396	7.07	0.65	13.5	274			1000
6/1/06	10:10	18.34	100	Clear	5.87	0.396	7.08	2.1	13.6	275			1000

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/1/06	10:20	18.34	100	Clear	5.87	0.397	6.85	1.5	13.6	276			1000

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	6.85
Total Vo. Purge (L)	8.5	**Waterlevel (ft.)**	18.34	**Turbidity (NTUs)**	1.5
Start Purge (hrs.)	9:00:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	13.6
End Purge (hrs.)	10:20:00 AM	**Color**	Clear	**ORP (mV)**	276
Total Purge Time (min.)	80	**pH (S.U.)**	5.87	**Salinity**	
		Conductivity (mS/cm)	0.397	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/1/06	10:25	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-622006-12
✓	6/1/06	10:25	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-622006-12

General Observations and Notes

TD = 27.75 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/1/06	**Modified Date**	6/2/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4507
TtNUS Project #	112G00041	**Well ID**	13MWT45
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/1/06	**Static Water Level (ft.)**	70.75	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	84.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/1/06	14:10	70.75	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/1/06	14:20	73.60	150	Clear	6.55	0.612	1.35	0.75	15.5	125	NA	NA	1500

6/1/06	14:30	74.10	100	Clear	6.53	0.607	0.85	0.05	16.3	127			1000
6/1/06	14:40	74.72	100	Clear	6.53	0.597	1.18	4.3	15.9	141			1000
6/1/06	14:50	75.55	150	Clear	6.52	0.600	1.25	6.3	15.4	142			1500
6/1/06	15:00	76.50	150	Clear	6.53	0.603	1.24	7.0	15.4	134			1500
6/1/06	15:10	77.26	150	Clear	6.57	0.613	1.15	11	15.4	96			1500
6/1/06	15:20	78.11	150	Clear	6.63	0.632	0.73	11	15.4	76			1500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/1/06	15:30	**	150	Clear	6.86	0.667	0.55	8.6	15.8	18			1500
6/1/06	15:40	**	150	Clear	7.08	0.689	0.54	8.9	16.8	-0.7			1500
6/1/06	15:50	**	120	Clear	7.18	0.697	0.56	8.8	17.8	-29			1200
6/1/06	16:00	**	100	Clear	7.22	0.704	0.59	6.8	18.1	-35			1000
6/1/06	16:05	**	50	Clear	7.23	0.691	0.54	7.7	18.3	-35	DRY	DRY	250

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.54
Total Vo. Purge (L)	14.95	**Waterlevel (ft.)**	**	**Turbidity (NTUs)**	7.7
Start Purge (hrs.)	2:10:00 PM	**Flowrate (mL/min)**	50	**Temp (C)**	18.3
End Purge (hrs.)	4:05:00 PM	**Color**	Clear	**ORP (mV)**	-35
Total Purge Time (min.)	115	**pH (S.U.)**	7.23	**Salinity**	DRY
		Conductivity (mS/cm)	0.691	**Other**	DRY

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/2/06	13:50	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-622006-12
✓	6/2/06	13:50	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-622006-12

General Observations and Notes

WELL HISTORICALLY DRIES OUT - WILL SAMPLE ON 6/02/06.

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	David Hickey	**Modified By**	David Hickey	**Printed By**	James Goerdt
Created Date	5/21/06	**Modified Date**	5/21/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4607
TtNUS Project #	112G00041	**Well ID**	13MWT46
Task/Contract #	CTO 377	**Well Type**	-Select-
WBS Code #	TP00050125	**Sampled By**	David Hickey
		Concentration	Low concentration

Well and Sample Data

Date	5/21/06	**Static Water Level (ft.)**	56.23	**Water Quality Meter**	406032
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**		**Pump Control Box**	MP10-1335
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3327-2402
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/21/06	11:40	56.23	120	Clear	6.35	0.9I2	NA	26.6	14.32	90	NA	NA	0
5/21/06	11:50	56.25	120	Clear	6.39	0.90	NA	21.6	13.56	83	NA	NA	1200

5/21/06	12:00	56.26	120	Clear	6.41	0.984	NA	7.45	13.81	77	NA	NA	1200
5/21/06	12:10	56.27	120	Clear	6.44	0.981	NA	5.16	13.56	73	NA	NA	1200
5/21/06	12:20	56.28	120	Clear	6.46	0.971	NA	4.32	13.50	70	NA	NA	1200
5/21/06	12:30	56.29	120	Clear	6.48	0.969	NA	3.65	13.37	67	NA	NA	1200
5/21/06	12:40	56.28	120	Clear	6.49	0.966	NA	2.82	13.32	67	NA	NA	1200

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	NA
Total Vo. Purge (L)	7.2	**Waterlevel (ft.)**	56.28	**Turbidity (NTUs)**	2.82
Start Purge (hrs.)	11:40:00 AM	**Flowrate (mL/min)**	120	**Temp (C)**	13.32
End Purge (hrs.)	12:40:00 PM	**Color**	Clear	**ORP (mV)**	67
Total Purge Time (min.)	60	**pH (S.U.)**	6.49	**Salinity**	NA
		Conductivity (mS/cm)	0.966	**Other**	NA

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	5/21/06	12:45	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-5222006-10
✓	5/21/06	12:45	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-5222006-10

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	5/23/06	**Modified Date**	5/23/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4707
TtNUS Project #	112G00041	**Well ID**	13MWT47
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	5/23/06	**Static Water Level (ft.)**	7.09	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	21.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	10:05	7.09	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
5/23/06	10:15	7.55	80	Clear	3.69	1.37	0.77	1.8	12.1	332	NA	NA	800

5/23/06	10:25	7.69	100	Clear	3.72	1.36	0.67	3.7	12.1	326			1000
5/23/06	10:35	7.80	110	Clear	3.72	1.36	0.37	5.4	12.1	322			1100
5/23/06	10:45	7.86	110	Clear	3.73	1.36	0.26	6.3	12.3	320			1100
5/23/06	10:55	7.92	110	Clear	3.74	1.36	0.16	3.8	12.3	318			1100
5/23/06	11:05	7.94	110	Clear	3.74	1.36	0.17	2.7	12.2	317			1100
5/23/06	11:15	7.97	110	Clear	3.75	1.36	0.17	2.0	12.3	314			1100

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
5/23/06	11:25	7.97	100	Clear	3.76	1.35	0.16	1.5	12.4	313			1000

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	0.16
Total Vo. Purge (L)	8.3	**Waterlevel (ft.)**	7.97	**Turbidity (NTUs)**	1.5
Start Purge (hrs.)	10:05:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	12.4
End Purge (hrs.)	11:25:00 AM	**Color**	Clear	**ORP (mV)**	313
Total Purge Time (min.)	80	**pH (S.U.)**	3.76	**Salinity**	
		Conductivity (mS/cm)	1.35	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	5/23/06	11:30	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-5232006-11
✓	5/23/06	11:30	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-5232006-11

General Observations and Notes

TD = 20.23

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	Terry Rojahn	**Modified By**	Terry Rojahn	**Printed By**	James Goerdt
Created Date	6/3/06	**Modified Date**	6/3/06	**Printed Date**	7/28/06

Project Information

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT5106
TtNUS Project #	112G00041	**Well ID**	13MWT51
Task/Contract #	CTO 377	**Well Type**	CRA
WBS Code #	TP00050125	**Sampled By**	Terry Rojahn
		Concentration	Low concentration

Well and Sample Data

Date	6/3/06	**Static Water Level (ft.)**	13.62	**Water Quality Meter**	928069
Purge Method	Low flow - Bladder	**Total Well Depth (ft.)**	16.00	**Pump Control Box**	MP10-1100
Sampling Method	Low flow - Bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	3254-1902
MS/MSD Collected?	N	**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	NA		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
6/3/06	15:05	13.62	0	Clear	NA	NA	NA	NA	NA	NA	NA	NA	0
6/3/06	15:15	13.96	110	Clear	6.85	0.415	3.31	12	15.2	171	NA	NA	1100

6/3/06	15:25	14.05	60	Clear	6.84	0.418	1.82	5.1	15.3	163	NA	NA	600
6/3/06	15:35	14.06	60	Clear	6.84	0.418	1.57	2.9	15.1	161			600
6/3/06	15:40	14.07	60	Clear	6.85	0.416	1.60	2.7	15.4	156			300
6/3/06	15:45	14.09	60	Clear	6.84	0.418	1.64	2.8	15.5	153			300

Final Purge / Sample Data

One Casing Volume		**Method**	Low flow - Bladder	**Dissolved Oxygen (mg/L)**	1.64
Total Vo. Purge (L)	2.9	**Waterlevel (ft.)**	14.09	**Turbidity (NTUs)**	2.8
Start Purge (hrs.)	3:05:00 PM	**Flowrate (mL/min)**	60	**Temp (C)**	15.5
End Purge (hrs.)	3:45:00 PM	**Color**	Clear	**ORP (mV)**	153
Total Purge Time (min.)	40	**pH (S.U.)**	6.84	**Salinity**	
		Conductivity (mS/cm)	0.418	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	6/3/06	15:50	SW-846-8330	Nitroaromatics and Nitramines	4°C	2	Glass	1L Amber		112G00041-642006-13
✓	6/3/06	15:50	EPA 353.2	Nitrate + Nitrite (as N)	4°C/H2SO4	1	Plastic	500ml PE		112G00041-642006-13

General Observations and Notes

TD = 17.75 ? CHECK WELL CONSTRUCTION SHEET!

- End of Report -

A.2

SWMU 13

SURFACE WATER SAMPLE LOG SHEETS

ROUND 8

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW1105			**Printed By**	James Goerdt
Sample Location ID	13SWSD11			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	yellowish tint	**Temp (C)**	14.4
Time	12:25	**pH (S.U.)**	8.54	**ORP (mV)**	178
Depth (ft.)	NA	**S.C. (mS/cm)**	2.06	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	9.61		
MS/MSD Collected	N	**Turbidity (NTUs)**	14		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	12:25	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

Flow ~3oz/min

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW1407			**Printed By**	James Goerdt
Sample Location ID	13SWSD14			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	CLEAR	**Temp (C)**	13.2
Time	10:40	**pH (S.U.)**	7.02	**ORP (mV)**	245
Depth (ft.)	SURFACE	**S.C. (mS/cm)**	0.451	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	9.90		
MS/MSD Collected	N	**Turbidity (NTUs)**	19		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	10:40	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

0.15 X 1.5 0.75FT/SEC

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW1507			**Printed By**	James Goerdt
Sample Location ID	13SWSD15			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	Slighty cloudy	**Temp (C)**	12.8
Time	10:54	**pH (S.U.)**	6.96	**ORP (mV)**	237
Depth (ft.)	SURFACE	**S.C. (mS/cm)**	0.222	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	8.70		
MS/MSD Collected	N	**Turbidity (NTUs)**	75		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	11:00	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

FLOW = <1GPM

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW1607			**Printed By**	James Goerdt
Sample Location ID	13SWSD16			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	CLEAR	**Temp (C)**	12.6
Time	11:25	**pH (S.U.)**	7.21	**ORP (mV)**	224
Depth (ft.)	SURFACE	**S.C. (mS/cm)**	0.257	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	9.83		
MS/MSD Collected	N	**Turbidity (NTUs)**	19		
Duplicate Collected	Y				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	11:25	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

0.05' X 1.2' & 1FT/SEC

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	David Hickey
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/21/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW1906			**Printed By**	James Goerdt
Sample Location ID	13SWSD19			**Printed Date**	8/3/06

Sample Collection Records

Date	5/21/06	**Color**	Clear	**Temp (C)**	14.43
Time	16:53	**pH (S.U.)**	5.57	**ORP (mV)**	260
Depth (ft.)	0.10	**S.C. (mS/cm)**	0.474	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	NA		
MS/MSD Collected	N	**Turbidity (NTUs)**	3.83		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/21/06	16:53	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

3.0 sec/ft

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	David Hickey
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/21/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW2006			**Printed By**	James Goerdt
Sample Location ID	13SWSD20			**Printed Date**	8/3/06

Sample Collection Records

Date	5/21/06	**Color**	Clear	**Temp (C)**	14.36
Time	16:40	**pH (S.U.)**	5.84	**ORP (mV)**	245
Depth (ft.)	0.11	**S.C. (mS/cm)**	0.296	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	NA		
MS/MSD Collected	N	**Turbidity (NTUs)**	11.1		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/21/06	16:40	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

2 sec/ft

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW2206			**Printed By**	James Goerdt
Sample Location ID	13SWSD22			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	CLEAR	**Temp (C)**	13.0
Time	13:00	**pH (S.U.)**	7.88	**ORP (mV)**	164
Depth (ft.)	SURFACE	**S.C. (mS/cm)**	0.406	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	7.95		
MS/MSD Collected	N	**Turbidity (NTUs)**	5.6		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	13:00	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

FLOW = 1-2 GPM

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Sample ID Number	13SW3007			**Printed By**	James Goerdt
Sample Location ID	13SWSD30			**Printed Date**	8/3/06

Sample Collection Records

Date	5/22/06	**Color**	CLEAR	**Temp (C)**	14.1
Time	11:55	**pH (S.U.)**	8.11	**ORP (mV)**	181
Depth (ft.)	SURFACE	**S.C. (mS/cm)**	0.371	**Salinity (%)**	NA
Method	Direct bottle	**DO (mg/L)**	11.11		
MS/MSD Collected	N	**Turbidity (NTUs)**	4.2		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✓	5/22/06	11:55	Nitroaromatics and Nitramines	SW-846-8330	2	Glass	1L Amber	4° C		112G00041-5222006-10

General Observations and Notes

0.25 X 10 5 & 2SEC/FT

- End of Report -

A.3

SWMU 13

CHAIN OF CUSTODY RECORDS

ROUND 8

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/22/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Chain of Custody ID	112G00041-5222006-10	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7415	**Printed Date**	7/19/06

Chain of Custody Information

Chain of Custody #	**112G00041-5222006-10**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
				Date	05/22/2006
Carrier	Federal Express	**Address**	940 South Harney Street	**Time**	18:00
Carrier/Waybill No.	8494 1921 7415	**City, State, Zip**	Seattle, WA 98108	**Received By:**	Federal Express
		Lab Contact	Hugh Prentice/Elaine Walker	**Date**	5/22/06
		Lab Telephone	206-767-5060 x1028	**Time**	18:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
5/20/06	12GWT1006	12:45	SW-846-8330	Nitroaromatics and Nitramines	12MWT10	GW	4°C	2	Glass	1L Amber	
5/20/06	12GWT1006	12:45	EPA 353.2	Nitrate + Nitrite (as N)	12MWT10	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/20/06	12GWT1106	15:15	EPA 353.2	Nitrate + Nitrite (as N)	12MWT11	GW	4°C/H2SO4	1	Plastic	500ml PE	

5/20/06	12GWT1106	15:15	SW-846-8330	Nitroaromatics and Nitramines	12MWT11	GW	4°C	2	Glass	1L Amber	
5/20/06	12GWT4106	11:05	SW-846-8330	Nitroaromatics and Nitramines	12MWT41	GW	4°C	2	Glass	1L Amber	
5/20/06	12GWT4106	11:05	EPA 353.2	Nitrate + Nitrite (as N)	12MWT41	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/20/06	12GWT4706	10:55	SW-846-8330	Nitroaromatics and Nitramines	12MWT47	GW	4°C	2	Glass	1L Amber	
5/20/06	12GWT4706	10:55	EPA 353.2	Nitrate + Nitrite (as N)	12MWT47	GW	4°C/H2SO4	1	Plastic	500ml PE	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
5/21/06	13GWT3707	10:25	SW-846-8330	Nitroaromatics and Nitramines	13MWT37	GW	4°C	2	Glass	1L Amber	
5/21/06	13GWT3707	10:25	EPA 353.2	Nitrate + Nitrite (as N)	13MWT37	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/21/06	13GWT4607	12:45	EPA 353.2	Nitrate + Nitrite (as N)	13MWT46	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/21/06	13GWT4607	12:45	SW-846-8330	Nitroaromatics and Nitramines	13MWT46	GW	4°C	2	Glass	1L Amber	
5/21/06	13SW1906	16:53	SW-846-8330	Nitroaromatics and Nitramines	13SWSD19	SW	4°C	2	Glass	1L Amber	
5/21/06	13SW2006	16:40	SW-846-8330	Nitroaromatics and Nitramines	13SWSD20	SW	4°C	2	Glass	1L Amber	
5/21/06	16GWT1107	17:20	SW846 9056	Sulfate and Chloride	16MWT11	GW	4°C	1	Plastic	1L HDPE	
5/21/06	16GWT1107	17:20	SW-846 8260B	Volatile Organic Compounds	16MWT11	GW	4°C/HCL	3	Glass	40ml vials	
5/21/06	16GWT1107	17:20	EPA 353.2	Nitrate + Nitrite (as N)	16MWT11	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/21/06	16GWT1107	17:20	SW-846-8330	Nitroaromatics and Nitramines	16MWT11	GW	4°C	2	Glass	1L Amber	
5/21/06	TB05210601	17:10	SW-846 8260B	Volatile Organic Compounds	QC	AQ	4°C/HCL	2	Glass	40ml vials	
5/22/06	13SW1105	12:25	SW-846-8330	Nitroaromatics and Nitramines	13SWSD11	SW	4°C	2	Glass	1L Amber	
5/22/06	13SW1407	10:40	SW-846-8330	Nitroaromatics and Nitramines	13SWSD14	SW	4°C	2	Glass	1L Amber	
5/22/06	13SW1507	11:00	SW-846-8330	Nitroaromatics and Nitramines	13SWSD15	SW	4°C	2	Glass	1L Amber	
5/22/06	13SW1607	11:25	SW-846-8330	Nitroaromatics and Nitramines	13SWSD16	SW	4°C	2	Glass	1L Amber	
5/22/06	13SW2206	13:00	SW-846-8330	Nitroaromatics and Nitramines	13SWSD22	SW	4°C	2	Glass	1L Amber	
5/22/06	13SW3007	11:55	SW-846-8330	Nitroaromatics and Nitramines	13SWSD30	SW	4°C	2	Glass	1L Amber	
5/22/06	FD05220601	00:00	SW-846-8330	Nitroaromatics and Nitramines	QC	SW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/23/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Chain of Custody ID	112G00041-5232006-11	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7390	**Printed Date**	7/19/06

Chain of Custody Information

Chain of Custody #	**112G00041-5232006-11**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	05/23/2006
Carrier/Waybill No.	8494 1921 7390	**City, State, Zip**	Seattle, WA 98108	**Time**	18:00
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	5/23/06
				Time	18:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
5/23/06	13GWT1308	14:05	SW-846-8330	Nitroaromatics and Nitramines	13MWT13	GW	4°C	2	Glass	1L Amber	
5/23/06	13GWT1408	15:00	SW-846-8330	Nitroaromatics and Nitramines	13MWT14	GW	4°C	2	Glass	1L Amber	
5/23/06	13GWT1408	15:00	EPA 353.2	Nitrate + Nitrite (as N)	13MWT14	GW	4°C/H2SO4	1	Plastic	500ml PE	

5/23/06	13GWT4707	11:30	SW-846-8330	Nitroaromatics and Nitramines	13MWT47	GW	4°C	2	Glass	1L Amber	
5/23/06	13GWT4707	11:30	EPA 353.2	Nitrate + Nitrite (as N)	13MWT47	GW	4°C/H2SO4	1	Plastic	500ml PE	
5/23/06		14:05	EPA 353.2	Nitrate + Nitrite (as N)		GW	4°C/H2SO4	1	Plastic	500ml PE	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	6/2/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Chain of Custody ID	112G00041-622006-12	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7389	**Printed Date**	7/19/06

Chain of Custody Information

Chain of Custody #	**112G00041-622006-12**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	06/02/2006
Carrier/Waybill No.	8494 1921 7389	**City, State, Zip**	Seattle, WA 98108	**Time**	18:00
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	6/2/06
				Time	18:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
6/1/06	13GWT2108	13:20	SW-846-8330	Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass	1L Amber	
6/1/06	13GWT2108	13:20	EPA 353.2	Nitrate + Nitrite (as N)	13MWT21	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/1/06	13GWT4007	10:25	EPA 353.2	Nitrate + Nitrite (as N)	13MWT40	GW	4°C/H2SO4	1	Plastic	500ml PE	

6/1/06	13GWT4007	10:25	SW-846-8330	Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass	1L Amber	
6/2/06	13GWT0108	11:30	SW-846-8330	Nitroaromatics and Nitramines	13MWT01	GW	4°C	2	Glass	1L Amber	
6/2/06	13GWT0108	11:30	EPA 353.2	Nitrate + Nitrite (as N)	13MWT01	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/2/06	13GWT1108	13:15	EPA 353.2	Nitrate + Nitrite (as N)	13MWT11	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/2/06	13GWT1108	13:15	SW-846-8330	Nitroaromatics and Nitramines	13MWT11	GW	4°C	2	Glass	1L Amber	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
6/2/06	13GWT4507	13:50	EPA 353.2	Nitrate + Nitrite (as N)	13MWT45	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/2/06	13GWT4507	13:50	SW-846-8330	Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass	1L Amber	

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	6/4/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Chain of Custody ID	112G00041-642006-13	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	8494 1921 7378	**Printed Date**	7/19/06

Chain of Custody Information

Chain of Custody #	**112G00041-642006-13**	**Lab Name**	Laucks Testing Laboratories	**Relenquished By**	Terry Rojahn
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	06/05/2006
Carrier/Waybill No.	8494 1921 7378	**City, State, Zip**	Seattle, WA 98108	**Time**	18:30
		Lab Contact	Hugh Prentice/Elaine Walker	**Received By:**	Federal Express
		Lab Telephone	206-767-5060 x1028	**Date**	6/5/06
				Time	18:30

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
6/3/06	13GWT0909	10:00	EPA 353.2	Nitrate + Nitrite (as N)	13MWT09	GW	4°C/H2SO4	3	Plastic	500ml PE	DO MS/MSD
6/3/06	13GWT0909	10:00	SW-846-8330	Nitroaromatics and Nitramines	13MWT09	GW	4°C	4	Glass	1L Amber	DO MS/MSD
6/3/06	13GWT3407	18:35	SW-846-8330	Nitroaromatics and Nitramines	13MWT34	GW	4°C	2	Glass	1L Amber	

6/3/06	13GWT3407	18:35	EPA 353.2	Nitrate + Nitrite (as N)	13MWT34	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/3/06	13GWT5106	15:50	SW-846-8330	Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass	1L Amber	
6/3/06	13GWT5106	15:50	EPA 353.2	Nitrate + Nitrite (as N)	13MWT51	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/3/06	FD06030601	00:00	SW-846-8330	Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass	1L Amber	
6/3/06	FD06030601	00:00	EPA 353.2	Nitrate + Nitrite (as N)	QC	GW	4°C/H2SO4	1	Plastic	500ml PE	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
6/4/06	13GWT1508	15:15	EPA 353.2	Nitrate + Nitrite (as N)	13MWT15	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/4/06	13GWT1508	15:15	SW-846-8330	Nitroaromatics and Nitramines	13MWT15	GW	4°C	2	Glass	1L Amber	
6/4/06	13GWT1708	12:30	SW-846-8330	Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass	1L Amber	
6/4/06	13GWT1708	12:30	EPA 353.2	Nitrate + Nitrite (as N)	13MWT17	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/4/06	13GWT2807	10:30	EPA 353.2	Nitrate + Nitrite (as N)	13MWT28	GW	4°C/H2SO4	1	Plastic	500ml PE	
6/4/06	13GWT2807	10:30	SW-846-8330	Nitroaromatics and Nitramines	13MWT28	GW	4°C	2	Glass	1L Amber	
6/4/06	13GWT3107	09:40	SW-846-8330	Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass	1L Amber	
6/4/06	13GWT3107	09:40	EPA 353.2	Nitrate + Nitrite (as N)	13MWT31	GW	4°C/H2SO4	1	Plastic	500ml PE	

General Observations and Notes

No Notes

- End of Report -

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SWMU 13

WATER LEVEL MEASUREMENTS

ROUND 8

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round ~~6~~ 8 Sampling - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Site**	SWMU 13	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**Measuring Device**	Water Level Indicator	**Created Date**	5/21/06
Task/Contract #	CTO 0377	**Sampled By**	Terry Rojahn	**Modified By**	Michael Quaill
WBS Code #	0000	**Weather**	Mostly sunny and 60s	**Modified Date**	6/5/06
				Printed By	James Goerdt
				Printed Date	8/3/06

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT01	5/21/06	12:18	6.70		NA	NA		calc	N
13MWT02	5/21/06	12:00	16.91		NA	NA		calc	N
13MWT03	5/21/06	12:21	8.45		NA	NA		calc	N
13MWT04	5/21/06	14:22	13.82		NA	NA		e	N
13MWT05	5/21/06	13:58	5.06		NA	NA		calc	N
13MWT06	5/21/06	12:24	11.20		NA	NA		calc	N
13MWT07	5/21/06	13:55	3.02		NA	NA		calc	N
13MWT08	5/21/06	14:27	3.81		NA	NA		calc	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round ~~9~~ 8 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT09	5/21/06	12:26	7.96		NA	NA		calc	N
13MWT10	5/21/06	13:51	13.00		NA	NA		calc	N
13MWT11	5/21/06	13:39	8.56		NA	NA		calc	N
13MWT12	5/21/06	13:36	9.87		NA	NA		calc	N
13MWT13	5/21/06	10:50	3.91		NA	NA		calc	N
13MWT14	5/21/06	10:39	13.46		NA	NA		calc	N
13MWT15	5/21/06	13:31	13.22		NA	NA		calc	N
13MWT16	5/21/06	13:17	9.72		NA	NA		calc	N
13MWT17	5/21/06	13:14	8.52		NA	NA		calc	N
13MWT18	5/21/06	13:28	18.76		NA	NA		e	N
13MWT19	5/21/06	10:27	9.14		NA	NA		calc	N
13MWT20	5/21/06	12:35	4.34		NA	NA		calc	N
13MWT21	5/21/06	13:08	8.02		NA	NA		calc	N
13MWT22	5/21/06	13:00	7.84		NA	NA		calc	N
13MWT23	5/21/06	12:38	8.06		NA	NA		calc	N
13MWT24	5/21/06	12:41	8.68		NA	NA		calc	N
13MWT25	5/21/06	12:49	5.80		NA	NA		calc	N
13MWT26	5/21/06	12:47	9.44		NA	NA		calc	N
13MWT27	5/21/06	13:34	8.35		NA	NA		calc	N
13MWT28	5/21/06	12:32	77.29		NA	NA		calc	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round ~~6~~ 8 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT29	5/21/06	10:56	5.06		NA	NA		calc	N
13MWT30	5/21/06	10:41	11.02		NA	NA		calc	N
13MWT31	5/21/06	10:22	9.98		NA	NA		calc	N
13MWT32	5/21/06	10:18	8.30		NA	NA		calc	N
13MWT33	5/21/06	10:29	9.60		NA	NA		calc	N
13MWT34	5/21/06	13:04	4.86		NA	NA		calc	N
13MWT35	5/21/06	13:42	63.65		NA	NA		calc	N
13MWT36	5/21/06	08:57	18.55		NA	NA		calc	N
13MWT37	5/21/06	09:43	13.29		NA	NA		e	N
13MWT38	5/21/06	09:46	61.58		NA	NA		e	N
13MWT39	5/21/06	12:22	12.88		NA	NA		e	N
13MWT40	5/21/06	15:48	17.96		NA	NA		calc	N
13MWT41	5/21/06	15:45	66.28		NA	NA		calc	N
13MWT42	5/21/06	15:53	20.23		NA	NA		calc	N
13MWT43	5/21/06	14:07	7.85		NA	NA		calc	N
13MWT44	5/21/06	14:12	64.06		NA	NA		calc	N
13MWT45	5/21/06	13:11	70.85		NA	NA		calc	N
13MWT46	5/21/06	12:25	56.23		NA	NA		calc	N
13MWT47	5/21/06	11:06	6.84		NA	NA		calc	N
13MWT48	5/21/06	09:47	9.88		NA	NA		calc	N

Tetra Tech NUS, Inc.

GROUNDWATER MEASUREMENT LOG

SWMU 13 and 16 Round ~~9~~ 8 Sampling - CRANE NSWC

Groundwater Measurements

Well ID	Date	Time	Water Level Indicator Reading (ft)	Total Well Depth (ft)	Free Product Thickness (ft)	PID/FID (ppm)	Reference Elevation (ft)	Groundwater Elevation	Tidally Influenced
13MWT49	5/21/06	09:39	7.20		NA	NA		calc	N
13MWT50	5/21/06	09:37	7.33		NA	NA		calc	N
13MWT51	5/21/06	09:34	5.62		NA	NA		calc	N

General Observations and Notes

WELLS 13MWT08 & 18 REPLACED J-PLUG W/ NITRIL GLOVE.;D. HICKEY MEASURED WELLS 13MWT36-42 AND 46 - TR MEASURED OTHERS.

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Terry Rojahn
TtNUS Project #	112G00041	**PM Telephone**	412-921-8308	**Created Date**	5/30/06
Task/Contract #	CTO 377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP00050125	**FOL Phone**	412-921-8425	**Modified Date**	
Chain of Custody ID		**Carrier**		**Printed By**	John Wright
		Carrier/Waybill No.		**Printed Date**	9/1/06

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
13SG01	5/21/06	12:07	<1gpm	Estimated	1.77			
13SG02	5/21/06	12:15	1-3gpm	Estimated	3.69			
13SG03	5/21/06	10:59	<1gpm	Estimated	1.94			
13SG04	5/21/06	10:55	1.5gpm	Measured	2.43			
13SG05	5/21/06	10:47	1-2gpm	Estimated	3.89			
13SG06	5/21/06	10:35	<0.5gpm	Estimated	2.34			
13SG07	5/21/06	12:44	0gpm	Stagnant	1.56			
13SG08	5/21/06	12:58	3-5gpm	Estimated	5.08			

Tetra Tech NUS, Inc.

SURFACE WATER MEASUREMENT LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Surface Water Measurements

Location ID	Date	Time	Flow Rate (est.)	Type	Measurement	Flow Width	Flow Depth	Flow Velocity
13SG09	5/21/06	13:23	12.1gpm	Measured	4.14	0.9	0.03	1
13SG10	5/21/06	13:45	14.8gpm	Measured	4.93	1.1	0.03	1
13SG11	5/21/06	11:12	1.5gpm	Measured	2.24			
13SG12	5/21/06	08:50	606.2gpm	Measured	6.88	15	0.09	1
13SG13	5/21/06	09:10	60gpm	Measured	4.83			
13SG14	5/21/06	09:30	50gpm	Measured	6.35			
13SG15	5/21/06	09:45	673.5gpm	Measured	Destroyed	15	0.10	1
13SG16	5/21/06	09:58	0gpm		Dry	Dry	Dry	Dry
13SG17	5/21/06	09:53	0gpm		Dry	Dry	Dry	Dry
13SG18	5/21/06	10:00	727.4gpm	Measured	8.14	18	0.09	1

General Observations and Notes

No Notes

- End of Report -

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SWMU 13

EQUIPMENT CALIBRATION FORMS

ROUND 8

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Horiba U-22 (JG)	**Created By**	David Hickey
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	5/7/06
Task/Contract #	CTO 377	**Serial Number**	406032	**Modified By**	James Goerdt
WBS Code #	TP00050125			**Modified Date**	7/7/06
Client				**Printed By**	James Goerdt
				Printed Date	8/3/06

Calibration Records

Date	Calibrator	pH (4 SU)	Conductivity (mS/cm)	Comments
5/3/06	David Hickey	Pre: 4.53 Post: 3.98 Std: 5216 Exp: 03-20-2008	Pre: 4.33 Post: 4.47 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/4/06	David Hickey	Pre: 4.26 Post: 3.96 Std: 5216 Exp: 03-20-2008	Pre: 4.60 Post: 4.48 Std: 5216 Exp: 03-20-2008	
5/6/06	David Hickey	Pre: 3.14 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.37 Post: 4.48 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/7/06	David Hickey	Pre: 3.80 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.74 Post: 4.49 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/8/06	David Hickey	Pre: 4.22 Post: 4.00 Std: 5216 Exp: 03-	Pre: 4.46 Post: 4.49 Std: 5216 Exp: 03-	Conductivity standard = 4.49 mS/cm

		20-2008	20-2008	
5/9/06	David Hickey	Pre: 3.80 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.39 Post: 4.49 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/17/06	David Hickey	Pre: 4.15 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.65 Post: 4.49 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/18/06 1:00:00 AM	David Hickey	Pre: 4.00 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.32 Post: 4.49 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm
5/19/06 1:00:00 AM	David Hickey	Pre: 4.08 Post: 3.98 Std: 5216 Exp: 03-20-2008	Pre: 4.80 Post: 4.49 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm. Cal standard has no set value for DO but this parameter is included in the auto cal of the instrument
5/20/06 1:00:00 AM	David Hickey	Pre: 3.67 Post: 4.02 Std: 5216 Exp: 03-20-2008	Pre: 4.42 Post: 4.51 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm. Received error message #6 for DO sensor indicating a malfunctioning sensor.
5/21/06 1:00:00 AM	David Hickey	Pre: 4.02 Post: 4.00 Std: 5216 Exp: 03-20-2008	Pre: 4.43 Post: 4.54 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm. Received error message #6 for DO sensor indicating a malfunctioning sensor.
5/23/06 1:00:00 AM	David Hickey	Pre: 3.93 Post: 4.01 Std: 5216 Exp: 03-20-2008	Pre: 4.61 Post: 4.48 Std: 5216 Exp: 03-20-2008	Conductivity standard = 4.49 mS/cm. Received error message #6 for DO sensor indicating a malfunctioning sensor.

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	LaMotte 2020 Turbidity Meter (DH)	**Created By**	David Hickey
TtNUS Project #	112G00041			**Created Date**	5/7/06
Task/Contract #	CTO 377	**Manufacturer**	LaMotte	**Modified By**	
WBS Code #	TP00050125	**Serial Number**	3327-2402	**Modified Date**	
Client				**Printed By**	James Goerdt
				Printed Date	8/3/06

Calibration Records

Date	Calibrator	Turbidity (0 NTU)	Turbidity (10 NTU)	Comments
5/3/06	David Hickey	Pre: 0.0 Post: 0.0 Std: 4771 Exp: 06/2007	Pre: 9.7 Post: 10.0 Std: P568485 Exp: 06/2007	Standards provided with instrument by US Environmental. 0 NTU - AMCO Clear Turbidity Standard. 10 NTU - LaMotte AMCO Primary Turbidity Standard.
5/6/06	David Hickey	Pre: 0.25 Post: 0.0 Std: 4771 Exp: 06/2007	Pre: 10.0 Post: 10.0 Std: P568485 Exp: 06/2007	
5/7/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.04 Post: 10.00 Std: P568485 Exp: 06/2007	
5/8/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.76 Post: 9.99 Std: P568485 Exp: 06/2007	
5/9/06	David Hickey	Pre: 0.19 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.95 Post: 10.01 Std: P568485 Exp: 06/2007	
		Pre: 0.00	Pre: 8.41	

5/16/06	David Hickey	Post: 0.00 Std: 4771 Exp: 06/2007	Post: 9.94 Std: P568485 Exp: 06/2007	Standards provided with instrument by US Environmental. 0 NTU - AMCO Clear Turbidity Standard. 10 NTU - LaMotte AMCO Primary Turbidity Standard.
5/18/06 1:00:00 AM	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.71 Post: 10.02 Std: P568485 Exp: 06/2007	
5/19/06 1:00:00 AM	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.14 Post: 10.03 Std: P568485 Exp: 06/2007	
5/20/06 1:00:00 AM	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.00 Post: 10.00 Std: P568485 Exp: 06/2007	
5/21/06 1:00:00 AM	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.12 Post: 9.99 Std: P568485 Exp: 06/2007	Standards provided with instrument by US Environmental. 0 NTU - AMCO Clear Turbidity Standard. 10 NTU - LaMotte AMCO Primary Turbidity Standard.
5/22/06 1:00:00 AM	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.81 Post: 10.00 Std: P568485 Exp: 06/2007	Standards provided with instrument by US Environmental. 0 NTU - AMCO Clear Turbidity Standard. 10 NTU - LaMotte AMCO Primary Turbidity Standard.
5/23/06 1:00:00 AM	David Hickey	Pre: 0.09 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.98 Post: 10.00 Std: P568485 Exp: 06/2007	Standards provided with instrument by US Environmental. 0 NTU - AMCO Clear Turbidity Standard. 10 NTU - LaMotte AMCO Primary Turbidity Standard.

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	LaMotte 2020 Turbidity Meter (JG)	**Created By**	David Hickey
TtNUS Project #	112G00041			**Created Date**	5/7/06
Task/Contract #	CTO 377	**Manufacturer**	LaMotte	**Modified By**	
WBS Code #	TP00050125	**Serial Number**	3254-1902	**Modified Date**	
Client				**Printed By**	James Goerdt
				Printed Date	8/3/06

Calibration Records

Date	Calibrator	Turbidity (0 NTU)	Turbidity (10 NTU)	Comments
5/3/06	David Hickey	Pre: 0.35 Post: 0.0 Std: 4771 Exp: 06/2007	Pre: 8.4 Post: 9.8 Std: P568485 Exp: 06/2007	
5/4/06	David Hickey	Pre: 0.0 Post: 0.0 Std: 4771 Exp: 06/2007	Pre: 9.7 Post: 10.0 Std: P568485 Exp: 06/2007	
5/6/06	David Hickey	Pre: 0.0 Post: 0.0 Std: 4771 Exp: 06/2007	Pre: 10.0 Post: 10.0 Std: P568485 Exp: 06/2007	
5/7/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.61 Post: 9.97 Std: P568485 Exp: 06/2007	
5/8/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.1 Post: 10.0 Std: P568485 Exp: 06/2007	
5/9/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.13 Post: 10.00 Std: P568485 Exp: 06/2007	
5/16/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.98 Post: 10.00 Std: P568485 Exp: 06/2007	
5/17/06	David Hickey	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 5.5 Post: 10.0 Std: P568485 Exp: 06/2007	

5/18/06	T. Rojahn	Pre: 0.20 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.90 Post: 10.00 Std: P568485 Exp: 06/2007	
5/19/06	T. Rojahn	Pre: 0.04 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.183 Post: 10.00 Std: P568485 Exp: 06/2007	Turbidity standard manufacture = AMCO
5/20/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.98 Post: 10.00 Std: P568485 Exp: 06/2007	
5/22/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.11 Post: 10.00 Std: P568485 Exp: 06/2007	
5/23/06	T. Rojahn	Pre: 0.03 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.90 Post: 10.00 Std: P568485 Exp: 06/2007	
6/1/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.12 Post: 10.00 Std: P568485 Exp: 06/2007	
6/2/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 10.09 Post: 10.00 Std: P568485 Exp: 06/2007	Turbidity standard manufacture = AMCO
6/3/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.45 Post: 10.00 Std: P568485 Exp: 06/2007	
6/4/06	T. Rojahn	Pre: 0.00 Post: 0.00 Std: 4771 Exp: 06/2007	Pre: 9.99 Post: 10.00 Std: P568485 Exp: 06/2007	Turbidity standard manufacture = AMCO

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	Horiba U-22 (DH)	**Created By**	David Hickey
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	5/7/06
Task/Contract #	CTO 377	**Serial Number**	928069	**Modified By**	James Goerdt
WBS Code #	TP00050125			**Modified Date**	7/7/06
Client				**Printed By**	James Goerdt
				Printed Date	8/3/06

Calibration Records

Date	Calibrator	pH (4 SU)	Conductivity (mS/cm)	Comments
5/4/06	David Hickey	Pre: 4.36 Post: 3.99 Std: 4951 Exp: 06/23/07	Pre: 5.1 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/6/06	David Hickey	Pre: 4.03 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.47 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/7/06	David Hickey	Pre: 3.97 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.52 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/8/06	David Hickey	Pre: 4.12 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.60 Post: 4.47 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/9/06	David Hickey	Pre: 4.03 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.40 Post: 4.47 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/16/06	T. Rojahn	Pre: 3.94 Post: 4.00 Std: 4920 Exp: 5/10/07	Pre: 4.91 Post: 4.49 Std: 4920 Exp: 5/10/07	Conductivity standard = 4.49 mS/cm
5/17/06	David Hickey	Pre: 4.01 Post: 3.99 Std: 4951 Exp: 06/23/07	Pre: 4.07 Post: 4.50 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/18/06	T. Rojahn	Pre: 4.00 Post: 4.00 Std: 4951	Pre: 4.71 Post: 4.49 Std: 4951	Conductivity standard = 4.49 mS/cm

		Exp: 06/23/07	Exp: 06/23/07	
5/19/06	T. Rojahn	Pre: 4.03 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.20 Post: 4.48 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/20/06	T. Rojahn	Pre: 4.02 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.73 Post: 4.49 Std: 4951 Exp: 06/23/07	
5/22/06	T. Rojahn	Pre: 3.99 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.50 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
5/23/06	T. Rojahn	Pre: 4.03 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.92 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
6/1/06	-Select-	Pre: 4.00 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.98 Post: 4.48 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
6/2/06	T. Rojahn	Pre: 4.00 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.04 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
6/3/06	T. Rojahn	Pre: 4.02 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.42 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm
6/4/06	T. Rojahn	Pre: 4.00 Post: 4.00 Std: 4951 Exp: 06/23/07	Pre: 4.48 Post: 4.49 Std: 4951 Exp: 06/23/07	Conductivity standard = 4.49 mS/cm

ROUND 9

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3408
TtNUS Project #	112G00041	**Well ID**	13MWT34
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	5.10	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	20.50	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	09:25	5.10	160	Clear	4.76	0.435	9.77	4.2	12.70	371	N/A		0
4/29/07	09:35	5.75	160	Clear	4.70	0.432	5.23	6.2	12.51	373	N/A		1600
4/29/07	09:45	5.82	160	Clear	4.66	0.426	3.45	4.9	12.60	379	N/A		1600
4/29/07	09:55	5.90	160	Clear	4.65	0.425	3.39	4.1	12.57	376	N/A		1600
4/29/07	10:05	5.90	160	Clear	4.65	0.425	3.22	2.4	12.57	376	N/A		1600
4/29/07	10:15	5.90	160	Clear	4.66	0.425	3.72	1.1	12.68	373	N/A		1600
4/29/07	10:25	5.90	160	Clear	4.67	0.425	3.78	0.95	12.74	372	N/A		1600
4/29/07	10:35	5.90	160	Clear	4.68	0.426	2.70	0.50	12.78	371	N/A		1600

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	10:45	5.90	160	Clear	4.72	0.425	2.56	0.15	12.75	369	N/A		1600
4/29/07	10:50	5.90	160	Clear	4.72	0.426	2.52	0.40	12.76	369	N/A		800
4/29/07	10:55	5.90	160	Clear	4.72	0.427	2.52	0.30	12.76	368	N/A		800

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Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.52
Total Vo. Purge (L)	14.4	**Waterlevel (ft.)**	5.90	**Turbidity (NTUs)**	0.30
Start Purge (hrs.)	10:25:00 AM	**Flowrate (mL/min)**	160	**Temp (C)**	12.76
End Purge (hrs.)	11:55:00 AM	**Color**	Clear	**ORP (mV)**	368
Total Purge Time (min.)	90	**pH (S.U.)**	4.72	**Salinity**	N/A
		Conductivity (mS/cm)	0.427	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/29/07	10:55	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/29/07	10:55	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3708
TtNUS Project #	112G00041	**Well ID**	13MWT37
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	13.85	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	25.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/24/07	10:00	13.85	180	Clear	4.85	0.186	4.43	5.23	11.9	284	na	na	0
4/24/07	10:30	14.22	180	Clear	4.83	0.191	4.10	2.98	11.8	318	na	na	5400
4/24/07	11:18	14.8	180	Clear	4.82	0.196	3.88	2.03	12.0	357	na	na	8640

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	3.88
Total Vo. Purge (L)	14.04	**Waterlevel (ft.)**	14.8	**Turbidity (NTUs)**	2.03
Start Purge (hrs.)	11:00:00 AM	**Flowrate (mL/min)**	180	**Temp (C)**	12.0
End Purge (hrs.)	12:18:00 PM	**Color**	Clear	**ORP (mV)**	357
Total Purge Time (min.)	78	**pH (S.U.)**	4.82	**Salinity**	na
		Conductivity (mS/cm)	0.196	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/24/07	11:25	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4262007-3
✓	4/24/07	11:25	SW-846 6850	Perchlorate	4°C	2	Plastic - PE	250ml		112G00041-4262007-4

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4008
TtNUS Project #	112G00041	**Well ID**	13MWT40
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	17.87	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	25.50	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/30/07	12:30	17.87	150	Clear	6.61	0.519	9.23	13	13.9	158	na	na	0
4/30/07	13:05	18.43	150	Clear	5.98	0.609	7.45	9.1	13.5	186	na	na	5250
4/30/07	13:30	18.25	140	Clear	5.98	0.599	7.55	6.9	14.2	191	na	na	3500
4/30/07	13:56	18.21	140	Clear	5.99	0.576	7.55	5.9	14.7	193	na	na	3640

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	7.55
Total Vo. Purge (L)	12.39	**Waterlevel (ft.)**	18.21	**Turbidity (NTUs)**	5.9
Start Purge (hrs.)	1:30:00 PM	**Flowrate (mL/min)**	140	**Temp (C)**	14.7
End Purge (hrs.)	2:56:00 PM	**Color**	Clear	**ORP (mV)**	193
Total Purge Time (min.)	86	**pH (S.U.)**	5.99	**Salinity**	na
		Conductivity (mS/cm)	0.576	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/30/07	14:00	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/30/07	14:00	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4508
TtNUS Project #	112G00041	**Well ID**	13MWT45
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	70.07	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	84.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	09:30	70.07	120	Clear	6.63	0.788	5.89	1.08	17.5	159	na	na	0
4/28/07	10:10	74.35	100	Clear	6.4	0.693	1.03	13.7	15.4	68	na	na	4000
4/28/07	10:43	76.82	100	Clear	6.56	0.760	0.98	12.5	16.5	42	na	na	3300
4/28/07	11:00	Dry	100	Clear	6.69	0.758	1.25	11.6	16.8	17	na	na	1700

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	1.25
Total Vo. Purge (L)	9	**Waterlevel (ft.)**	Dry	**Turbidity (NTUs)**	11.6
Start Purge (hrs.)	10:30:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	16.8
End Purge (hrs.)	12:00:00 PM	**Color**	Clear	**ORP (mV)**	17
Total Purge Time (min.)	90	**pH (S.U.)**	6.69	**Salinity**	na
		Conductivity (mS/cm)	0.758	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/28/07	15:19	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/28/07	15:19	SW-846 6850	Perchlorate	4°C	2	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

Well purged dry. Will allow it to recover and then attempt to collect sample.

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4608
TtNUS Project #	112G00041	**Well ID**	13MWT46
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	55.75	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	68.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/24/07	08:05	55.75	260	Clear	5.71	0.824	0.0	39.5	16.5	163	na		0
4/24/07	08:15	55.83	260	Clear	5.55	0.789	0.0	47.9	13.0	156	na	na	2600
4/24/07	09:10	55.88	260	Clear	5.59	0.761	0.0	17.3	13.3	111	na	na	14300

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	0.0
Total Vo. Purge (L)	16.9	**Waterlevel (ft.)**	55.88	**Turbidity (NTUs)**	17.3
Start Purge (hrs.)	9:05:00 AM	**Flowrate (mL/min)**	260	**Temp (C)**	13.3
End Purge (hrs.)	10:10:00 AM	**Color**	Clear	**ORP (mV)**	111
Total Purge Time (min.)	65	**pH (S.U.)**	5.59	**Salinity**	na
		Conductivity (mS/cm)	0.761	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/24/07	09:15	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4262007-3
✓	4/24/07	09:15	SW-846 6850	Perchlorate	4°C	2	Plastic - PE	250ml		112G00041-4262007-4

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT4708
TtNUS Project #	112G00041	**Well ID**	13MWT47
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	7.20	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	21.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	10:18	7.20	200	Clear	3.82	1.03	5.45	23	10.5	308	na	na	0
4/29/07	10:47	7.56	200	Clear	3.88	1.03	5.12	13.7	13.1	287	na	na	5800
4/29/07	11:45	7.87	200	Clear	4.04	1.02	4.58	9.5	13	269	na	na	11600

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	4.58
Total Vo. Purge (L)	17.4	**Waterlevel (ft.)**	7.87	**Turbidity (NTUs)**	9.5
Start Purge (hrs.)	11:18:00 AM	**Flowrate (mL/min)**	200	**Temp (C)**	13
End Purge (hrs.)	12:45:00 PM	**Color**	Clear	**ORP (mV)**	269
Total Purge Time (min.)	87	**pH (S.U.)**	4.04	**Salinity**	na
		Conductivity (mS/cm)	1.02	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/29/07	12:00	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/29/07	12:00	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT5107
TtNUS Project #	112G00041	**Well ID**	13MWT51
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	10.66	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	16.00	**Pump Control Box**	MP10-1588
Sampling Method	same			**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Riser Diameter (in.)**			
Duplicate Sample Collected?	N	**Well Volumes Req.**	1		
Corresponding Duplicate Sample ID		**Monitor Reading (ppm)**	na		

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/26/07	10:05	10.66	100	Clear	5.68	0.833	0.213	51.2	16.3	136	na	na	0
4/26/07	10:30	10.69	100	Clear	5.61	0.78	0.22	24.6	16.6	122	na	na	2500
4/26/07	11:00	10.73	100	Clear	5.45	0.72	0.225	13.28	16.8	118	na	na	3000

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	0.225
Total Vo. Purge (L)	5.5	**Waterlevel (ft.)**	10.73	**Turbidity (NTUs)**	13.28
Start Purge (hrs.)	11:05:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	16.8
End Purge (hrs.)	12:00:00 PM	**Color**	Clear	**ORP (mV)**	118
Total Purge Time (min.)	55	**pH (S.U.)**	5.45	**Salinity**	na
		Conductivity (mS/cm)	0.72	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/26/07	11:20	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/26/07	11:20	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/10/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0109
TtNUS Project #	112G00041	**Well ID**	13MWT01
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	6.95	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**	2	**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/27/07	10:20	6.95	90	Clear	4.51	0.206	8.08	4.6	10.89	383	N/A		0
4/27/07	10:30	7.50	90	Clear	4.39	0.196	4.71	1.1	10.75	392	N/A		900
4/27/07	10:40	7.70	90	Clear	4.16	0.205	3.58	0.00	10.68	413	N/A		900
4/27/07	10:50	7.75	90	Clear	4.04	0.237	3.27	0.00	10.79	418	N/A		900
4/27/07	11:00	7.75	90	Clear	4.00	0.245	3.12	0.00	10.82	420	N/A		900
4/27/07	11:10	7.80	90	Clear	3.99	0.249	2.49	0.00	10.91	422	N/A		900
4/27/07	11:20	7.80	90	Clear	4.00	0.252	2.41	0.00	10.90	425	N/A		900
4/27/07	11:30	7.80	90	Clear	4.03	0.254	2.39	0.00	10.89	425	N/A		900

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/27/07	11:35	7.80	90	Clear	4.04	0.255	2.30	0.00	10.85	425	N/A		450
4/27/07	11:40	7.80	90	Clear	4.04	0.255	2.33	0.00	10.87	424	N/A		450

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Final Purge / Sample Data

One Casing Volume	4.97	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.33
Total Vo. Purge (L)	7.2	**Waterlevel (ft.)**	7.80	**Turbidity (NTUs)**	0.00
Start Purge (hrs.)	11:20:00 AM	**Flowrate (mL/min)**	90	**Temp (C)**	10.87
End Purge (hrs.)	12:40:00 PM	**Color**	Clear	**ORP (mV)**	424
Total Purge Time (min.)	80	**pH (S.U.)**	4.04	**Salinity**	N/A
		Conductivity (mS/cm)	0.255	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/27/07	11:40	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/27/07	11:40	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/10/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT0910
TtNUS Project #	112G00041	**Well ID**	13MWT09
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	8.65	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	20.00	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	14:10	8.65	150	Clear	5.39	1.09	8.62	0.00	13.16	266	N/A		0
4/28/07	14:20	9.10	150	Clear	5.39	0.96	4.81	0.00	13.02	258	N/A		1500
4/28/07	14:30	9.20	150	Clear	5.40	0.96	4.96	0.00	12.76	256	N/A		1500
4/28/07	14:40	9.20	150	Clear	5.41	0.95	4.41	0.00	12.76	256	N/A		1500
4/28/07	14:50	9.25	150	Clear	5.43	0.94	5.13	0.00	13.00	255	N/A		1500
4/28/07	15:00	9.25	150	Clear	5.43	0.95	3.52	0.00	13.18	255	N/A		1500
4/28/07	15:10	9.25	150	Clear	5.45	0.97	2.55	0.00	12.67	259	N/A		1500
4/28/07	15:15	9.25	150	Clear	5.45	0.97	2.55	0.00	12.63	259	N/A		750

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	15:20	9.25	150	Clear	5.46	0.98	2.52	0.00	12.65	260	N/A		750

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Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**
Total Vo. Purge (L)	0	**Waterlevel (ft.)**		**Turbidity (NTUs)**
Start Purge (hrs.)	9:15:00 AM	**Flowrate (mL/min)**		**Temp (C)**
End Purge (hrs.)	9:15:00 AM	**Color**		**ORP (mV)**
Total Purge Time (min.)	0	**pH (S.U.)**		**Salinity**
		Conductivity (mS/cm)		**Other**

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/28/07	15:20	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/28/07	15:20	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1109
TtNUS Project #	112G00041	**Well ID**	13MWT11
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	9.10	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	12:25	9.10	180	Clear	3.93	0.283	8.44	0.00	13.55	303	N/A		0
4/29/07	12:35	9.60	180	Clear	3.88	0.284	5.88	0.10	13.55	306	N/A		1800
4/29/07	12:45	9.85	180	Clear	3.89	0.282	4.80	3.2	14.22	318	N/A		1800
4/29/07	12:55	9.95	130	Clear	3.81	0.280	4.14	3.9	14.36	324	N/A		1300
4/29/07	13:05	10.05	130	Clear	3.84	0.279	3.79	3.3	14.92	321	N/A		1300
4/29/07	13:15	9.95	90	Clear	3.84	0.277	3.78	2.1	15.84	318	N/A		900
4/29/07	13:25	9.95	90	Clear	3.83	0.278	4.66	1.2	15.90	318	N/A		900
4/29/07	13:30	9.95	90	Clear	3.83	0.278	4.68	1.0	15.87	317	N/A		450

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	13:35	9.95	90	Clear	3.83	0.278	4.67	1.1	15.87	316	N/A		450

Page 2 of 3

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	4.67
Total Vo. Purge (L)	8.9	**Waterlevel (ft.)**	9.95	**Turbidity (NTUs)**	1.1
Start Purge (hrs.)	1:25:00 PM	**Flowrate (mL/min)**	90	**Temp (C)**	15.87
End Purge (hrs.)	2:35:00 PM	**Color**	Clear	**ORP (mV)**	316
Total Purge Time (min.)	70	**pH (S.U.)**	3.83	**Salinity**	N/A
		Conductivity (mS/cm)	0.278	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/29/07	13:35	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/29/07	13:35	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1309
TtNUS Project #	112G00041	**Well ID**	13MWT13
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	4.90	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	19.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/25/07	11:50	4.90	250	Clear	4.2	0.131	3.76	2.29	11.5	334	na	na	0
4/25/07	13:45	4.97	250	Clear	4.45	0.148	2.81	0.42	11.6	382	na	na	28750

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.81
Total Vo. Purge (L)	28.75	**Waterlevel (ft.)**	4.97	**Turbidity (NTUs)**	0.42
Start Purge (hrs.)	12:50:00 PM	**Flowrate (mL/min)**	250	**Temp (C)**	11.6
End Purge (hrs.)	2:45:00 PM	**Color**	Clear	**ORP (mV)**	382
Total Purge Time (min.)	115	**pH (S.U.)**	4.45	**Salinity**	na
		Conductivity (mS/cm)	0.148	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/25/07	14:00	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4262007-3
✓	4/25/07	14:00	SW-846 6850	Perchlorate	4°C	2	Plastic - PE	250ml		112G00041-4262007-4

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1409
TtNUS Project #	112G00041	**Well ID**	13MWT14
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	13.82	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	23.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/25/07	08:20	13.82	100	Clear	5.5	0.98	2.45	19.5	12.9	321	na	na	0
4/25/07	09:00	13.83	100	Clear	5.75	0.98	2.32	18	13.5	291	na	na	4000
4/25/07	09:30	13.83	100	Clear	5.93	0.96	1.78	8.43	15.7	201	na	na	3000
4/25/07	10:15	13.85	100	Clear	6.16	0.97	1.23	3.57	17.2	118	na	na	4500

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	1.23
Total Vo. Purge (L)	11.5	**Waterlevel (ft.)**	13.85	**Turbidity (NTUs)**	3.57
Start Purge (hrs.)	9:20:00 AM	**Flowrate (mL/min)**	100	**Temp (C)**	17.2
End Purge (hrs.)	11:15:00 AM	**Color**	Clear	**ORP (mV)**	118
Total Purge Time (min.)	115	**pH (S.U.)**	6.16	**Salinity**	na
		Conductivity (mS/cm)	0.97	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/25/07	10:20	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4262007-3
✓	4/25/07	10:20	SW-846 6850	Perchlorate	4°C	2	Plastic - PE	250ml		112G00041-4262007-4

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1509
TtNUS Project #	112G00041	**Well ID**	13MWT15
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	13.75	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	25.00	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/27/07	13:20	13.75	180	Clear	3.51	0.491	7.23	0.60	12.21	447	N/A		0
4/27/07	13:30	15.15	180	Clear	3.50	0.491	4.57	5.3	12.09	444	N/A		1800
4/27/07	13:40	16.05	180	Clear	3.59	0.458	2.96	14	11.81	406	N/A		1800
4/27/07	13:50	16.25	150	Clear	3.65	0.433	2.75	16	11.85	387	N/A		1500
4/27/07	14:00	16.45	150	Clear	3.69	0.424	2.75	12	11.88	380	N/A		1500
4/27/07	14:10	16.55	150	Clear	3.71	0.411	3.07	10	11.95	374	N/A		1500
4/27/07	14:20	16.65	150	Clear	3.72	0.413	2.55	7.8	11.94	371	N/A		1500
4/27/07	14:30	16.67	150	Clear	3.75	0.412	2.27	5.0	11.96	370	N/A		1500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/27/07	14:40	16.75	150	Clear	3.76	0.407	2.25	4.0	11.95	369	N/A		1500
4/27/07	14:50	16.30	100	Clear	3.79	0.404	2.26	3.5	11.99	360	N/A		1000
4/27/07	14:55	16.30	100	Clear	3.79	0.403	2.23	3.0	12.00	358	N/A		500
4/27/07	15:00	16.30	100	Clear	3.79	0.402	2.23	3.1	12.00	358	N/A		500

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Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.23
Total Vo. Purge (L)	14.6	**Waterlevel (ft.)**	16.30	**Turbidity (NTUs)**	3.1
Start Purge (hrs.)	2:20:00 PM	**Flowrate (mL/min)**	100	**Temp (C)**	12.00
End Purge (hrs.)	4:00:00 PM	**Color**	Clear	**ORP (mV)**	358
Total Purge Time (min.)	100	**pH (S.U.)**	3.79	**Salinity**	N/A
		Conductivity (mS/cm)	0.402	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/27/07	15:00	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/27/07	15:00	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT1709
TtNUS Project #	112G00041	**Well ID**	13MWT17
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	9.92	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	18.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/26/07	13:00	9.92	110	Clear	5.92	0.879	0.248	31.72	17.2	158	na	na	0
4/26/07	13:35	9.96	110	Clear	6.31	0.747	1.98	13.9	16.3	178	na	na	3850
4/26/07	14:05	9.98	110	Clear	6.32	0.656	0.187	8.7	15.4	176	na	na	3300

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	0.187
Total Vo. Purge (L)	7.15	**Waterlevel (ft.)**	9.98	**Turbidity (NTUs)**	8.7
Start Purge (hrs.)	2:00:00 PM	**Flowrate (mL/min)**	110	**Temp (C)**	15.4
End Purge (hrs.)	3:05:00 PM	**Color**	Clear	**ORP (mV)**	176
Total Purge Time (min.)	65	**pH (S.U.)**	6.32	**Salinity**	na
		Conductivity (mS/cm)	0.656	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/26/07	14:30	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/26/07	14:30	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2109
TtNUS Project #	112G00041	**Well ID**	13MWT21
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	8.12	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	15.00	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	Y	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID	13FD04280701				

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	13:09	8.12	200	Clear	6.72	0.411	6.89	10.78	13.3	108	na	na	0
4/28/07	13:40	8.58	200	Clear	6.58	0.459	2.22	4.54	12.8	149	na	na	6200
4/28/07	14:15	9.20	200	Clear	6.61	0.480	2.09	3.66	13.0	148	na	na	7000

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.09
Total Vo. Purge (L)	13.2	**Waterlevel (ft.)**	9.20	**Turbidity (NTUs)**	3.66
Start Purge (hrs.)	2:09:00 PM	**Flowrate (mL/min)**	200	**Temp (C)**	13.0
End Purge (hrs.)	3:15:00 PM	**Color**	Clear	**ORP (mV)**	148
Total Purge Time (min.)	66	**pH (S.U.)**	6.61	**Salinity**	na
		Conductivity (mS/cm)	0.480	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/28/07	14:32	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/28/07	14:32	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT2808
TtNUS Project #	112G00041	**Well ID**	13MWT28
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	Walt Pryor
Status	Complete	***Concentration***	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	77.05	**Water Quality Meter**	4143008
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	88.00	**Pump Control Box**	MP10-2191
Sampling Method	Low flow - bladder	**Well Riser Diameter (in.)**		**Turbidity Meter**	1757-1800
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	N/A		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	09:25	77.05	200	Clear	7.21	1.11	10.79	12	14.67	304	N/A		0
4/28/07	09:35	78.85	120	Clear	7.29	1.08	5.22	5.2	14.80	300	N/A		1200
4/28/07	09:45	80.10	120	Clear	7.32	1.08	3.57	1.2	14.83	292	N/A		1200
4/28/07	09:55	80.75	100	Clear	7.33	1.07	3.06	0.00	15.00	282	N/A		1000
4/28/07	10:05	81.30	100	Clear	7.32	1.06	2.82	0.00	15.20	277	N/A		1000
4/28/07	10:15	81.50	50	Clear	7.32	1.05	2.76	0.00	16.04	275	N/A		500
4/28/07	10:25	81.80	50	Clear	7.32	1.04	2.92	0.00	15.65	272	N/A		500
4/28/07	10:35	82.11	50	Clear	7.33	1.04	2.95	0.00	15.80	265	N/A		500

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/28/07	10:45	82.40	50	Clear	7.35	1.03	3.12	0.00	15.84	265	N/A		500
4/28/07	10:55	82.70	50	Clear	7.36	1.04	3.30	0.00	15.75	262	N/A		500
4/28/07	11:05	82.70	50	Clear	7.33	1.05	3.16	0.00	17.43	261	N/A		500
4/28/07	11:15	82.70	50	Clear	7.32	1.06	3.02	0.00	20.79	258	N/A		500
4/28/07	11:25	82.70	50	Clear	7.39	1.05	3.93	0.00	16.40	254	N/A		500
4/28/07	11:35	83.00	50	Clear	7.38	1.05	3.54	0.00	16.44	250	N/A		500
4/28/07	11:45	83.30	50	Clear	7.38	1.05	3.38	0.00	16.45	245	N/A		500
4/28/07	11:55	83.50	50	Clear	7.38	1.05	3.21	0.00	16.49	241	N/A		500
4/28/07	12:05	83.80	50	Clear	7.38	1.05	3.14	0.00	16.55	237	N/A		500
4/28/07	12:15	84.00	50	Clear	7.38	1.05	3.02	0.00	16.58	233	N/A		500
4/28/07	12:25	84.25	50	Clear	7.39	1.06	2.90	5.3	16.45	230	N/A		500
4/28/07	12:35	84.50	50	Clear	7.38	1.05	2.84	5.4	15.67	227	N/A		500
4/28/07	12:45	85.15	50	Clear	7.38	1.05	2.60	6.4	15.43	219	N/A		500
4/28/07	12:55	85.80	50	Clear	7.40	1.05	2.36	7.0	15.45	213	N/A		500
4/28/07	13:05	86.20	50	Clear	7.45	1.01	2.33	7.8	15.36	207	N/A		500
4/28/07	13:15	Dry	50	Clear	7.46	1.02	2.28	10	15.43	205	N/A		500

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Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	2.28
Total Vo. Purge (L)	13.9	**Waterlevel (ft.)**	Dry	**Turbidity (NTUs)**	10
Start Purge (hrs.)	10:25:00 AM	**Flowrate (mL/min)**	50	**Temp (C)**	15.43
End Purge (hrs.)	2:15:00 PM	**Color**	Clear	**ORP (mV)**	205
Total Purge Time (min.)	230	**pH (S.U.)**	7.46	**Salinity**	N/A
		Conductivity (mS/cm)	1.02	**Other**	

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/29/07	08:55	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-512007-7
✓	4/29/07	08:55	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-512007-6

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General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

Created By	John Wright	**Modified By**	James Goerdt	**Printed By**	James Goerdt
Created Date	4/1/07	**Modified Date**	5/11/07	**Printed Date**	5/14/07

Project Information

MNA Sampling - SWMU 13 - CRANE NSWC

Facility Name	CRANE NSWC	**Sample ID #**	13GWT3108
TtNUS Project #	112G00041	**Well ID**	13MWT31
Task/Contract #	CTO 0377	**Well Type**	Monitoring Well
WBS Code #		**Sampled By**	David Hickey
Status	Complete	**Concentration**	Low concentration

Well and Sample Data

Date		**Static Water Level (ft.)**	10.78	**Water Quality Meter**	924025
Purge Method	Low flow - bladder	**Total Well Depth (ft.)**	20.0	**Pump Control Box**	MP10-1588
Sampling Method	same	**Well Riser Diameter (in.)**		**Turbidity Meter**	1157-1899
MS/MSD Collected?		**Well Volumes Req.**	1		
Duplicate Sample Collected?	N	**Monitor Reading (ppm)**	na		
Corresponding Duplicate Sample ID					

Purge Entries

Date	Time	Water Level (ft.)	Flow Rate (mL/min)	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTUs)	Temp °C	ORP (mV)	Salinity (%)	Other	Incremental Volume (mL)
4/29/07	14:08	10.78	200	Clear	5.53	1.41	2.52	9.9	11.7	276	na	na	0
4/29/07	14:40	12.36	200	Clear	5.62	1.3	3.93	8.2	12.2	244	na	na	6400
4/29/07	15:20	13.55	200	Clear	5.63	1.17	3.88	7.6	12.4	238	na	na	8000

Final Purge / Sample Data

One Casing Volume	0	**Method**	Low flow - bladder	**Dissolved Oxygen (mg/L)**	3.88
Total Vo. Purge (L)	14.4	**Waterlevel (ft.)**	13.55	**Turbidity (NTUs)**	7.6
Start Purge (hrs.)	3:08:00 PM	**Flowrate (mL/min)**	200	**Temp (C)**	12.4
End Purge (hrs.)	4:20:00 PM	**Color**	Clear	**ORP (mV)**	238
Total Purge Time (min.)	72	**pH (S.U.)**	5.63	**Salinity**	na
		Conductivity (mS/cm)	1.17	**Other**	na

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Preservative	Count	Type	Requirements	Comments	Chain#
✓	4/29/07	15:30	SW-846 8330	Nitroaromatics and Nitramines	4°C	2	Glass - Amber	1L		112G00041-4302007-5
✓	4/29/07	15:30	SW-846 6850	Perchlorate	4°C	1	Plastic - PE	250ml		112G00041-4302007-6

Page 2 of 2

General Observations and Notes

None

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW1508	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	7.8
Time	10:59	**pH (S.U.)**	7.07	**ORP (mV)**	320
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.173	**Salinity (%)**	
Method		**DO (mg/L)**	11.41		
MS/MSD Collected		**Turbidity (NTUs)**	36.5		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	10:59	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1
✓	4/17/07	10:59	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW2007	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	11.4
Time	14:13	**pH (S.U.)**	6.67	**ORP (mV)**	280
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.243	**Salinity (%)**	
Method		**DO (mg/L)**	9.96		
MS/MSD Collected		**Turbidity (NTUs)**	6.47		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	14:13	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2
✓	4/17/07	14:13	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW1907	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	13.4
Time	14:32	**pH (S.U.)**	6.81	**ORP (mV)**	285
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.345	**Salinity (%)**	
Method		**DO (mg/L)**	983		
MS/MSD Collected		**Turbidity (NTUs)**	2.96		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	14:32	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1
✓	4/17/07	14:32	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW2207	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	10.2
Time	11:22	**pH (S.U.)**	6.98	**ORP (mV)**	328
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.337	**Salinity (%)**	
Method		**DO (mg/L)**	10.87		
MS/MSD Collected	MS/MSD	**Turbidity (NTUs)**	6.75		
Duplicate Collected	Y				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	11:22	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C	MS/MSD	112G00041-4192007-2
✓	4/17/07	11:22	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C	MS/MSD	112G00041-4192007-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW1106	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**		**Temp (C)**	
Time	15:40	**pH (S.U.)**		**ORP (mV)**	
Depth (ft.)	DRY	**S.C. (mS/cm)**		**Salinity (%)**	
Method		**DO (mg/L)**			
MS/MSD Collected		**Turbidity (NTUs)**			
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
X			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
X			Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		
X			Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		

General Observations and Notes

Dry location. Appears as though some construction has been done in the vicinity of this location.

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW3008	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	9.1
Time	10:03	**pH (S.U.)**	6.54	**ORP (mV)**	235
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.306	**Salinity (%)**	
Method		**DO (mg/L)**	12.56		
MS/MSD Collected		**Turbidity (NTUs)**	2.98		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	10:03	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1
✓	4/17/07	10:03	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW1608	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	8.7
Time	10:31	**pH (S.U.)**	6.71	**ORP (mV)**	302
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.199	**Salinity (%)**	
Method		**DO (mg/L)**	11.40		
MS/MSD Collected		**Turbidity (NTUs)**	6.58		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	10:31	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2
✓	4/17/07	10:31	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLING LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/14/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Sample ID Number	13SW1408	**Status**	Complete	**Printed By**	James Goerdt
Sample Location ID				**Printed Date**	5/14/07

Sample Collection Records

Date	4/17/07	**Color**	clear	**Temp (C)**	9.2
Time	10:47	**pH (S.U.)**	6.91	**ORP (mV)**	324
Depth (ft.)	0.5	**S.C. (mS/cm)**	0.326	**Salinity (%)**	
Method		**DO (mg/L)**	10.91		
MS/MSD Collected		**Turbidity (NTUs)**	17.8		
Duplicate Collected	N				
Duplicate ID					

Laboratory Analysis Records

Collected	Date	Time	Analysis / Method	Description of Analysis	Count	Type	Requirements	Preservative	Comments	Chain of Custody #
✗			Perchlorate	SW-846 6850	2	Plastic - PP	250ml	4°C		
✓	4/17/07	10:47	Nitroaromatics and Nitramines	SW-846 8330	2	Glass - Amber	1L	4°C		112G00041-4192007-2
✓	4/17/07	10:47	Perchlorate	SW-846 6850	1	Plastic - PP	250ml	4°C		112G00041-4192007-1

General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/19/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4192007-2	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216213	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4192007-2**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/19/2007
Carrier/Waybill No.	849419216213	**City, State, Zip**	Seattle, Washington 98108	**Time**	15:47
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/19/07
				Time	16:47

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/17/07	13FD04170701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1408	10:47	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1508	10:59	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1608	10:31	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1907	14:32	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW2007	14:13	SW-846	Nitroaromatics		SW	4°C	2	Glass -	1L	

			8330	and Nitramines					Amber		
4/17/07	13SW2207	11:22	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	MS/MSD
4/17/07	13SW3008	10:03	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/19/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4192007-1	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216202	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4192007-1**	**Lab Name**	Data Chem	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/19/2007
Carrier/Waybill No.	849419216202	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	15:07
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/19/07
				Time	16:07

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/16/07	16GWT0409	12:35	SW-846 8330	Nitroaromatics and Nitramines	16MWT04	GW	4°C	2	Glass - Amber	1L	
4/16/07	16GWT0409	12:35	SW-846 8260B	Volatiles	16MWT04	GW	4°C/HCL	3	Glass - Clear	40ml vials	
4/17/07	13FD04170701	01:00	SW-846 6850	Perchlorate	QC	SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1408	10:47	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1508	10:59	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1608	10:31	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1907	14:32	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW2007	14:13	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/17/07	13SW2207	11:22	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	MS/MSD
4/17/07	13SW3008	10:03	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	16GWT1308	13:20	SW-846 8330	Nitroaromatics and Nitramines	16MWT13	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1308	13:20	SW-846 8260B	Volatiles	16MWT13	GW	4° C/HCL	3	Glass - Clear	40ml vials	Vocs are hot.
4/17/07	16GWT1508	12:45	SW-846 8330	Nitroaromatics and Nitramines	16MWT15	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1508	12:45	SW-846 8260B	Volatiles	16MWT15	GW	4° C/HCL	3	Glass - Clear	40ml vials	
4/17/07	16GWT1708	16:15	SW-846 8330	Nitroaromatics and Nitramines	16MWT17	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1708	16:15	SW-846 8260B	Volatiles	16MWT17	GW	4° C/HCL	3	Glass - Clear	40ml vials	Vocs are hot

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/26/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4262007-4	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216235	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4262007-4**	**Lab Name**	Data Chem	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/26/2007
Carrier/Waybill No.	849419216235	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	17:00
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/26/07
				Time	17:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/24/07	13GWT3708	11:25	SW-846 6850	Perchlorate	13MWT37	GW	4°C	2	Plastic - PE	250ml	
4/24/07	13GWT4608	09:15	SW-846 6850	Perchlorate	13MWT46	GW	4°C	2	Plastic - PE	250ml	
4/25/07	13GWT1309	14:00	SW-846 6850	Perchlorate	13MWT13	GW	4°C	2	Plastic - PE	250ml	
4/25/07	13GWT1409	10:20	SW-846 6850	Perchlorate	13MWT14	GW	4°C	2	Plastic - PE	250ml	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/26/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4262007-3	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216246	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4262007-3**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/26/2007
Carrier/Waybill No.	849419216246	**City, State, Zip**	Seattle, Washington 98108	**Time**	17:00
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/26/07
				Time	17:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/24/07	13GWT3708	11:25	SW-846 8330	Nitroaromatics and Nitramines	13MWT37	GW	4°C	2	Glass - Amber	1L	
4/24/07	13GWT4608	09:15	SW-846 8330	Nitroaromatics and Nitramines	13MWT46	GW	4°C	2	Glass - Amber	1L	
4/25/07	13GWT1309	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT13	GW	4°C	2	Glass - Amber	1L	
4/25/07	13GWT1409	10:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT14	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-5	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.		**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-5**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/30/2007
Carrier/Waybill No.		**City, State, Zip**	Seattle, Washington 98108	**Time**	17:59
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/30/07
				Time	18:59

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass - Amber	1L	
4/26/07	13GWT5107	11:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass - Amber	1L	
4/28/07	13FD04280701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT2109	14:32	SW-846 8330	Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT4508	15:19	SW-846 8330	Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3108	15:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT4708	12:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT47	GW	4°C	2	Glass - Amber	1L	

4/30/07	12GWT4107	11:43	SW-846 8330	Nitroaromatics and Nitramines	12MWT41	GW	4°C	2	Glass - Amber	1L	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 8330	Nitroaromatics and Nitramines	12MWT47	GW	4°C	2	Glass - Amber	1L	
4/30/07	13GWT4008	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	5/1/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-512007-6	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	854567329220	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-512007-6**	**Lab Name**	Data Chem	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	05/01/2007
Carrier/Waybill No.	854567329220	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	13:00
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	5/1/07
				Time	13:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/27/07	13GWT0109	11:40	SW-846 6850	Perchlorate	13MWT01	GW	4°C	1	Plastic - PE	250ml	
4/27/07	13GWT1509	15:00	SW-846 6850	Perchlorate	13MWT15	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT0910	15:20	SW-846 6850	Perchlorate	13MWT09	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT1109	13:35	SW-846 6850	Perchlorate	13MWT11	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT2808	08:55	SW-846 6850	Perchlorate	13MWT28	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT3408	10:55	SW-846 6850	Perchlorate	13MWT34	GW	4°C	1	Plastic - PE	250ml	

General Observations and Notes

No Notes

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	5/1/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-512007-7	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216224	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-512007-7**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	05/01/2007
Carrier/Waybill No.	849419216224	**City, State, Zip**	Seattle, Washington 98108	**Time**	13:00
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	5/1/07
				Time	13:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/27/07	13GWT0109	11:40	SW-846 8330	Nitroaromatics and Nitramines	13MWT01	GW	4°C	2	Glass - Amber	1L	
4/27/07	13GWT1509	15:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT15	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT0910	15:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT09	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT1109	13:35	SW-846 8330	Nitroaromatics and Nitramines	13MWT11	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT2808	08:55	SW-846 8330	Nitroaromatics and Nitramines	13MWT28	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3408	10:55	SW-846 8330	Nitroaromatics and Nitramines	13MWT34	GW	4°C	2	Glass - Amber	1L	

General Observations and Notes

No Notes

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-5	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216224	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-5**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Dave Hickey
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/30/2007
Carrier/Waybill No.	849419216224	**City, State, Zip**	Seattle, Washington 98108	**Time**	17:40
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/30/07
				Time	17:40

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass - Amber	1L	
4/26/07	13GWT5107	11:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass - Amber	1L	
4/28/07	13FD04280701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT2109	14:32	SW-846 8330	Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT4508	15:19	SW-846 8330	Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3108	15:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT4708	12:00	SW-846	Nitroaromatics and Nitramines	13MWT47	GW	4°C	2	Glass - Amber	1L	

			8330								
4/30/07	12GWT4107	11:43	SW-846 8330	Nitroaromatics and Nitramines	12MWT41	GW	4°C	2	Glass - Amber	1L	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 8330	Nitroaromatics and Nitramines	12MWT47	GW	4°C	2	Glass - Amber	1L	
4/30/07	13GWT4008	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-6	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	854567329220	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-6**	**Lab Name**	Data Chem	**Relenquished By**	David Hickey
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/30/2007
Carrier/Waybill No.	854567329220	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	17:49
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/30/07
				Time	17:49

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 6850	Perchlorate	13MWT17	GW	4°C	1	Plastic - PE	250ml	
4/26/07	13GWT5107	11:20	SW-846 6850	Perchlorate	13MWT51	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13FD04280701	00:00	SW-846 6850	Perchlorate	QC	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT2109	14:32	SW-846 6850	Perchlorate	13MWT21	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT4508	15:19	SW-846 6850	Perchlorate	13MWT45	GW	4°C	2	Plastic - PE	250ml	
4/29/07	13GWT3108	15:30	SW-846 6850	Perchlorate	13MWT31	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT4708	12:00	SW-846 6850	Perchlorate	13MWT47	GW	4°C	1	Plastic - PE	250ml	

4/30/07	12GWT4107	11:43	SW-846 6850	Perchlorate	12MWT41	GW	4°C	1	Plastic - PP	250ml	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 6850	Perchlorate	12MWT47	GW	4°C	1	Plastic - PP	250ml	
4/30/07	13GWT4008	14:00	SW-846 6850	Perchlorate	13MWT40	GW	4°C	1	Plastic - PE	250ml	

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General Observations and Notes

No Notes

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/19/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4192007-2	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216213	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4192007-2**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/19/2007
Carrier/Waybill No.	849419216213	**City, State, Zip**	Seattle, Washington 98108	**Time**	15:47
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/19/07
				Time	16:47

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/17/07	13FD04170701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1408	10:47	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1508	10:59	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1608	10:31	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW1907	14:32	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	
4/17/07	13SW2007	14:13	SW-846	Nitroaromatics		SW	4°C	2	Glass -	1L	

			8330	and Nitramines					Amber		
4/17/07	13SW2207	11:22	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	MS/MSD
4/17/07	13SW3008	10:03	SW-846 8330	Nitroaromatics and Nitramines		SW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/19/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4192007-1	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216202	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4192007-1**	**Lab Name**	Data Chem	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/19/2007
Carrier/Waybill No.	849419216202	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	15:07
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/19/07
				Time	16:07

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/16/07	16GWT0409	12:35	SW-846 8330	Nitroaromatics and Nitramines	16MWT04	GW	4°C	2	Glass - Amber	1L	
4/16/07	16GWT0409	12:35	SW-846 8260B	Volatiles	16MWT04	GW	4°C/HCL	3	Glass - Clear	40ml vials	
4/17/07	13FD04170701	01:00	SW-846 6850	Perchlorate	QC	SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1408	10:47	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1508	10:59	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1608	10:31	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW1907	14:32	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	13SW2007	14:13	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/17/07	13SW2207	11:22	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	MS/MSD
4/17/07	13SW3008	10:03	SW-846 6850	Perchlorate		SW	4°C	1	Plastic - PP	250ml	
4/17/07	16GWT1308	13:20	SW-846 8330	Nitroaromatics and Nitramines	16MWT13	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1308	13:20	SW-846 8260B	Volatiles	16MWT13	GW	4° C/HCL	3	Glass - Clear	40ml vials	Vocs are hot.
4/17/07	16GWT1508	12:45	SW-846 8330	Nitroaromatics and Nitramines	16MWT15	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1508	12:45	SW-846 8260B	Volatiles	16MWT15	GW	4° C/HCL	3	Glass - Clear	40ml vials	
4/17/07	16GWT1708	16:15	SW-846 8330	Nitroaromatics and Nitramines	16MWT17	GW	4°C	2	Glass - Amber	1L	
4/17/07	16GWT1708	16:15	SW-846 8260B	Volatiles	16MWT17	GW	4° C/HCL	3	Glass - Clear	40ml vials	Vocs are hot

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General Observations and Notes

No Notes

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/26/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4262007-4	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216235	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4262007-4**	**Lab Name**	Data Chem	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/26/2007
Carrier/Waybill No.	849419216235	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	17:00
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/26/07
				Time	17:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/24/07	13GWT3708	11:25	SW-846 6850	Perchlorate	13MWT37	GW	4°C	2	Plastic - PE	250ml	
4/24/07	13GWT4608	09:15	SW-846 6850	Perchlorate	13MWT46	GW	4°C	2	Plastic - PE	250ml	
4/25/07	13GWT1309	14:00	SW-846 6850	Perchlorate	13MWT13	GW	4°C	2	Plastic - PE	250ml	
4/25/07	13GWT1409	10:20	SW-846 6850	Perchlorate	13MWT14	GW	4°C	2	Plastic - PE	250ml	

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General Observations and Notes

No Notes

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/26/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4262007-3	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216246	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4262007-3**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	James Goerdt
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/26/2007
Carrier/Waybill No.	849419216246	**City, State, Zip**	Seattle, Washington 98108	**Time**	17:00
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/26/07
				Time	17:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/24/07	13GWT3708	11:25	SW-846 8330	Nitroaromatics and Nitramines	13MWT37	GW	4°C	2	Glass - Amber	1L	
4/24/07	13GWT4608	09:15	SW-846 8330	Nitroaromatics and Nitramines	13MWT46	GW	4°C	2	Glass - Amber	1L	
4/25/07	13GWT1309	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT13	GW	4°C	2	Glass - Amber	1L	
4/25/07	13GWT1409	10:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT14	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-5	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.		**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-5**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/30/2007
Carrier/Waybill No.		**City, State, Zip**	Seattle, Washington 98108	**Time**	17:59
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/30/07
				Time	18:59

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass - Amber	1L	
4/26/07	13GWT5107	11:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass - Amber	1L	
4/28/07	13FD04280701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT2109	14:32	SW-846 8330	Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT4508	15:19	SW-846 8330	Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3108	15:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT4708	12:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT47	GW	4°C	2	Glass - Amber	1L	

4/30/07	12GWT4107	11:43	SW-846 8330	Nitroaromatics and Nitramines	12MWT41	GW	4°C	2	Glass - Amber	1L	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 8330	Nitroaromatics and Nitramines	12MWT47	GW	4°C	2	Glass - Amber	1L	
4/30/07	13GWT4008	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	5/1/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-512007-6	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	854567329220	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-512007-6**	**Lab Name**	Data Chem	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	05/01/2007
Carrier/Waybill No.	854567329220	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	13:00
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	5/1/07
				Time	13:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/27/07	13GWT0109	11:40	SW-846 6850	Perchlorate	13MWT01	GW	4°C	1	Plastic - PE	250ml	
4/27/07	13GWT1509	15:00	SW-846 6850	Perchlorate	13MWT15	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT0910	15:20	SW-846 6850	Perchlorate	13MWT09	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT1109	13:35	SW-846 6850	Perchlorate	13MWT11	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT2808	08:55	SW-846 6850	Perchlorate	13MWT28	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT3408	10:55	SW-846 6850	Perchlorate	13MWT34	GW	4°C	1	Plastic - PE	250ml	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	5/1/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-512007-7	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216224	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-512007-7**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Walt Pryor
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	05/01/2007
Carrier/Waybill No.	849419216224	**City, State, Zip**	Seattle, Washington 98108	**Time**	13:00
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	5/1/07
				Time	13:00

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/27/07	13GWT0109	11:40	SW-846 8330	Nitroaromatics and Nitramines	13MWT01	GW	4°C	2	Glass - Amber	1L	
4/27/07	13GWT1509	15:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT15	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT0910	15:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT09	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT1109	13:35	SW-846 8330	Nitroaromatics and Nitramines	13MWT11	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT2808	08:55	SW-846 8330	Nitroaromatics and Nitramines	13MWT28	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3408	10:55	SW-846 8330	Nitroaromatics and Nitramines	13MWT34	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-5	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	849419216224	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-5**	**Lab Name**	Laucks Testing Laboratories, Inc.	**Relenquished By**	Dave Hickey
Carrier	Federal Express	**Address**	940 South Harney Street	**Date**	04/30/2007
Carrier/Waybill No.	849419216224	**City, State, Zip**	Seattle, Washington 98108	**Time**	17:40
		Lab Contact	Hugh Prentice	**Received By:**	Federal Express
		Lab Telephone	206-767-5060	**Date**	4/30/07
				Time	17:40

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT17	GW	4°C	2	Glass - Amber	1L	
4/26/07	13GWT5107	11:20	SW-846 8330	Nitroaromatics and Nitramines	13MWT51	GW	4°C	2	Glass - Amber	1L	
4/28/07	13FD04280701	01:00	SW-846 8330	Nitroaromatics and Nitramines	QC	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT2109	14:32	SW-846 8330	Nitroaromatics and Nitramines	13MWT21	GW	4°C	2	Glass - Amber	1L	
4/28/07	13GWT4508	15:19	SW-846 8330	Nitroaromatics and Nitramines	13MWT45	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT3108	15:30	SW-846 8330	Nitroaromatics and Nitramines	13MWT31	GW	4°C	2	Glass - Amber	1L	
4/29/07	13GWT4708	12:00	SW-846	Nitroaromatics and Nitramines	13MWT47	GW	4°C	2	Glass - Amber	1L	

			8330								
4/30/07	12GWT4107	11:43	SW-846 8330	Nitroaromatics and Nitramines	12MWT41	GW	4°C	2	Glass - Amber	1L	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 8330	Nitroaromatics and Nitramines	12MWT47	GW	4°C	2	Glass - Amber	1L	
4/30/07	13GWT4008	14:00	SW-846 8330	Nitroaromatics and Nitramines	13MWT40	GW	4°C	2	Glass - Amber	1L	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Project Manager (PM)**	Ralph Basinski	**Created By**	James Goerdt
TtNUS Project #	112G00041	**PM Telephone**		**Created Date**	4/30/07
Task/Contract #	CTO 0377	**Field Op Leader (FOL)**	James Goerdt	**Modified By**	
WBS Code #	TP0050125	**FOL Phone**		**Modified Date**	
Chain of Custody ID	112G00041-4302007-6	**Carrier**	Federal Express	**Printed By**	James Goerdt
		Carrier/Waybill No.	854567329220	**Printed Date**	5/14/07

Chain of Custody Information

Chain of Custody #	**112G00041-4302007-6**	**Lab Name**	Data Chem	**Relenquished By**	David Hickey
Carrier	Federal Express	**Address**	960 West LeVoy Drive	**Date**	04/30/2007
Carrier/Waybill No.	854567329220	**City, State, Zip**	Salt Lake City, Utah 84123	**Time**	17:49
		Lab Contact	Kevin Griffiths	**Received By:**	Federal Express
		Lab Telephone	801-904-4302	**Date**	4/30/07
				Time	17:49

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/26/07	13GWT1709	14:30	SW-846 6850	Perchlorate	13MWT17	GW	4°C	1	Plastic - PE	250ml	
4/26/07	13GWT5107	11:20	SW-846 6850	Perchlorate	13MWT51	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13FD04280701	00:00	SW-846 6850	Perchlorate	QC	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT2109	14:32	SW-846 6850	Perchlorate	13MWT21	GW	4°C	1	Plastic - PE	250ml	
4/28/07	13GWT4508	15:19	SW-846 6850	Perchlorate	13MWT45	GW	4°C	2	Plastic - PE	250ml	
4/29/07	13GWT3108	15:30	SW-846 6850	Perchlorate	13MWT31	GW	4°C	1	Plastic - PE	250ml	
4/29/07	13GWT4708	12:00	SW-846 6850	Perchlorate	13MWT47	GW	4°C	1	Plastic - PE	250ml	

4/30/07	12GWT4107	11:43	SW-846 6850	Perchlorate	12MWT41	GW	4°C	1	Plastic - PP	250ml	

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Tetra Tech NUS, Inc.

CHAIN OF CUSTODY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Sample Records

Date	Sample ID#	Time	Analysis	Description	Loc ID	Matrix	Preservative	No.	Type	Requirements	Comments
4/30/07	12GWT4707	14:40	SW-846 6850	Perchlorate	12MWT47	GW	4°C	1	Plastic - PP	250ml	
4/30/07	13GWT4008	14:00	SW-846 6850	Perchlorate	13MWT40	GW	4°C	1	Plastic - PE	250ml	

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General Observations and Notes

No Notes

- End of Report -

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MNA Sampling - SWMU 12 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	2020	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	LaMotte	**Created Date**	4/12/07
Task/Contract #	CTO 0377	**Serial Number**	1157-1899	**Modified By**	James Goerdt
WBS Code #	TP0050125			**Modified Date**	5/9/07
Client				**Printed By**	James Goerdt
Status	Complete			**Printed Date**	5/9/07

Calibration Records

Date	Calibrator	Turbidity (0 NTU)	Turbidity (10 NTU)	Comments
4/30/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: 11 Post: 10 Std: Exp:	
4/30/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 9.96 Post: 10.01 Std: Exp:	
4/29/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 9.97 Post: 10.01 Std: Exp:	
4/28/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 10.14 Post: 9.98 Std: Exp:	
4/27/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 9.73 Post: 10.0 Std: Exp:	
4/26/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 9.79 Post: 10.0 Std: Exp:	
4/25/07	David Hickey	Pre: 0 Post: 0 Std: Exp:	Pre: 9.82 Post: 10.0 Std: Exp:	
4/24/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: 9.69 Post: 10 Std: Exp:	
		Pre: 0	Pre: 10.42	

4/17/07	Walt Pryor	Post: 0 Std: Exp:	Post: 10 Std: Exp:	
4/16/07	Walt Pryor	Pre: 0.14 Post: 0 Std: Exp:	Pre: 9.84 Post: 10 Std: Exp:	
4/15/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: 9.87 Post: 10 Std: Exp:	
4/15/07	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 9.64 Post: 9.99 Std: Exp:	
4/14/07	Walt Pryor	Pre: 0.07 Post: 0 Std: Exp:	Pre: 10.05 Post: 10 Std: Exp:	None
4/14/07	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 11.0 Post: 9.94 Std: Exp:	
4/13/07	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 9.90 Post: 10.03 Std: Exp:	
4/12/07	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 9.16 Post: 10.02 Std: Exp:	
4/11/07	James Goerdt	Pre: 0.0 Post: 0.0 Std: Exp:	Pre: 9.62 Post: 10.01 Std: Exp:	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MNA Sampling - SWMU 12 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	2020	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	Photovac	**Created Date**	4/12/07
Task/Contract #	CTO 0377	**Serial Number**	PPXJ0015	**Modified By**	James Goerdt
WBS Code #	TP0050125			**Modified Date**	5/9/07
Client				**Printed By**	James Goerdt
Status	Complete			**Printed Date**	5/9/07

Calibration Records

Date	Calibrator	Isobutylene (100 ppm)	Comments
5/10/07	Walt Pryor	Pre: 90 Post: 100 Std: Exp:	

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Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MNA Sampling - SWMU 12 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	U-22	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	4/12/07
Task/Contract #	CTO 0377	**Serial Number**	4103008	**Modified By**	James Goerdt
WBS Code #	TP0050125			**Modified Date**	5/9/07
Client				**Printed By**	James Goerdt
Status	Complete			**Printed Date**	5/9/07

Calibration Records

Date	Calibrator	pH (4 SU)	Conductivity (mS/cm)	DO (mg/L)	Temperature (°C)	Temperature (°C)	Comments
4/30/07	Walt Pryor	Pre: 4.28 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.72 Post: 4.48 Std: 5480 Exp: 11/03/2007	Pre: 9.30 Post: 9.17 Std: 5480 Exp: 11/03/2007	Pre: 19.4 Post: 19.4 Std: NA Exp:	Pre: 314 Post: 297 Std: 5480 Exp: 11/03/2007	
4/27/07	Walt Pryor	Pre: 4.27 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.37 Post: 4.48 Std: 5480 Exp: 11/03/2007	Pre: 9.39 Post: 9.29 Std: 5480 Exp: 11/03/2007	Pre: 18.7 Post: 18.7 Std: NA Exp:	Pre: 333 Post: 318 Std: 5480 Exp: 11/03/2007	
4/24/07	Walt Pryor	Pre: 3.52 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.46 Post: 4.49 Std: 5480 Exp: 11/03/2007	Pre: 9.60 Post: 9.17 Std: 5480 Exp: 11/03/2007	Pre: 19.4 Post: 19.4 Std: NA Exp:	Pre: 328 Post: 327 Std: 5480 Exp: 11/03/2007	
4/17/07	Walt Pryor	Pre: 4.02 Post: 3.99 Std: 5480 Exp: 11/03/2007	Pre: 4.65 Post: 4.50 Std: 5480 Exp: 11/03/2007	Pre: 9.74 Post: 9.62 Std: 5480 Exp: 11/03/2007	Pre: 17.0 Post: 16.9 Std: NA Exp:	Pre: 291 Post: 284 Std: 5480 Exp: 11/03/2007	
4/16/07	Walt Pryor	Pre: 4.00 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.55 Post: 4.49 Std: 5480 Exp: 11/03/2007	Pre: 9.77 Post: 9.68 Std: 5480 Exp: 11/03/2007	Pre: 16.7 Post: 16.7 Std: NA Exp:	Pre: 333 Post: 324 Std: 5480 Exp: 11/03/2007	
4/15/07	Walt Pryor	Pre: 4.23 Post: 3.99 Std: 5480 Exp: 11/03/2007	Pre: 4.50 Post: 4.49 Std: 5480 Exp: 11/03/2007	Pre: 9.20 Post: 9.59 Std: 5480 Exp: 11/03/2007	Pre: 16.2 Post: 16.1 Std: NA Exp:	Pre: 322 Post: 316 Std: 5480 Exp: 11/03/2007	None
4/14/07	Walt Pryor	Pre: 3.99 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.43 Post: 4.46 Std: 5480 Exp: 11/03/2007	Pre: 8.81 Post: 9.46 Std: 5480 Exp: 11/03/2007	Pre: 17.5 Post: 17.4 Std: NA Exp:	Pre: 329 Post: 315 Std: 5480 Exp: 11/03/2007	None
		Pre: 4.08 Post: 4.00	Pre: 4.53 Post: 4.49	Pre: 9.53 Post: 9.59	Pre: 16.8	Pre: 307 Post: 296	

4/13/07	Walt Pryor	Std: 5480 Exp: 11/03/2007	Std: 5480 Exp: 11/03/2007	Std: 5480 Exp: 11/03/2007	Post: 16.8 Std: NA Exp:	Std: 5480 Exp: 11/03/2007	
4/12/07	James Goerdt	Pre: 4.02 Post: 4.00 Std: 5480 Exp: 11/03/2007	Pre: 4.54 Post: 4.49 Std: 5480 Exp: 11/03/2007	Pre: 9.60 Post: 9.59 Std: 5480 Exp: 11/03/2007	Pre: 16.9 Post: 16.9 Std: NA Exp:	Pre: 319 Post: 313 Std: 5480 Exp: 11/03/2007	
4/11/07	James Goerdt	Pre: 3.96 Post: 4.00 Std: 5480 Exp:	Pre: 4.45 Post: 4.49 Std: 5480 Exp:	Pre: 9.59 Post: 9.88 Std: 5480 Exp:	Pre: 16.7 Post: 16.7 Std: Exp:	Pre: 330 Post: 321 Std: 5480 Exp:	

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Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MNA Sampling - SWMU 12 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	U-22	**Created By**	James Goerdt
TtNUS Project #	112G00041	**Manufacturer**	Horiba	**Created Date**	4/12/07
Task/Contract #	CTO 0377	**Serial Number**	4143008	**Modified By**	James Goerdt
WBS Code #	TP0050125			**Modified Date**	5/9/07
Client				**Printed By**	James Goerdt
Status	Complete			**Printed Date**	5/9/07

Calibration Records

Date	Calibrator	pH (4 SU)	Conductivity (mS/cm)	DO (mg/L)	Temperature (°C)	Temperature (°C)	Comments
4/30/07	Walt Pryor	Pre: 4.07 Post: 4.00 Std: 5480 Exp:	Pre: 4.53 Post: 4.49 Std: 5480 Exp:	Pre: 8.91 Post: 9.04 Std: 5480 Exp:	Pre: 19.81 Post: 19.82 Std: NA Exp:	Pre: 289 Post: 285 Std: Exp:	
4/29/07	Walt Pryor	Pre: 4.04 Post: 4.00 Std: 5480 Exp:	Pre: 4.51 Post: 4.49 Std: 5480 Exp:	Pre: 9.98 Post: 9.15 Std: 5480 Exp:	Pre: 18.78 Post: 18.80 Std: NA Exp:	Pre: 290 Post: 289 Std: Exp:	
4/28/07	Walt Pryor	Pre: 4.28 Post: 4.00 Std: 5480 Exp:	Pre: 4.59 Post: 4.49 Std: 5480 Exp:	Pre: 8.38 Post: 9.19 Std: 5480 Exp:	Pre: 18.71 Post: 18.70 Std: NA Exp:	Pre: 300 Post: 297 Std: Exp:	
4/27/07	Walt Pryor	Pre: 4.02 Post: 4.00 Std: 5480 Exp:	Pre: 4.42 Post: 4.49 Std: 5480 Exp:	Pre: 9.74 Post: 9.11 Std: 5480 Exp:	Pre: 19.15 Post: 19.16 Std: NA Exp:	Pre: 293 Post: 286 Std: Exp:	
4/26/07	Walt Pryor	Pre: 4.01 Post: 4.00 Std: 5480 Exp:	Pre: 4.49 Post: 4.49 Std: 5480 Exp:	Pre: 8.85 Post: 8.92 Std: 5480 Exp:	Pre: 20.39 Post: 20.39 Std: NA Exp:	Pre: 318 Post: 311 Std: Exp:	
4/25/07	Walt Pryor	Pre: 3.86 Post: 4.00 Std: 5480 Exp:	Pre: 4.57 Post: 4.48 Std: 5480 Exp:	Pre: 9.13 Post: 8.71 Std: 5480 Exp:	Pre: 21.27 Post: 21.24 Std: NA Exp:	Pre: 296 Post: 286 Std: Exp:	
4/24/07	Walt Pryor	Pre: 4.02 Post: 4.00 Std: 5480 Exp:	Pre: 4.61 Post: 4.49 Std: 5480 Exp:	Pre: 9.55 Post: 9.12 Std: 5480 Exp:	Pre: 19.48 Post: 19.49 Std: NA Exp:	Pre: 362 Post: 346 Std: Exp:	
4/17/07	Walt Pryor	Pre: 3.95 Post: 3.99 Std: 5480 Exp:	Pre: 4.36 Post: 4.49 Std: 5480 Exp:	Pre: 9.66 Post: 9.68 Std: 5480 Exp:	Pre: 16.29 Post: 16.31 Std: NA Exp:	Pre: 291 Post: 289 Std: Exp:	
4/16/07	Walt Pryor	Pre: 4.01 Post: 4.00 Std: 5480 Exp:	Pre: 4.64 Post: 4.49 Std: 5480 Exp:	Pre: 9.84 Post: 9.42 Std: 5480 Exp:	Pre: 17.22 Post: 17.20 Std: NA Exp:	Pre: 356 Post: 339 Std: Exp:	

4/15/07	Walt Pryor	Pre: 4.09 Post: 4.00 Std: 5480 Exp:	Pre: 4.32 Post: 4.49 Std: 5480 Exp:	Pre: 8.42 Post: 9.66 Std: 5480 Exp:	Pre: 16.49 Post: 16.52 Std: NA Exp:	Pre: 367 Post: 340 Std: Exp:	None
4/14/07	Walt Pryor	Pre: 3.95 Post: 4.01 Std: 5480 Exp:	Pre: 4.44 Post: 4.49 Std: 5480 Exp:	Pre: 10.89 Post: 9.18 Std: 5480 Exp:	Pre: 17.40 Post: 17.41 Std: NA Exp:	Pre: 301 Post: 301 Std: Exp:	None
4/13/07	Walt Pryor	Pre: 4.05 Post: 3.99 Std: 5480 Exp:	Pre: 4.68 Post: 4.49 Std: 5480 Exp:	Pre: 10.95 Post: 9.10 Std: 5480 Exp:	Pre: 17.40 Post: 17.40 Std: NA Exp:	Pre: 301 Post: 300 Std: Exp:	
4/12/07	James Goerdt	Pre: 4.01 Post: 4.00 Std: 5480 Exp:	Pre: 4.44 Post: 4.49 Std: 5480 Exp:	Pre: 8.85 Post: 9.34 Std: 5480 Exp:	Pre: 17.62 Post: 17.64 Std: NA Exp:	Pre: 304 Post: 304 Std: Exp:	
4/11/07	James Goerdt	Pre: 4.24 Post: 4.01 Std: 5480 Exp:	Pre: 4.50 Post: 4.49 Std: 5480 Exp:	Pre: 10.47 Post: 9.67 Std: 5480 Exp:	Pre: 16.76 Post: 16.77 Std: NA Exp:	Pre: 306 Post: 304 Std: Exp:	

Page 1 of 1

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

MNA Sampling - SWMU 12 - CRANE NSWC

Project Information

Facility Name	CRANE NSWC	**Instrument**	2020	**Created By**	Walt Pryor
TtNUS Project #	112G00041	**Manufacturer**	LaMotte	**Created Date**	4/13/07
Task/Contract #	CTO 0377	**Serial Number**	1757-1800	**Modified By**	James Goerdt
WBS Code #	TP0050125			**Modified Date**	5/9/07
Client				**Printed By**	James Goerdt
Status	Complete			**Printed Date**	5/9/07

Calibration Records

Date	Calibrator	Turbidity (0 NTU)	Turbidity (1 NTU)	Turbidity (10 NTU)	Comments
4/30/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/29/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/28/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/27/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/26/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/25/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/24/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/17/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/16/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	

4/15/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	
4/14/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: Delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	None
4/13/07	Walt Pryor	Pre: 0 Post: 0 Std: Exp:	Pre: delete Post: Std: Exp:	Pre: 10 Post: 10 Std: Exp:	

Page 1 of 1

APPENDIX B

SMWU 13

DAILY ACTIVITIES RECORD, ROUNDS 1-9

ROUND 1

NSWC CRANE

N9060

CTO 279

SWMU 13 & 16

LOG BOOK

1363

START : 2-11-03

END :

TETRA TECH NUS, INC.

Terry R. Rojahn
Biologist

661 Andersen Drive, Pittsburgh, PA 15220-2745
(412) 921-8857 ▪ FAX (412) 921-4040
rojahnt@ttnus.com ▪ www.tetratech.com

IF LOST
RETURN
TO :

NSWC CRANE

PROJ. NO = 9060
SWMUS = 13 & 16
PROJECT TOM = RALPH BASINSKI
Assit. TOM = TOM JOHNSTON
FOL = TERRY ROJAHN
GEOLOGIST = BOB BALKOVEC

TITLE CRANE (NSWC)

PROJECT NO. 9060

BOOK NO. 1363

TUES. 2-11-03

Work continued from Page

- TRAVEL DAY -

1350 Hrs - ARRIVE @ BLDG 3245 AFTER RECEIVING BADGE @ MAIN GATE

- PREP. to lay out Monitoring Well & DPT Locations
- T. BRENT out of OFFICE
- CALL OFFICE talk to TOM JOHNSTON

1505 Hrs - LOCATE SWMU 16 - NEED ACCESS CLEARENCE FROM MIKE ROACH Ext. 3546

1530 Hrs - RETURN to BLDG 3245 - MEET w/ T. BRENT
TOM will contact & get clearence @ sites/SWMUS 13 & 16 FOR tomorrow

1550 Hrs - MEET with PUBLIC WORKS

- MARK locations in WHITE
- contact PW when finished locating borings & MWs
- Check back via phone FEB 24 → 27 - talk to DONNA (812) 854 6903

1610 Hrs - LEFT CENTER

1730 Hrs - SHOP FOR SUPPLIES - stakes & PK NAILS

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Roach

DATE 2-11-03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

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VOID THIS PAGE

TITLE NSWC CRANE

PROJECT NO. 9060
BOOK NO. 1363

WED. 2-12-03
Work continued from Page

0700Hrs - Arrive @ BLDG #3245
Wait for word from Army Environmental
on security issues @ both SWMUS
Army contact is Doug Johnson X 1481
0835Hrs - Got go ahead from Mr. Johnson to access
SWMUS 13 & 16 this date
- @ SWMU 13 to inform Mr Marvin Kluesner
X 1790 before entery area around BLDG 165
- Need to inform Mike Dages X-1472 to access
BLDG 146
Jeff Franklin - Supervisor
(TC) ~~Dor~~ Mike Roach - Production Super X-3546
SEE Doug Johnson's FAX - Pages 4 → 6 (X-1481)
0845 Hrs - Arrive @ SWMU 16
- Cannot be around BLDG 147 during defuser
operations - included are locations
16SB04,05, 16MWT04 & 16SW/SD03
- Check in w/ guard & Jeff Franklin
- Located sampling locations until 1300Hrs
1315Hrs - Check in w/ T. Brent - Regarding Boiler
Removals @ BLDG #s 171 & 166
- 1400Hrs - T. Brent & T. Rojahn reconed
Boiler removal areas
- T. Rojahn - made sketches for R. Basinski
to use to place boring locations -
SEE SKETCHES ON PAGES - 7 & 8 & PHOTOS ON P. 11
1605Hrs - Finish sketches @ BLDS 171 & 166
1615Hrs - Arrive @ BLDG. #146 - talk to Jeff Franklin
- Defuser down - Finish location of Boring
sites near defuser
- Jeff said Defuser will be down 2/13/03
so T.R. could have free access
1700Hrs - Left BLDG 146 Area
~~1700Hrs~~ Left Crane

SCIENTIFIC BUSINESS PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page 4 → 9

SIGNATURE

DATE 2/12/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Brent Thomas J CNIN
From: Johnson, Douglas G [JohnsonD@crane.army.mil]
Sent: Wednesday, February 12, 2003 10:09 AM
To: Brent Thomas J CNIN
Subject: FW: TTNUS ACCESS

Importance: High

Here are the rules of engagement. Main issue is to ensure coordination with the area supervisors before beginning operations. I should have covered that requirement a little more clearly. Also, another rule that is not listed but is very important - POVs are not allowed inside red flagged areas (denoting explosives operations). It's easier to phone the supervisors ahead of time, as the supervisors are normally within the red-flagged area and are not easily accessible if you're driving a POV.

I can help in coordination with the production folks if needed. Current supervisor @ 146 is Mike Dages (X-1472), and supervisor at B-165/MFB is [redacted]. The head Production Supervisor is Mike Roach (X-3546).

In March, we'll have a short sit-down with the crew to go over the Safety and Security requirements. Shouldn't take too long, but should help in eliminating any problems during their work.

----Original Message----

From: **Clinton, Leah K**
Sent: Wednesday, February 12, 2003 9:55 AM
To: Voorhies, John D; Johnson, Douglas G; Baker, Sheryl G; Roach, Michael D; Flynn, Thomas R
Cc: SS Personnel
Subject: RE: TTNUS ACCESS
Importance: High

I believe we've coordinated this as much as possible given the short notification.

Here's the plan for this week:

1. MEA will notify people assigned access control duties. Although the contractor must check in, access will be authorized without an escort.
2. Doug Johnson will:
   a. Coordinate access for Friday, 14 Feb
   b. Make sure the contractor is made aware of the contractor's responsibilities (3 below).
3. The contractor will:
   a. Stop and identify himself to the person performing access control.
   b. Check in with the area supervisor immediately upon entry if the area is in operation and comply with all instructions/prohibitions given to him by the supervisor concerning safety and security.

Here's the plan for the longer term operation planned for mid-March:

1. Doug Johnson will:
   a. Make arrangements to provide the Key/Lock Officer with a copy of the contract or scope of work.
   b. Sign for all controlled contractor core keys
   c. Issue controlled keys to the contactor on DA Form 5513-R
   d. Make sure the contractors are made aware of their responsibilities.
   e. Oversee work and make sure the contractor turns the keys back in immediately upon completion of the work and prior to authorization for release of payment.

2. The Key/Lock Officer will:
   a. Install controlled contractor core locks on 145/146 area and MFB
   b. Provide assistance to Doug Johnson on proper issuance of keys to the contractor
   c. Remove the controlled locks once all keys have been returned by Doug Johnson.

3. The contractor will:
   a. Strictly control keys and immediately turn the keys back in once the contract work has been completed.
   b. Stop and identify himself to the person performing access control.

If gates are locked and nobody is at the guard house, the contractor is responsible for securing the gate behind him (coming and going). NOTE:

Locks must be relocked in their specific original order.

   c. Check in with the area supervisor immediately upon entry if the area is in operation and comply with all instructions/prohibitions given to him by the supervisor concerning safety and security.

4. MEA will notify people who are assigned access control duties. Although the contractor must check in, access will be authorized without an escort.

—Original Message—

From: **Johnson, Douglas G**
Sent: Tuesday, February 11, 2003 3:33 PM
To: Clinton, Leah K
Subject: FW: TTNUS ACCESS

Leah,

TetraTech is an environmental contractor that does corrective action work for Crane Navy. They are wanting to work on flagging, soil sampling, and drilling for studies at B-146 and Mine Fill B to determine levels of contamination. These actions are part of the overall Crane site cleanup effort.

Since we're at Bravo +, what is the best way to get TetraTech access to work in those areas and what level of supervision will they need? The scope of the operations is listed in Tom Brent's e-mail below. Terry Rojahn is at Crane currently, and would like to begin the flagging operations. The soil boring and drilling operations should not begin until March.

Let me know your thoughts on this issue.

Thanks,

Doug Johnson
Environmental Protection Specialist
SJMCN-SF
Crane Army Ammunition Activity
(812)854-1481
DSN 482-1481

—Original Message—

From: **Brent Thomas J CNIN [mailto:brent_t@crane.navy.mil]**
Sent: Tuesday, February 11, 2003 3:14 PM

ed to Page

SIGNATURE

DATE 2/12/03

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To: Johnson, Douglas G
Subject: TTNUS ACCESS

Doug,

Terry Rojahn from Tetra Tech NUS needs access to B146 area & MFB to put in pin flags to obtain a PW digging permit. This will take about 3 days. Furthermore, he has a rented vehicle & would very much like to get this into the 2 sites (after all, MFB is a BIG place). Let me know what you can work out.

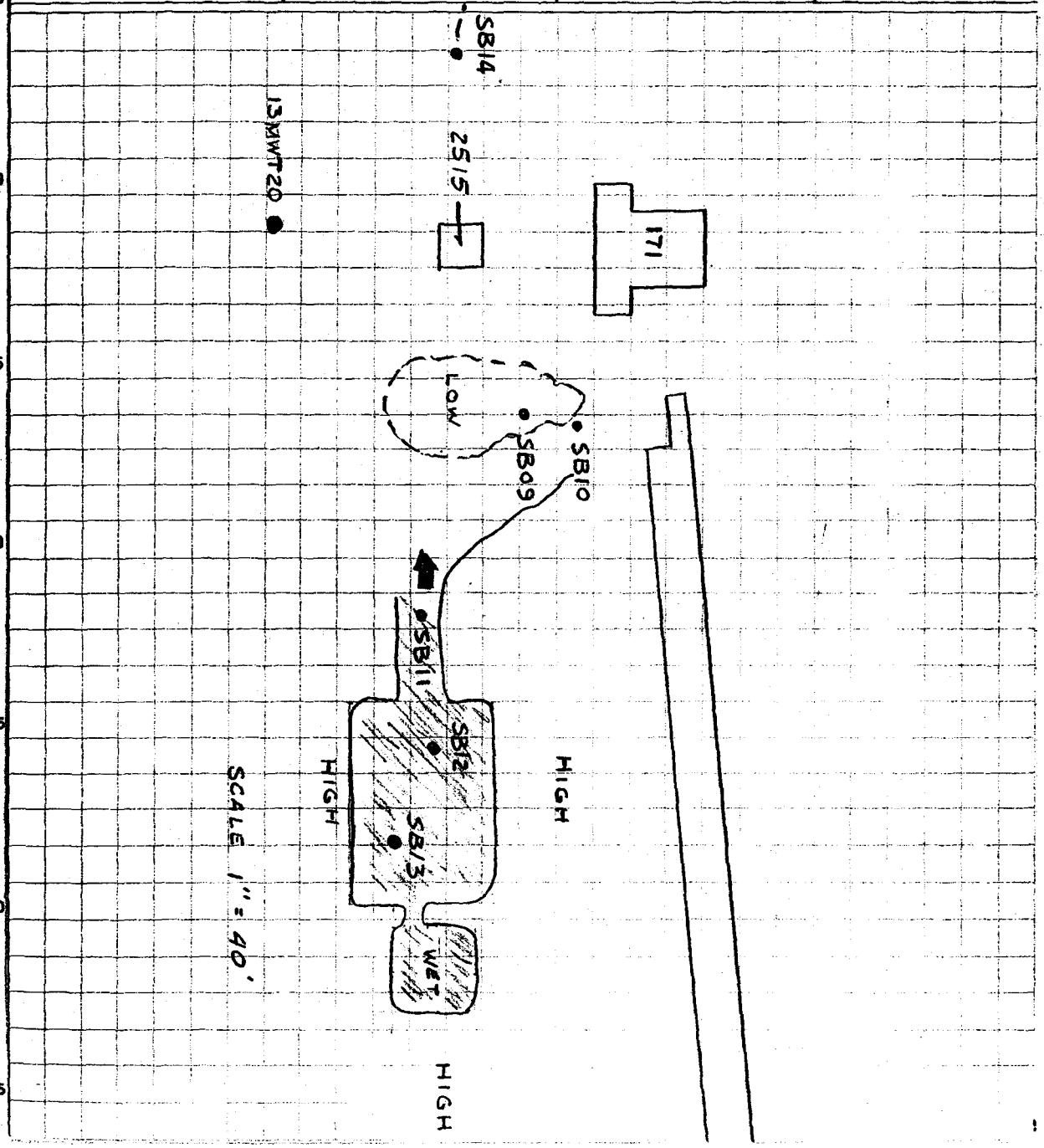
Just so you know, Tetra Tech will be mobilizing a full field crew about mid-March w/drill rigs to collect soil boring samples and install wells. I'll let you know more as soon as I find out details. Please let me know what we need to do to make this happen at these 2 sites.

Thanks,
Tom

TITLE

PROJECT NO. 9060
BOOK NO. 1363

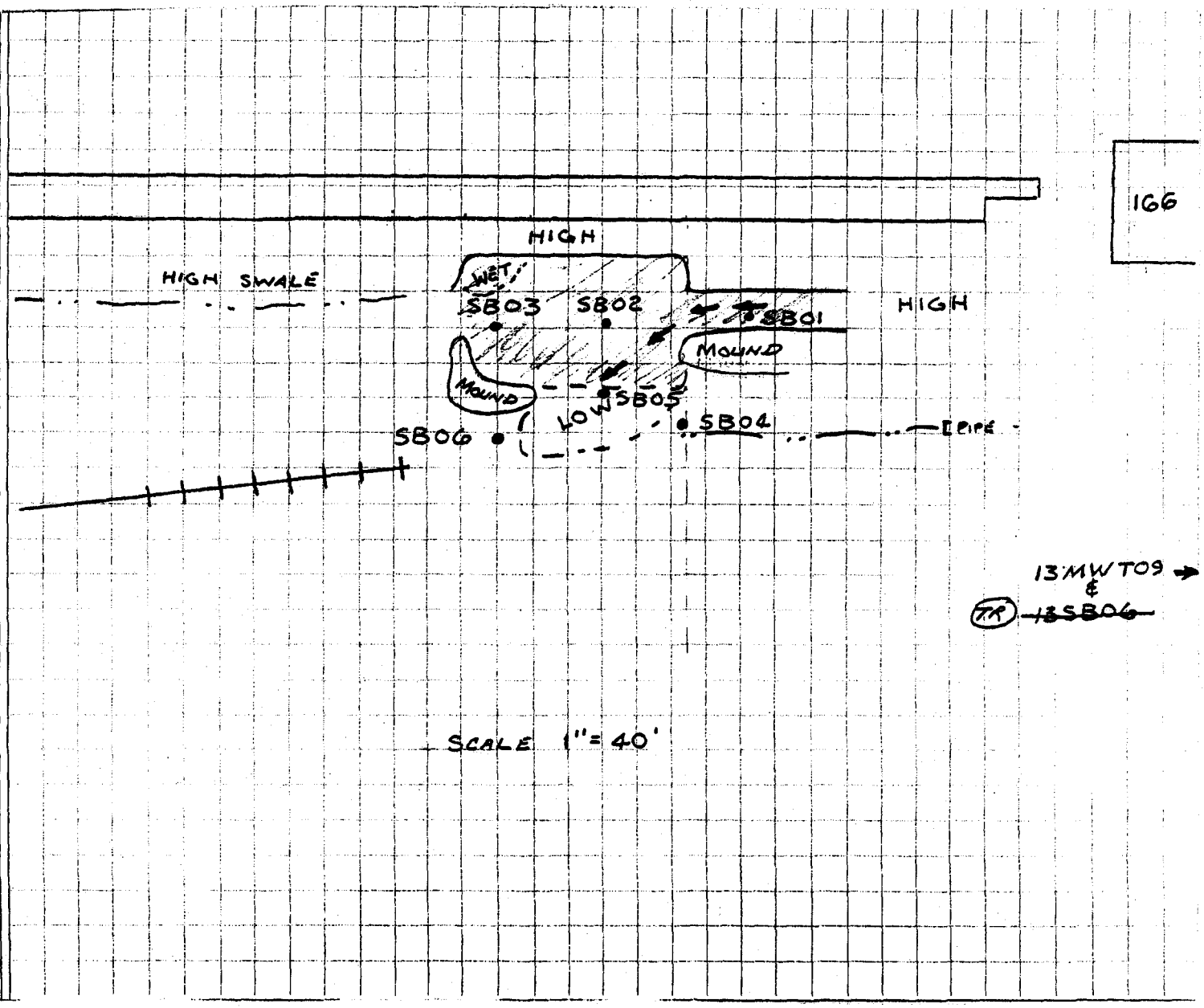
CLIENT: CRANE	JOB NUMBER: 9060
SUBJECT: SOIL REMOVAL NEAR BLDG 171	
BASED ON: FIELD MEASUREMENTS	DRAWING NUMBER:
BY: T.R / CHECKED BY:	APPROVED BY: / DATE: 2-12-03



SIGNATURE: Troy Rogers — DATE: 2/12/03

DISCLOSED TO AND UNDERSTOOD BY — DATE — WITNESS — DATE

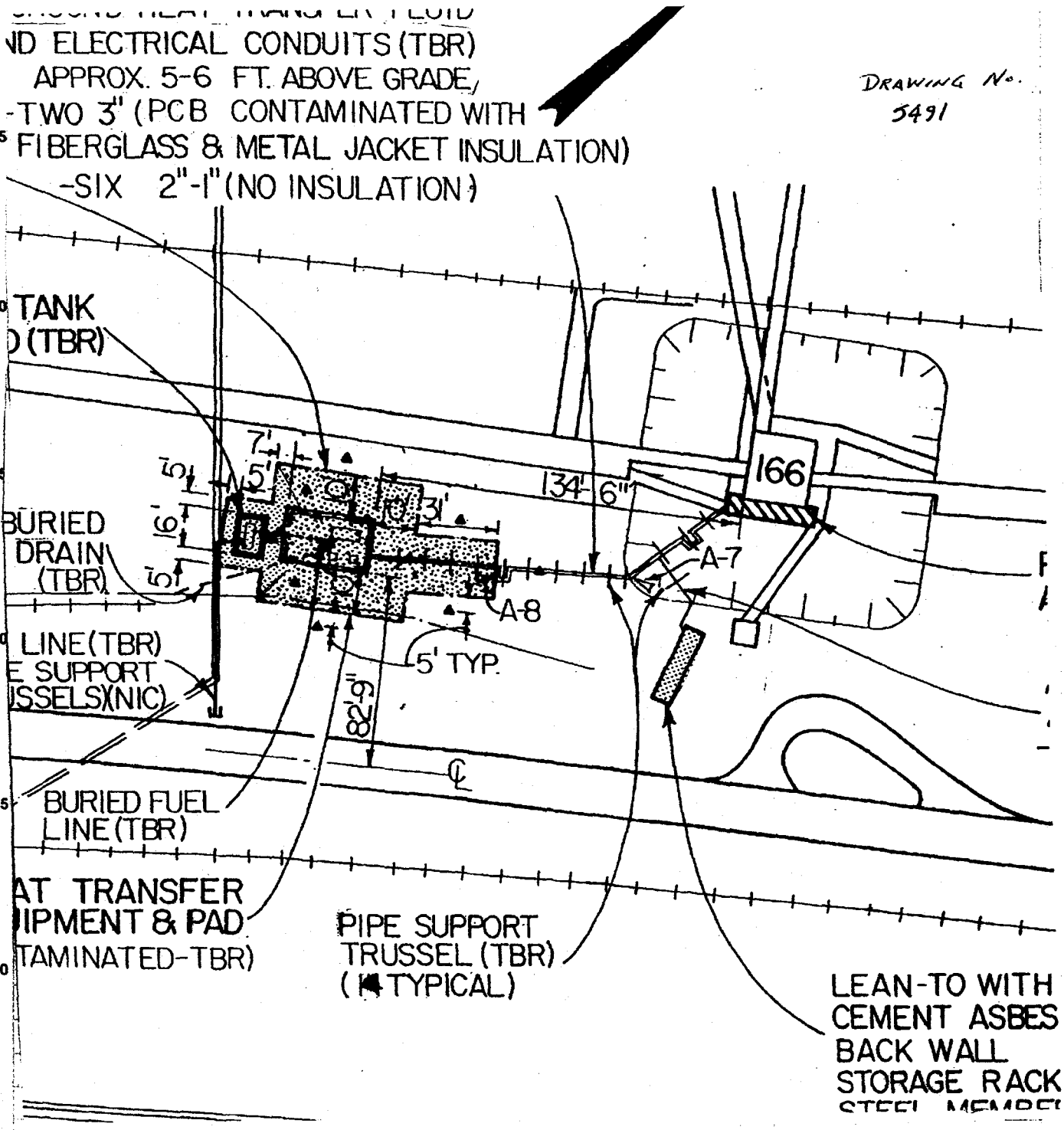
CLIENT	CRANE
JOB NUMBER	9060
SUBJECT	SOIL REMOVAL NEAR BLDG 166
DRAWING NUMBER	
BASED ON	FIELD MEASUREMENTS
APPROVED BY	
DATE	2-12-09
BY	T.R.
CHECKED BY	



TITLE

PROJECT NO. 9060
BOOK NO. 1363

DRAWING No. 5491

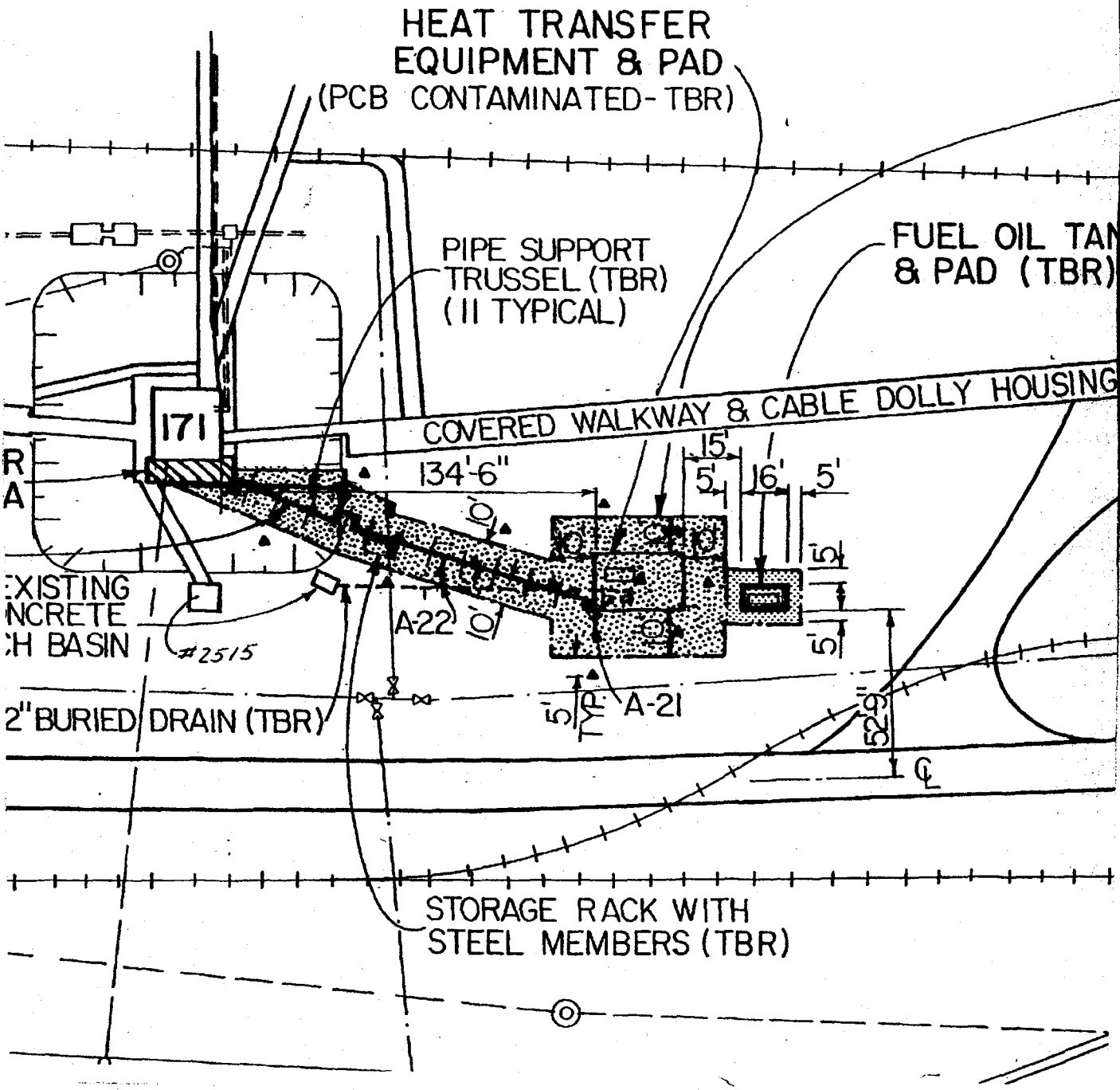


SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

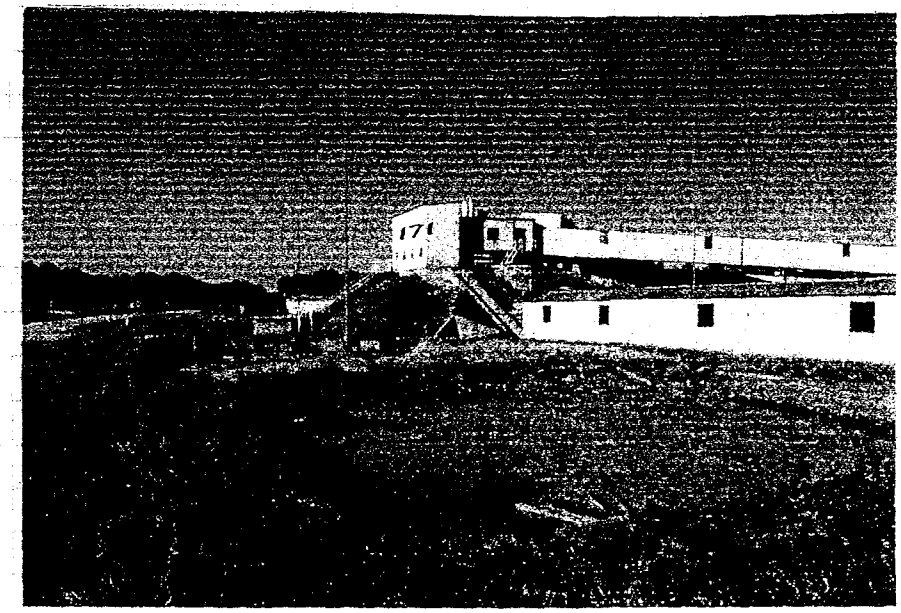
Work continued to Page

SIGNATURE Tony Nagel **DATE** 2/12/03

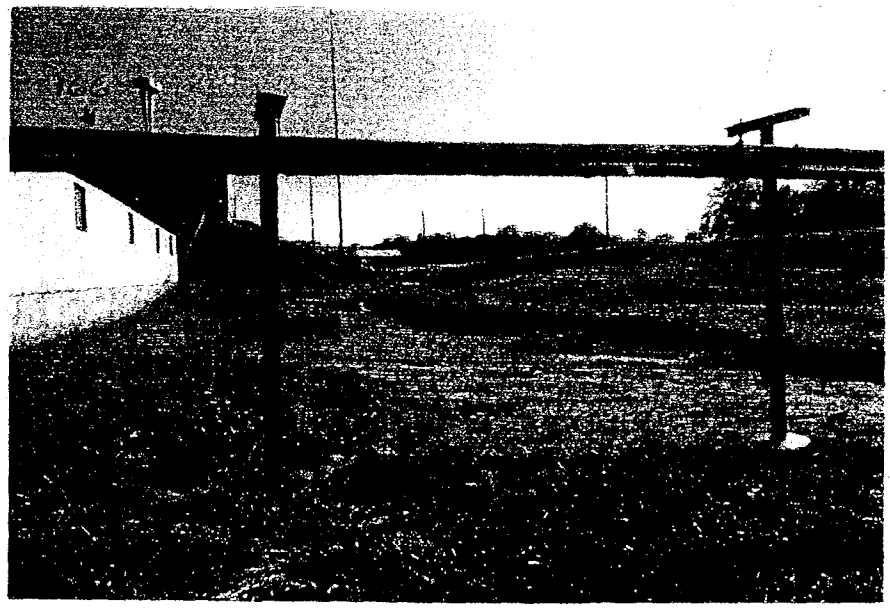
DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**


HEAT TRANSFER
EQUIPMENT & PAD
(PCB CONTAMINATED-TBR)
PIPE SUPPORT
TRUSSEL (TBR)
(11 TYPICAL)
FUEL OIL TAN
& PAD (TBR)
COVERED WALKWAY & CABLE DOLLY HOUSING
171
134'-6"
15'
5'
16'
5'
10'
5'
5'
10'
A-22
A-21
EXISTING
NCRETE
CH BASIN
#2515
2" BURIED DRAIN (TBR)
52'-9"
STORAGE RACK WITH
STEEL MEMBERS (TBR)

Work continued from Page



24



25

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 2/12/03

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THURS. 2/13/03

Work continued from Page

0710 Hrs - Arrive @ BLDG 3245
- PREP DRAWING # 5491 of BLDGS 171 & 166 to FAX to R. BASINSKI
- FAX DRAWING # 5491 to RALPH
- TALKED to RB. SENT up CONFERENCE CALL FOR 1430 Hrs

0805 Hrs - Arrive @ SWMU 16 - PARK outside FENCE/gates lock - will stake out borings outside South END OF site
- staked out 13 locations
- CHECK Existing well KEY # 34567
- CHECK locations OF SUMPS & proximity OF SUMPS to FENCE FOR WELL stake out - SUMPS INSIDE FENCE site MAP SHOWS them on the outside

1030 Hrs - Arrive @ BLDG # 3245
- CALL Mr Kluesner FOR ACCESS to SWMU 16 BLDG 165 - BLDG SHUT DOWN FOR MAINTENCE tomorrow - will HAVE FREE ACCESS - NEED to call tomorrow FOR ACCESS through gate

1050 Hrs - Arrive @ SWMU 13 - locate WELL sites
1410 Hrs - LEFT FOR BLDG. # 3245
1420 Hrs - Arrive @ BLDG # 3245
- CONFERENCE call with R. Basinski, T. Dent Bill Gates Doug Johnson, Tim Johnston, V. Plachy Matt Cockran & B. BALKOVEC; SEE FAX PAGE 14
- Address SAMPLING locations @ BLDGS 171 & 166
- " moving MW locations @ SWMUS 13 & 16
- " site ACCESS issues & ongoing operations

1550 Hrs - Locate SB01 → 06 & 09-14 @ SWMU 13 w/ T. Brent then continue to map ABOVE locations & locate MW sites outside FENCE
1700 Hrs - LEFT SECURED FENCED AREA
1745 Hrs - Finish locating 13MWT13, 14 & 19
1755 Hrs - LEFT CRANE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rose

DATE 2/13/03

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14

Brent Thomas J CNIN

From: Basinski, Ralph [BasinskiR@ttnus.com]

Sent: Thursday, February 13, 2003 9:56 AM

To: Johnston, Tom; Cochran, Matthew; Plachy, Valerie; 'Bill Gates'; Brent Thomas J CNIN CNIN

Subject: NSWC Crane SWMUs 13 and 16 Sampling Locations / Access Issues

When: Thursday, February 13, 2003 2:30 PM-3:30 PM (GMT-05:00) Eastern Time (US & Canada).
Where: Main Conference Room

~~*~*~*~*~*~*~*~*~*

Terry Rojahn is currently conducting the utility clearance site visit. He has identified several issues. These include

1] Inadequate # of samples for PCBs at therimonal boilers at MFB

2] Access issues for several monitoring locations at SWMUs 13 and 16

3] General access issues due to ongoing operations and heightened security.

It may be necessary to add or move sample locations. A conference call will be held among Bill Gates, Tom Brent, Terry Rojahn, Ralph B, Tom Johnston, and Valerie P. At the end of the conference call we hope to have determined the locations of additional samples and whether any sample locations have to be moved. Also any modifications to the QAPP (Submittal of the revisions to the QAPP is being held up until it is determined whether any additional modification must be made to the QAPP).

Field sketches made by Terry are attached for use in the meting.

<<Field Sketch for PCB Samples MFB.pdf>>

FRI 2/14/03

Work continued from Page

0700 Hrs - Arrive @ BLDG # 3245
Paperwork & wait for D. Johnson to deliver
Key to access SWMU 16

0805 Hrs - T. Brent received key to access gate to
BLDG 146 - went w/ T.B. to BLDG 146
Tom unlocked gate & returned to BLDG 3245
T.R. located sampling sites for wells next to
East & West sumps, etc. @ SWMU 16

0905 Hrs - Return to BLDG # 3245 - inform T. Brent of
my return so that he could secure gate @ BLDG 146

0920 Hrs - Arrive @ SWMU 13 - Check in with Mr Kluesner
- Locate 13 monitoring well sites
- Photo Boiler removal areas near BLDGs 171 & 166

1125 Hrs - Finish @ SWMU 13 Check out w/ Mr. Kluesner

1205 Hrs - Arrive @ Public Works
- Adjust maps to reflect changes in well locations
- Add soil boring locations for BLDGs 171 & 166
- Adjust Dig Permit Request to reflect the
addition of 6 more soil borings @ SWMU 13

1238 Hrs - Arrive @ BLDG # 3245
- Demob SUV & clean
- Prep. to depart to Airport
- Check out w/ T. Brent

1335 Hrs - Left Crane → Remainder of day TRAVEL

— END —

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tom Brent DATE 2/14/03

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MON 3/24/03

Work continued from Page

TRAVEL DAY

1325 Hrs - Arrive @ main gate (Bloomington) obtain badges - Matt Cochran, Bob Balkovec & T. Rojahn

1338 Hrs - Arrive @ BLDG 3245 (Field Office) Start opening boxes & coolers to organize EQ. & sample containers

1430 Hrs - Pick up Dig Permit for SWMU 16 Problem w/ SWMU 13 Public works having trouble getting on-site.

1500 Hrs - Return to BLDG 3245 - Drillers arrived

Tim Boehmer - Foreman
Dave Schrecengost - Driller
Jon Keifer - Helpers
Chad Mahaffy -
Tony Mayrer -

Drillers organize supplies

1600 Hrs - H&S meeting

1715 Hrs - Finish H&S meeting
Prep. EQ for DPT work tomorrow
Leave message for R. Basinski on day's events

1755 Hrs - Left Base

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 3/24/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

ON SITE
T+NUS - M. Cochran, Bob Balkovec, T. Rosahn
B-M - T. Boehmer, D. Schrecongost, J. Keifer, C. Mahaffy, T. Mayker & J. Akers

TUES 3/25/03 SUMMARY

Kick off meeting w/ T. Brent, C. Freeman & Army
Receive Key to SWMU 16 & 13
Receive Dig Permit for SWMU 13
Gave H&S to Jeff Akers
Sample Borings
135801 → 135806

Install - 13MW T15 SEE N.B. # 2555

Logs Generated
Laucks - 0963 & 0964
Triangle - 0965

SCIENTIFIC BINDERY PRODUCTS CHICAGO 50605 MADE IN USA

TUES 3/25/03

Work continued from Page AM Weather mild & sunny PM mild w/period of heavy rain start ~1400 Hrs

0700 Hrs - Arrive @ BLDG 3245
Prep. to sample W/DPT @ SWMU 16
0800 Hrs - Arrive @ Kick off meeting w/ Tom Brent & C. Freeman; Army represented by Frank Mitchell & Mike Roach (x3546)
They presented maps w/ limited access do to material handling. Also, received 3 keys (T. Brent, B. Balkovec & T. Rojahn) for access to S. Gate @ SWMU 13 & gates @ SWMU 16
Others @ meeting included T. Boehmer & D. Schegengost of B-M & M. Cochran, B Balkovec & T. Rojahn of T+NUS
No access to SWMU 16 until Thursday 3/27/03
Have to switch focus from SWMU 16 to SWMU 13
0840 Hrs - Stop at Public works to try to hurry up SWMU 13 dig permit - Donna very helpful will call gas co. & us when permit is finished
1200-1300 Hrs
0910 Hrs - Arrive @ SWMU 13 to show MW locations to B-M (T.B. & D.S.) & T+NUS (M.C. & B.B.)
Select location 13MWT15 to start when dig permit is obtained - meanwhile will start setup of drilling rig
1130 Hrs - Lunch
1200 Hrs - Prep. to sample @ SWMU 13
Pick up Dig Permit
1230 Hrs - Arrive @ Boring locations near BLDG 166
Begin sampling @ 1240 hrs end @ 1420
See CoCs 0964, 0963 & 0965
1500 Hrs - Return to BLDG 3245 for packing & paperwork
1800 Hrs - Left Site
1830 Hrs - Drop off samples ship to Lauches on FED. EX AirBill # 8316 7332 7269

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 3/25/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW:
T+NUS - M. COCHRAN, B. BALKOVEC & T. BOJAHN
B-M - D. SCHREGENGOST, J. KEIFER, C. MAHAFFEY, T. MAYCEK & J. AKERS.

SUMMARY WED 3/26/03

INSTALLED: 13MWT17 & 18 SEE NB #2555

SAMPLED SOIL BORINGS - 135807 &
135809 → 135813

ALSO, COLLECTED RINSATE & SOURCE BLANKS FOR TAP WATER & DI

COECS GENERATED
LAMICKS - 0969, 0970
TRIANGLE - 0966

DI IS NERL REAGENT GRADE WATER
NERL DIAGNOSTICS
14 ALMEIDA AVE
E. PROVIDENCE, RI 02914
LOT # 01097313
EXP DATE 01-2004

SCIENTIFIC BINDERY PRODUCTS CHICAGO MADE IN USA

WED 3/26/03

Work continued from Page AM sunny & mild PM - Same

0650 Hrs - Arrive @ BLDG 3245
Prep. to sample @ SWMU 13
0730 Hrs - Arrive @ SWMU 13 - set up to sample Soil Borings
M.C & T.R sampled 135809 → 135813
SEE CoFCs 0966 & 0968
1000 Hrs - Finish sampling @ SWMU 13
1015 Hrs - Return to BLDG # 3245
- FAX CoFCs to Laucks
- " " " OFFICE
- CALL T. Patton order soil auger & bucket bits to sample @ 135814 - Refusal w/ DPT
- CALLED OFFICE LEFT MESSAGE W/ A. Basinski

1200 Hrs - LUNCH
1230 Hrs - Return to BLDG # 3245
- Prep. to collect Source Blanks & Rinsate
SEE CoFC # 0970
- M.C. & B.B. collect samples @ 135807
- TR. collected S.Blanks & Rinsates
- PACKAGE SAMPLES FOR SHIPMENT on
CoFCs 0966 & 0965 FOR Triangle &
0968 & 0970 FOR LAUCKS

1740 Hrs - LEFT BASE FOR. FED. EX. Drop off the Following:
Triangle samples on AB# 8316 7332 7247
Laucks samples on AB# 8316 7332 7258
1830 Hrs - Arrive @ Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 3/26/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS - SAME AS 3/26/03 P 20

THURS. SAMPLE SUMMARY 3/27/03

INSTALLED : 13MWT 10, 12 & 16 SEE NB# 2555

SAMPLED SOIL BORINGS : 165B01 → 11, 14-17 & 41

QUECS GENERATED

LAUCKS : 0959 & 0960

TRIANGLE : 0962

SCIENTIFIC SINCERY PRODUCTS. CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

THURS. 3/27/03

Work continued from Page AM Sunny & Mild PM - SAME

0700 Hrs - Arrive @ BLDG #3245

0730 Hrs - Try to Access 2nd Gate @ BLDG 146 Contractor lock not in place yet - Return to BLDG 3245 INFORMED C. Freeman - she will take care of the problem (called Frank Mitchell)

0810 Hrs - Access 2nd Gate - Maintenance opened Gate M.C. & T.R.

Collected soil samples @ 165B01 → 07 & 165B41

Water level @ sump near 165B14 @ 4' w/ TD @ 8'

1130 Hrs - Lunch

1200 Hrs - Return to BLDG 3245

REFRIGERATE samples; check in @ office

1310 Hrs - Return to SWMU 16

Collected soil samples 165B08 → 11 & 165B14 → 17

1615 Hrs - Secured 2nd gate w/ Contractors lock

Return to BLDG #3245

PACKAGE samples taken this date ON CoFCs 0959 & 0960 FOR SHIPMENT ON FED.EX. AIRBILL # 8316 7332 7236

1830 Hrs - Drop of samples @ FED.EX.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 3/27/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW - SAME AS 3/26/03

J. AKERS & C. MAHAFFY LEFT FOR HOME @ the END OF DAY.

FRI. 3/28/03 SUMMARY

INSTALLED - 13MWT 11, 21, 22, 25 & 26, SEE NB 2655

Sampled - 21 Soil Borings SEE P. 25

SUMP @ SWMU 16 (16SB40) - WATER @ 5'
TD = 8'

COECs GENERATED
LAUCKS: 0961, 0972, 0981
TRIANGLE: 0967 & 0971

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

FRI 3/28/03

Work continued from Page Weather Partly cloudy & windy/cool 50's

0700 Hrs - ARRIVE @ BLDG. 3245
PREP to SAMPLE soils

0745 Hrs - Arrive @ SWMU 16 set up to sample soils
SAMPLE 16SB 12, 13, 31, 30, 29, 22 & 25 SEE CoC 0972
SAMPLE 16SB 25, 24, 23, 18, 19, 21, 27 & 28 SEE CoC 0961
SAMPLE 16SB 28, 20, 35, 37, 38, 39 & 40 SEE CoC 0981

1500 Hrs - Finish collecting soils and leave SWMU 16

1510 Hrs - Arrive @ BLDG # 3245
PACKAGE & SHIP samples for Laucks Lab
collected on above CoCs

1730 Hrs - LEAVE BASE FOR FED. EX.

1800 Hrs - DROP OFF SHIPMENT @ FED. EX on AB#
8316 7332 7225

1020 Hrs - SENT FAX to Hugh Prentice of Laucks - w/ CoCs - samples
collected this date - FOR Sat. Pick up.

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 3/28/03

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

CREW - THNUS - M. COCHRAN, B. BALKOVOC & T. ROJAW
B-M - D. SCHREECENGOST, J. KEIFER & T. MAYREC

SAT: 3/29/SUMMARY

INSTALLED: 13MWT 01, 02 & 05
SAMPLE: SURFACE WATERS
135W01-07, 09 & 10
135D01 - 10, 17, 18, 22 & 23
ADDED

GOFCS GENERATED
LAUCKS: 0973, 0980, 0975 & 0978

SCIENTIFIC SINGER PRODUCTS CHICAGO 60606 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

SAT 3/29/03

Work continued from Page

Weather Cloudy & cold 30's

0650 Hrs - Arrive @ BLDG #3245
Prep for surface water & sed sampling
Checked BLDG 3260 for water quality eq.
Found only cali. solutions & turbidity meter
0815 Hrs - Checked @ BLDG 41 for peristalic pump
& YSI - Found @ signed form
0855 Hrs - Returned to BLDG 3245
Calibrated YSI
Finish prep for sampling surface waters
& sediments
1000 Hrs - Arrive @ SWMU 13
Sample: 13SD22, 01, 02 & 23; and 13SW01 & 02
1200 Hrs - Break for lunch
1300 Hrs - Return to BLDG 3245
Prepare bottle sets for remainder of day's
sampling effort
1400 Hrs - Arrive @ SWMU 13
Sample: 13SW/SD 03, 04, 05, 06, 07, 09 & 10 &
13 SD 08, 17 & 18
1800 Hrs - Complete sampling this date
1810 Hrs - Arrive @ BLDG 3245
Paperwork & secure samples
1900 Hrs - Left site for Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Rogers

DATE 3/29/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREWS: SAME AS ON P. 26

SUN: 3/30/03 SUMMARY

INSTALLED: 13MWT01, 03, 04 & 08; SEE NB 2555

SAMPLED: SURFACE WATER - 13SW12 & 13

SEDI - 13SD11→16, & 19→21

SOIL - 13SB08 - SS & SB

COPCs GENERATED

LABELS: 0980, 0978 & 0979

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

SWH 3/30/03

Work continued from Page

Weather Cloudy & Cold 30's

0650 Hrs - Arrive @ BLDG # 3245
PREP. to sample SW/SD @ SWMU 13

0900 Hrs - Arrive @ SWMU 13
SAMPLE Locations
13 SW/SD 11 - Dry collect SD only
13 SW/SD 12 & 13
13 SD 14 → 16 & 21

1200 Hrs - Return to BLDG # 3245 - LUNCH

1235 Hrs - Return to SWMU 13
SAMPLE Locations 13 SD 20 & 19

1335 Hrs - Return to BLDG # 3245
PAPERWORK & Sample Handling

1840 Hrs - LEAVE BASE FOR Hotel
Stop FOR GAS & Supply PURCHASE

2120 Hrs - FAX OFFICE FRI. SHIPMENT COFCs
0961, 0972 & 0981

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 3/30/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREWS : SAME AS ON P.26

MON 3/31/03

INSTALLED 13MW T 14 & 19

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

MON. 3/31/03

Work continued from Page

WEATHER: mostly sunny & 40's

0650 Hrs - Arrive @ BLDG #3245
PAPERWORK & PACKAGING
CHECK IN @ OFFICE. FAX CWCS to Ed Sedlmyer for distribution

1400 Hrs - CHECK Drilling Locations w/ Tom Brent for restoration & REVEGETATION; relocate 13MWT20 & 09 to DPT locations.
CHECK IN w/ OFFICE (ED) checked w/ Laucks ok to sample tomorrow
CHECK SWMU 16 - SWI locations dry; ~~key~~ (TC) BLUE Lock on Back Gate for ACCESS to EXISTING WELLS & SWI/SDS
Return to BLDG - SECURE OFFICE; pick up SAMPLES.
Rig stuck @ 16MWT13; will have to relocate and INFORM PW.

1700 Hrs - LEFT BASE FOR SAM'S CLUB & LOWES - FOR SUPPLIES, STAKES & ~~cold tar~~ (TC) cold tar to patch Boreholes in Asphalt @ SWMU 16

1845 Hrs - Return to Hotel.

END

Work continued to Page

SIGNATURE [signature] DATE 3/31/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CLEWIS: SAME AS P. 26

INSTALLED: 13MWT09, 20, 23 & 24

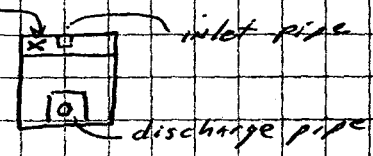
SAMPLED: SW/SD @ SWMU 16

SEE COACS 0983 & 0982

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

Work continued from Page Sunny & 70's

0650 Hrs Arrive @ BLDG 3245
Prep to sample SW/SD @ SWMU 16
Talk to Tom regarding sump next to BLDG. 188
SAMPLE behind divider



0815 Hrs - Talk to Mean. to bring dozer through North gate - He okay'd
0830 Hrs - Check in w/ drill crew
0930 Hrs - Access dozer to BMWT09 w/ boards on road crossings
0947 Hrs - Talked to Donna @ PW about moving BMWT13 - she will get it cleared will talk to her on Monday

1000 Hrs - Return to BLDG # 3245
Called F. Mitchell regarding work @ BLDG 146 NEXT WEEK - He said it looks good through May however there is work sch. @ BLDG #145 so he would have to talk to Mike Roach to see if that would impact us - he would get back to Tom B.
1020 Hrs - Arrive @ SWMU 16
Sample 165D11, 02, 10, 04 & 05
1135 Hrs - Break for Lunch
1200 Hrs - Return to BLDG Pick up additional supplies
1215 Hrs - Arrive @ SWMU 16
Sample 165D08, 09, 06, 03 & 165W0101
1505 Hrs - Arrive @ BLDG # 3245 prep. samples for shipping on COFCs 0982 & 0983
1730 Hrs - Drop of Samples on Fed Ex. AB# 8316 7332 7199

END

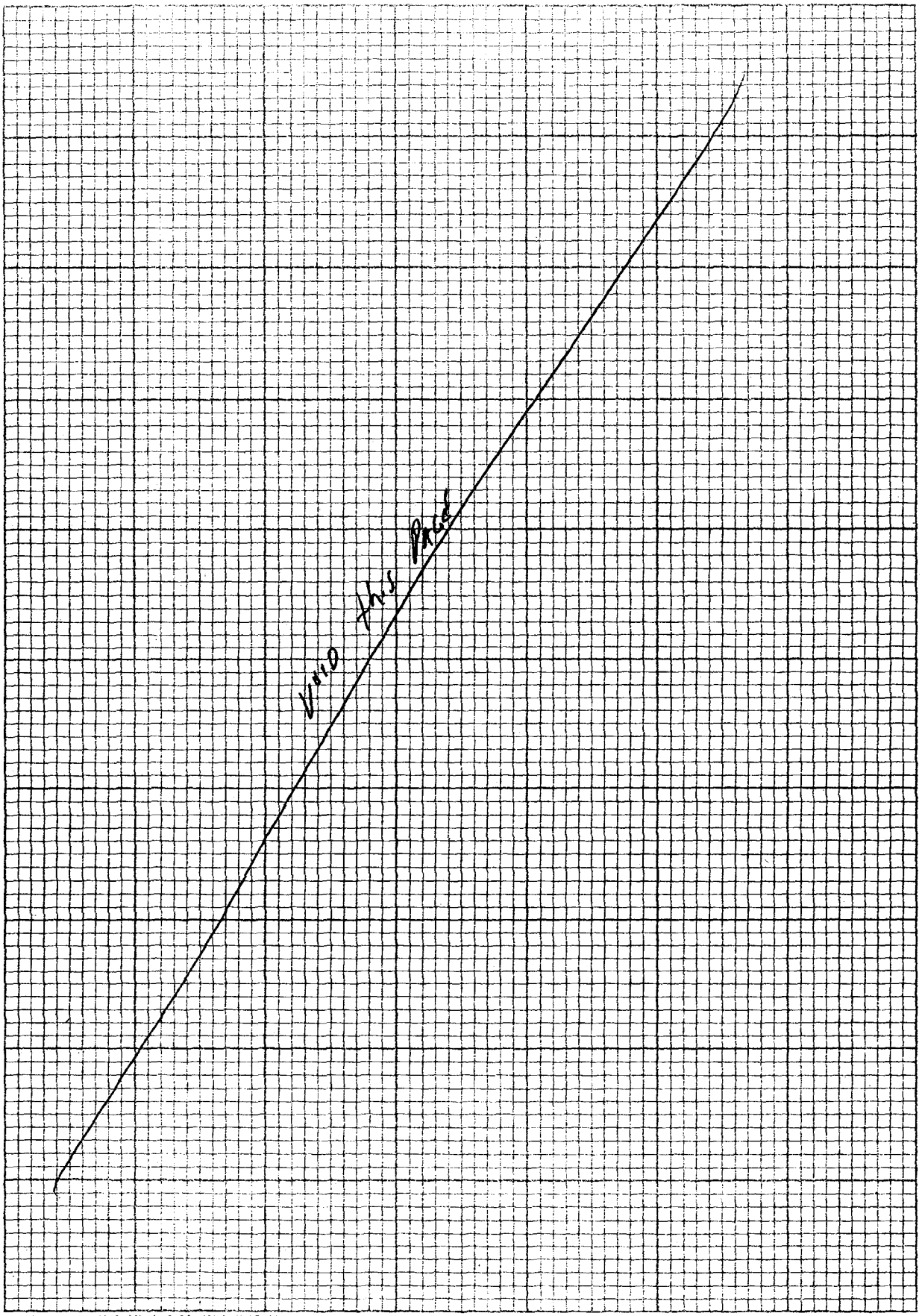
SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/1/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©



SCIENTIFIC BINDERY PRODUCTS CHICAGO 60656 MADE IN USA

TITLE NSWC CRANE

PROJECT NO.

BOOK NO.

WED APRIL 2, 2003

Work continued from Page

0700Hrs - Arrive @ BLDG #3245
General House Cleaning @ BLDG 3245
FAX C&C 0982 & 0983 to LAB & OFFICE
0815Hrs - Left Base For Airport

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] **DATE** 4/4/03

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

T+ NCLS - B. BALKOVEC & T. ROJAHN
B-M - D. SCHRECENGOST, JOHN KEISER, J. AKERS, T. MAYER & C. MAHAFFY

MON 4/7/03 SUMMARY

- TRAVEL DAY
- INSTALLED: 13MWT06 SER NB 2555
- SAMPLED: RINSATES RB04070301 @1615 SS MIXING BOWL
  RB04070302 @1630 DI: STANDARD
- ~~ALSO ON SITE SUNDAY CREW~~

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE **PROJECT NO.** 9060 **37**

BOOK NO. 1363

MON 4/7/03

Work continued from Page Cool & Overcast

TRAVEL DAY

1245 Hrs - Arrive @ BLDG # 3245
Organize newly delivered coolers + eq. shipments

1330 Hrs - Check in @ PW - ok to install 13 MWH 13

1345 Hrs - Check in @ main gate for picture badge - cannot get picture badge - but will receive a laminated logs from badge check back Wed or Thurs.

1410 Hrs - Return to BLDG # 3245 - check on operations @ BLDG 265
M. Kluesner said may be finish operations @ 1630 Hrs. but check @ BLDG 165 first.

1440 Hrs - Check on Drillers - gone to escort dozer pick up to SWMU 13 - D.S. arrived

1510 Hrs - Return to BLDG 3245
Prep labels for Rinsates

1615 Hrs - Collected Rinsate of S.S. Mixing bowl
RB04070301 w/ Reagent Grade H_2O by NEKL
Lot # 0109313 Exp. 01-2004

1630 Hrs - Collected Rinsate of Disposable Plastic Trowels
RB04070301 w/ same Reagent Grade H_2O as above

- Labeled & Tag Rinsate containers & secure in Frig
- Prep for surveyors to arrive tomorrow

1900 Hrs - Left Site

— END —

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/7/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREWS
T+NUS & B-M SAME AS ON P 36
B.T & R - M. Cooper & Tony Allen

4-8-03 Summary
Installed - 16MWT 01 SEE NB 2555
SEE PAGES 40 & 41 for RULES to ACCESS MFB
JK & CM - worked on WELL PADS @ SWMU 13
Surveyors - locate SW/SO @ SWMU 13 outside FENCE

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

TUES. 4/8/03

Work continued from Page

Cool & OVERCAST

0655 Hrs - ARRIVE @ BLDG #3245
PICK FOR SURVEYORS

0730 Hrs - SURVEYORS ARRIVE - MATT Cooper & Corey Allen
GIVE H&S TRAINING W/ WORK PERMIT
SHOW SURVEYORS SWMU 13

1000 Hrs - SURVEY CREW TO WORK OUTSIDE OF MFB SGD/SW
locations - GOT DRILLING CREW INSIDE SWMU 16

1025 Hrs - MEET W T. Brent - SAID SOMEONE SAW
SOMEONE W/ A GPS INSIDE Buffer Zone
@ BLDG 165 - CHECK IN W/ Mr Kluesner -
HE didn't Know anything about it. Also
checked w/ Guard at North Gate

1105 Hrs - MEET W/ LEAH Clinton (Head of Security)
worked out ground rules for subs accessing
SWMU 13 - SHE will get E-Mail to T. Brent.

1130 Hrs - Unlock gate @ SWMU 16 to let drilling crew out
for lunch

1200 Hrs - LUNCH

1300 Hrs - MEET W/ SURVEY CREW & drilling crew to
discuss ACCESS rules @ SWMU 13
- WAIT FOR E-mail FROM LEAH CLINTON
- tally Soil samples TAKEN & APPROPRIATE
DUPS & MS/MSDs NEED to take @ SWMU 16
- Prep. CoCs FOR tomorrow & Check in W/ OFFICE
- RECEIVE E-Mail FROM Cris Freeman & Leah Clinton

1700 Hrs - LEFT BASE

END

SIGNATURE
DATE 4/8/03
DISCLOSED TO AND UNDERSTOOD BY
DATE
WITNESS
DATE

Freeman Christine D CNIN
From: Freeman Christine D CNIN
Sent: Tuesday, April 08, 2003 4:18 PM
To: 'ClintonL@crane.army.mil'
Cc: Brent Thomas J CNIN; 'Johnson, Douglas G'; Mitchell Frank CNIN
Subject: RE: Contract Work in MFB

Leah,
Code 095 acknowledges receipt of your instructions (Tom had to leave for the day). The contractors will receive a copy of this email.

The following are the names of the contractors conducting work in MFB:

TtNUS:

Robert Balkovec
Terry Rojahn
Bowser-Morner:

Dave Schrecengost
Tony Mayrer
Jon Keifer
Jeff Akers
Chad Mahaffy
Bledsoe Tapp & Riggert, Inc.:

Matthew Cooper
Corey Allen

Thank you for you assistance.

---Original Message---

From: **Johnson, Douglas G [mailto:JohnsonD@crane.army.mil]**
Sent: Tuesday, April 08, 2003 15:53
To: Freeman Christine D CNIN
Subject: FW: Contract Work in MFB
Importance: High

---Original Message---

From: **Clinton, Leah K**
Sent: Tuesday, April 08, 2003 3:45 PM
To: 'brent_t@crane.navy.mil'; Mitchell, Frank E; Johnson, Douglas G; Wininger, Terri L; Roach, Michael D; Baker, Sheryl G; Kluesner, Marvin J; Voorhies, John D; Guard Supervisors
Cc: Helms, Mark E; Shearin, Walter F; Meals, Sterling W; Thomas, Norman R; XO; SS Personnel
Subject: Contract Work in MFB
Importance: High

BACKGROUND: TTNUS (contractor) is currently performing work in the MFB > area. We must make sure that:

- access controls are maintained in all of our operational areas
- contractors are granted the necessary access in order to perform > requested work and that access is consistent with safety and security requirements

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 82602 MADE IN USA

Work continued from Page

- contractors are made aware of and comply with key and access control requirements
- persons performing access control (both CAAA guards and in-house personnel) are given the proper guidance necessary to adequately perform their duties

TTNS employees or other contractors performing work in the area shall:

- provide the name(s) of the contract employees or a list of supervisors who can "vouch" for the identity of the contract employees (so we may provide this information to the guard force).
- check in and out with the guard/access control person prior to entering and upon leaving MFB (the guard is located at the gate nearest bldg 165). Contractors are not required to check in/out if a guard is not/no longer on duty (e.g., after hours or on weekends when there are no operations in the area).
- call the bldg 165 supervisor (854-1790) to notify him/her that contractors will be working in the area and to obtain any approvals/prohibitions concerning movement in/around/behind the general area of bldg 165 (as provided by Mr. Mike Roach on a color-coded map). For convenience, the guard will make the phone in the guard house available for this purpose. The contractor shall not go in/around/behind bldg 165 without specific approval in advance by the bldg 165 supervisor. Approval shall be obtained on a case-by-case basis.
- go around to the opposite gate and enter the area (nearest bldg 174) (where a contractor cored lock has been installed). The contractor shall secure the gate behind him/her. The contractor shall not permit anyone other than his/her own employees to enter the area at the same time (i.e., no "piggybacking").
- exit thru the same gate he/she entered, secure the gate behind him/her; and "check out" thru the gate guard.
- control keys assigned to them. Making duplicates is unauthorized.
- turn in all keys immediately upon completion of requested work.

ALL: Similar written/detailed instructions must be provided to all contractors working in our areas and coordinated with all parties concerned. I will be happy to provide you advice and assistance if you are preparing similar instructions for contract work being performed in your area of responsibility.

Mr. Brent: Please acknowledge receipt and provide the names of the contract employees who can enter our areas on an unaccompanied basis (e.g., a roster that we can furnish to the guards so we know who is working for TTNS on this project or a list of supervisors who can "vouch" for TTNS employees)

Leah Clinton
CAAA Security Officer
DSN 482-3960
(812) 854-3960

"Only Our Best For the World's Best"

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE DATE 4/8/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW SAME AS ON P. 40

4/9/03 SUMMARY

INSTALLED - 16 MWT 04 & 05

SAMPLED - 16 SB26, 32, 33, 34 & 36

COLLECTED RB0090301

JK & CM - WORKED ON WELL PADS @ SWMU 13

SURVEYORS - LOCATE SW/SD & SBs @ SWMU 16

POURED 1 PAD BY HAND @ SWMU 13

LATE INSIDE BUFFER ZONE.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE WED 4/9/03

PROJECT NO. 9060

BOOK NO. 1363

Work continued from Page

Cold 40's & overcast.

0655 Hrs - Arrive @ BLDG 3245
Give Drillers E-Mail from Mr Clinton
Discuss said E-mail on pp 40 & 41

0740 Hrs - Arrive @ North Gate MRB talk to
Guard leave copy of E mail - Let
Guard know that J. Keiser & C. Mahaffy
will be working inside

0755 Hrs - Let J.K & C.M inside MRB from S. Gate

0810 Hrs - Return to BLDG 3245 - meet w/ surveyors
• Recon SWMU w/ survey crew

0845 Hrs - Return to BLDG # 3245
Discuss well installation @ 13MWT13
w/ T. Brent - may have to block main road.

0915 Hrs - Set up @ SWMU 16 to same soil
Collect samples @ 16SB 26, 32, 33, 34 & 36

1130 Hrs - Finish soil sampling Break for Lunch

1210 Hrs - Return to BLDG # 3245
• Collect Rinsate from core sleeve (RB04090301)
@ 1230 Hrs
• Prep samples collected for shipment to
Laucks, ~~via~~ on C.o.C 0984 & 0986 via
FED. EX. AB# 8316 7332 7063
• Clean up

1800 Hrs - Left site

1830 Hrs - Drop off samples @ FED EX.
B. Balkovec remained on site to oversight
drillers working on pad inside the BCDG 165
Buffer Zone

END

SIGNATURE [signature] DATE 4/9/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW
T+NUS - B. BALKOVEC & T. COSAHAN
B-M - D. SCHREECENGOST, JON KEIFER & T. MAYER

4/10/03 SUMMARY

INSTALLED - 16MWT03

SAMPLED - 13SB 14 & 09
16 SW02 & 07

DECIDE ON INSTALLATION OF 13MWT13 w/ TRACK RIG
WEEK OF 4/21 @ ORIGINAL SITE.

MFB BUFFER ZONE OPEN SAT & SUN
CHECKED W/ MR KLUESNER

POUR PADS @ SWMU 13 - 16 PADS

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

THURS. 04/10/03

Work continued from Page

MILD & SUNNY

0700 Hrs - ARRIVE @ BLDG # 3245
FAX COCs FROM YESTERDAY to E. SEDLMYER
PREP to SAMPLE E. SUMP (16SW02), CHECK IN @ OFFICE

0835 Hrs - ARRIVE @ SWMU 16
Collect MS/MSD @ E. SUMP (16SW02) @ 0850 Hrs

0955 Hrs - LEAVE SWMU 16 FOR BLDG 3245
Label & Tag Containers From 16SW0201 & secure in Frig

1105 Hrs - LUNCH

1135 Hrs - Return to BLDG - PREP. to sample soils @ SWMU 13
Collect samples @ 135814 & 09 w/ B. Bellouse

1320 Hrs - Arrive @ SWMU 16
Collect w/ sump sample (16SW07 & Dup)

1450 Hrs - Return to BLDG # 3245
Prep samples for SHIPMENT on
COCs 0987 & 0969 for LAUCKS &
COC 0985 for TRIANGLE

1800 Hrs - Drop of Samples @ FED EX
AB# 8316 7332 7166 to LAUCKS
AB# 8316 7332 7177 to TRIANGLE

1815 Hrs - Return to Hotel

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 4/10/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW - SAME AS PAGE 44

04/11/03 SUMMARY

INSTALLED Monitoring WELL 16MWT02 SEE NB #2565

DEVELOPED & INSPECTED 3 WELLS @SWMU 16

WES-14-4-83
WES-14-3-83
WES-14-5-83

Drillers - Also, dug out pads @ SWMU 16
Painted 11 wells & bollards @ SWMU 13
& Hand poured pad @ 13MWT09

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

FRI 04/11/03

Work continued from Page Mild & Sunny Temp 60's

0650 Hrs - Arrive @ BLDG #3245
Fax Cofcs to ED Sedlmyer
Clean up office area
Decon Whale Pumps
Prep Vehical for Well Development
Call ED Sedlmyer
1010 Hrs - Get Extended Pass from main Gate w/ B.B.
1030 Hrs - Return to BLDG 3245 - Give Tom list of weekend works for weekend work Letter
1055 Hrs - Lunch
1130 Hrs - Return to BLDG #3245
Call in Hrs to office
Call Denny - straw supplier; he will see how much he has (bail count) and get back to me
1210 Hrs - Start surging @ WES-14-4-83
Develope / purge from 1224 to 1255 remove 24 gals
Final Turbidity = 8 NTUS ; Well Inspection @ 1300 Hrs
1315 Hrs - Return to BLDG #3245
Decon whale pump & pick up for purge H2O containers
1400 Hrs - Start surging @ WES-14-3-83
Purge from 1416 Hrs - 1501 Hrs ; Dry out 3 times
Removed 10 gal. Final Turbidity = 32 NTUS
Well Inspection Completed @ 1506
1515 Hrs - Start surging @ WES-14-5-83
Purge from 1523 to 1602 Hrs ; almost dry out @ 1548
stop to let well recharge (Turbidity was on the rise)
Allowed well to recharge & turbidity dropped to 12 NTU
Removed 34 gals ; Finish Well Inspection @ 1607
1620 Hrs - Return to BLDG #3245
Dump Purge Water & Decon Whale Pumps
Check YSI Calibration ; B.B. checking on Drillers @ SWMU 13.
1800 Hrs - Left Base

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/11/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREWS - SAME AS P. 44

Summary 4/12/03

Drilling - Installed 12 Pads & Painted Bollards & Protective Casings

All pads poured & Painting Completed @ Both Summits

6 Wells Developed @ SUMMIT 13
13MWIT 26, 06, 18, 15, 10 & 11

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 50603 MADE IN USA

SAT. 4/12/03

Work continued from Page Mild & Sunny Temp 70's

0635 Hrs - Arrive @ BLDG # 3245
Pick up Dev. wells while drillers prep to pour pads - Cement truck due @ 0700 Hrs.

0700 Hrs - Arrive @ S. Gate
Wait for drillers to arrive w/ concrete truck

0730 Hrs - No drillers yet - They Arrived @ 0755 Hrs to pour pads
Will set up @ 13MWT26 @ South Gate to Develop

0735 Hrs - Start surge @ 13MWT26 - Dry out 4 times
Start Purge Time = 0745 Hrs Vol. purged = 4 gal
End Purge Time = 0847 Hrs Final NTUs = +1000 V. slow recharge

0900 Hrs - Start surge @ 13MWT06 Dry out 4 times
Start Purge = 0905 Vol. purged = ~1.8
End Purge = 1013 Final NTUs = +1000

1035 Hrs - Start surge @ 13MWT18 Dry out 3 times
Start purge = 1044 Vol. Purged = 7 gal
End Purge = 1127 Final NTUs = +1000

1143 Hrs - Start Surge @ 13MWT15 Dry out 3 times
Start Purge = 1146 Vol purged = 9 gal
End Purge = 1235 Final NTUs = +1000

1245 Hrs - Break for Lunch

1330 Hrs - Get Gas

1355 Hrs - Return to BLDG 3245; Decon Pumps & dump Dev. H2O

1450 Hrs - Surge 13MWT10 Purged Dry 3 times
Start Purge = 1515 Vol purged = 7 gal
End Purge = 1604 Final NTUs = +1000

1620 Hrs - Start Surge @ 13MWT11 Purged Dry 3 times
Start Purge = 1629 Vol Purged = 8 gal
End Purge = 1723 Final NTUs = +1000

1745 Hrs - Return to BLDG # 3245
Decon Pumps & Dump Dev. H2O

1830 Hrs - Leave Base

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/12

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW: B. BALKOVEC & T. CONNAN
Drilling crew left this date ~ 0840 hrs

SUMMARY 4/13/03

WELL ID	START PURGE	END PURGE	VOL. PURGED	TIMES DRIED OUT
13MWT01	0850	1003	7 gal	5 TIMES (BB)
13MWT03	0951	0932	4 gal	3 TIMES (TC)
13MWT02	1005	1101	4.5 gal	3 TIMES (TC)
13MWT07	1116	1205	8 gal	3 TIMES (BB)
13MWT05	1123	1205	4 gal	3 TIMES (TC)
13MWT08	1358	1445	12 gal	3 TIMES (TC)
13MWT04	1356	1456	4 gal	3 TIMES (BB)
13MWT12	1511	1551	5 gal	3 TIMES (TC)
13MWT16	1517	1605	4 gal	3 TIMES (BB)

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60606 MADE IN USA

Sun 4/13/03

Work continued from Page

Weather - Mild & Sunny high 60's & 70's

0720 Hrs - Arrive @ BLDG # 3245
Prep. Vehicles for Well Development; Cal. Instruments
Drillers Prep to Leave Base - complete all related paperwork; get gate key; etc.

0830 Hrs - Arrive @ SWMU 13
Develope 13MWT01, 03, 02, 07 & 05 (See Page 50)

1220 Hrs - Arrive @ BLDG # 3245
• Dump Purge H_2O & Decon Whale Pumps

1245 Hrs - Lunch

1310 Hrs - Prep. Vehicles for return to develope wells

1325 Hrs - Development @ SWMU 13
13MWT08, 04, 12 & 16

1615 Hrs - Finish Clean up @ SWMU 13

1625 Hrs - Return to BLDG # 3245
• Clean Offices (4 rooms & Hall way)
• Decon Whale Pumps & Dump Purge Water
• Unload Vehicles

1715 Hrs - Left Base for Hardware Store

1830 Hrs - Left Manards - Purchased RE tubing foot valves tamper, rake etc. for Well development & Site restoration work

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 4/13/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SUMMARY 4/14/03

WELL ID	START PURGE	END PURGE	VOL PURGED	TIMES PUMPED WELL DRY
13MWT17	0825	0847	14gal	—
13MWT21	0908	0947	10	3
13MWT22	1008	1046	4.5	3
13MWT25	1100	1133	2.5	3
13MWT24	1255	1337	7.5	3
13MWT23	1353	1432	5.5	3
13MWT20	1450	1531	5.0	3
13MWT09	1547	1633	17.0	3
13MWT19	1654	1735	6.0	3

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

MON 4/14/03

Work continued from Page

0653 Hrs - Arrive @ BLDG #3245
- Prep Vehicles for Well Dev.
- Call Matt Cooper (Surveyor) to come later - after 13MWT13 is installed
- Call T. Patton - track missing bladder tool & order Peristaltic Pump.
- Call PID - see P.52 for wells developed @ SWMU13

1150 Hrs - Lunch
1215 (Hrs) - Return to BLDG #3245
Call office - No answer
Make reservations for return trip 4/21-30/03
1235 Hrs - Return to SWMU 13
see P.52 for wells developed
1745 Hrs - Finish clean up at SWMU 13 returns to BLDG #3245
Clean EQ & Dump Purge H_2O
1800 Hrs - Leave Base

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/14/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUMMARY 4/15/03

WELL ID	START PURGE	END PURGE	VOL. PURGE	TIMES PURGED WELL DRY
13MWT1A	0809	0852	10.0 gal	3
16MWT02	0929	1010	4.5 gal	3
16MWT03	1025	1109	6.0 gal	3
16MWT05	1245	1402	21.0 gal	3
WES-14-01-83	1246	1340	10.0 gal	1
16MWT04	1425	1508	9.0 gal	3
16MWT01	1525	1605	1.5 gal	3
WES-14-02-83	1623	1718	20.0 gal	3

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

TUES. 4/15/03

PROJECT NO. 9060

BOOK NO. 1363

Work continued from Page

0665 Hrs - Arrive BLDG #3245
- CHECK IN w/ T. Brent - update on Progress & Bobcat Hookup.
- Cal. Instruments & CHECK YSI
- PREP. VEHICLES FOR WELL DEV.
- Order 2ND Turbidity Meter from T. Patton

0800 Hrs - Arrive @ SWMU 13 FOR 13MWT 14 Development

0915 Hrs - Arrive @ SWMU 16 DEV. 16MWT02 & 03

1130 Hrs - Arrive @ BLDG. #3245
- Empty Purge H_2O
- Pick up Batteries for YSI (showing low Battery)

1200 Hrs - LUNCH

1230 Hrs - Return to SWMU 16
DEVELOPE 16MWT01 - 05; WES-14-01 & 02

1725 Hrs - Finish Clean up @ SWMU 16

1730 Hrs - Return to BLD # 3245
- Dump Purge H_2O
- Clean Instruments
- Paperwork
- Check in w/ R. Basinski @ office

1815 Hrs - LEFT BASE

END

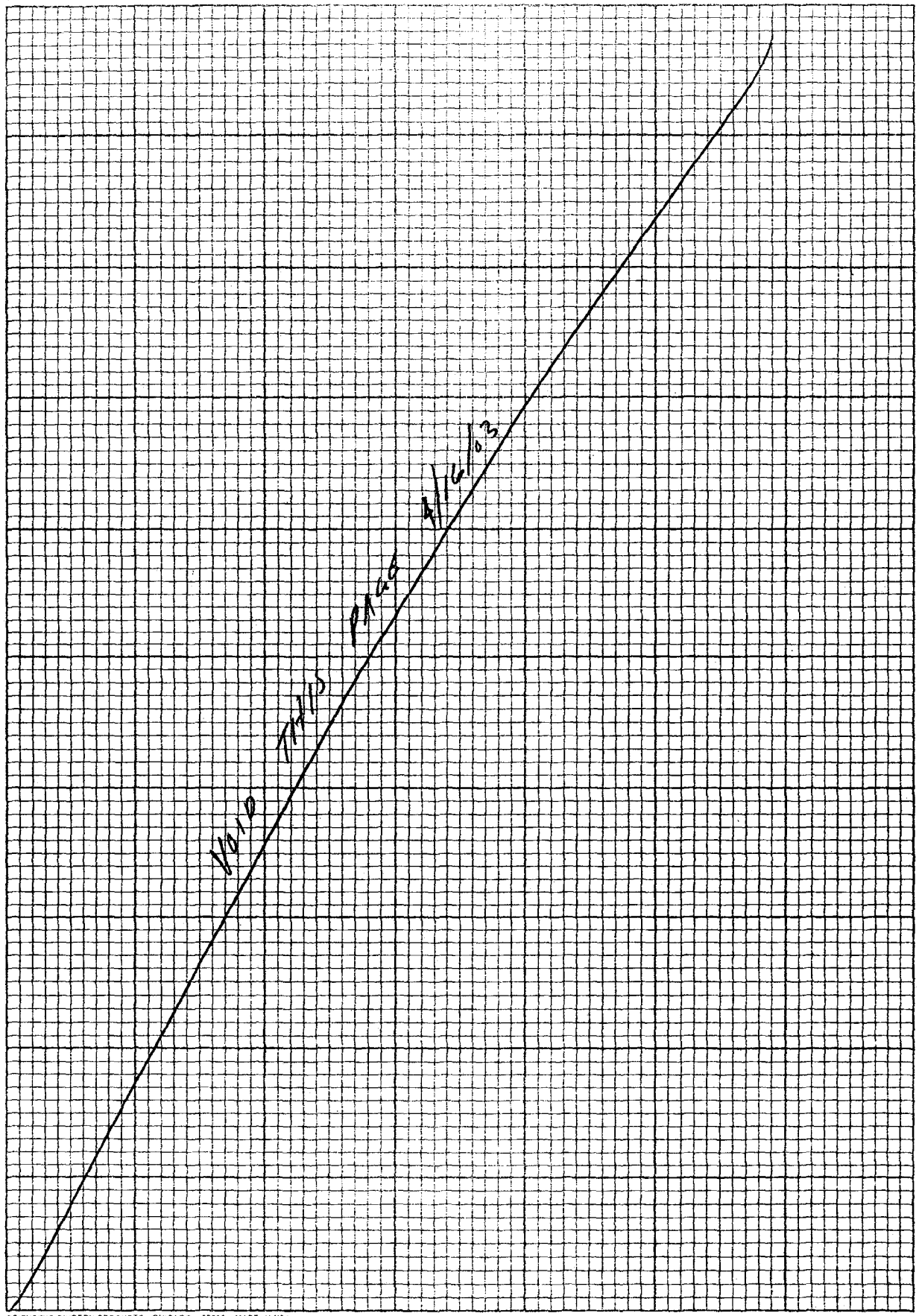
Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 4/15/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE



SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

WED 4/16/03

Work continued from Page

0655 Hrs - Arrive @ BLDG #3245
- Decon whale pumps & bucket bits
- Called Denny & set up straw delivery for Wed.
- Clean up office space
- Pull together paper work to take to P.H. office
- Clean out vehicles

0850 Hrs - Left Base

Remainder of Day = Travel
- Made Stop @ Enterprise in Martinsville, IN and reserved a pick up truck for the week of May 5th.

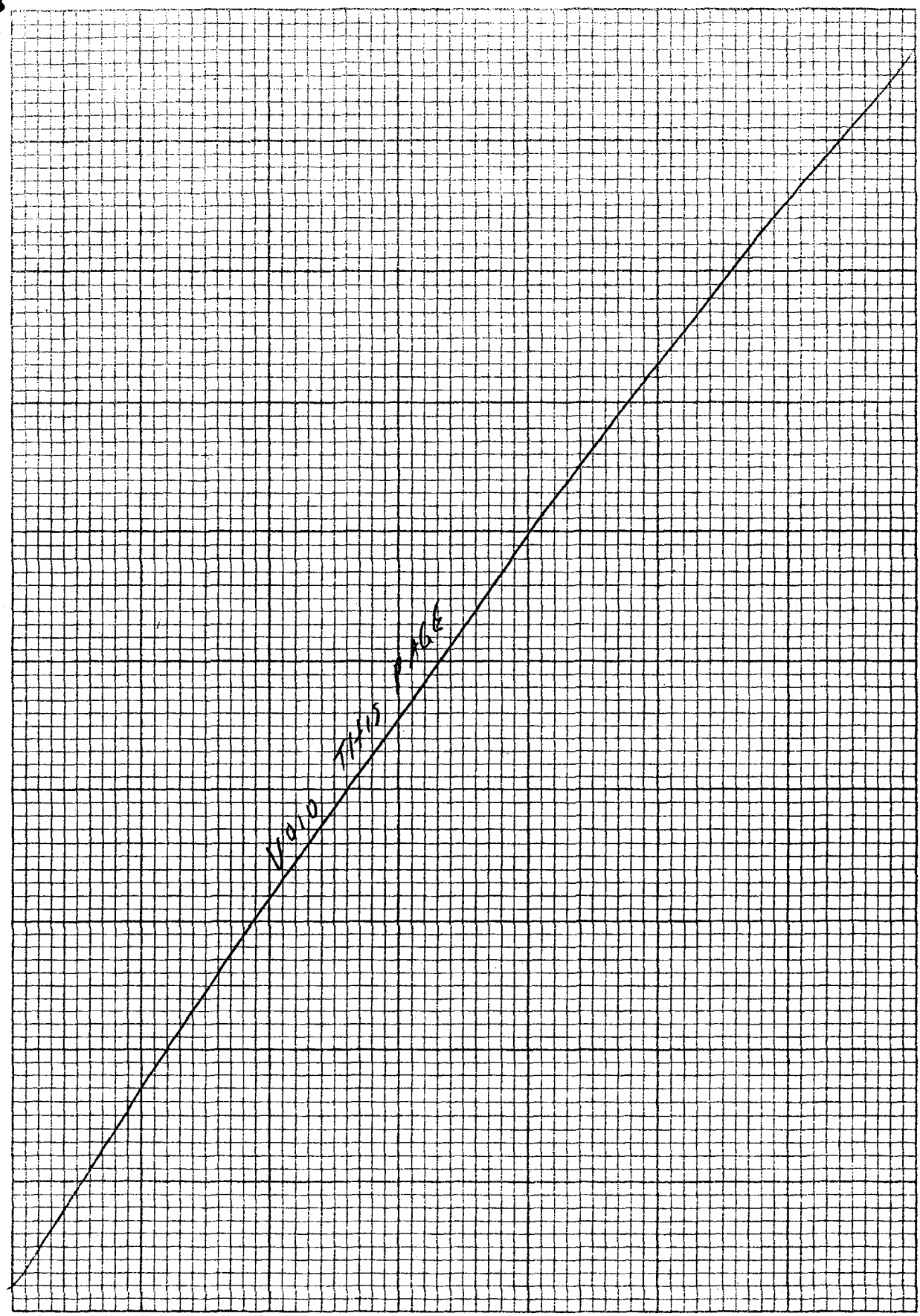
END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 4/16/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE



SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

Work continued from Page

5

10

15

20

25

30

35

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

CREW: BOB BALKOVEC & TERRY ROJAHN

MON. 4/21/03

WELL ID	TIME	W.L.
WES-14-01-83	1505	31.49
02	1445	14.75
03	1457	19.98
04	1500	27.61
05	1502	33.47
13 MW T01	1512	25.61
02	1450	8.33
03	1453	27.88
04	1510	11.04
05	1455	30.66

WEATHER: Cool & overcast

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

MON 4/21/03

Work continued from Page

TRAVEL DAY

1000 Hrs - Arrive Indy Airport
1115 Hrs - Check in @ Hotel
1145 Hrs - Pick up supplies @ Sam's Club & Lowes
1300 Hrs - Arrive @ BLDG #3245
CHECK IN W/ T. BRANT
Calibrate YSI & prep. to purge 16MWT01
1445 - 1512 Hrs - Take Round of Water levels @ SWMU 16
1515 Hrs - Purge 16MWT01
Dry ~ 5 min. purge 1.1 L SEE Low Flow Purge Data Sheet
1550 Hrs - Return to BLDG #3245
PREP. SAMPLE SETS; Check in @ OFFICE W/ T. JOHNSTON
Go over well development sheets - determine which wells to purge via bladder or peristaltic pump.
1700 Hrs - LEFT BASE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/21/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

TUES 4/22/03 SUMMARY

WELL ID	START PURGE	END PURGE	SAMPLE TIME	
16GW70101	*	*	0800	
16GW70201	0828	0945	0946	
16GW0501	0900	1040	1045	MS/MSD
16GW70401	1243	1435	1437	
RB042203 01	—	—	1630	Teflon & Silicon Tubing Rinsate for Peristaltic Pump

SCIENTIFIC BINDERY PRODUCTS CHICAGO 50605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

TUES 4/22/03

Work continued from Page

Weather - cool & mostly cloudy

0650 Hrs - Arrive @ BLDG 3245
Prep to sample Groundwater

0745 Hrs - Arrive @ SWMU 16
SEE PAGE 62 & CofC # 0988

1600 Hrs - Return to BLDG # 3245
Call office - check in w/ T. Johnston
Call Denny Wagner - set up steam delivery for tomorrow 0700 Hrs
Collect Rinsate Blank - RB0422 0301 (Tubing)
Check Calibration on YSIs

1730 Hrs - Leave Crane

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/22/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

WED 9/23/03 SUMMARY

WELL ID	START PURGE	END PURGE	SAMPLE TIME
16GW0401	0723	0810	0811
16GW0101	0750	1122	1130

Installed : 13MWT13 SEE NB #2550 FOR DETAILS

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

WED 4/23/03

Work continued from Page AM - Cold & partly sunny ; PM Sunny & Mild

0630 Hrs - Arrive @ BLDG #3245

Prep. to sample groundwater

0702 Hrs - Arrive @ BWMW 16

SEE PAGE 64 & C.o.C #0988

1515 Hrs - Arrive @ BLDG #3245

- Paperwork & Package samples on C.o.C #0988 for shipment via FED EX AB# 8316 7332 7155
- Decon Bladder Pumps
- Check in w/ T. Johnston
- CHECK CALIBRATION on YSIs

1700 Hrs - Left Base for FED EX

1730 Hrs - Drop off samples (7 coolers) @ FED EX

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/23/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

THURS. 4/24/03 SUMMARY

WELL ID	Start Purge	END PURGE	SAMPLE TIME	COMMENTS
RB04240301	NA	NA	0830	RINSATE OF BLADDER PUMP & TEFLON TUBING
16GW0201	1041	1200	1201	
16GWT0501	1045	1255	1300	Also FD0424 0301
16GW0301	1433	1630	1632	

Installed 2ND WELL @ location 16MWT01 to replace dry well

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

THURS. 4/24/03

Work continued from Page WEATHER - Mostly Cloudy & 50's

0630 Hrs - Arrive @ BLDG #3245
Prep. to meet Denny Wagner
0650 Hrs - Arrive @ Crane Gate meet w/ D. Wagner
Escort him to SWMU 13 @ 0715
• Unload straw @ SWMU 13
0748 Hrs - Return to BLDG #3245; Prep TB04240301 @ 0800 Hrs
Prep. to sample groundwater @ SWMU 16
Collect Pump & teflon Tubing Rinsate @ 0830 Hrs
T. Johnston call wants to install deeper well
@ 16MWT01 - ORIGINAL WELL dry
1000 Hrs - Arrive @ SWMU 16
CHECK Location for NEW WELL, 16MWT01
Sample Groundwater SEE P. 66 & COC #0991
1718 Hrs - Return to BLDG #3245 B.B. still @ 16GW0301
• Paperwork
• Cal. YSI
• Dump Purge H_2O
• Decon Bladder Pump
• B.B. Arrive @ 1845 Hrs
1910 Hrs - LEAVE BLDG #3245

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE
DATE 4/24/03
DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

FRI. 4/25/03 Summary

WELL ID	Start Purge	End Purge	Sample Time	Comments
RB04250301	NA	NA	0810	Rinsate of Peristaltic PE tubing & Silicon Tubing
13GWT2601	0804	1020	1022	
16GWT0301	0940	1130	1135	
13GWT2101	1237	1345	1346	Dup FD04250301
13GWT2501	1110	1210	NA	Pumped Dry

Drillers - Pour pad @ 16MWT06 AWA DEMOB

16MWT06 - Located next to Dry Well 16MWT01.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CLANG

PROJECT NO. 9060

BOOK NO. 1363

FLL. 4/25/03

Work continued from Page (Periods of Heavy rain & Cool (50°s))

0630Hrs - Arrive @ BLDG 3245
- Prep. to sample Groundwater @ SWMU 16
- Call Surveyors - inform them that all work have been completed - they will check their schedual
- Called T. Johnston w/ 4/24/03 summary
- Called in Hours to L. Yeager

0740Hrs - Check in w/ PAM @ Break BLDG. for BLDGs 145 & 146 OK to work @ SWMU 16 today

0745Hrs - Return to BLDG #3245 to wait for drillers
- No one work inside gate @ BLDG 146 so gate is locked - need to wait on drillers to give them access to SWMU 16 to pour well pad
- Collect Rinsate Blank for PE tubing & Silicon for SWMU 13 @ 0810 Hrs

0840Hrs - Drillers Arrive

0845Hrs - Arrive @ SWMU 16
- Drillers to pour pad @ NEW 16MWT01 (Finish @ 1010Hrs)
- T.R. set up @ 16MWT03 with Tent (Renamed 16MWT06)

Start Purge @ 0940Hrs
End Purge @ 1130 Hrs
Sample Time @ 1135 Hrs

1605Hrs - Return to BLDG #3245 to package samples for shipment via FED EX (AOF 8316 7332 7144); samples on COC #0991.

1730Hrs - Left Base

1800Hrs - Drop off samples @ FED. EX.

1836Hrs - Pick up supplies @ Lowes

1845Hrs - Return to Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/25/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUN 4/27/03 SUMMARY

B.B sampled 13GWT0001, 1001 & 1101
FINISHED sampling 13GWT0201

T.R. FINISHED sampling 13GWT0501, started sampling
13GWT0601 & Purged/sampled 13GWT0701
& 13GWT1201

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

SAT 4/26/03

Work continued from Page

AM - Cool & Sunny PM - Mild & Sunny

0630 Hrs - Arrive @ BLDG # 3245
PREP. to sample Groundwater; Check YSI Cal.

0730 Hrs - Arrive @ SWMU 13

WELL ID	Start Purge	END PURGE	SAMPLE TIME	COMMENTS
13MWT06	0745	0843	NA	PUMPED Dry
13MWT03	0745	1145	1146	
13MWT01	0912	1022	1024	
13MWT05	1117	1349	NA	PUMPED Dry
13MWT25	NA	NA	1230	Purged 4/25/03
13MWT02	1246	1535	1536	
13MWT08	~~1343~~ 1412	1542	1545	

1638 Hrs - Return to BLDG # 3245
Pick up well dev. supplies

1700 Hrs - Start well development @ 16MWT06
Start Purge = 1700 Hrs
END Purge = 1746 Hrs
Vol. Purged = 13.5 gal
Pumped Dry 3 times

1805 Hrs - Return to BLDG # 3245
Prep to Leave Base

1830 Hrs - LEFT CRANE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/26/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SEE SAMPLE SUMMARY FOR 4/27/03 ON PAGE 70

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

SUN. 4/27/03

Work continued from Page

0730 Hrs - Arrive @ BLDG #3245
Prep. to sample groundwater, check YSI Cal.
0815 Hrs - Arrive @ SWMU13
0835 Hrs - Start sampling 13GWT06 - Extremely slow recharge
0910 Hrs - Start sampling 13GWT05
0955 Hrs - Finish " "
1020 Hrs - Start purge @ 13MWT07
1200 Hrs - Start sampling 13GWT0701
1305 Hrs - Start purge @ 13MWT12
1710 Hrs - Start sampling 13GWT1201
1815 Hrs - Pump down 13MWT06 into Explosives Container
1835 Hrs - Return to BLDG #3245
- Secure Samples in Frig
- Clean & mop office areas
1930 Hrs - Leave Base
END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE
DATE 4/27/03
DISCLOSED TO AND UNDERSTOOD BY
DATE
WITNESS
DATE

Surveyors - Matt Cooper & Corey Allen
FINISH SURVEYING @ SWMUS 13 & 16

SAMPLE SUMMARY 4/28/03

WELL ID	Start Purge	END Purge	SAMPLE TIME	COMMENTS
13GWT0901	0740	0910	0911	Collected Dup
FD042803a	↓	↓	0000	DUP OF ABOVE
16GWT0601	0835	0930	0932	SEE Comments on P.75 may have to resample/collect additional sample; well ID may change
13GWT2401	1311	1455	1456	
13GWT2001	1205	1605	1606	

NSWC Crane, IN

Bledsoe Tapp & Riggert - Surveyors Daily Sign-In

(± 2hr Drive & Prep. Time Per Day)

MC

DATE	NAME (print)	TIME IN	TIME OUT	TOTAL HOURS *	SITE/S WORKED ON
4/8/03	Corey Allen	7:00	4:45	12	#13
4/8/03	Matt Cooper	7:00	4:45	12	#13
4/9/03	Matt Cooper	7:30	1:00	7.5	#16
4/9/03	Corey Allen	7:30	1:00	7.5	#16
4/28/03	Matt Cooper	8:00	7:30	11.5	#13 + 16
4/28/03	Corey Allen	8:00	7:30	11.5	#13 + 16

** Include total daily hours to be charged (travel, time on site, etc.)*

Sites = SWMU 13 – Mine Fill B
SWMU 16 – Cast High Explosives Fill/B146 Incinerator

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

MON 4/28/03

Work continued from Page Weather - Mostly sunny & 60's Late Afternoon Rain

0630 Hrs - Arrive @ BLDG #3245
Prep to sample groundwater

0815 Hrs - Arrive @ SWMU 16 - 2nd well @ Location 16MWT01
Start Purge @ 0835 (Surveyors Arrive @ 0850 Hrs) left them in gate
END " @ 0930
Start Sampling @ 0932 - still draw down in well but will sample anyway to obtain groundwater incase well dries out and doesn't recover in tight formation as did the 1st well installed @ this location.
WELL DRY @ 1015 Hrs

1035 Hrs - Arrive @ BLDG #3245
Prep. to sample GW @ SWMU 13

1100 Hrs - Arrive @ SWMU 13
Let surveyors into area (MFB)

1130 Hrs - Set up @ 13MWT20
Problem w/ Bladder pump (water siphoning out of flow cell and back into well - switched to peristaltic Pump)
Start purge @ 1205. @ 1345 B.B. took over @ well - T.R. returned to BLD #3245 to package samples for shipment.

1400 Hrs - Arrive @ BLDG #3245
- Package samples for shipment on CoFCs 993 & 992
- T. Sumnston called - spoke with him regarding the disposition of the 1st well @ location 16MWT01 & what to ID the 2nd well @ same location - will talk again tomorrow @ 0830 CT.

1745 Hrs - Left Base for FED. EX.

1815 Hrs - Deliver samples under CoFCs 0992 & 0993 to FED EX. (AB# 8316 7332 7133)
B. Balkovec - stayed @ site w/ surveyors to secure buffer area around BLDG #165
left site ~ 1900 Hrs

Work continued to Page

SIGNATURE [signature] DATE 4/28/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 4/29/03

WELL ID	Start PURGE	END PURGE	Vol PURGED	COMMENTS
13GWT1401	0755	0925	0926	
13GWT2501	—	—	—	Collect Additional Vol.
16GWT0601	—	—	—	Collect Additional Vol.

ALSO, DEVELOPED 13MWT13, SEE P. 77 FOR DETAILS.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60625 MADE IN USA

Tues - 4/29/03

Work continued from Page

0636 Hrs - Arrive @ BLDG #3245
Fax CoFCs 992 & 993 to OFFICE & LAB
Paperwork; Organize files
Check Cal. in YSI
0830 Hrs - Conference call w/ T. Brent, T. Johnston & T. Ashman (Ed Sedlmyer)
0930 Hrs - Arrive @ SWMU 16
16MWT06 - W.L. @ 26.95
16MWT01 - W.L @ 25.70
Start Sampling 16MWT06 @ 1002 Hrs
Dry @ 1037 ~3L collected VOCs & ~2.5L of Glass Bottles
1040 Hrs - T. Brent arrived @ SWMU-16 - showed existing wells needing work; and discussed 16MWT01 & 06
1120 Hrs - Left SWMU 16, Arrive BLDG #3245
1135 Hrs - Lunch @ CAF.
1210 Hrs - Return to BLDG #3245
• Call T. Johnston - ok to ship samples collected 4/29/03 @ 16MWT06 w/ today's collection
• Prep. to develope 13MWT13
1250 Hrs - Arrive @ 16MWT06
• Start Development 1308 hrs
End Development 1353 hrs; vol. Purged 17gals
• Removed pad forms @ 13MWT13, 19 & 19 then went to ~~gate M~~ (TC) S. gate @ MFB and someone by passed our lock - informed security @ N. Gate
1430 Hrs - Arrive @ Bldg #3245; Told T. Brent about the lock
Remainder of Day - Package samples for shipment and clean-up; Prep. Turbidity meter (malfunctioning) for shipment to U.S. ENV.
1645 Hrs - Left Base
1715 Hrs - Arrive @ FED.EX.
SHIP SAMPLES ON CoFC #0994 on AB #8316 7332 7122
SHIP TURBIDITY METER ON AB #8316 7332 7111

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 4/29/03

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SCIENTIFIC BINDERY PRODUCTS CHICAGO

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

WED. 4/30/0

Work continued from Page

0640 Hrs - Arrive @ BLDG # 3245
FAX CoCs to OFFICE & LAB (0994)
CLEAN OFFICE AREA (mw); Prep. Paperwork to return to Pit.
CLEAN out VEHICALES
0755 Hrs - LEAVE OFFICE (BLDG 3245) For Airport
0820 Hrs - Stop @ ABELLS Nursery - check on bulk top soil
$35/YD, will load pick ups.
1030 Hrs - Arrive @ Airport
Remainder of day travel
END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 4/30/03

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MON 5/05/03

WELL ID	TIME	W.L.	
WES-14-01-83	1757	31.00	
02	1551	14.23	
03	1443	18.80	
04	1437	26.80	
05	1800	32.59	
16MWT 01	1422	25.19	
02	1433	6.55	
03	1430	27.20	
04	1426	8.05	
05	1428	29.77	
06	1420	22.33	
13MWT 01	1730	6.21	
02	1732	17.15	PUMP NEEDED @ STICK UP
03	1728	8.19	BOLLARDS NEED TOPPED OFF
04	1737	12.98	
05	1733	5.42	
06	1720	15.21	
07	1741	3.12	
08	1738	3.17	
09	1650	7.74	
10	1636	13.65	
11	1638	7.87	
12	1639	7.88	
13	1610	3.62	
14	1612	13.25	
15	1631	12.83	
16	1629	8.49	
17	1628	8.70	
18	1633	19.06	
19	1615	8.31	
20	1646	4.22	
21	1626	7.69	
22	1624	7.44	
23	1645	7.45	
24	1642	8.45	
25	1622	16.00	
26	1619	9.10	

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

MON. 5/05/03

Work continued from Page

Hot & Sunny (Low 90's)

TRAVEL DAY

1515 - ARRIVE @ BLDG #3245 ; AFTER trip to Lowe's Pick up hardware for well

- PREP. to take water levels & REPAIR existing wells @ SWMU 16

1415 Hrs - Arrive @ SWMU 16

- Collect water levels
- Repair wells WES-14-04-93 New pad
  WES-14-03-93 Fix cap for locking
- Repair 165807 w/ cold patch others repaired by M. Cochran

1554 Hrs - Leave SWMU 16

1556 Hrs - Stop @ BLDG 3245 For Drinking water

1607 Hrs - Check in @ N. Gate SWMU-13 (MEB)

13MWT25

Start Purge @ 1702

END Purge @ 1708 (Dried out well)

Pumped ~1 gal

13MWT06

Start Purge @ 1720

END Purge @ 1724 (Dried out well)

Pumped ~1.5 gal

1747 Hrs - Finish W.Ls @ SWMU 13

1755 Hrs - Arrive @ SWMU 16

Returned to get two wells that were in need of equalization

Lids on to tight @ WES-14-01 & 05-93

1800 Hrs - Arrive @ BLDG #3245

CLEAN UP & un load Pick up Truck

1825 Hrs - LEFT BASE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Pagel DATE 5/5/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

SAMPLE SUMMARY 5/06/03

WELL ID	Start PURGE	END PURGE	SAMPLE TIME	COMMENTS
13GWT1601	0748	0840	0842	
13GWT2301	0840	1240	1242	
13GWT1801	0938	1340	1342	
13GWT2201	1400	1540	1542	
13GWT1501	1445	1700	1702	
13GWT2501	Repurged	5/5/03	→	added to sample collected 5/6/03 @ 1430 Ammonia & Nitrates
13GWT0601-F	Repurged	5/5/03		

collected Filtered Metals @1735 Hrs 5/6/03

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

TUES 5/06/03

Work continued from Page WEATHER Mostly Sunny Temp. 80°F

0640 Hrs - Arrive @ BLDG #3245
PREP. to sample groundwater
Load Pick up
Calibrate YSI & LaMotte

0815 Hrs - Arrive @ SWMU 13

0840 Hrs - Begin Purge @ 13MWT23
END Purge @ 1240 Hrs ; Vol purged = 22.1L

1242 Hrs - Sample 13GWT2301

1400 Hrs - BEGIN PURGE @ 13MWT22
END PURGE @ 1540 Hrs ; vol. purged = 10.6L

1542 Hrs - Sampled 13GWT2201
REMOVED pad forms @ 13MWT22 & 23

1650 Hrs - Check in on B.B. - get sample log sheets - start sample summary on page 82

1720 Hrs - REMOVE FORM @ 13MWT16

1735 Hrs - Sampled Filtered Metals @ 13MWT06

1750 Hrs - RETURN to BLDG #3245
SECURE samples in Frig.
CLEAN UP
Unload Pick-up Truck
LEAVE MESAGES FOR Both Ralph & Tom on progress made today & yesterday

1830 Hrs - LEFT BASE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 5/6/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLE SUMMARY 5/7/03

WELL ID	Start PURGE	END PURGE	Sample TIME	COMMENTS
13GWT1301	0730	0945	0947	ALSO DUP FD0507030 01
13GWT1701	0750	1020	1022	MS/MSD
* 13GWT2501	—	—	1300	*Filtered Metals Only
13GWT1901	1155	1345	1347	
* 13GWT0601	—	—	1700	*Ammonia & Nitrate only

* Slow Recharge wells purged dry 5/5/03

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

WED 5/7/03

Work continued from Page Weather overcast to rain (Heavy @ times)

0640 Hrs - Arrive @ BLDG #3245
PREP. to sample Groundwater
Check YSI meter

0730 Hrs - Arrive @ SWMU 13 - 13MWT17
Start Purge @ 0750 Hrs
END Purge @ 1020 Hrs. Vol. Purged = 15.2 L
Start Sampling @ 1022 13GWT1701

1300 Hrs - Sampled Filtered Metals @ 13GWT2501

1335 Hrs - Returned to BLDG #3245
Unloaded Pick up Truck

1400 Hrs - Lunch

1445 Hrs - Return to BLDG #3245
- Called Ralph B. & Tom J. gave them progress report.
- Paperwork & Prep. Samples for shipment to FED. EX. on Air Bill 8316 7332 7074 & C.o.C. # 8995

1630 Hrs - Left Base for FED. EX

1700 Hrs - Drop off:
Samples to Laucks on AB# 8316 7332 7074
EQ. to U.S. ENU on AB# 8316 7332 7100

B.B. Remained @ site to sample for Ammonia & Nitrate @ 13MWT06 (Inside Buffer zone BLDG # 265)

END

Work continued to Page

SIGNATURE [signature] DATE 5/7/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Day Summary 5/8/03

Surface water samples collected - 13SW0801 & 13SW1101

Well Sites Restoration locations completed:

13MWT 21, 17, 16, 12, 11, 25(OK), 26, 22 & 10

Start Restoration @ 13MWT 18 & 24

SHIP SAMPLES ON COC #0996

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

THUR 5/8/03

Work continued from Page

WEATHER - Mostly Cloudy & 60's

0700 Hrs - Pick up computer disk & Drinking Water @ Wal-Mart

0745 Hrs - Purchase SEED & A yard of Top Soil @ ABELL NURSERY

0815 Hrs - Arrive @ BLDG #3245

- B.B. Check Cali. on YSI
- Prep. to do site Restoration @ SWMU 13 & AND SURFACE WATER Sampling @ Location 8 & 11

0840 Hrs - Check SURFACE WATER locations @ SWMU 16 AFTER YESTERDAYS RAIN - locations Not conducive to SAMPLING (DRY)

0855 Hrs - Return to BLDG #3245

0910 Hrs - Collected 135W0801

0935 Hrs - Collected 135W1101

0950 Hrs - BEGAN Site Restoration DID 13MWT 21, 17, 16, 12, part of 11, 25 (ok) & 26

1145 Hrs - LEFT SWMU 13 for Lunch; B.B. stayed @ SWMU 13

1210 Hrs - ARRIVE @ BLDG #3245 Check In w/ R. BASINSKI

1250 Hrs - LEAVE BLDG for ABELL'S NURSERY

1410 Hrs - RETURN to SWMU 13 Restored 13MWT 11, 15 and part of 18 B.B. Restored 13MWT 22

1630 Hrs - Return to BLDG #3245 Prep. samples for SHIPMENT on COFC #0996

1715 Hrs - LEFT BASE for FED. EX

1745 Hrs - Drop of samples at FED. EX AB #8316 7332 7085

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 5/8/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 5/09/03

SLUG TESTING FINISHER @
13MW17, 11, 26 & 15

RESAMPLED SVOCS @ 13MW17 09 & 20

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

FRI. 5/9/03

Work continued from Page

0630 Hrs - Arrive on Base
- B.P. check cali. on VSI
- FAX CoFC to OFFICE & LAB
- PREP. to Collect Groundwater Samples

0750 Hrs - Arrive @ 13MWT09 after check in w/N. Gate Guard
Start Purge @ 0816
END Purge @ 0958
Sample Time @ 1000 For 13GWT0902 & FD05090301

13MWT20
Start Purge @ 1103
END Purge @ 1503
Sample Time @ 1505 For 13GWT2002

1545 Hrs - Finish @ SWMU 13 - Arrive @ BLDG #3245
Packaging & Paperwork
Unload Pick up

1635 Hrs - Left site for FED. EX.

1700 Hrs - Drop of Samples on Cart #0989 & FED EX.
AB# 8316 7332 7096

1715 Hrs - Arrive @ ABELL Nursery
purchase 1 yard of Top Soil

1805 Hrs - Arrive @ BLDG #3245
Park Pickup under Port & Ride Back
to motel w/ B.B.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 5/9/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SUMMARY 5/10/03

B.B SLUG TESTED : 13MWT08, 14 & 20 & Started 13MWT02

Restored the Following locations 13MWT01 → 08 and
Finished restoration @ 13MWT[illegible]

Purchased 2 yards (2 trips) of Topsoil & 50lbs
Bag of Seed.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

LOCATION	W.L	TIME	
13MWT01	5.02	1359	
02	17.10	1350	
03	8.88	1401	
04	12.75	1449	
05	4.13	1505	
06	15.62	1402	
07	3.10	1500	
08	2.92	1448	
09	7.40	1405	
10	13.11	1443	
11	7.78	1458	
12	7.58	1457	
13	3.18	1516	
14	13.08	15.14	
15	12.63	1432	
16	8.61	1425	
17	8.09	1423	
18	19.04	1436	
19	6.80	1529	
20	4.00	1410	
21	7.34	1421	
22	7.25	1420	
23	7.17	1412	
24	8.23	1413	
13MWT 25	16.61	1417	~FLOW RATES
SG 01	1.73	1354	<1 gpm
02	3.64	1355	1-5 gpm
03	1.96	1517	1-5 gpm
04	2.38	1518	1-5 gpm
05	3.89	1520	<1 gpm
06	2.37	1523	<1 gpm
07	1.50	1414	<1 gpm
08	5.05	1419	5-25 gpm
09	4.15	1429	5-25 gpm
SG 10	4.78	1455	20-50 gpm (cannot get to weir downstream of gauge to measure flow) + Bank to steep & slippery
13MWT26	8.93	1415	

SUMMARY 5/11/03

TR: Eco Assessments @ swamps 13 & 16

Restore - 16 MWT 01, 06 & 05
13 MWT 24 &
Begin @ Decon Area

BB = SLUG TEST
16 MWT 02, 04 & 05
Continued @ 13MWT02
Resample wells:
16 MWT 06
WES-14-02-03

TR/BB - Round of W.L. @ swamp 13

SCIENTIFIC BINDERY PRODUCTS

SAT. 5/10/03

Work continued from Page Mostly Cloudy 70's & Humid

0650 Hrs - Arrive @ Site (BLDG #3245)
Call Security & BLDG #265
Also, track Package shipped 5/8/03 - (ok)
0720 Hrs - Arrive @ Swamp 13
Restore 13MWT06, 03 & 01
0930 Hrs - Left Base for Abells Nursery
1003 Hrs - Purchase Black Top Soil 1 yard @ Nursery
1045 Hrs - Return to Swamp 13
Spread Soil @ 13MWT05 & 08 (07 ok)
1200 Hrs - Heavy Rain Break for Lunch
1245 Hrs - Return to Swamp 13
Seed & Hay @ 08; ABB will seed & Hay 13MWT04 while I.L. picks up seed & Soil
1430 Hrs - Left Site for Seed & Soil
1510 Hrs - Arrive @ Good Earth (Abells out of top soil)
1552 Hrs - Arrive @ Abells for Seed
1640 Hrs - Return to Swamp 13
Finish Hay & Seed @ 13MWT18
1730 Hrs - Return to BLDG #3245
Clean up - will pick up supplies this evening
1800 Hrs - Left Site

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Kopel DATE 5/10/03

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TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

SUN 5/11/03

Work continued from Page Mostly Cloudy, 70's & Windy

0645 Hrs - Arrive @ ~~SWMU~~ BLDG #3245
Call Security for work @ BLDG 148 & MFB

0710 Hrs - Site Restoration @ SWMU-16
Restore 16MWT01 & 02 & 05

0930 Hrs - Start Eco. Assessment
Take 15 Photos & cover Type Area

1145 Hrs - Finish Eco. Assessment @ SWMU-16

1150 Hrs - Return to BLDG #3245 for Lunch

1220 Hrs - Arrive @ SWMU-13
Restoration @ 13MWT24
Start Eco. Assessment

1350 Hrs - Start Water Levels & Staff Gauge Measurements
SEE P. 92; Pick up Farm lumber

1525 Hrs - END Water Levels. - Resume Eco Assessment
Take Photos 16 → 33

1730 Hrs - Complete Eco. Assessment
BEGIN Restoration @ Decon Area
SPREAD SEED & Hay

1810 Hrs - Return to BLDG #3245
Drop off lumber in area behind BLDG #3245
Pref. to LEAVE

1845 Hrs - Left Site

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 5/11/03

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MON 5/12/03 SUMMARY

B.B. FINISHED SLEG TEST @ 13MWT02

B.B/TR RESTORATION @ DECON AREA, 13MWT10, 14 & 19

TR RESTORATION @ 13MWT20

DEMOB FOR 9060

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

MON 5/12/03

Work continued from Page

0715 Hrs - Arrive @ Wal Mart - Purchase Hacksaw for Mustard Gas Site & drill bit

0740 Hrs - Arrive @ Good Earth for Lyd of top soil

0801 Hrs - Left " "

0845 Hrs - Arrive @ BLDG #3245

Send Faxes to LAO & OFFICE

Some office clean up

Check in w/ Tom Brent

0930 Hrs - Arrive @ Swmu 13 - Detour on Rte 45

Restore - 13 Mwt 10, 14, 19, 20 & Decon

1445 Hrs - Return to BLDG #3245

Meet w/ Tom Brent to store core boxes & straw bales

1600 Hrs - Return to BLDG #3246 after storage of straw

1630 Hrs - Arrive @ Mustard Gase Site

Attemp to drill hole for well tag OTOR - drill not heavy duty enough for the task - put tag inside well lid & cut grounding rod @ Mustard Gas site flush w/ ground.

1530 Hrs - Return to BLDG #3245 for Demob

- Prep. samples on CoC # 0997 for shipment
- Prep. EQ. for shipment to Pitt Warehouse & U.S. Environmental on FED EX AB # 8243 8234 9739 & 8243 8234 9740 respectively
- Clean & mop office space
- Inventory EQ. & Supplies
- Clean out Pick up truck

2030 Hrs - Left site for Motel

Note: B.B. Left site @ 1800 Hrs to Drop of Samples and EQ @ FED.EX. (Sample on AB# 828074028890)

SIGNATURE [signature] DATE 5/12/03

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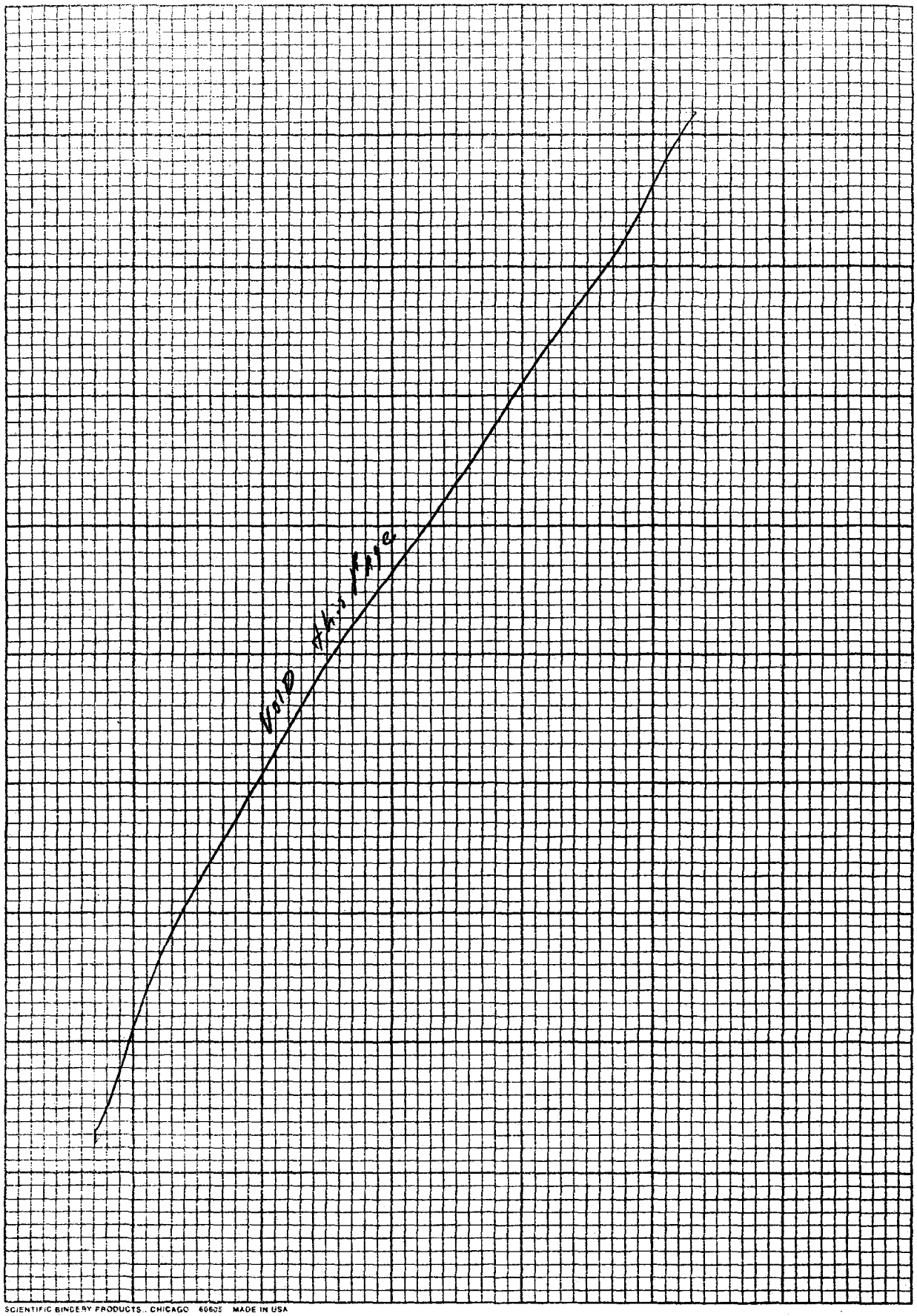

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRAN
TUES 5/13/03

PROJECT NO. 9060
BOOK NO. 1363

Work continued from Page

TRAVEL DAY (only)

5
10
15
20
25
30
35

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 5/13/03

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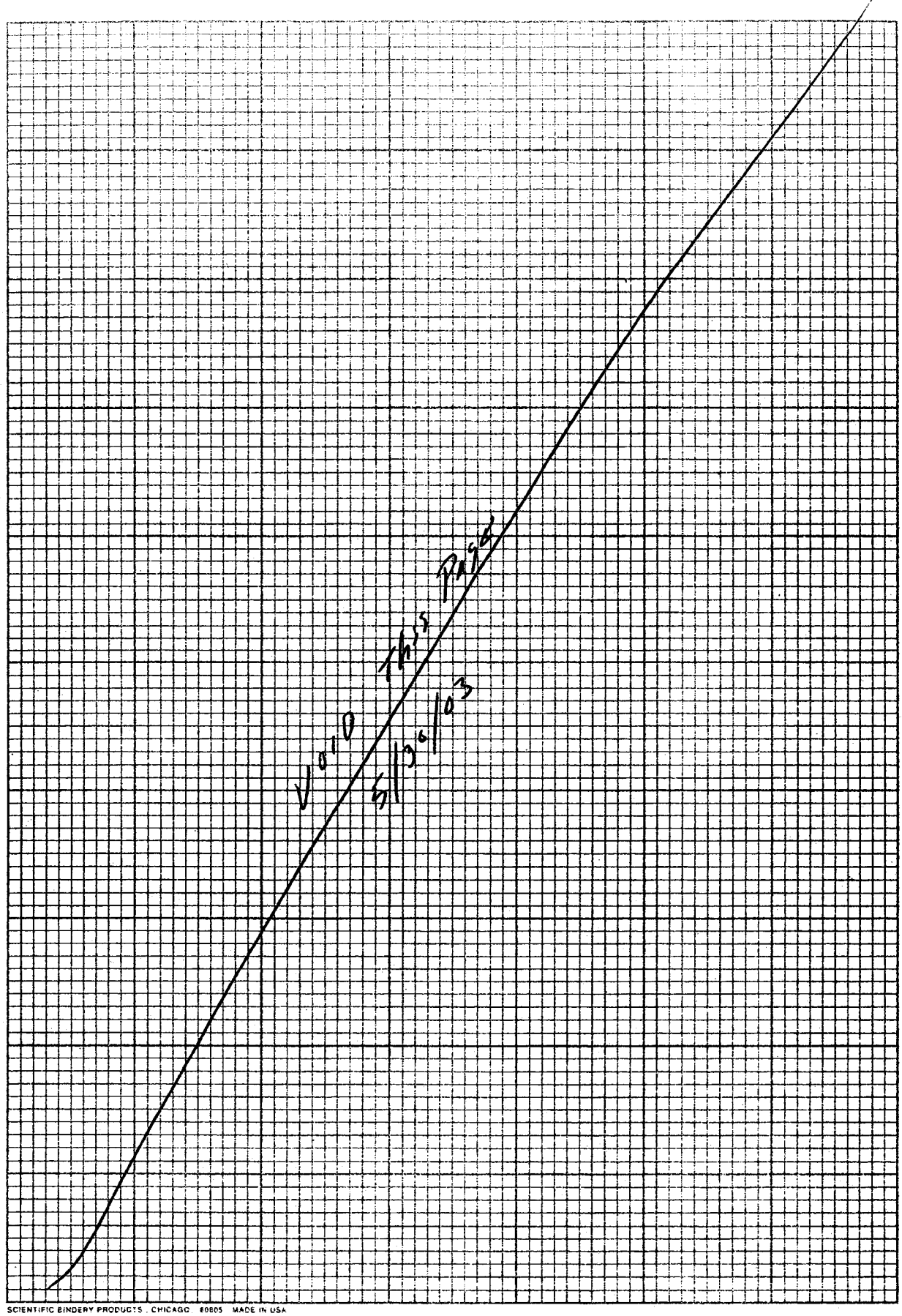

SCIENTIFIC BINDERY PRODUCTS . CHICAGO . 60605 MADE IN USA

FRI - 05/30/03

Work continued from Page

Weather: 75°F & Sunny (On site work @ SWMU-7 FRR)

1600 Hrs - Left Bldg for SWMU 16

WELL ID	W.L.	TIME
WES-14-01-83	31.00	1714
WES-14-02-83	14.56	1654
WES-14-03-83	19.83	1710
WES-14-04-83	27.27	1718
WES-14-05-83	33.05	1716
16MWT01	22.70	1656
16MWT02	12.18	1706
16MWT03	28.07	1704
16MWT04	13.14	1659
16MWT05	30.39	1701
16MWT06	15.92	1658

1730 Hrs - Return to Bldg #3245

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 5/30/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

APPENDIX D.1.2
SWMU 13
SITE LOGBOOK
ROUND 2

From: Rojahn, Terry
Sent: Wednesday, October 15, 2003 4:07 PM
To: 'Tom Brent'
Cc: Basinski, Ralph
Subject: RE: Bowser Morner personnel Participating in Fieldwork Starting October 20, 2003 at NSWC Crane

Tom, the following personnel from Bowser Morner need clearance, however not all of them will be starting work on October 20, 2003:

Tim Boehmer	Dayton, OH
Ken Boehmer	Dayton, OH
John Davis	Dayton, OH
Jon Keifer	Dayton, OH
Maynard Laati	Dayton, OH
Dennis Sinic	Dayton, OH
Robert Trader	Dayton, OH
Todd Wollenhavpt	Dayton, OH
Nick Post	Dayton, OH
Tony Mayrer	Dayton, OH
Joshua Dean	Toledo, OH
James Walsh	Toledo, OH

All the above are US citizens.

Just a heads up...you should be receiving a lot of coolers and equipment over the next few days.

-----Original Message-----
From: Basinski, Ralph
Sent: Wednesday, October 15, 2003 2:34 PM
To: 'Tom Brent'
Cc: Rojahn, Terry; Cochran, Matthew; Wudkwych, Frank; Ramser, Fred; 'Bill Gates'; Goldman, Mary Lou
Subject: TtNUS Personnel Participating in Fieldwork Starting October 20, 2003 at NSWC Crane

The following Tetra Tech NUS, Inc. personnel will be participating in fieldwork at NSWC Crane SWMUs 1, 13, and 16 starting October 20, 2003

Terry Rojahn
Matt Cochran
Frank Wudkwych
Fred Ramser
Robert Balkovec

All of these staff are located at Pittsburgh, Pennsylvania office of Tetra Tech NUS.

The award for the drillers has been made to Bowser-Morner. Terry Rojahn is in contact with the driller and will send an e-mail to you with the list of drillers and their home office locations.

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

Work (

From: Basinski, Ralph
Sent: Tuesday, October 07, 2003 2:30 PM
To: Cochran, Matthew; Rojahn, Terry; Schubert, Jeff
Cc: 'Bill Gates'; 'Tom Brent'; Johnston, Tom; Goldman, Mary Lou
Subject: Access for Fieldwork at SWMUs 13 & 16

Terry, Jeff, and Matt

Tom and Bill informed me of the following.

SWMU 13 – No operations will be occurring that will limit access. Follow the procedures developed last time in regards to access.

SWMU 16 - Operations will be occurring. The Army has agreed to limit operations to Monday through Thursday on alternate weeks. SWMU 16 cannot be accessed during that time. No operations will occur on Friday, Saturday, and Sunday. SWMU 16 is fully accessible during that time. Please note that the Army is working the 4-10s in order to accommodate our fieldwork at SWMU 16. Therefore, we need to make sure that any schedule changes are communicated to the Tom and the Army as soon as known. Also, we should inform Tom as soon as our work at SWMU 16 is complete so that the Army can revert to their normal schedule.

Ralph

-----Original Message-----
From: Basinski, Ralph
Sent: Tuesday, October 07, 2003 1:57 PM
To: 'Tom Brent'
Cc: 'Bill Gates'; Johnston, Tom; Cochran, Matthew; Rojahn, Terry
Subject: Fieldwork at SWMUs 13 & 16

Tom

As you are aware we are scheduled to be in the field starting October 20, 2003 at SWMUs 13 and 16. Currently we are in the office mobilization and planning phase.

During the last field event we ran into access issues at SWMUs 13 and 16 due to operations occurring at these facilities. Can you find out anything about the operations schedules from October 20 through mid-December. This information would be useful for planning purposes.

Also, during the last field event, security / access procedures were established for TtNUS and subcontractor staff. Was anything written regarding these procedures? If something written is available, please provide a copy or call me to discuss.

Ralph

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SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

Monday 10-20-03

Work continued from Page

700 Hrs - Arrive @ Pitt Airport
TRAVEL DAY
1300 Hrs - Arrive @ NSWC CRANE
OBTAIN BADGE
1315 Hrs - Arrive @ BLDG 3245
OPEN & BEGIN to ORGANIZE EQ & SUPPLIES
SHIPMENT
MISSING SOME RENTAL EQ. - BLADDER PUMP,
(2) M-Scopes, (1) YSI etc.
1400 Hrs - DRILLERS ARRIVE - UNLOAD SUPPLIES + EQ
1415 Hrs - T.R. & F.R. ARRIVE @ PUBLIC WORKS
OBTAINED Dig PERMITS
1) WEST side of SWMU 13 MINE FILL B
~10 WELLS CLEARED FOR drilling
2) Mustard GAS SWMU 1 Complete Site
1445 Hrs - RETURN to BLDG. #3245
MEET W/ DRILLERS JON KEIFER, DENNIS SLUIC &
TODD WOLLENHAUPT - NEEDED to get
badged @ Bloomington Gate
1520 Hrs - DRILLERS RETURN - go to check out drilling
locations W. OF MINE FILL B
1650 Hrs - RETURN to BLDG #3245
PAPERWORK, PREP FOR H&S MEETING FOR TOMORROW
1745 Hrs - LEFT BASE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 10/20/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

10/21/03

BOWSER MORNER

- RECEIVE HES TRAINING
- RECON WELL LOCATIONS W OF MINE FILL B
- PURCHASE SUPPLIES FOR DECON PAD
- BUILD DECON PADS
- OBTAIN 20 SLOT SCREENS
- TRACK DOWN BULLDOZER TO CONSTRUCT ROADS TO WELLS @ MINE FILL B (W. SIDE)

SAMPLING:

- CONDUCTED SEEP SEARCH W SIDE OF MINE FILL B - SEEP 13SP04 FOUND
- CONDUCTED TRENCHING ACTIVITIES - MC & EVI

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60675 MADE IN U.S.A.

TUES. 10-21-03

Work continued from Page

0655 HRS - ARRIVE @ BLDG #3245
H&S SITE SPECIFIC TRAINING

TTNUS — BOWSER MARINER

MATT COCHRAN MC — TIM BOSHMER (TB)
FRED RAMSER FR — JON KEIFER (JK)
FRANK WUDKWYCH FW — TODD WOLLENHAUPT (TW)
T. ROWANA T.R — DENNIS SINIC (DS)

- EQUIPMENT INSPECTION
- GO OVER WORK PERMITS

0910 Hrs - T.B, JK, MC FR & TR RECON W. SIDE OF MINE FIELD B ; T.B. UNABLE to comment Rotasonic Rig to drill in AREA unless ACCESS ROADS ARE CONSTRUCTED.
CHECK IN WITH OFFICE - MC. will coordinate Road construction w/ T. BRENT & NSWC CONS FORESTER

1100 Hrs - T.R. & FR check in w/ Public Works to SEE IF other AREAS CAN be CLEANED besides W. Side of MINE FILL B - Public Works still having problems to complete SWMU 16 by 10/25/03 & REMAINDER OF MINE FILL B by 10/27/03
DONNA Zollman told T.R. that WELLS & Borings inside MINE FILL B WERE not located - T.R. & F.R. will locate & get back to Public Works when job is accomplished.

1200 Hrs - LUNCH

1230 Hrs - Return to BLDG #3245

- M.C. & F.W. TRENCH (2) SEEPS & (1) SW location, w/ backhoe & dig ONE SW location W. SHOVEL
- RECON & OK Road construction FOR ACCESS to drilling locations W/ OF MINE FILL B W/ Rotasonic T. BRENT & FORESTER CONFIRM - BE CAREFUL & AVOID ALL SHAGBARK hickory TREES (ADULT & SAPLING)

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 10/21/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Brent Thomas J CNIN
From: Johnson, Douglas G (PKI) [DOUG.JOHNSON1@US.ARMY.MIL]
Sent: Tuesday, October 07, 2003 3:56 PM
To: Clinton, Leah K (PKI); Voorhies, John D (PKI); Roach, Michael D (PKI)
Cc: Brent Thomas J CNIN
Subject: FW: TtNUS Participants in Fieldwork at SWMUs 1, 13 & 16

Partial list of TetraTech employees that will be conducting fieldwork @ MFB and 146. Will provide the names of the drilling crew as soon as Tom forwards.

-----Original Message-----

From: **Brent Thomas J CNIN [mailto:brent_t@crane.navy.mil]**
Sent: Tuesday, October 07, 2003 2:27 PM
To: Johnson, Douglas G (PKI)
Subject: FW: TtNUS Participants in Fieldwork at SWMUs 1, 13 & 16

Doug,

Here's the partial particulars. Current plan is to begin work at B146 on Friday, October 24, 2003. I'll pass along the names of the drillers once I get them. Note that SWMUs 1, 13, & 16 are Mustard Gas Burial Grounds, Mine Fill B, and B146, respectively.

Thanks,
Tom

-----Original Message-----

From: **Basinski, Ralph [mailto:BasinskiR@ttnus.com]**
Sent: Tuesday, October 07, 2003 2:13 PM
To: Brent Thomas J CNIN
Cc: 'Bill Gates'; Rojahn, Terry; Cochran, Matthew; Johnston, Tom; Goldman, Mary Lou
Subject: TtNUS Participants in Fieldwork at SWMUs 1, 13 & 16

The following Tetra Tech NUS, Inc. personnel will be participating in fieldwork at NSWC Crane SWMUs 1, 13, and 16.

Terry Rojahn
Matt Cochran
Frank Wudkwych
Fred Ramser
Robert Balkovec
All of these staff are located at Pittsburgh, Pennsylvania office of Tetra Tech NUS.

The award for the drillers will be made shortly. Once the award is made the driller will be requested to provide a list of staff and their office locations.

The fieldwork is scheduled to start on Monday, October 20, 2003.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

Brent Thomas J CNIN

From: Brent Thomas J CNIN

Sent: Thursday, October 16, 2003 1:41 PM

To: Johnson Douglas G CNIN

Subject: FW: Bowser Morner personnel Participating in Fieldwork Starting O ctober 20, 2003 at NSWC Crane

Doug,

As promised, here is the list of drillers who will be working with the Tetra Tech folks on the upcoming fieldwork at B146 and MFB. Please distribute to CAAA Security. As a reminder, they will begin mobilizing here on Monday, October 20, 2003. The 1st shift will end on Wednesday, October 29, 2003. Please let me know if you have any questions.

Thanks,
Tom

-----Original Message-----
From: Rojahn, Terry [mailto:RojahnT@ttnus.com]
Sent: Wednesday, October 15, 2003 3:07 PM
To: Brent Thomas J CNIN
Cc: Basinski, Ralph
Subject: RE: Bowser Morner personnel Participating in Fieldwork Starting O ctober 20, 2003 at NSWC Crane

Tom, the following personnel from Bowser Morner need clearance, however not all of them will be starting work on October 20, 2003:

Tim Boehmer (TM) Dayton, OH
Ken Boehmer Dayton, OH
John Davis Dayton, OH
Jon Keifer (JK) Dayton, OH
* Maynard Lahti (ML) Dayton, OH
Dennis Sinic (DS) Dayton, OH
Robert Trader Dayton, OH
Todd Wollenhaupt (TW) Dayton, OH
Nick Post (NP) Dayton, OH
Tony Mayrer Dayton, OH
* Joshua Dean JD Toledo, OH

* James Walsh JW Toledo, OH

All the above are US citizens.

Just a heads up...you should be receiving a lot of coolers and equipment over the next few days.

-----Original Message-----
From: Basinski, Ralph
Sent: Wednesday, October 15, 2003 2:34 PM
To: 'Tom Brent'
Cc: Rojahn, Terry; Cochran, Matthew; Wudkwych, Frank; Ramser, Fred; 'Bill Gates'; Goldman, Mary Lou

Subject: TtNUS Personnel Participating in Fieldwork Starting October 20, 2003 at NSWC Crane

The following Tetra Tech NUS, Inc. personnel will be participating in fieldwork at NSWC Crane SWMUs 1, 13, and 16 starting October 20, 2003

Terry Rojahn
Matt Cochran
Frank Wudkwych
Fred Ramser
Robert Balkovec

All of these staff are located at Pittsburgh, Pennsylvania office of Tetra Tech NUS.

The award for the drillers has been made to Bowser-Morner. Terry Rojahn is in contact with the driller and will send an e-mail to you with the list of drillers and their home office locations.

L. Clinton: 854-3960

Brent Thomas J CNIN

From: Johnson, Douglas G (PKI) [DOUG.JOHNSON1@US.ARMY.MIL]
Sent: Monday, October 20, 2003 9:37 AM
To: Clinton, Leah K (PKI)
Cc: Voorhies, John D (PKI); Brent Thomas J CNIN
Subject: TetraTech Fieldwork @ MFB

Leah,

Just wanted to make you aware that TetraTech personnel conducting fieldwork usually work until dark. Are there any special procedures we need to implement for after normal hours-work?

If after hours work is a problem, please let me or Tom Brent know.

Doug Johnson
Environmental Protection Specialist
SJMCN-SF
Crane Army Ammunition Activity
(812)854-1481
DSN 482-1481

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

10/21/03 Cont

Work continued from Page

- T.R. & F.R. - problems accessing Mine Fill B; security @ North Gate needs E-Mail to confirm our access - T. Brent got access E-Mail to Gate via D. Johnson & L. Clinton see Pages 106-108
- TR & F.R. → Accessed Mine Fill B @ 1500 Hrs & Talked w/ Mr. Kluesner; Talk Mr. Kluesner about drilling & sampling activities in area - Mr. Kluesner said extraction may be completed in ~1 week & Bldg #165 Buffer Zone will not be needed
- TR & F.R. - Lay out 5 well & 10 boring locations within Mine Fill B
- TR & F.R. - Return to Public Works to let Donna know that above was accomplished

1640 Hrs - Return to Bldg #3245
- Paperwork
- Check on sediment & soil containers w/ Ann Ho - should arrive tomorrow
- Check in @ P.M. office - T. Johnston - report progress w/ accessing Mine Fill B; decission to build roads W. of Mine Filled B.; & progress w/ seep search & trenching

1730 Hrs - Left site for Lowes (F.R. & TR) & Sams (F.R. & M.C.) to purchase supplies.

1840 Hrs - Return to Hotel.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 10/21/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

T+NUS - Crew same as 10/21/03 P. 105
MB - " " " " P. 105

10/22/03 Summary

Drilling:
- Bull Dozer Arrived this date
- Installed 13MW740
- Start Installation of 13MW740
- Site Access Completed on W. side of Mine Fill B to Access wells on sewer utility corridor
- See Note Book 2555 for Details

Sampling Completed:

Seeps	Surface Water	Sediment
13SP0101	13SW1601	13SD290004 (13FD10220302)
13SP0201	13SW1401 (13FD10220301)	13SD310004
13SP0301	13SW3101	13SD300004
13SP0401	13SW2201	13SD280004
	13SW1302 (13FD10220303)	
	13SW1202	
	13SW3001	

CoCs = 4801, 4802 & 4803; Shipped this date on AB # 8412 2491 1051 to Laucks

Surface water locations that were Dry:
13SW29, 13SW15 & 13SW28

Dry Seep: Seep location A down grade of 13SW15.

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

WED 10/22/03

Work continued from Page

WEATHER - Mostly Sunny Temp 60°; mild

0650Hrs - Arrive @ BLDG #3245
- CHECK IN w/ R. BASINSKI
- " YSI & LaMotte
- Inventory Bottle SHIPMENT
- Prep. to Sample SW/SD

0820Hrs - Checked Access AREAS W. OF MINE FILLS for Clearing for Rotasonic Rig - marked trees not to BE REMOVED (trees 7A" DBH); NO SHAGBARK HICKORIES WERE REMOVED

0930Hrs - Start Sampling SURFACE Water & Sediment @ SWMU 13; Frank, Matt & Tony

1130Hrs - Lunch

1200Hrs - Refrigerate samples @ BLDG #3245 taken thus far - Secured in Refrigerator

1230Hrs - Return to SWMU 13 cont sampling SW, SD & SEEPS

1630Hrs - Return to BLDG #3245
Prep. samples collected this date for SHIPMENT ON CoFCs 4801, 4802 & 4803 to Lauckes on AB# 8412 2491 1051

1800Hrs - LEFT BASE FOR FED. EX

1835Hrs - Drop off samples @ FED. EX

1900Hrs - RETURN to Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Ted Rogers DATE 10/22/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

T+NUS / BM - CREWS SAME AS 10/21/03 P. 105

10/23/03 SUMMARY

SAMPLING: SURFACE WATER (SW) & SEDIMENT (SD)

SW:

13SW08, 10, 18, 19, 20 & 27

SD:

13SD24, 25, 26, 27

SAMPLES SHIPPED VIA FED. EX AB # 8412 2891 0813
ON COCs 4804 & 4805

DRILLING SUMMARY

Installed 13MWT40

Installed upper casing @ 13MWT41

SEE NB # 2555 for Details

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

THUR. 10/23/03

Work continued from Page

WEATHER - Mostly Sunny TEMP 60°s

0700 Hrs - ARRIVE @ BLDG #3245
- Prep. to sample SW/SD @ SWMU 13
- Check YSI cali.
- Calibrate LaMotte
- FAX CoCs FROM 10/22/03 to Lancaster Lab & OFFICE (E.S.)

0830 Hrs - Check in @ N. GUARD Gate @ SWMU 13 (out @ 0900

0850 Hrs - Begin sampling SW/SD @ SWMU 13

1100 Hrs - LUNCH

1150 Hrs - ARRIVE @ BLDG #3245
SECURE MORNING SAMPLES in Fridg.

1215 Hrs - Return to SWMU 13 cont sampling SW/SD

1450 HRS - Return to BLDG #3245
- PACKAGING + PAPERWORK OF SAMPLES ON CoCs 4804 & 4805
- Contact DONNA (Public Works) SWMU 16 will Not be CLEARED FOR this weekend's work (drilling only)
- Dig Permit FOR SWMU 13 inside ~~bldg~~ Fenced

Dig Permits

- TALK w/ R. BASINSKI - Progress report
- CLEAN / ORGANIZE FIELD OFFICE

1745 Hrs - F.W. & M.C. LEFT Site to DELIVER SHIPMENT to FED. EX (SAMPLES ON CoCs 4804 & 4805)
T.R. REMAINED ON SITE - PAPERWORK, etc. to WAIT ON drilling CREW & F.R.

1845 Hrs - LEFT BLDG 3245 FOR MOTEL

END

SIGNATURE [signature] DATE 10/23/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

THUS - SAME CREW
BM - JK, DS, TW & NEW ARRIVAL Nick Post

10/24/03 SUMMARY

SAMPLING: Collected

SW	SD
13 SW3201	13 SD32 & 16 SD19, 17, 16, 18
16 SW1701	15, 14, 21 & 22
16 SW1801	
16 SW1401	
16 SW2101	

SAMPLES SHIPPED VIA FED. EX AB # 8412 2491 0824
ON COECS 4806 & 4807.
* Conducted SEEP SEARCH NONE FOUND THIS DATE. @ SWMU 16

Drilling:

- Nick Post on site this Date - I & E gave him HES
- Installed 13MW731
- Drilled to 40' BGS @ 13MW738, cured 25-40' BGS
- See Notebook #2555 for Additional Detail

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

FRI 10/24

Work continued from Page

WEATHER Mostly sunny, Temp 60's

0655 Hrs - ARRIVE @ BLDG #3245
- FAX CoCs to OFFICE & LAB (LAUCKS)
- GIVE T. Brent personnel NAMES FOR WEEK END WORK
- CALL IN TIME FOR MC, FW, FR & TR
- PREP FOR SW/SD SAMPLING
- CALL Sandy checked on Nitrite Standard - SHOULD HAVE MORE
- FW & MC. will grab samples @ 13 SW/SD 32

1000 Hrs - LEFT FOR SW/SD Sampling @ SWMU 16 (TR)
Sampled 16SD19 & SW/SD17 - Conducted SEEP SEARCH

1200 Hrs - LUNCH

1320 Hrs - ARRIVE BLDG #3245 - Drop OFF & Refrigerate samples
- Called TRAVEL - MAKE ARRANGEMENTS FOR NOV 3-12th
- Called LAUCKS - Check on THURS. DELIVERY ... MISSING
- Called Public Works - CHECKED ON Dig Permits
  - CANNOT get into SWMU 16 - Flags up
  - May FINISH SWMU 13 by Monday

1315 Hrs - ARRIVE @ SWMU 16 - Con't sampling SW/SD

1630 Hrs - RETURN to BLDG #3245
PREP. SAMPLES FOR SHIPMENT
ON CoCs 4806 & 4807

1750 Hrs - LEFT BASE FOR FED. EX.

1830 Hrs - Drop OF Samples FOR SAT DELIVERY @
FED EX under AB #8412 2491 0324

END

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

THNUS - SAME

BM - DS, FW & NP

10/25/03 SUMMARY

SAMPLING:

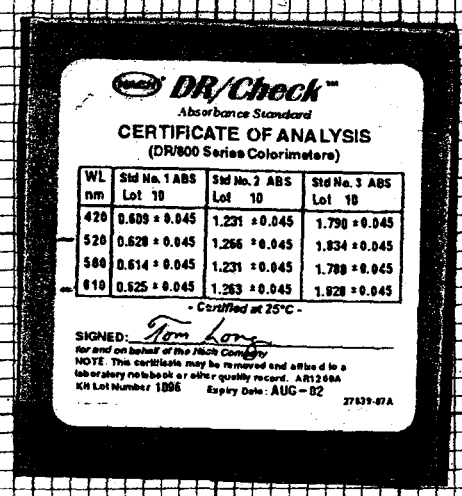
MC & FW - Collect SW1505
16SW1501, 16SW1501201, 16SW1501301 &
16SW2001.

MG, TC & FW - Collected GW
16GW0202 & 16GW0502

1 of 3 Coolers SHIPPED 10/23/03 was lost by FEDEX
LAB still checking on it @ Seattle.
2 of 3 Found this date

Drilling:

Installed Isolation Casing @ 13.7 WT 38
AFTERNOON RAIN delay
SEE NB 2555 for additional Detail



SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

SAT 10/25/03

Work continued from Page

Overcast w/ Periods of Rain

0650 Hrs - Arrive @ BLDG #3245

- Prep to Finish SW/SD sampling @ SWMU 16
- Prep to Collect GW samples @ SWMU 16

Cali. Additional YSI & LaMotte Meter

Cali. PID

Determine order of well sampling w/ relationship to hits & MNA

Check out NA Meter DR/890 Colorimeter

1) Absorbance Solution For Inst. Performance Verification

Program #	nm	Standard 1	Standard 2	Standard 3
42	420	0.629	1.216	1.850
52	520	0.612	1.247	1.832
56	560	0.586	1.204	1.760
61	610	0.581	1.243	1.839

2) Accuracy Check For Nitrite using NO_2^--N Standard = 5mg/L

- 5.00ml/250mg/L NO_2^--N Standard dilute in 250mL vol. flask
- Above took 10ml of dilute (500mg/L) & diluted in 500mL " " to make 0.100mg/L NO2-N
- Ran test using above Dilute - Results 0.091 Should read between 0.090 & 0.110

1200Hrs - Lunch

1245Hrs - Prep for GW Sampling @ SWMU 16 @ 1400Hrs

FW on 16GW0202

MC & TR on 16GW0502 - ~~Collected~~ Ran NA Parameters

1800Hrs - Arrive @ BLDG #3245

Clean up; bring in meters; decon bladder pump etc.

1900Hrs - Left NSWC Crane for Motel

SMB

SIGNATURE [signature] DATE 10/25/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

TH WILS - SAME CREW
BM - JK, DS, TW & NP

DRILLING:

Grouting top off casings & wells
Installed 1 PAD @ 13MT37

SAMPLING:

GW @ SWMU-13
WES-10-04-83
WES-14-01-83
16MWT02

Laid out soil boring @ SWMU 16

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE
SUN 10/26/03
~~SAT 10/~~ TR

PROJECT NO. 9060
BOOK NO. 1363

Work continued from Page

WEATHER - OVERCAST AM SUNNY AFTERNOON & COLD

0650 Hrs - Arrive @ BLDG #3245
Prep to sample GW @ SWMU 16
Cal. Instruments, etc.

0830 Hrs - Arrive @ SWMU 16
Assist MC with set up @ 16GW01
F.W. to sample @ 16GW04

1015 Hrs - Set up @ 16GW02 - to run NA w/ ER.

1131 Hrs - Finish Running NA @ 16GW02
Lay out all 9 soil Borings @ SWMU w/ ER

1330 Hrs - Lunch

1400 Hrs - PR to check on drillers
TR paperwork, organize office & Field Doc.

1750 Hrs - Left NSWC Crane for Motel

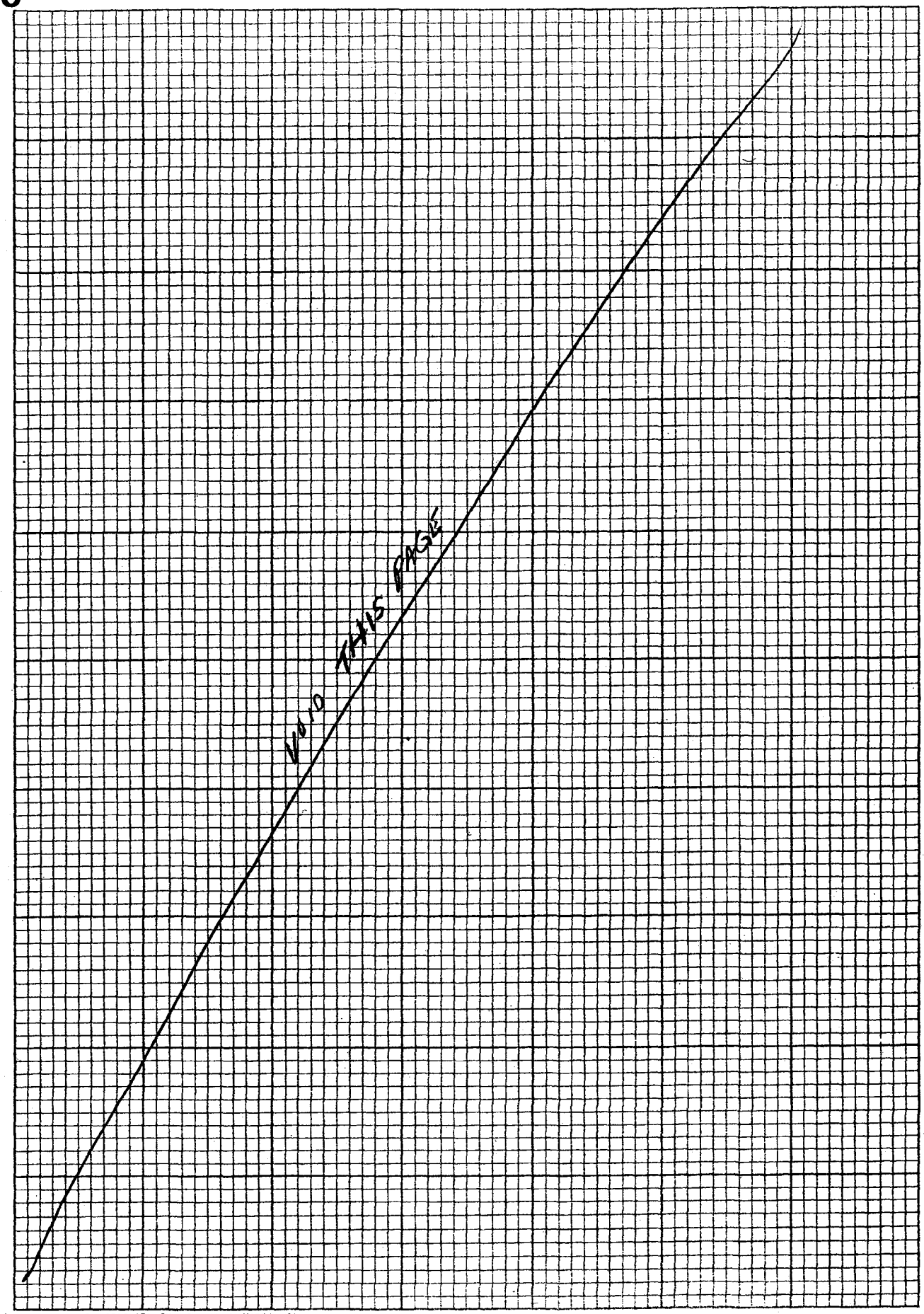
END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE | DATE

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE



SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

Mon. 10/27/03

Work continued from Page Weather AM Cold PM Sunny

0700 Hrs - Arrive @ BLDG #3245
- Cal. Instruments
- Check on Dig Permit
- Problems Associated w/ Dig Permits Talk to T. Brent
  SWMU 13 - Production
  SWMU 16 - Security
- Start Prep for Well Dev. - check pumps

0915 Hrs - Talked to T. Brent - Public work must think to existing wells need cleaned - will go check if proposed are cleaned

0918 Hrs - Leave for SWMU 13

0923 Hrs - Check in @ N. Gate SWMU 13 Guard
Check for TR utility flags inside SWMU 13

0956 Hrs - Check out @ N. Gate w/ Guard

1020 Hrs - Talk w/ Tom Brent - no water/sewer located on West side/inside fence @ SWMU 13
- Tom called PW - checked in w/ compressed air & sewer & water personnel also if they need any access help we would be available

1100 Hrs - T. Brent & T.R - met with Max @ N. Gate
Assisted with locating utilities

1215 Hrs - Left Mine Fill B - Max to sign work permit

1220 Hrs - Arrive @ P. Works - All signed but compressed air

1230 Hrs - Talked to T. Brent - Tom said that compressed air personnel would be signing after lunch

1300 Hrs - Picked up DIG Permit - Drilling crew off stand by ~1310 (Returned to BLDG #3245)
- Check in w/ officers.
- Checked in w/ Lauks - coolers arrived in Temp.
- More coolers & unpreserved HDPE on the way
- Check in w/ Microseeps - sending additional bottle sets & coolers
- Called U.S. Environmental for working geophysics
- Fax copies to Lauks & offices

Work continued to Page 122

SIGNATURE Ted Hyde DATE 10/27/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS SAME AS ON 1/14

SAMPLING:

13SW15 01, 28, 09, 25, 07, 24 & 26 SAMPLED THIS DAYS

LAUCKS SAMPLES SHIPPED ON COECS #4804, 4811, 4813 & 4814 VIA FED EX AB# 8412 2491 1040

MICROSEEPS samples SHIPPED ON COEC #4812 VIA FED EX AB# 8412 2491 0846

DRILLING:

Stand By All Morning

39' of Isolation Casing Installed @ 13 minutes

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

10/27/03 Cont

Work continued from Page

- PACKAGING & SHIPPING
  1) LAUCKS (10 Coolers) AB# 8412 2491 1040
     CoFCs # 4808, 4811, 4813, & 4814
  2) MICROSEEPS (1 Cooler) AB# 8412 2491 0846
     CoFC # 4812
  3) US ENVIRONMENTAL AB# 8412 2491 0835
     GEOPUMP

1715 Hrs - LEFT NSWC CRANE FOR FED EX

1800 Hrs - Drop off Samples @ FED-EX

1820 Hrs - Purchase Paper Towels, Zip Lock bags & drinking water @ Sam's

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rapt

DATE 10/27/03

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

CREWS SAME AS ON P. 114

SAMPLING

13GWT 24, 23 & 19 SAMPLED THIS DATE
ALONG WITH 2 SOURCE BLANKS
TRUCKS SAMPLES SHIPPED ON COC # 4815
VIA FED EX AB# 0012 2491 1030

DRILLING

SET TWO ISOLATION CASINGS @ 13MWT 45 & 35 and
DRILLED SHALLOW WELL 13MWT 32 to TD.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TUES 10/28/03

Work continued from Page

0700 Hrs - Arrive @ BLDG. #3245
Call Meters (YSI, Turb. & PID)
Repax GPCs to Lockers
Prep. to Sample GW @ SWMU 13 & Run MNA
0810 Hrs - Arrive @ Mine Fill B After checking in w/Guard
Set up @ 13MWT23 & 24
Run NA on both wells
1050 - 1151 Hrs - Run NA @ 13MWT24
1200 Hrs - Lunch
1230 Hrs - Return to BLDG #3245
Refrigerate samples from 13MWT24 & Pick up supplies
1355 Hrs - 1438 Hrs Run NA @ 13MWT23
1450 Hrs - Finish cleanup inside Minefill B
1500 Hrs - Check in w/ N. Gate Guard... Report everyone out of Minefill B including Drilling Crew
1515 Hrs - Arrive @ BLDG #3245
- Unload Rental Car
- TK Collect Trip Blank TB10280301
- FW & TK collect Source Blanks
  1) SB10280301 - Drilling Water
  2) SB10280302 - DI Water Reagent Grade Water
     NEEL Lot # 0807253
     EXP 08-2004
- Check in w/ R. Basinski - Reviewing Work Progress
- Packaging & Shipping
1755 Hrs - Left NSWC Crane for FED. EX.
1832 Hrs - Drop of Samples on AB # 8912 2491 1030

END

NEBS BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 10/28/03

READ AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREW: T/NUS: F. Ramsey & T. Kojahn
BM = JK, DS, TW & NP

Drilling: Complete installation of 13 MWLT 32

SAMPLING: None this date - Travel Day

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. N9060

BOOK NO. 1363

WED. 10/29/03

Work continued from Page

0655 Hrs - Arrive @ Bldg #3245

- Fax Copc 4815 to Lauck's & Office from Yesterday's Sampling Effort
- Submit Personnel Names to T. Brent for next shifts passes.
- Organize Office
- Sweep & Mop Office Area, Lab & Bathroom & path to Bathroom.

0930 Hrs - Left NSWC Crane for Airport

Remainder of Day's Travel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 10/29/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

HACH DR/Check™

Absorbance Standard

CERTIFICATE OF ANALYSIS

WL nm	Std No. 1 ABS Lot 43	Std No. 2 ABS Lot 43	Std No. 3 ABS Lot 43
420	0.618 ± 0.050	1.199 ± 0.050	1.770 ± 0.050
520	0.617 ± 0.050	1.220 ± 0.050	1.804 ± 0.050
560	0.593 ± 0.050	1.212 ± 0.050	1.758 ± 0.050
610	0.621 ± 0.050	1.227 ± 0.050	1.786 ± 0.050

- Certified at 25°C -

SIGNED: Patrick J. Hedman

For and on behalf of the Hach Company

NOTE: This certificate may be removed and affixed to a laboratory notebook or other quality record. AR663A

Kit Lot Number 3281 Expiry Date: Feb 2005

27639-97A

DR 890

HACH DR/Check™

Absorbance Standard

INSTRUMENT READING

WL nm	Std No 1 ABS Lot 43	Std No 2 ABS Lot 43	Std No 3 ABS Lot 43
420	0.622	1.223	1.804
520	0.618	1.240	1.797
560	0.596	1.187	1.734
610	0.594	1.213	1.792

RECORD INITIAL VALUES IN ABOVE TABLE

NOTE: This certificate may be removed and affixed to a laboratory notebook or other quality record. AR663A

Kit Lot Number 3281 Expiry Date: Feb 2005

27639-97B

DR 850

52 0.646 1.234 1.815

61 0.627 1.238 1.809

MCS Cesar - Set up on 13 MAY 22 (AIR Cesar)

588 Min Fore Refill

FRS Cesar - Set up & start Dosing @ 13 MAY 22

588 Min 2333 For Refill

(Refrigerate Cesar)

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

MON 11/03/03

Work continued from Page

1425 Hrs - ARRIVE @ BLDG 3245
• CAL: VSIs ; Problem w/ PH SENSOR ON 98F047848

1500 - 1545 Hrs - HES FOR J. WALSH & J. DEAN
M. LAHTI WAS A NO SHOW - to ARRIVE tomorrow

1600 Hrs - PREP. FOR WEEK REV. OF 11/04
PREP. to CALIBRATE PUMPS
CHECK DR Colorimeters w/ Absorbance Standards
CHECK IN w/ R. BASINSKI
1820 Hrs - LEFT SITE (BLDG #3245) FOR HOTEL
END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Ty Hart

DATE 11/3/03

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

B 100 P ©

CREWS:
THNOS - F.W., R.K., M.C. & TK
BM - ML, JK, D.S., TW, NP, JW & JD
SUMMARY 10/4/03

SAMPLING:
DEVELOPE WELLS
13MWT 42, 40, 37 & 32

DRILLING:
INSTALLED 13MWT 29
13 MWT 28 ~~ER.03 only~~ (ER) Isolation Casing
13 MWT 39
13 MWT 38 Isolation Casing

SEE Notebooks #2565 (MC) & 2553 (ER) For Details

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TUES 11-04-03

Work continued from Page WEATHER Mostly Sunny TEMP High 70's Low 50's

0650 Hrs - Arrive @ BLDG #3245
PREP to H&S TEAM M. LANTI
0700 - 0800 Hrs - Training (H&S) M. LANTI
0830 Hrs - Receive M.L's H&S PAPERWORK
PREP. to DEVELOPE WELLS
0845 Hrs - SHOW M.L. SWMU 13
0930 Hrs - Arrive @ 13MWT42
DEVELOPE WELL Start = 0939
Stop = 1021 Volume Purged (3L) dry out 3 times
1035 Hrs - Arrive @ 13MWT40
Start = 1053
END = 1145 Volume Purged (115gal) dry out 3 times
1200 Hrs - Lunch
1230 Hrs - Arrive @ BLDG #3245
DECON Pumps & Call OFFICE
1315 Hrs - Return to SWMU 13 WELL 13MWT37
Start = 1329
END = 1417 Volume Purged (10gal) dry out 3 times
1426 Hrs - Arrive @ 13MWT32
Start = 1435
END = 1522 Vol. Purged (8gal) dry out 3 times

1540 Hrs - Return to Bldg #3245

- Run Nitride Standard on DR 850 (HACH Colorimeter)
  Read = 0.093
- Repair - pH PROBE on 98F0478AB sonde
- DECON - WHALE PUMPS
- Start PREP. FOR GW SAMPLING

1750 Hrs - LEFT BLDG #3245 FOR Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11/4/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREWS: SAME AS ON P. 130

SAMPLING: SEE TABLE ON P. 133

DRILLING:

Drilled & Installed the following:

13MWT30 } MC NB#2526
13MWT31

13MWT28 } FR NB#2555
13MWT27

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60603 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

WED 11-5-03

Work continued from Page

WEATHER Mostly Cloudy Temp 40's

0655 Hrs - ARRIVE @ BLDG #3245

PREP to SAMPLE GW

0810 HRS - ARRIVE @ SWMU 13

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS *(SAMPLER)
13GWT2502	0830	0925	15.2 L	DRY	*(TR)
13GWT2102	0825	0950	2.2 gal	0950	*(FW) MS/MSD (TF NA)
13GWT1702	0945	1045	6 L	1047	*(TR) NA 13FD110503 01
13GWT4004	1455	1630	2.2 gal	1630	*(FW)
13GWT4201	1535	1610	3 L	DRY	*(TR)

NOTES:

- CHECK IN W/ BLDG 165 VIA PHONE - to mob Rotasonic through buffer zone to 13MWT03 & 04 (OK)
- CHECK IN W/ LAB
- CHECK IN W/ R. BASINSKI

1730 Hrs - RETURN to BLDG. #3245

DROP OFF EQ

PAPERWORK

WAIT FOR FW

1800 Hrs - LEFT NSWC CRANE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 11/5/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUMMARY 11-6-03

CREWS : SAME AS ON P. 130 ~~EXCEPT JK IS OFF MIC~~ (TC)

Drilling

SEE NB 2565 MC
SEE NB 2565 FR

SAMPLING

SEE labels on P. 135

SCIENTIFIC BINDERY PRODUCTS.. CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. N9060

BOOK NO. 1363

THURS 11-6-03

Work continued from Page WEATHER - OVERCAST & TEMP LOW 40°s

0655 Hrs - ARRIVE @ BLDG #3245
PREP to SAMPLE GW

0815 Hrs - CHECKED IN w/ N. Gots GUARD & MIKE FILL B

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13GMT2502	11-5-03		15.2 L	0845	(TR) PURGED (11-5) start sampling on 11-6 (Explosives only)
13GWT0502	0920	1320	21.7 L	1320	(TR) NA RUN
13GWT4201	11-5-03		3 L	1500	(TR) PURGED (11/5) start samples on 11-6 (all but metals)
13GWT3701	1400	1550	2.3 gal	1550	(FW)

WELL DEVELOPMENT:

SAMPLE ID	Start DEV	END DEV.	VOL. PURGED	COMMENTS
13MWT29	0827	1000	22 gal	—
13MWT39	1043	1140	6.5 gal	—
13MWT38	1300	1650	3 gal	Will cont Development on 11/7

1600 Hrs - Picked up Dis Permit for SWMU 16 @ Public Works
1615 Hrs - Return to BLDG #3245
- PAPERWORK & PREP. SAMPLES FOR SHIPMENT ON COEC # 4816 VIA FED EX AB# 8412 2491 0629
- CHECK IN w/ Ralph BASINSKI
- CHECK IN w/ LAB talked to H. PRENTICE. also CONFIRMED SAT. DELIVERY

1845 Hrs - DROP OFF SAMPLES @ FED EX.
1915 Hrs - FAX COECs to OFFICE & LAB FROM Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Kogel DATE 11-06-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUMMARY 11-7-03

CREWS - SAME AS ON PAGE 130, EXCEPT JK IS OFF SITE TODAY

Drilling:

SEE NB 2565 MC

SEE NB 2555 FR

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

FRI 11-07-03

Work continued from Page WEATHER - Partly Cloudy Temp High 30's

0650 Hrs - Arrive @ BLDG #3245
- Cal: YSI, PREP to sample GW @ SWMU 13
- Give MC & ER priority wells to install first @ SWMU 16
- Check Lock out Tag @ SWMU16 for 16 MWT 13 & 15, Not sure so T. Brent will make calls to confirm that the lines (ele.) were turned off
- Call in Hrs to Pittsburgh

0845 Hrs - Check on FW; gave him charge # for GW sampling & Prep.
0910 Hrs - Arrive @ 13 MWT29

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	TIME SAMPLED	COMMENTS
13GWT2901	0935	1205	15 L	1205 (TR)	NA RUN
13GWT3901	0913	1400	5.1 gal	1400 (FW)	
13GWT4201					(FW) Completed sampling Collected Tot. & Dis Metals
13GWT2502					(TR) Collected Partical Misc. E.

1400 Hrs - Setup @ 13GWT2502 collected partical MISC. Explosive. VERY slow RECHARGE WELL.
1435 Hrs - Check on drilling progress @ SWMU 16
1455 Hrs - Arrive @ BLDG #3245
- CHECK IN w/ OFFICE - R. Basinski (Progress Report) + T. Johnston (Status of Mustard Gas Start up)
- MADE TRAVEL ARRANGEMENTS FOR RETURN NEXT SHIFT (NOV 17-26) - Also talked to Scott Gr. ABOUT TRAVEL ARRANGEMENTS FOR NEXT shift
- Call Laucks (Mike Baxter) - gave MB tracki. NO. FOR SAT SHIPMENT
- PAPERWORK @ PACKING FOR SAMPLES ON CoC 48
1835 Hrs - Drop OFF Samples @ FED EX (AB # 8412 2491 0618
1852 Hrs - FAX Copy of CoC to M. Baxter @ Laucks Lab FROM Hotel.

SIGNATURE
DATE 11-7-03
DISCLOSED TO AND UNDERSTOOD BY
DATE
WITNESS
DATE

Summary 11-8-03

drevl same as on P. 130

Drilling: 566 NB 2565 MC
566 NB 2555 FR

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

SAT 11-08-03

Work continued from Page

Weather: mostly sunny Temp High 30's

0655 Hrs - Arrive @ BLDG #3245; Collect Trip Blank TB11080301 @ 0700
Prep for GW sampling @ SWMU 16

0810 Hrs - Let FW inside SWMU 16

0900 Hrs - Arrive @ 13GWT25 - Finish collecting Misc. Explosives
Let Mlahti in to secure protective casing @ 13MWT27

0930 Hrs - Exist Minefield B (SWMU 13)

0945 Hrs - Arrive @ SWMU 16 to setup on WES-14-03-83

Sample ID	Start Purge	End Purge	Vol Purged	Sample Time	Comments
16GW0302	1015	1215	12.1L	1215	(TA) RAN NA
16GWT0602	0908	1308	5.1gal	1308	(FW) Will run NA 11/9
16GWT0402	1430	1640	14.8L	1640	(TA) RAN NA
16GWT0102	1455	1800	4.2gal	NA	(FW) will sample 11/9

Note - Attempt to develope 16MWT14 today - Well Dry

1805 Hrs - Left SWMU 16 for BLDG #3245

1807 Hrs - Arrive @ BLDG #3245
- Secure samples in Frig.
- Unload Meters, etc.

1820 Hrs - Left BLDG #3245 for Hotel

END

Work continued to Page

SIGNATURE [signature] DATE 11/8/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUMMARY 11-09-03

CREW SAME AS ON P. 130

SAMPLING: SEE P. 141

DRILLING:

M.C.'S CREW (NB#2565)
Install 16MWT10 & 16 (end shallow well 1st week TIA was DAY)

F.R.'S CREW (NB#2555)
Install - 16MWT08 & 15

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

SUN 11-09-03

Work continued from Page WEATHER - Mostly Sunny Low 40's

0655 Hrs - ARRIVE @ BLDG #3245
- PREP FOR GW SAMPLING & NA @ SWMU 13 (TR)
- (FW) PREP to PURGE 13GWT38
- FAX R. BASINSKI - STATUS POR GW SAMPLING & WELL INSTALLATION thus FAR.

0840 Hrs - ARRIVE @ SWMU 16
SET UP @ 16MWT06 to RUN NA

0910 Hr - 1000 Hrs - RUN NA @ 16MWT06

1035 Hrs - SAMPLE VOCs @ 16MWT01 Sample ID 16GWT0102
* WELL WAS purged on 11-08-03 by FW

1100 Hrs - ARRIVE @ BLDG #3245
PAPERWORK & LUNCH
PREP. to DEV. WELLS @ SWMU 16

SAMPLE ID	Start Purge	END PURGE	VOL PURGED	SAMPLE TIME		COMMENTS
16GWT0102	←	11/8/03	→	1035	(TR)	Purged 11/8; Sampled 11/9 VOCs only
16GWT0302	1425	1635	2.1 gal	1635	(FW)	
13GWT3801				NA	(FW)	PURGED only w/ sample 11/10

WELLS DEVELOPED

SAMPLE LOC	Start DEV	END DEV	Vol. Purged	
16MWT12	1355	1500	35.7 L	(TR)
16MWT9	1540	1648	17 gal	(TR)

1700 Hrs - TR check on FW @ 16MWT03 work out return time to open gate

1715 Hrs - TR ARRIVE @ BLDG #3245
- CLEAN & MOP FLOORS
- PAPERWORK
- MC to get FW out of SWMU 16 FENCE

1820 Hrs - LEFT NSWC CARNE FOR Hotel

END

SIGNATURE [signature] DATE 11-9-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Summary of 11/10/03

Same crew as on p 138
AK to leave today

Sampling see p 143

Drilling:

MC's crew (#NB 2565): Installed 13 MWT 44

FR's crew (NB #2550): Installed 13 MWT 45 & 41

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60665 MADE IN USA

MON. 11/10/03

Work continued from Page

WEATHER - Partly Sunny Temp MID 40°s AM ; MID 60°s PM

0655 Hrs - ARRIVE @ BLDG # 3245

- Prep. to SAMPLE GW
- CHECK IN W/ OFFICE Ralph Rasinski
- FAX COC # 4817 to ED Sedlmayer
- Call Instruments
- ASK CHRIS FREEMAN to ASK Public Works to hold off on RECONNECTING street light @ SWMU 16 Around 16 MWT 13 & 15 WELL installation Location

0930 Hrs - Stop @ Public Works to discuss moving location of 13MWT47.

0945 Hrs - ARRIVE @ 13MWT03

SAMPLE ID	Start Purge	End Purge	Vol. Purged	Sample Time	Comments
13GWT3801	(← 11-09-03 →)			0915	(FW)
13GWT0302	1005	1209	10.9L	NA	(TK) will sample w/
13GWT0702	1120	1330	2.2gal	1330	(FW)

1225 Hrs - Finish Cleanup @ 13MWT03 AFTER Completion of Purge will sample tomorrow

1230 Hrs - Check on FW

1245 Hrs - ARRIVE @ BLDG #3245

- Check in W/ ED SEDLMYER on QT Samples
- Give List of TINUS personnel to start NEXT SHIFT For Gate Passes
- Prep for WELL Development

1340 Hrs - Arrive @ 13MWT36

Start purge 1400 Hrs END PURGE 1502 Hrs VOL PURGED 29.4L

1515 Hrs - Check on FW ; FR is working nearby will let FW out Gate

1530 Hrs - ARRIVE @ 13MWT25 - Collect Additional sample volume for Total Metals & Hg

1600 Hrs - Return to BLDG #3245 ; Empty SUV to carry coolers to FED. PAPERWORK & Packaging COC # 4818 (Kracks) & COC 4819 (Microscopes) KRACKS ON AB# 8412 2491 0375 & Microscopes on AB # 8412 2491 0386

1840 Hrs - Drop off Samples @ FED. EXP.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11-10-03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Summary of 11/11/03

CAGUI - SAME AS ON P. 130 EXCEPT DOR MIL left 11/10.

DRILLING:

MC's crew = Installed 13MWT 30, 16MWT 07 & 13

FR's crew = Installed 16MWT 11

SAMPLING: See P. 145

SCIENTIFIC BINDERS PRODUCTS CHICAGO 60605 MADE IN USA

TUES 11/11/03

Work continued from Page WEATHER: Lt Showers & Temp 60's

0653 Hrs - Arrive @ BLDG #3245
- Prep to Run NA & Sample
- Prep for Well Dev.

0805 Hrs - Arrive @ 13MWT38 to Run NA (0824-0908 Hrs.)

0925 Hrs - (TK) Filled Total Metals From 13MWT25 - Started Filling on 11/9
(FW) Set up @ 13MWT03 to Sample

0940 Hrs - TK Arrived @ 13MWT03 to Assist FW w/ Sampling and Running NA

1130 Hrs - Leave for Lunch / Finish @ 13MWT03

1215 Hrs - Refrigerate Samples @ BLDG #3245

1235 Hrs - Arrive @ 13MWT41
- Only 1.6' of water in well will let well set until start of Next shift to develope

1315 Hrs - Return to BLDG #3245
- Check in @ Office Talked to Ralph & ED
- Collect Trip Blank TB11110301 @ 1315

1400 Hrs - Arrive @ 16 for Development

WELL ID	Start Dev	End Dev	Vol. Purged	Comments
16MWT10	1420	1650	12 gal	(FW)
16MWT16	1435	1545	4.5 L	(TK)

1600 Hrs - Arrive @ BLDG #3245
- Unload Car
- Paperwork & Packaging For Shipping Samples on COC #4820
- Sweep & Mop Floors (Field office Bathroom Hallway & LAB)
- FW to drop of sample shipment on AB #8412 2491 0397
- MC cleaned drain & car port area

1830 Hrs - Left Site for Hotel

END

SIGNATURE [signature] DATE 11/11/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

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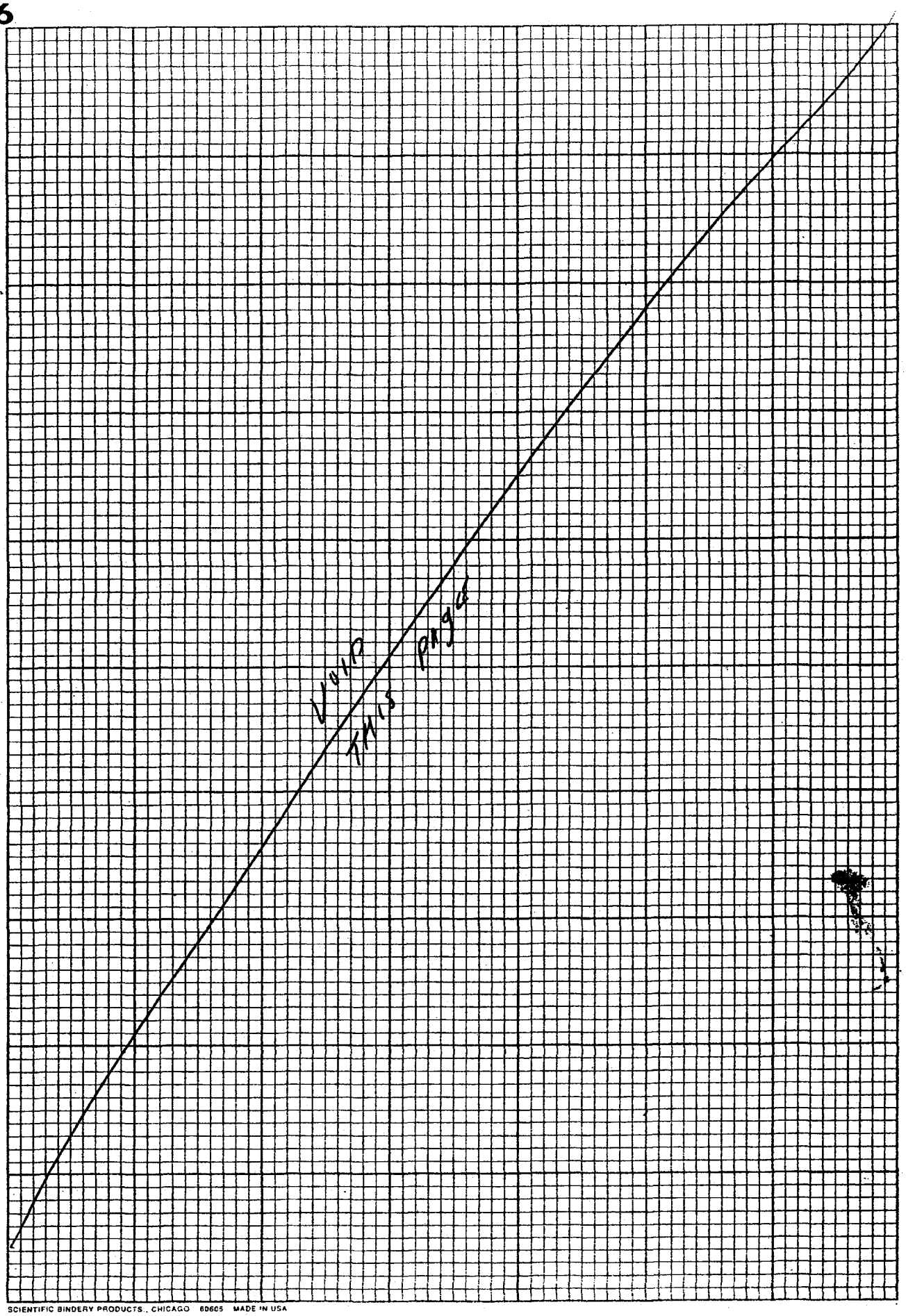

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

TITLE

PROJECT NO. 9060

BOOK NO. 1363

WED. 11/12/03

Work continued from Page

TRAVEL DAY ONLY

END

5

10

15

20

25

30

35

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 11/12/03

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

Summary 11/17/03

Drilling Crew: Jon Keifer
Dennis Sills
Todd Wallenhaupt } Rotasonic Scott's Crew
Nick Post
Jim Walsh } ATV Matt's Crew
Joshua Dean

Tunnus Crew: Matt Cochran
Jim Goeckel
Scott Greer
T. Roman

Matt's Crew - Set up on 13 MW T35
Scott's Crew - " " " 13 MW T28

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

MON 11-17-03

Work continued from Page

1405 Hrs - Arrive @ BLDG #3245
- Hold H&S Specific Training for Scott Greer & Jim Gosrdt

1500 Hrs - Arrive @ Public Works
- Check on Monitoring well location 13MW147 Moved to END OF TREE LINE OK w/ Public works - Donna Z. checked on

1525 Hrs - Arrive @ SWMU 13 - show J. G. around SWMU - ATTEMPT to dev. 13MW141 - ACCESS WET - NEED to let utility road dry out VERY slippery.

1655 Hrs - Return to BLDG #3245
Cali YSIs
Prep sample sets
Paper work

1800 Hrs - Left Crane for Hotel

END

SIGNATURE [signature] DATE 11/17/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Summary 11/18/03

No DRILLING PERFORMED this date to the Road

Sampling see p. 151 - REPURGE 13MW-T25 (S.G.) @1345Hrs

Crews see p. 148

SCIENTIFIC BINDERY PRODUCTS CHICAGO

Tues 11-18-03

Work continued from Page

Weather: Mid 50°s & Rain

0702 Hrs - Arrive @ BLDG #3245

- Prep. to sample Groundwater & Develope Wells
- Talk w/ Tom Johnston

0930 Hrs - Arrive @ SWMU 13 & set up @ 13 MWT12 JG & TR

Start Purge = 1002

End Purge = 1402 Vol. Purged = 21.4L

Sample Time = 1408 RAH & NA

1400 Hrs - M.C. sampled 13SW1102

Monitoring Well Development

Well ID	Start Purge	End Purge	Vol. Purged	Comments
13MWT27	1230	1403	33.6L	(TK) Dry out 3 times
13MWT41	1500	1505	4L	(MC) Dry out well
13MWT34	1500	1658	52.4L	(SG & TK) Dry out well & Remove 5 casing volumes

1600 Hrs - Assist S.G. with development @ 13MWT34

1720 Hrs - Check out of SWMU 13 @ North Gate

1730 Hrs - JG, SG & T.R. meet MC. @ BLDG #3245

Secure all samples in Frig.

Drop of meters inside BLDG

Check in w/ K. Basinski.

1800 Hrs - Leave BLDG 3245 for Hotel

End

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11-18-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SUMMARY 11-19-03

CREWS SAME AS ON P. 148

SAMPLING SEE P. 153

DRILLING:

MATT'S CREW = Complete 13 MW 1 35 & Start 47

SCOTT'S CREW = Complete 13 MW 1 28

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

WED. 11/19/03

Work continued from Page

WEATHER = Mostly Sunny AM 40's PM 50's

0650 Hrs - Arrive @ BLDG #3245
- PREP. to SAMPLE groundwater

0908 Hrs - Arrive @ SWMU 13

0815 Hrs - Start Sampling Dis-Metals @ 13MWT25 - Purged DAY 11/18

WELL ID	Start Purge	END Purge	Vol. Purged	Time Sampled	Comments
13GWT2602	0855	1135	13.2L	1140	(TG) RAN NA
13GWT2003	0828	1228	24.6L	1235	(JG) " "
13GWT3201	1409	1539	8.25L	1543	(JG)

1315 - 1429 Hrs - Ran NA @ 13MWT20

1440 Hrs - Return to BLDG #3245
- Drop off samples in Frig.
- PREP SUV FOR DEVELOPMENT

1525 Hrs - Arrive @ 13MWT33
Start DEV = 1542 Hrs
END DEV = 1633 Hrs
Vol. Purged = 12.8L

1650 Hrs - Return to BLDG #3245
PREP. PAPERWORK (COC #4821) & SAMPLES FOR SHIPMENT ON FED EX. AB# 8412 2491 6801

1745 Hrs - LEFT CRANE FOR FED EX.

1820 Hrs - Drop off Samples @ FED. EX.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11/19/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Summary 11/20/03

Crews: Same as on P. 148; except T. Bachmann returned

Drilling: Completed BMW T47; and worked on Well Pads.

Sampling: See P 155

SCIENTIFIC SUPPLY PRODUCTS CHICAGO 60605 MADE IN USA

THURS 11-20-03

Work continued from Page

Weather - Mostly Sunny temp AM 40's / PM 60's

0655 Hrs - Arrive @ BLDG #3245

- Prep for GW sampling
- Assist S.G. w/ Well Dev. Prep.
- Select wells to sample for JG & TR
- T. Johnston called - discussed drilling & sampling status
- Fax CoC #4821 to LAB & OFFICE (A. Ho & E. Sedlmyer)

0910 Hrs - Arrive @ N. Gate Check in w/ Guard

SAMPLE ID	Start Purge	End Purge	Vol. Purged	Sample Time	Comments
13GWT1102	0930	1050	7.65 L	1055	(TR) Ran NA
13GWT1008	0917	1317	18.6 L	1322	(JG Purged) TR Ran NA & sampled until 1558 Hrs
13GWT1602	1404	1534	8.2 L	1537	(JG)
13GWT2502	←	11/18/03	→	1610	(TR) Finish collecting Dissolved & Nitrate Nitrite & Ammonia

WELLS DEV BY SG

WELL ID	Start DEV	END DEV	Vol DEV
13MWT45	1020	1205	7.25 gal
13MWT31	1330	1455	11 gal
13MWT30	1550	1650	7.5 gal

1700 Hrs - Returned to BLDG #3245

- Checked in w/ T. Johnston talked for ~35 min
- Unloaded EQ & Samples
- Labeled bottles from 13MWT25

1815 Hrs - Left Crane for Hotel

END

SIGNATURE

DATE 11-20-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Summary 11-21-03

CREWS: SAME AS ON P. 148

DRILLING: Install isolation casing @ 13MW-46
SEE NB 2555 (SG.)
Work on well pads cont'd
ABANDON 16MW-1A SEE NB #2565

SAMPLING: SEE P. 157

MC: Slug testing (NB 2565)

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

FRI 11-21-03

Work continued from Page

WEATHER - MOSTLY SUNNY & 50'S

ARRIVE BLDG 3245 @ 0655 Hrs

- PREP. FOR WELL DEV & WELL SAMPLING
- PREP. WEEK END PERSONNEL LIST FOR T. BRENNT

0820 Hrs - ARRIVE @ SWMU 16

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
TB1121030 1	—	—	—	0700	TRIP BLANK (TR)
16GWT1001	0842	0957	7.5L	1003	JG WELL SAMPLER, TR RAN
16GWT1201	1148	1313	9.5L	1316	↓ ↓
16FD1121030 1	"	"	"	0000	DUP FROM 16GWT12

WELL ID	START DEV	END DEV	VOL PURGED	COMMENTS
16MWT11	0845	0947	28L	(TR) SLOW RECHARGE (DRY OU
16MWT07	—	—	—	DRY WELL
16MWT08	1316	1338	15gal	(DRY OUT) TR & MC
16MWT13	1520	1700	41L	MC & SG
16MWT15	1610	1720	8gal	MC & SG

1620 Hrs - TR ARRIVE @ BLDG #3245 W/ J.G.

- PREP SAMPLES FOR SHIPMENT ON COFC #4822 ON FED EX AB #8412 2491 0607
- CALL LAUCKS LAB - TALK TO H. PLCATICE - REPORT SAT. SHIPMENT
- ATTEMPT TO CALL - T. JOHNSTON & R. BASINSKI

1790 Hrs - LEAVE CRANE FOR FED EX

1815 Hrs - DROP OFF SAMPLES @ FED EX ON ABOVE AB #. FAX COFC #4822 FROM HOTEL @ 2200 Hrs TO LAUCKS

END

SIGNATURE Terry Rock

DATE 11-21-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CRACKS SAME AS ON P 148

Drilling: Complete Installation of 13 MWT 4C
See MB 2595 for Details
Remainder of day Well Pad Construction

M.C (MB 2565) - Skip Testing

Sampling See P. 159

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

SAT 11-22-03

Work continued from Page WEATHER - Partly Sunny & warm 60°s

0703 Hrs - Arrive @ BLDG # 3245
- Prep to sample GW w/ Bladder Pump
- Coordinate w/ M.C. (Slug Testing) as to which wells to sample so that samplers don't interfere w/ slug tests
- Calibration & Decon of Bladder Pump

0910 Hrs - Arrive @ SWMU 16
(TR) Purge well # 16MWT16 ; (JG) to set up on 16MWT13

0940 Hrs - Return to BLDG # 3245
- to pick up Dev. Eq. to Dev. 16MWT17
- waited for MC. so that he could access SWMU 16

1020 Hrs - Arrive @ SWMU 16 w/ MG - get M.G Dev. Sheets on 16MWT11 & 10 to assist slug test

1040 Hrs - Arrive @ 16MWT17 to Dev
Start Dev = 1100 Hrs
End Dev = 1230 Hrs
Volume Dev = 54 L

SAMPLE ID	Start Purge	End Purge	Vol Purged	Sample Time	Comments
16GWT1301	0927	1157	17.65 L	1200	(JG) TR Ran NA
16GWT0901	1422	1612	10.6 L	1614	(JG)
16GWT0502	1445	1615	10.0 L	1617	(TR)
16GWT1601	0925	0926	1.0 L	1745	(TR/JG) Min. Vol. Very slow Recharge Purged Dry @ 0925; Allowed to recharge & Sampled @ 1745 Hrs w/ JG.

WELL ID	Dev. Start	Dev. End	Vol. Purged	Responsible Person
13MWT28	1020	1110	3.259	(S.G.)
16MWT17	1100	1230	54 L	(TR)

1810 Hrs - Arrive @ BLDG # 3245
- Secure all samples in Lab Frig.
- Unload EQ

1830 Hrs - Left Crane

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11-22-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

CREWS: SAME AS ON P. 148

Drilling & Complete well pad @ 13MWT46 & DEMOB

MC - Slug Testing

Sampling - See P. 160

SCIENTIFIC BINDERY PRODUCTS

SLIN 11-23-03

Work continued from Page

WEATHER: Mostly Cloudy 60's

0700 Hrs - Arrive @ BLDG #3245

- Prep. to sample groundwater / develope & Run NA

0915 Hrs - Collect Addition Sample Parameters From 16MWT16 (Explosives) - This is a very slow recharge well Purged 11/22/03.

SAMPLE ID	START PURGE	END PURGE	Vol. PURGED	TIME SAMPLED	Comments
16GWT1601	←	11-22-03	→	0915	(TR) Collected additional Parameters Explosives & Dis metals
13GWT4101	1025	1030	1.5 L	1530	(TR) Very Slow recharge well sampled - Expl. & Miss. Expl.
13GWT0402	0942	1042	5.9 L	1044	(JG)
13GWT0102	1215	1315	6.7 L	1320	(JG) MS/MSD
13GWT0802	1330	1505	5.0 L	1515	(SG) TR RAD NA
13FD11230301	0000	"	"	—	(SG) Dup of 13GWT0802

WELL ID	START DEV	END DEV	VOL. PURGED	COMMENTS
~~13MWT45~~ (TR)				
13MWT44	1100	1153	10 gal	TR & SG
13MWT43	1230	1347	21.6 L	TR

1530 Hrs - Sample @ 13MWT41

1600 Hrs - Run NA @ 13MWT08

1705 Hrs - Complete NA @ 13MWT08

1730 Hrs - Collect more AQ sample @ 16MWT16 w/ JG

1800 Hrs - Return to BLDG #3245

- Securing samples in Frig.
- Clean & Mop Bathroom, Hallway, LAB & Field OFFICE

1908 HRS - LEFT BLDG #3245 for motel.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 11-23-03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

CLEAN: T+NGS ONLY
M. COCHRAN
J. GOERDT
S. GRIER
T. ROJAHN

MC - SLUG TESTING SEE NB #2565

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

Mon 11-24-03

Work continued from Page

Weather - Cold 30's; Overcast w/ Flurries

0655 Hrs - Arrive @ Site
- Check in w/ R. Basinski
- Pick to Dev Monitoring well
- Fax office (E.S.) COPC # 4822
- Paperwork / Assign wells to JG & SG

0945 Hrs - Check in w/ N. Gate Guard
1000 Hrs to 1200 Hrs - Sample (Complete) 13GWT4101 (went under fence road to west)
1210 Hrs - Check out w/ N. Gate Guard

SAMPLE ID	Start Purge	END Purge	VOL Purged	SAMPLE TIME	Comments
13GWT4101	←	11-23-03	→	1000	(TK) completed sampling from 11/23/03
13GWT1402	0935	1105	2 gal	1115	(SG)
13GWT3101	0903	1113	12.7 L	1118	(JG)
13GWT3001	1415	1605	26 gal	1615	(SG)
13GWT3301	1330	1730	21.7 L	1732	(JG) sampled Explosives only well dry will complete 11/25

1225 Hrs - Lunch
1300 Hrs - Arrive @ 13MWT47 to Dev
Start Dev. = 1335 Hrs
End Dev. = 1445 Hrs
Vol. Dev. = 48 L
1515 Hrs - Return to Bldg # 3245
- Package & ship samples on CoC's & Lauck's = 4824 & 4825 (FED EX AB# 8412 2491 058.
Microscops = 4826 (FED EX AB# 8412 2491 0592)

1800 Hrs - Left Crane for FED EX
1835 Hrs - Drop of Samples @ FED EX (MC & TK)

END

Work continued to Page

SIGNATURE [signature] DATE 11/24/03
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

CREW - SAME AS ON P 162

MC, - SLUG TESTING SEE NB# 2565

SCIENTIFIC BINDERY PRODUCTS., CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

TUES 11-25-03

Work continued from Page

WEATHER: Partly Cloudy & Cold (Temp 30's)

0655 Hrs - Arrive @ Bldg #3245
- Prep to sample Groundwater
- Fax offices & Lab. CoCs
- Check in w/ R. Basinski

0920 Hrs - Check in w/ Guard @ N. Gate

Sample ID	Start Purge	End Purge	Vol. Purged	Sample Time	Comments
13GWT3301	←	11/24	→	0845	(JG) Completed this date
13GWT1302	1016	1146	10.9 L	1150	(JG) TK RAN NA W/SG
13GWT1502	0945	1345	18L	1347	(TK) TOC MS/MSD & DUP RAN NA
13GWT2701	1005	1415	35.4 L	1425	(SG)
13GWT ED 11250301	—	—	—	0000	(TK) TOC DUP OF T13

1600 Hrs - Return to BLDG #3245 - Start Prep to ship Samples on CoC #4827 (AB# 8412 2491 0570)

1640 Hrs - Arrive @ 13MWT13 RAN NA w/ SG.

1725 Hrs - Finish Running NA @ BMWT13

1740 Hrs - Return to BLDG #3245
- Prep. some eq. to return to US Environmental on FED. EX AB# 8412 2491 0412
- Clean office, Bathroom, hallway, Lab, etc. & Mop
- Work on Paperwork
- JG took samples to FED EX & Misc. EQ Also
- Shipped mini trolls to Pittsburgh office on FED EX AB# 8412 2491 0423
- M.C. & SG - Clean vehicals & back of BLDG #3245 & Dr
- Organize office
- Inventory sample containers

2030 Hrs - Left Crane

END

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

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SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

WED 11-26-03

Work continued from Page

0715 Hrs - FAX COPY # 4827 to LAUCKS LAB & Pittsburgh OFFICE

0800 Hrs - TRAVEL to INDIANAPOLIS Airport

REMAINDER OF day = TRAVEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature]

DATE 11-26-03

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

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SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. N9060

BOOK NO. 1363

WED 12-03-03

Work continued from Page

CREW: J. Goerdt, S. Geier & T. Rojahn

1400Hrs - Arrive @ NSWC Crane

- Cali. YSIs
- Prep. to Collect Rinsate Blanks

SAMPLE ID	TIME	SAMPLER	COMMENTS
TB12030301	1500	TR	TRIP BLANK
16RB12030301	1520	JG	BLADDER PUMP
13RB12030301	1535	SG	Peristaltic Tubing (PE
13RB12030301-F	1535	SG	" " ("
16RB12030302	1600	SG	Peristaltic Tubing (TE

Reagent Grad Water - NERL Lot # 0807253 Exp. Dat - 8/04

1700Hrs - Train JG to run NA

1806Hrs - Left Crane for Hotel

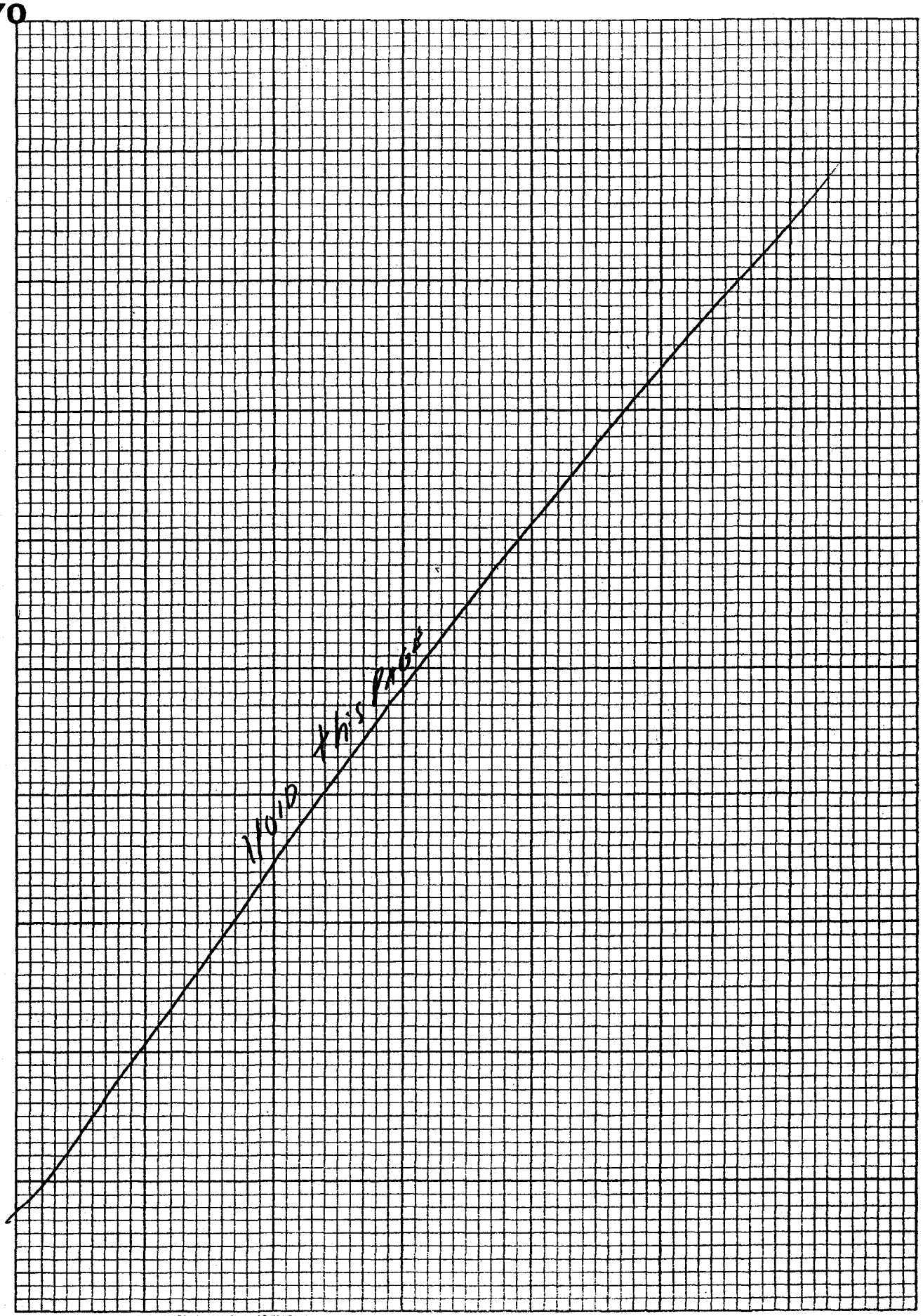
END

Work continued to Page

SIGNATURE

DATE 12-3-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE



SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

THURS. 12-04-03

Work continued from Page Weather: Overcast, Periods of Lt Rain & High 30

0655 Hrs - Arrive @ BLDG #3245
Prep. to sample Groundwater

SAMPLE ID	Start Purge	End Purge	Vol Purged	Sample Time	Comments
13GWT0902	0835	1015	9.0L	1018	(JG) NA RAN
13FD12040301	"	"	"	0000	(JG)
13GWT4301	0900	1040	3 gal	1050	(SG)
13GWT3401	0955	1145	10.5L	1150	(TC) NA RAN
13GWT2202	1340	1455	7.5L	1510	(JG) NA RAN
13GWT4401	1430	1650	4.0 gal	1700	(SG)

1330 Hrs - Return to BLDG #3245 - Check in @ Office & Secure Sam
- Prep. to Develope Monitoring Wells
- Assist S.G. w/ Bladder Pump @ 13MWT44
  SG having trouble getting it going

1520 Hrs - Arrive @ 13MWT46 to Dev.
Start Dev. = 1533 Hrs
End Dev. = 1707 Hrs
Vol. Purged. = 84L

1720 Hrs - Assist U.G. w/ Clean up @ 13MWT22 then check on SG @ 13MWT44

1805 Hrs - Return to Bldg #3245
- Check in w/ K. Basinski - left message
- Unload NA Eq & Inst. secure inside Bldg #3245
- Receive Paperwork from SG & JG

1830 Hrs - Left NSWC Clang

END

SIGNATURE DATE 12-4-03
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

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SCIENTIFIC BINDERY PRODUCTS

TITLE NSWC CRANE

FRI 12/05/03

PROJECT NO. N9060

BOOK NO. 1363

Work continued from Page Weather - Overcast Periods of Rain & High 30's

0655 Hrs - Arrive @ BLDG # 3245

- Prep to sample soils

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
16RB12050301	—	—	—	0900	Rinsate on Bucket Bi
16GWT0901	0900	1025	7.65 L	1027	(JG) Run NA
16RB12050302	—	—	—	1130	Rinsate on Bucket Bi

PURGED this Date 2 WELLS (16MWT08 (JG) & 16MWT11 (SG)) BUT not sampled (next Day)

0900 Hrs - Arrive @ SWMU 16 - start clearing gravel from sampling Bore Hole 47 → 50.

- TR & SG sample soil borings 16SB42 → 50 SEE CoFC # 4829

1300 Hrs - Finish soil sampling

1315 Hrs - Check on JG @ 16MWT08 - ~6' of standing water in well. Well is also a slow recharge well - Decided to bail dry

1400 Hrs - Returned to BLDG # 3245

- Prep. samples for shipment on AB # 8412 2491 0434 CoFCs include # 4828 & 4829

1730 Hrs - Left BLDG # 3245 for Federal Express w/ JG

1800 Hrs - Drop of samples @ Fed. Ex. 1854 Hrs Fax Laucks CoCs

END

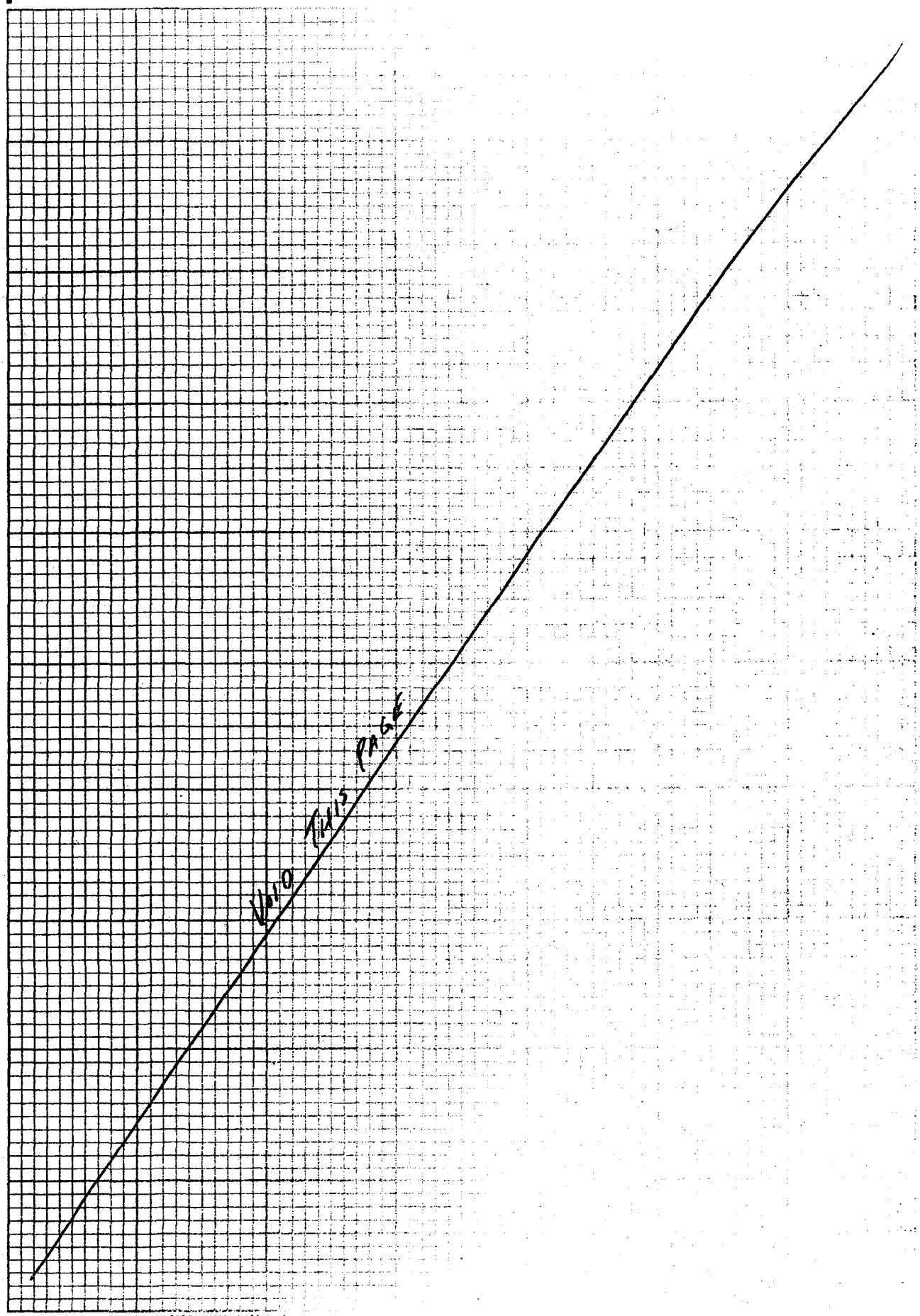
SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 12/5/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE



SCIENTIFIC BINDERY PRODUCTS CHICAGO

SAT. 12-06-08

Work continued from Page Weather - Sunny Mostly & 30's

0655 Hrs - Arrive @ BLDG #3245

• Prep. to sample sumps & GW @ SWMU 16

SAMPLE ID	Start Purge	End Purge	Vol Purged	Sample Time	Comments
TB12060301	NA	NA	NA	0700	TRIP BLANK
16SW0102	NA	NA	NA	0905	TR/SG N. Sump
16SW0202	NA	NA	NA	0935	TR/SG E Sump
16FD12060301	NA	NA	NA	0000	FROM 16SW0202
16SW0702	NA	NA	NA	1008	TR/SG W. Sump
16GWT1501	0950	1350	21.6 L	1352	JG can NA DUP
13GWT0202	1210	1345	5 gal	DRY	(SG) Will collect 12/7
13GWT0602	1510	1628	2 gal	DRY	(SG) Start Collecting 12/7
16GWT0801	1320 (12/5)	1330 (12/5)	9L	1030 (12/6)	(JG) Sampled VOCs; Explosives 1L; Start Total Metals & Hg
16GWT1101	1515 (12/5)	1600 (12/5)	1.25 g	1330 (12/6)	(JG) Sampled VOCs, Explosives 1L; & Metals & Hg (Total)

1030 Hrs - Start Sampling @ 16MWT08
Collected VOCs, 1L of Explosives & started Total metals & Hg

1145 Hrs - Stop collecting sample @ 16 MWT08 - DRY WELL will continue on 12/07

1200 Hrs - Return to BLDG #3245 - CHECKED IN W/ R. Basinski
Checked on Shipment from 12/5 - made it to Fed Ex. Station in Seattle

1330 Hrs - Started sampling @ 16MWT11
Milked well until 1500 Hrs - Collected VOCs, 1L of Explosives & Total Metals & Hg - well dry

1515 Hrs - Rechecked 16MWT08 well still dry

1530 Hrs - Check on J.G. @ 16MWT1501 - Almost done sampling & running MNA

1600 Hrs - Return to BLDG #3245
• Paper work & Walkood Rental

1730 Hrs - Left BLDG #3245 for Hotel

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 12/6/08

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 12-7-03

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	START SAMPLING	COMMENTS
16GWT1101	← Purged 12-05 →			1000	(TG) Collected M. Exp. & ~~[illegible]~~ metals 5L
13GWT0202	← Purged on 12-06 →			0850	(JG) FULL Sample, Rinsed
13GWT0602	← Purged on 12-06 →			1300	(TG) Collected 500ml of Exp. sample.
13GWT2801	0930	1400	3.5 gal	1410	(SG) Start sampling well dry. After Expl. collected Well continue recovered started pumping rinsed
13GWT1802	1155	1535	16.45 L	1538	(JG) RAN DRY
13GWT4501	1515	1755	4 gal	NA	(SG) Will start sampling 12/8/03

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60595 MADE IN USA

SUN 12-07-03

Work continued from Page WEATHER - Mostly sunny High 40's

0655 Hrs - Arrive @ Bldg #3245
- PREP to sample GW @ SWMU 16
- Assign work to SG & JG

0845 Hrs - Arrive @ SWMU 16
- Tighten down well tops

0910 Hrs - Attempt to sample 16GWT08 - Collect some sample on 12/6 see page 175 - well still dry this date

1000 Hrs - Collected additional sample from 16GWT11 - Misc. Explosives & Filtered Metals - Well dry

1130 Hrs - Lunch

1200 Hrs - Check on JG @ SWMU 13

1215 Hrs - Put Lock on 13 MWT 44

1230 Hrs - Check on SG. - will be ready to sample @ 1400 Hrs - will return to run MNA @ 13MWT28

1300 Hrs - Collect 0.5L of sample @ 13MW 06 until well dried up.

1330 Hrs - Return to well 13MWT28 @ 1400 Hrs start to run MNA

1440 Hrs - Well 13MWT29 - water level @ pump intake - SG will move to 13MWT45 & finish sampling 13MWT28 tomorrow

1510 Hrs - Assist SG with setup @ 13MWT45

1535 Hrs - Start Dev. @ 13MWT35
Start Purge = 1535 Monitored Recovery until 1625
END Purge = 1555
Vol. Purged = 14.5L

1635 Hrs - Finished Cleanup @ 13MWT35

1640 Hrs - Check on JG & Assist w/ 13MWT19

1720 Hrs - Check on SG & Assist w/ 13MWT45

1800 Hrs - Left SWMU 13 for Bldg #3245
- Unload Vehicle
- Clean office space, bathroom, hallway Labs etc.

1830 Hrs - Left Office for Hotel

Work continued to Page

SIGNATURE [signature] DATE 12/7/03

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLE SUMMARY 12-8-03

SOIL : Collected PCBs @ Soil Borings 16 - 25
SEE CoPCs 4831 & 4832

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13RB12080301	NA	NA	NA	0740	BUCKET BIT
13RB12080302	NA	NA	NA	0937	BUCKET BIT
13RB12080303	NA	NA	NA	1500	BLADDER PUMP
13GWT3601	0840	1040	13L	1050	VG MS/MSD RAN MNA
13FD12080303	"	"	"	0000	DUP OF 13GWT3601

Continued to collect Additional sample @ :

13MWT28 = Complete Sample Collection this date
13MWT45 = Collected 1.5L of Explosives & Misc. Expl.
13MWT06 = Collected ~500ml completed the collection of Explosive sample

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. N9060

BOOK NO. 1363

MON 12-08-03

Work continued from Page Weather - Partly Cloudy & High 30°s

0658 Hrs - Arrived @ BLDG #3245

- Prep to sample soils @ SWMU 13
- Collected 13R81208030 @ 0745 Hrs

NERL Reagent Grade H2O Lot # 0807253 Exp. 8/04

0848 Hrs (TL) Start Collecting Soil Samples @ SWMU 13

1115 Hrs - End " " " @ SWMU 13

1130 Hrs - Lunch

1200 Hrs - Arrive @ BLDG #3245

- Paper work & Shipping of samples on COPCs:
  #4831 → 4834 to Laucks Testing Lab
  #4835 to Microseeps Inc.
- Label Soils Samples

1730 Hrs - Left NSWC Crane for Fed. Ex.

1800 Hrs - Drop off samples @ Fed. Ex

Laucks samples on AB # 8412 2491 0560

Microseeps samples on AB # 2412 2491 0559

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE
Terry Rogal			12-8-03
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

SAMPLE SUMMARY 12-09-03

SAMPLE ID	START PURGE	END PURGE	SAMPLE TIME	VOL PURGED	COMMENTS
13GWT4601	0902	1122	1124	11.2 L	(JG)
13GWT4701	0930	1100	1110	9.4 L	(SG)
13GWT3501	1443	1530	NA	12 L	(JG) DRIED OUT WELL
13GWT4501	← SEE 12/7 →		1645	12/7	JG/TC collected total metals
13GWT0602	← SEE 12/6 →		1730	12/6	JG/TC collected total metals

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TUES 12-09-03

Work continued from Page Mostly Cloudy & 50's Temp.

0700 Hrs - ARRIVED @ BLDG #3245
- Assign work to J.G. & S.G.
- FAX COPCs to OFFICE & LAUCKS LAB

0800 Hrs - PREP. to visit sites w/ B. Gates, T. Brant & R. Basinski AND C. FREEMAN
Sites visited included:
- SWMU 18: BLDGS #104, #105, #198 & #200
- OLD GUN TUB
- Roads & Grounds - SWMU 15
- Pond - SWMU 8
- SMUU-20

1300 Hrs - RETURN to BLDG #3245
Roughed out sample location maps FOR BLDGS 104, 105, 198, 200 & ~~SMUU~~ SWMU 20 FOR B. Gates, T. Brant & R. Basinski.

1600 Hrs - Joined JG and PREP. to sample 13GWT45 & 06

1645 Hrs - Collect Total metals & Hg and complete Misc. Explosive sample @ 13GWT45 - and well DRIED out

1730 Hrs - Arrive @ 13MWT06 - Sample for Total Metals & Hg and well dried out

1745 Hrs - Return to BLDG #3245
SECURE samples in Fridge; drop off Misc. Eq.

1815 Hrs - LEFT NSWC CRANE

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 12-09-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 12-10-08

SAMPLE ID	SAMPLE TIME	PURGE DATE	COMMENTS
13GWT3501	1145	12/9	FULL SUITE COLLECTED (TRE, JG)
13GWT4501	1300	12/7	Nitrate + Nitrite, Ammonia & Filtered Metals & Hg
TB12100301	1500	NA	TR
RB12100301	1510	NA	TR/JG Disposable Bailer

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. N9060

BOOK NO. 1363

WED 12-10-03

Work continued from Page

Weather: Overcast Periods of Rain & 30's

0653 Hrs - Arrive @ BLDG #3245
- Paperwork C&C #4836, etc.
- Start office clean-up
- Start Prep. of EQ clean up & shipment prep.
- (JG) drilled screw holes in well tags 13MWT9 & 26 in prep. to secure the wells tags
- Start clean up in Storage Room / Garage

1100 Hrs - Lunch

1130 Hrs - Arrive @ Mo Gate notify Guard of our access

1145 Hrs - Start Sampling 13GWT35

1300 Hrs - " " 13GWT45 for Filtered Metals & Hg; and Nitrate Nitrite & Ammonia

1400 Hrs - Arrive @ BLDG #3245
- Talked to Ralph. Basinsko - ask me to set up the revegetation / restoration w/ Jacobi Sodding
- Talked to Jacobi (Dave Fulkerson) and set up Friday 1/9/12 for work / site access
- Paperwork, Packaging / Shipping prep. for samples on 4836

1630 Hrs - (JG) to work on securing well tags & sample 13GWT06

(TR) To drop off samples & Rental EQ. @ FEDEX

1720 Hrs - Drop of samples on C&C #4836 FED EX AB# 8412 2491 0526

US Environmental EQ shipped on FED EX AB# 8412 2491 0537

END

Work continued to Page

SIGNATURE Terry Roth

DATE 12-10-03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE Summary 12-11-03

Note: TALKED to Mr SLAVEN NO production @ BLDG #165 today & tomorrow.
OK to take in REVEGETATION/RESTORATION CREW.

Collected Nitrate + Nitrite and Ammonia sample from 13GWT0662.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 50605 MADE IN USA

TITLE NSWC CRANE
THURS 12/11/03

PROJECT NO. N9060
BOOK NO. 1363

Work continued from Page OVERCAST & Cold

0650 Hrs - ARRIVE @ BLDG #3245 - Arranged for restoration to take place tomorrow
- DECONS ALL WHALE PUMPS & HAND AUGER EQ.
- PREP. SOME EQ to RETURN to Pittsburgh
- GENERAL OFFICE CLEANUP - JG securing well tags on 13MWT wells

0930 Hrs - Start taking PHOTOS OF CORE BOXES
1130 Hrs - LUNCH
1200 Hrs - RETURN to BLDG #3245 - cont. taking PHOTOS OF CORE BOXES
1330 Hrs - FINISH PHOTOING CORE BOXES
T. BRENT will help deliver core BOXES to storage facility - Loaded Gov. Truck w/ core boxes (~ 1/3 of total)
1600 Hrs - Complete delivering core boxes to storage (MAG. 1970)
15 core boxes REMAIN for NEXT shift ~ 65 MOVED.
1615 Hrs - Collected Nitrate & Nitrite / Ammonia @ 13MWT06
Sample ID 13GWT0602.
1630 Hrs - ARRIVE @ BLDG #3245
- PAPERWORK & PACK SAMPLES for SHIPMENT and FEDEX.
1715 Hrs - → AB # 8412 2491 0504
DROP OFF Samples ON COC # 4837 @ FED EX.
ALSO, SHIPPING peristaltic PUMP to US ENVIRONMENTAL ON FED. EX AB # 8412 2491 0490
1735 Hrs - ARRIVE @ MOTEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry [illegible] DATE 12/11/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

FRI 12/12/03

Work continued from Page

0650 Hrs - ARRIVE @ BLDG #3245
- Start Packing EQ & PAPERWORK to Ship to Pittsburgh
- OFFICE ORGANIZE

0800 Hrs - MEET w/ Site Restoration CREW
- Ground to hard to dose will have to postpone Restoration to later date (Possibly spring)

0830 Hrs - Return to BLDG #3245
- Check in w/ OFFICE talk to R. Basinski - inform him of Site Restoration delay
- CALL in times
- Clean out VEHICLE
- CLEAN OFFICE LAB Hallway Storage room & Bathroom & Mop
- CLEAN DRAIN out back
- Finish Preparation to ship EQ & PAPERWORK to Pittsburgh
  - OFFICE - AB# 8412 2491 0478
  - WAREHOUSE - AB# 8412 2491 0467

1130 Hrs - LEFT NSWC CRANE to Check out of Motel & FED EX Drop off.

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 12/12/03

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Synoptic Water Levels @ SWMU 13 OU
1/12/04

Well ID	Time	W.L.	Well ID	Time	W.L.
1	1347	7.55	35	1424	63.96
2	1357	16.24	36		
3	1344	9.98	37		
4	1408	14.09	38		
5	1404	5.78	39		
6	1342	11.91	40		
7	14.17	4.21	41		
8	1412	3.88	42		
9	13.37	8.77	43		
10	1421	14.96	44		
11	14.27	8.76	45	15.05	72.95
12	14.30	10.75	46		
OS 13			47		
OS 14					
15	14.43	14.59			
16	1501	11.01			
17	1458	8.89			
18	1446	20.21			
OS 19					
20	1333	5.00			
21	1503	9.09			
22	1516	8.13			
23	1331	8.50			
24	1328	9.25			
25	1523	7.05			
26	1326	10.05			
27	1441	9.31			
28	1339	79.63			
29					
30					
31					
32					
33					
34	1512	5.42			

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

Mon 1-19-04

Work continued from Page

Morning - Worked on SWMU 1

1230 Hrs - Prep to do water levels @ SWMU 13
TK - all well measurements inside security fence & all staff gauge measurement & install SG 11
ER - to do all measurements on wells outside of the security fence @ SWMU 13

1620 Hrs - Meet w/ FEED @ BLDG #3245 FEED got tied up with the drillers and couldn't do well measurement, we will complete the measurement tomorrow & within the 24 Hrs. of start time (1319 Hrs)
• Prep. to develope monitoring well 16 MW718

1730 Hrs - TK assisted ER w/ well development & returned to BLDG #3245 to prep. ship of samples from SWMU 1.

SEE Notebook # 1340 (SWMU 1)

SG	Time	W.L.	Flow	
1	1401	1.77	stagnet	0.15 x 0.35
2	1351	3.68	0.35 x 1.3	22sec/1'
3	1602	1.87	ICE Pool 1x3' →	(0 Flow other side of Road)
4	15.35	2.45	0.04 x 0.35	4sec/1
5	15.39	3.90	0.01 x 0.25	3sec/1
6	1531	2.35	1'x1' stagnet Pool	
7	13:19	1.47	stagnet	
8	1519	5.08	0.01 x 0.3	1sec/1'
9	1452	4.15	0.06 x 0.9	2sec/1' (2 streams merg @ culvert)
10	14:33	4.82	0.05 x 1.6	3sec/1'
11	1554	2.74	0.1 x 1.2	6sec/1'

EHD

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 1/19/04
DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Synoptic Water Levels @ SWMU 13 OU
1/19/04 & 1-20-04

WELL ID	TIME	WL	
1	1347	7.55	
2	1357	16.24	
3	1344	9.98	
4	1408	14.09	
5	1404	5.78	
6	1342	11.91	
7	1417	4.21	
8	1412	3.88	
9	13:37	8.77	
10	1421	14.96	
11	1427	8.76	
12	1430	10.75	
c.s. 13	11.28	4.93	
c.s. 14	11.04	14.17	
15	1443	14.59	
16	1501	11.01	
17	1458	8.89	
18	1446	20.21	
c.s. 19	1058	10.96	1-20-04
20	1333	5.00	
21	1503	9.09	
22	1516	8.18	
23	1331	8.56	
24	1328	9.25	
25	1528	7.05	
26	1326	10.05	
27	1441	9.31	
	139	79.63	

WELL ID	TIME	WL	
35	1424	63.96	
36	900	19.26	1-20
37	913	14.37	1-20
38	911	61.90	1-20
* 39	920	14.25	1-20
40	941	18.55	1-20
41	940	66.58	1-20
42	949	21.14	1-20
43	1002	8.50	1-20
44	1007	64.57	1-20
s.s. 45	1505	72.75	
* 46	925	58.10	1-20
* 47	1115	7.32	1-20
32	1039	9.52	
31	1052	10.65	1-20
33	1048	10.63	1-20
19		10.96	

19	1058	10.96	1.20
30	1109	11.72	1-20
29	1122	5.82	

SCIENTIFIC MINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TUE 1-20-04

Work continued from Page

F. Ramsek completed the synoptic water level measurements (SEE P. 190) @ SWMCH 13.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1-20-04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

SWMU 16 SYNOPTIC WATER LEVELS

WELL ID	WL L	TIME
WES-14-1-83	- 31.94	- 10:32
WES-14-2-83	- 15.36	- 0935
WES-14-3-83	- 20.00	- 1047
WES-14-4-83	- 28.39	- 1041
WES-14-5-83	- 34.18	- 1038
16MWIT01	- 19.12	- 0945
02	- 10.94	- 1024
03	- 28.34	- 1021
04	- 13.11	- 10:15
05	- 31.44	- 10:18
06	- 17.41	- 0947
07	- DRY	- 1003
08	- 97.03	- 1005
09	- 13.68	- 1008
10	- 22.05	- 1010
11	- 96.30	- 1012
12	- 20.13	- 1044
13	- 10.25	- 1025
14	ABANDONED	
15	- 53.23	- 1026
16	- 32.93	- 0956
17	- 15.35	- 1000
18	- 96.65	- 0951 TD 104.5

SAT. 1-24-04

Work continued from Page

0700 Hrs -
ARRIVE @ BLDG # 3245 - Prep. to Sample 16MWT08 &
take a complete round of water levels @ SWMU 16.
0900 Hrs - Arrive @ SWMU 16
• 0935 - 1047 Hrs - Run synoptic round of ~~synoptic~~ water levels
1100 Hrs - Start set up @ 16MWT08
Start Purge - 1115 Hrs
End Purge - 1305 Hrs (well dry)
Vol Purged - 3.6 L
Will sample well tomorrow after well recharges
1320 Hrs - Arrive @ BLDG #3245
Prep. to sample wells @ SWMU 1
Remainder of day see NB# 1340 for N0845
charge #, CTO 315

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 1-24-04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

B 100 P

1
VOID THIS PAGE

TITLE NSWC CRAN

PROJECT NO. 9060

BOOK NO. 1363

SUN 1-25-04

Work continued from Page

0700 Hrs - Arrive @ BLDG # 3245

PREP to SAMPLE 16MWT18

0853 Hrs - Begin sampling 16MWT18

1100 Hrs - Finish clean up @ SWMU 16 + Return to BLDG # 3245.

Remainder of Day SEE MGBG Note Book # 1340.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Troy Royal

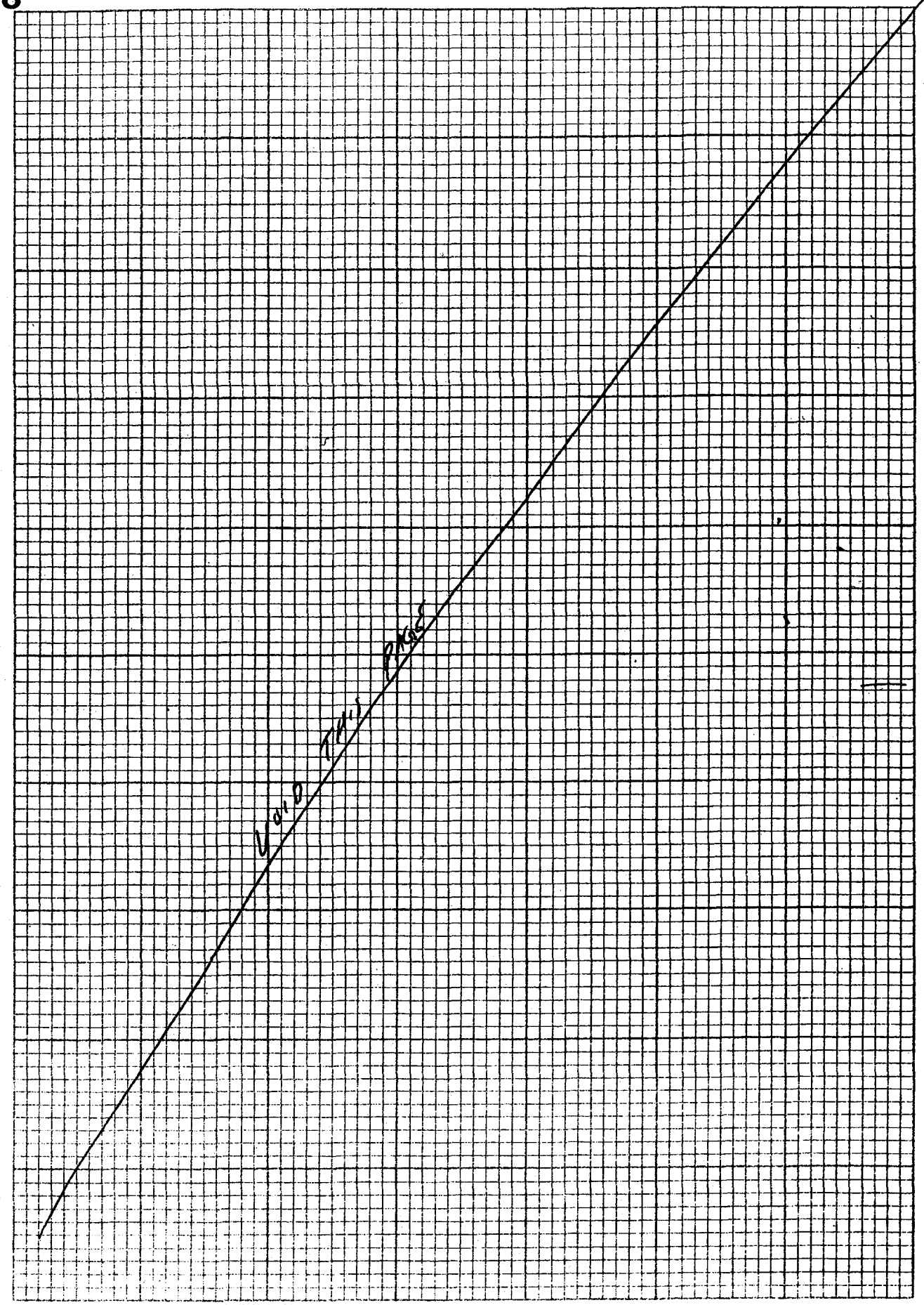
DATE 1-25-04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE



SCIENTIFIC (NEW) PRODUCTS CHICAGO 60647 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 9060

BOOK NO. 1363

MON 1-26-04

Work continued from Page

SHIP SAMPLE 16GWIT1801 this date :

LAUCKS - COC # 4395 AB# 8412 2491 0971

MICROSCOPES - COC # 4394 AB# 8412 2491 0993

Drop off @ FED. EX. @ 1845 Hrs

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] **DATE** 1-26-04

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

ROUND 2

NSWC CRANE

N7448

SWMU 13 & 16

1376

NSWC CRANE

PROJECT # ~~6878~~ TR 7448

CTO ~~0357~~ TR 0343

PROJECT TOM & RALPH BASINSKI

FOL - TERRY ROJAHN

Start Work - 7/8/04

END Work -

OTHER NOTE BOOKS

2577 - S. Cont:

2575 - J. Goerdt (Sampling)

2565 - C. LANEY

~~2575 - J Goerdt~~ TR

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

THURS 7-8-04

Work continued from Page

1615-Hrs Pick up Dig Permit # 4560 this date for WELLS only @ SWMU 13 - See opposite Page

END

5

10

15

20

25

30

35

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE 7-8-04
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

B 100 P ©

DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4572

REQUESTED BY: Tetra Tech NUS Inc/Ralph Brasuell 812-921-5308	DATE: 7/9/04
WORK REQUEST ON E/S NO.: 153704	B-1998 & B-1996 on Hwy 77
WORK WILL BE PERFORMED BY: Tetra Tech NUS, Inc.	DATE (Start - on or about):

WORK DESCRIPTION
2 Soil borings & monitoring wells along Hwy 77 between Magazines 1998 & 1996. Sites are marked & drawing is attached.

EQUIPMENT TYPE
☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed 22 7/9/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR	N/A			7/9/04 dg
HIGH VOLTAGE ELECTRICAL	N/A			7/9/04 DKW
FIRE ALARM 22	—			7-14 MAH
GROUNDING 22	—			
NATURAL GAS	N/A			7/9/04 dg
SECURITY ALARM 22	N/A			7-14 MA
SEWER	N/A			7/9/04 dg
STEAM	N/A			7/9/04 dg
TELEPHONE	N/A			7/9/04 DKW
WATER	N/A			7/9/04 dg
SECOND ELECTRICAL	N/A			7/9/04 DKW
GENERAL DYNAMICS/NMCI	N/A			7/9/04 dg

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

PERMIT HOLDER SIGNATURE: [signature]	DATE: 7/22/04
DIGGING PERMIT APPROVED BY: [signature]	DATE: 7/22/04

DISTRIBUTION:
ORIGINAL - Code 09Z5 File
YELLOW - Supv. At work site

TITLE NSWC CRANE

S. Cont
J. Goerdt
T. Rojahn

PROJECT NO. 7448

BOOK NO. 1376

THURS. 7-22-04

Work continued from Page

1230 Hrs - Arrive @ BLDG
- CHECK IN w/ T. Brent & C. Freeman
- OPEN EQ/METERS
- BEGIN OFFICE ORGANIZATION

1330 Hrs - Pick up Dig Permits 4562 (RENEWED FOR MFA) & 4572 SEE LEFT PAGE FOR SWMU 16 (WELLS along Hwy 77)

1350 Hrs - Recon decon (possible) locations outside MFA

1430 Hrs - CHECK prime location FOR decon site w/ T. Brent FORMER pesticide mixing bldg. - has WASH RACK & IND SEWER.

1500 Hrs - Return to BLDG.
Compile SHOPPING lists FOR Sams & Hardware stores

1545 Hrs - LEFT site to check into motel & SHOP FOR SUPPLIES

1650 Hrs - PURCHASE SUPPLIES @ SAMS

1745 Hrs - Return to Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE 7-22-04
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

SAMPLE SUMMARY 7-23-04:

WELL ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13GWT2403	0948	1123	10.9 L	1128	JG
13GWT1103	1585	1650	5.7 L	1652	TC
13GWT2603	1408	1738	21.0 L	1745	JG
13GWT2503	1250	1425	13.5 L	NA	PURGED DRY

Drilling Summary

- MOB Day for drilling crew J. Walsh, J. Dean & C. McMaffen (CM)
- S. Conti gave C.M. H&S training
- Decon pad okeyed by Fire Dept (got Hot Work Permit see NB # 1374 pg 8&9) & Army CAAA (B. Gilles)
- Set up decon behind bldg # 3245

TITLE NSWC CRANE

FRI. 7-23-04

T+NW
S. Conti
J. Geordt
T. Rojahn

PROJECT NO. 7448
BOOK NO. 1376

Work continued from Page

WEATHER - Hot & Humid TEMP High 80s

0710 Hrs - Arrive @ BLDG #3245
- Organize office material
- Select wells for JG @ SWMU 13
- Tried several time to contact supervisor @ SWMU 13 - NO ANSWER
- Contacted Fire Department - to inspect decon location @ MFA
- Contacted Bob Gillis Army Safety - he said area for decon is outside of ARCS for BLDGs 160 & 155 so he would defer to the Fire Dept

0920 Hrs - S. Conti & T.R. arrive @ proposed decon area for ~~BLDG #~~ MFA to meet Fire inspector.

0935 Hrs - meet w/ Fire Insp. - OKed area but will meet w/ S. Conti when drillers arrive @ BLDG #3245 + wright Hot Work Permit

0940 Hrs - Arrive @ BLDG #3245
- FED. EX dropped off dedicated Bladder Pumps
- Prep. to install bladder Pumps @ SWMU 13

1020 Hrs - start Bladder Pump Installation w/ S. Conti
Installed 13 MWT 09, 11, 15, 17, 21, 28, 34 & 45

1215 Hrs - Stop for lunch

1250 Hrs - Return to BLDG #3245
- Talked to D. Baker MFA super. informed him that we will be drilling in MFA over the weekend.
- PREP FOR H&S training FOR one driller (CHAD MAHAFFEY)
- PREP. to SAMPLE GW
- Call for more Nitrogen & Check in w/ OFFICE (R. Basinski)

1545 Hrs - Start Purge @ 13MWT11

1652 Hrs - Begin sampling @ 13MWT11

1735 Hrs - Finish @ 13MWT11 CHECK on JG. @ 13MWT26

1800 Hrs - Return to BLDG #3245; PAPERWORK

1830 Hrs - SECURED samples in Frig; JG. ARRIVED; LEFT site for Hotel

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rojahn

DATE 7-23-04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 7/24/04:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT0603				NA	(JG)
13GWT0803	0923	1043	8.2L	1045	(TC)
13GWT0403	1102	1202	6.0L	1205	(JG)
13GWT0203	1318	1428	7.2L	1435	(JG)
13GWT2503	—	—	—	1513	(JG) Purged 7/23/04
13GWT0503	1230	1630	16.5L	1635	(TC)
13GWT0303	1605	1815	11.7L	1825	(JG)

DRILLING SUMMARY:

Drilled & set 12MWT01 @ 34'

Drilled 12MWT02 to 29.5' will set well on 7/25
probably @ 28'

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60615 MADE IN USA

SAT 7/24/04

Work continued from Page Weather AM - Mostly Cloudy Temp 70's, PM - Same

0705 Hrs - Arrive @ Bldg # 3245
- Prep to sample GW
- Paperwork & Pick wells for sampling this date

0900 Hrs - Arrive @ MFB

0923 Hrs - Start Purge @ 13MWT08

1115 Hrs - Finish @ 13MWT08

1130 Hrs - Lunch

1200 Hrs - Return to MFB

1230 Hrs - Start Purge @ 13MWT05

1730 Hrs - Finish @ 13MWT05

1735 Hrs - Check on J. Goerdt

1800 Hrs - Return to Bldg # 3245
- Refrigerate samples
- Drop of EQ, Dump Purge H_2O
- Organize office

1830 Hrs - Left NSWC Crane for Motel
- E-mail R. Basinski work summary for 7/23 & 24/04 from Motel

— End —

SIGNATURE Troy Rojaw — DATE 7/24/04

DISCLOSED TO AND UNDERSTOOD BY — DATE — WITNESS — DATE

SAMPLE SUMMARY 7-25-04:

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13GWT0603	(SEE	PAGE 6	)	1405	(JG) Start sampling EXT (:
13GWT0703	0920	1120	9.7L	1122	(TR) DUP 13FD0T2504.
13GWT1203	0856	1211	17.6L	1218	(JG)
13GWT1603	1440	1540	5.4L	1541	(JG) Collected MS/MSD
13GWT2303	1420	1640	10.2L	1642	(TR)

DRILLING SUMMARY:

Set/installed 12MWT02 at 28' (drilled on 7/29)

Drilled/set/installed 12MWT08 @ 24'

Pulled out of MFA & disconnect Rig.

SCIENTIFIC & INDUSTRY PRODUCTS CHICAGO 32303 MADE IN USA

SUN 7/25/04 stop raining @ 0900 Hrs

Work continued from Page WEATHER: AM - Mostly Cloudy 60's; PM - SAME w/ Rain

0700 Hrs - ARRIVED @ BLDG #3245
- PREP. to SAMPLE GW
- PAPERWORK & PICK WELLS FOR SAMPLING this DATE

0900 Hrs - ARRIVE @ MF8

0920 Hrs - BEGIN PURGE @ 13MWT07

1240 Hrs - FINISH SAMPLING @ 13MWT07 obtained 13FD0725040

1300 Hrs - LUNCH / RAIN

1345 Hrs - RETURN to MF8 SET UP CANOPY @ 13MWT23

1725 Hrs - FINISH @ 13MWT23

1740 Hrs - ARRIVE @ BLDG #3245
SECURE SAMPLES & METERS
Assit J.G. in labeling MS/MSD

1800 Hrs - LEFT BLDG #3245 FOR Motel
- E-mail FIELD WORK summary to R. Baslask from motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 7/25/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 7/26/04:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT3002	0850	1040	9.4L	1042	(TK)
13GWT3302	0858	1038	8.0L	1043	(JG)
13GWT3302	1245	1645	18.6L	1650	(JG)
13GWT0603	(PAGE 6		)	(PAGE 8)	Con't to sample EXPLOSIVES

DRILLING SUMMARY 7/26/04:

RAIN DELAY ... H&S CONCERNS, B-M'S CALLS

CROWS - [illegible]
EXCEPT CHIP LANEY ARRIVED 1245 HRS

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

MCN 7-26-04

Work continued from Page

0705 Hrs - Arrived @ BLDG #3245
- Prep to sample GW
- Paperwork & Pick wells for sampling this date

0830 Hrs - Arrived @ Monitoring Well 13MWT30
1130 Hrs - Finish sampling & clean up @ 13MWT30
1145 Hrs - Lunch
1230 Hrs - Arrive @ BLDG #3245
- Check in w/ R. Basinski
- Prep. samples for shipment on COFCs 0050 & 0051 & ship via FED EX AB #8447 8135 5362
- Faxed labels & office copies of COFCs
- Called Bloomington Oxygen regarding Tues. delivery
- Discussed sch. w/ Chip Laney
- S. Conti to pick up hardware supplies

1430 Hrs - • Prep. to install Bladder Pumps w/ C.L.
Installed Bladder pumps 13MWT 13, 14, 31 & 47
1545 Hrs - Return to Bldg #3245
Load sample coolers
1555 Hrs - Left Bldg #3245 for FED EX.
1630 Hrs - Drop off samples @ FED. EX. in Bloomington
1700 Hrs - Return to Hotel
- E-mail fieldwork summary to R. Basinski from Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE 7/26/04
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

SAMPLING SUMMARY 7/27/04:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT1903	0815	0950	8.3L	0954	JG
13GWT3202	0830	0950	8.0L	0954	TR MS/MSD
13GWT2902	1029	1149	10L	1152	JG
13GWT2203	1440	1550	6.2L	1554	JG
13GWT1403	1435	1625	12.5L	1628	TR
13GWT0603	(SEE	PAGE 6	)	(PAGE)	TR FINISH collecting 1L Amber for EX1

DRILLING SUMMARY 7/27/04:

Drilled, set & installed monitoring wells:

13MWT51 @ 15'
13MWT50 @ 20'
13MWT49 @ 9'

Drilled 13MWT48 to 9'

SCIENTIFIC SPECIALTY PRODUCTS CHICAGO 53515 MADE IN USA

TUES 7/27/04

Work continued from Page WEATHER AM: Mostly Sunny 65°

0650 Hrs - Arrive @ BLDG # 3245
Prep for GW Sampling
Paperwork & Pick well for sampling this date

0815 Hrs - Arrive @ 13MWT32
1110 Hrs - Finish @ 13MWT32
1130 Hrs - Lunch
1200 Hrs - Arrive @ BLDG # 3245
- RR pre-con meeting moved to THURS 0800 Hrs was sch. for today @ 1300 Hrs
- Check in w/ R. Basinski - Already knew about the meeting change
- Sign receipt for Nitrogen cylinders & secured in upright position along fence @ BLDG #3245
- Meet w/ S. Cont: discuss meeting change & C. Laney will stay w/ him the remainder of the day to observe coring activities

1320 Hrs - Check in on J.G. ... dead car battery
1400 Hrs - Get car started after purchase of cables @ on base gas station
1410 Hrs - Arrive @ 13MWT14
1710 Hrs - Finish clean up @ 13MWT14
1720 Hrs - Collect sample @ 13MWT06
1735 Hrs - Arrive @ BLDG #3245
- Drop of EQ.
- Secure samples in Frig

1745 Hrs - Left BLDG # 3245 for Hotel
- E-mail fieldwork summary to R. Basinski from Hotel
- Paperwork

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rojek DATE 7/27/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

7/28 SUMMARY OF SAMPLING:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT1803	0901	1231	17.8L	NA	(JG) will cont Purge on ?
13GWT2103	1120	1300	8.9L	1300	(CL/TG)
13GWT1003	1354	1559	9.4L	1604	(JG)
13GWT4502	1430	1730	13.5L	NA	(CL) will sample 7/29 (.

7/28 SUMMARY OF DRILLING:

Drilled, set & installed 16 MWT 19 & 20 @ 5-15'
Finish installation of 13 MWT 98 set @ 5-10'

WED 7/28/04

Work continued from Page WEATHER - Mostly Sunny 80°s

0655 HRS - ARRIVE @ BLDG # 3245

- MEET w/ T. Brent on SCH. - Printed out D. Johnstons Production SCH. ; Also, talked to R. Basinski regarding sch.
- Prep. FOR GW sampling Picked wells For JG, CL & TR

0830 Hrs - MARK Peterson ARRIVED @ BLDG # 3245 FOR internal Audit

- work w/ M.P. answering question and producing doc. For Audit.
- Had C.L. work w/ S.C. during questions period
- SHOWED M.P. down NEXT TO MFA, now to access MFB (S. gate) and drop him off @ SWMU 16 WHERE S. Conti and B-M were drilling

1045 Hrs - Pick up C.L. @ SWMU 16

1100 Hrs - ARRIVE @ North Gate SWMU 13 & check into MPB w/ Guard

1120 Hrs - Start purge @ 13MWT21

- M.P. Audit sampling until completion of well sampling @ 1325 Hrs

1335 Hrs - Finish cleanup @ 13MWT21

1350 Hrs - Pick up sandwich @ Subway

1410 Hrs - Return to MFB - 13MWT46

1430 Hrs - Start Purge @ WELL 13MWT45 Assisted C.L. in set up

1500 Hrs - Returned to BLDG # 3245 - C.L. stayed @ 13MWT45

- Prep samples for SHIPMENT
- M. Peterson - went over results of Audit w/ TR
- SHIPMENT ON Fed. Ex. AB # 8447 8135 5384 SAMPLES ON COFC # 0052

1715 Hrs - Left BLDG for FED EX

1755 Hrs - Drop off samples @ FED. EX.

1830 Hrs - Return to Hotel

- PAPERWORK & E-mail R. BASINSKI Fieldwork Summary

Work continued to Page

SIGNATURE Terry Rogers DATE 7/28/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLING SUMMARY 7/29/04 :

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT1803	(Purged	7/28	See Page 14)	0850	(JG)
13GWT3002	0827	1047	12.7L	1047	(CL)
13GWT3602	0934	1044	5.6L	1048	(JG)
13GWT3902	1235	1355	8.0L	1359	(JG)
13GWT1703	1240	1510	15.0L	1510	(CL)
13GWT4502	(PURGED	7/28	See Page 14)	1602	(CL)
13GWT1503	1340	1700	15.9L	1704	(TR)

Drilling Summary 7/29/04 :

Built PADS @ SWMU 16

Installed 12 MWT3~~8~~7 (TR) (Drilled & set)

THURS. 7/29/04

Work continued from Page Weather: Partly Sunny 80's

0645 Hrs - Arrive @ BLDG #3245
- FAX CUAC # 0052 TO OFFICE & LAB
- Prep JG & CL for Sampling - Select Wells

0800 Hrs - Pre Con Meeting for 600 Hill RR tracks @ BLDG #2

1010 Hrs - Return to BLDG #3245
- T. Brent to set up meeting w/ Doug Johnson @ BLDG #~~3245~~ TR 146 to mark Boring locations inside the BLDG.
- Prep for Locating Borings @ BLDG #~~3245~~ 146
- Talk to R. Basinski

1100 Hrs - Arrive @ SWMU 16
ID Borings 90-97 & Dis. Samples 79 & 80

1140 Hrs - Return to BLDG #3245
- Paperwork
- Report to R.B. about meeting w/ Tom & Doug @ BLDG 146
- Prep to Sample Gal @ MFB

1215 Hrs - Left Bldg #3245

1225 Hrs - Lunch

1305 Hrs - Stop @ Public Works Donna not in

1320 Hrs - Arrive @ 13MWT15

1740 Hrs - Finish @ 13MWT15

1800 Hrs - Arrive @ BLDG #3245
Secure samples in Frig.
Paperwork

1830 Hrs - Left BLDG #3245 for Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Ty Nagat DATE 7/29/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

B 100 P ©

SAMPLING SUMMARY 7/30/04:

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13GWT4202	0904	1016	4.9 L	NA	(JG) DRY WELL
13GWT3702	0853	1102	9.4 L	1102	(CL) DUP 13FD070304
13GWT4002	0940	1120	8.8 L	1124	(TR)
13GWT4602	1210	1330	7.6 L	1333	(TR)
13GWT2702	1314	1604	8.6 L	1608	(JG)
13GWT2004	1546	1746	12.0 L	1749	(JG)
13GWT3802	1538	1713	7.6 L	NA	(CL) Dry well sampl 7/30/04

DRILLING SUMMARY 7/30/04:

Drilled set & Installed 12MWT 39' @ 34'

FRI 7/30/04

Work continued from Page

Weather Mostly Cloudy High 70's

0705 Hrs - Arrive @ BLDG #3245
- Prep for GW Sampling
- Pick wells for sampling
- Call R. Basinski leave message on 7/29/04 Fieldwork summary

0845 Hrs - Arrive @ MFB
Install Bladder Pumps (Dedicated) @ 13MWT40 & 46
C.L. Installed 13MWT37

0920 Hrs - Setup @ 13MWT40 after well's bladder pump inst

0940 Hrs - Start Purge @ 13MWT40

1145 Hrs - Finish sampling & cleanup @ 13MWT40

1210 Hrs - Start Purge @ 13MWT46

1400 Hrs - Finish cleanup @ 13MWT46

1410 Hrs - Check w/ C.L. Problem starting purging with Reuseable 1 3/4" Bladder Pump
Determined that the o-ring for the Top Spool was missing

1430 Hrs - TR - went to the office to get o-ring

1505 Hrs - Drop off o-ring and prep pump for sampling for chip.

1530 Hrs - Return to BLDG #3245
Prep samples for shipment to Laucks on COC 0053 via Fed. Ex. AB# 8447 8135 5.

1730 Hrs - Leave BLDG #3245 for Fed. Ex

1815 Hrs - Drop off samples @ Fed. Ex.

1855 Hrs - Return to Hotel

END

SIGNATURE [signature] DATE 7/30/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLING SUMMARY 7/31/04

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT4202	(SEE	PAGE	18)	0822	(JG)
13GWT4102	0820	0825	1.5L	NA	(JG) DRIED OUT
13GWT2802	0834	1234	11.3L	1234	(CL)
13GWT3802	(SEE	PAGE	18)	1442	(CL)
13GWT3502	1455	1519	13.0L	NA	(JG) DRIED OUT
13GWT4302				NA	(JG) DRIED OUT
13GWT0904	1640	1710	7.9L	1710	(CL)

DEV. SUMMARY 7/31/04

WELL ID	START DEV	END DEV	VOL PURGED	COMMENTS
13MWT51	0850	0936	7gal	Dried out 3 times
13MWT50	0955	1047	5.5gal	Dried out 3 times
13MWT49	1307	1354	18.0gal	Dried out 3 times
13MWT48	1401	1415	26gal	Recharge kept up with wireless pump

DRILLING SUMMARY 7/31/04

Drilled, set & installed 12MWT18 @ 20'

Bearings went bad on swivel... Rig down for remainder of the week end.

SAT 7/31/04

Work continued from Page Mostly Cloudy high 70's Low 80's

0650 Hrs - ARRIVE @ BLDG #3245
- PREP. FOR GW SAMPLING & WELL DEVELOPMENT
- Select WELLS to be sampled for JG, CL & TR

0800 Hrs - Arrive @ 13MWT41
0835 Hrs - FINISH @ 13MWT41
0840 Hrs - MEET w/ JG AND proceed to 13MWT51
0850 Hrs - Start Purging / DEV. 13MWT51
0936 Hrs - END DEV @ 13MWT51
0955 Hrs - Start Purging / DEV. @ 13MWT50
1047 Hrs - END DEV @ 13MWT50
1105 Hrs - DUMP DEV H_2O in IND. SEWER
1120 Hrs - LUNCH
1150 Hrs - DECON WHALER PUMP & Foot check valve
1307 Hrs - Start DEV. @ 13MWT49
1334 Hrs - END DEV. @ 13MWT49
1401 Hrs - Start DEV. @ 13MWT48
1415 Hrs - END DEV @ 13MWT48
1430 Hrs - Dump Development H_2O @ IND. SEWER SWMU
1455 Hrs - Start Purging @ 13MWT35
1519 Hrs - Finish Purging @ 13MWT35
1540 Hrs - CHECK ON CL @ 13MWT28
1600 Hrs - Return to BLDG #3245
- Clean out vehicle
- DECON WHALER Pump & Foot check value
- Restock containers in OFFICE
- PAPERWORK
- CL. LEFT SITE ~ 1800 hrs

1820 Hrs - LEFT SITE (BLDG #3245) w/ J.G.
E-MAIL FIELDWORK SUMMARY TO K. BASINSKI FROM HOTEL
END

SIGNATURE [signature] DATE 7/31/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLING SUMMARY 8/1/04:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT4102	(SEE PAGE 20		)	0816	(TR/SC)
13GWT3502	(SEE PAGE 20		)	0825	(JG)
13GWT4302	(SEE PAGE 20		)	0850	(JG)
13GWT9402	0913	1143	7.6L	1143	(CL)
13GWT5101	1016	1416	29.3L	1420	(JG)
13GWT1303	1407	1547	11.5L	1547	(CL)
13GWT4702	1641	1811	7.8L	1811	(CL)
13GWT0103	1618	1818	13.0L	1821	(JG)

DEVELOPMENT SUMMARY 8/1/04

DEVELOPED: 12 MWT01, 02, 08, 13, 37 & 39

THUS CREW SAME AS ON PAGE 13

TITLE NSWC CRANE B-M-CREWS GWG

PROJECT NO. 7448

BOOK NO. 1376

SUN 8/1/04

Work continued from Page Weather - Mostly sunny High 80°s

0705 Hrs - Arrive @ BLDG #3245

- Asign wells to sample for CL, JG & TB
- Prep to sample GW & Dev wells @ SWMU 12

0805 Hrs - Arrive @ 13MWT41 w/ S.C.

0816 Hrs - Sample 13MWT41 Began

0930 Hrs - Finish @ 13MWT41 - Well recharge very slowly

1011 Hrs - Start Development @ 12MWT01

1026 Hrs - Finish Dev @ 12MWT01, Purged 28 gal, H2O Clear

1100 Hrs - Start Dev. @ 12MWT03

Dry out 3 times, H2O Brownish

1151 Hrs - Dry out 3rd time; Purge 16.75 gal

1205 Hrs - Lunch, Checked in w/ R. Basinski

1230 Hrs - Decon whale pumps & Pick up additional supplies @ BLDG #3245 Dis Bailer, Rope, etc.; Dump Dev.

1353 Hrs - Return to SWMU 12 to Purge the remaining 4 wells

~~Sample~~ Well ID	Start Dev.	End Dev	Vol Dev	Comments
12MWT37	1353	1448	3 gal	Dry out 3x; color-Brn
12MWT39	1505	1605	8.5L	Dry out 3x; color-Brn
12MWT08	1620	1713	10.5 gal	Dry out 3x; color-Clou
12MWT02	1725	1750	30 gal	Rapid Recharge; color-cle

1810 Hrs - Return to BLDG #3245

Unload Rental SUV - Clean instruments

~1900 Hrs - JG & C.L. Return to BLDG #3245

Assist in unloading & cleaning chemicals & EQ, organize office

1940 Hrs - Leave BLDG #3245 for Motel

E-mail R. Basinski Fieldwork summary from Motel.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tim Beal **DATE** 8/1/04

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

VOID THIS PAGE

SCIENTIFIC BINDERY PRODUCTS CHICAGO 13615 MADE IN USA

TITLE NSWC CRANE

CREW
J. GOERDT
C. LANEY
T. ROJAHN

PROJECT NO. 7448
BOOK NO. 1376

MON 8/2/04

Work continued from Page

0715 Hrs - ARRIVE @ BLDG #3245

- PREP SAMPLES FOR SHIPMENT ON COC 0054 & 0055 VIA FED EX AB# 8447 8135 5400
- FAX COCs 0054 & 0055
  - OFFICE ED S. @0836; ALSO CALLED OFFICE CHECK IN W/ R.B. LAUCKS HUGH P. @0835

0930 Hrs - KICK OFF Dig Permits FOR BLDG #146 (SWMU 160); DPT WORK @ SWMU 13 done; PERMIT FOR SWMU 12 to update 16 MWT 21 missing on DONNA'S MAP - WENT BACK to BLDG #3245 AND PICKED UP MAP WITH WELL shown AND delivered it to Donna Z. @ 1025 Hrs

C. LANEY & J. GOERDT - • DECON WHALER PUMPS & REUSEABLE 1 3/4" Bladder Pump
- PACKAGED SAMPLES FOR SHIPMENT ON AB# 8447 8135 5400
- CLEANED OFFICE, LAB, hallways + rest room FLOORS.
- J.G. DROPED OFF SAMPLES @ FED EX.
- INVENTORIED SAMPLE CONTAINERS

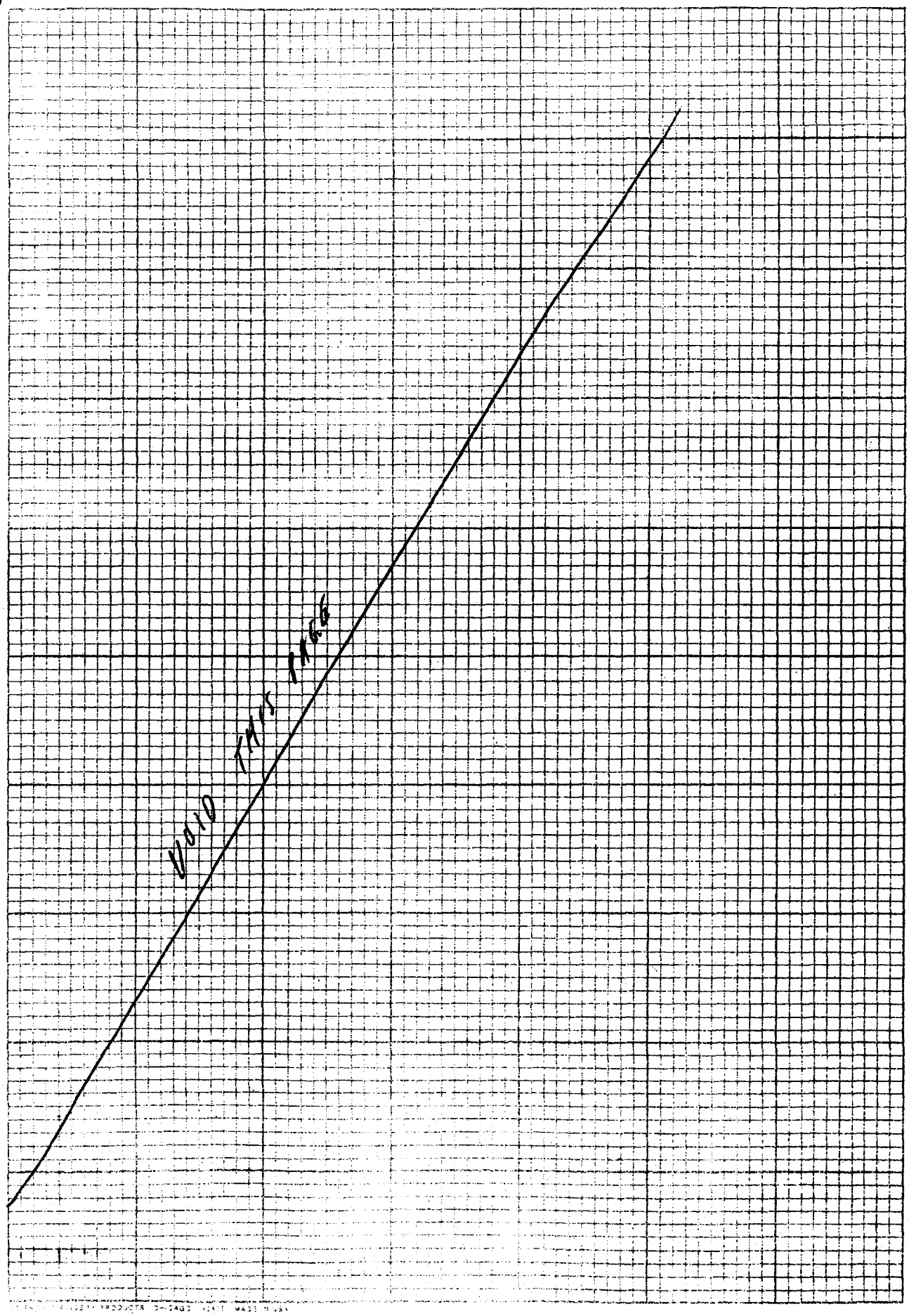
1100 HRS - LEFT BLDG #3245 FOR AIRPORT (INDY)
REMAINDER OFF DAY TRAVEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE			DATE
Terry Rojahn			8/2/04
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE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MON 8/9/04

Work continued from Page

~~0645~~ 1305 Hrs - ARRIVE @ BLDG # 3245 - TRAVEL DAY

- CHECK IN W/ R. BASINSKI
- CHECK ON DIG PERMITS @ PUBLIC WORKS
  - MFA & B ALMOST READY - CHECK BACK TOMORROW MORNING
  - BLDG #146 SWMU 16 - NEED ANOTHER DAY
- CHECK ON CERT. CLEAN CERTIFICATES ON SWMU 16 PUMPS.
- GAVE JOSH DUTTON - SITE SPECIFIC HES TRAINING
  LEFT SITE ~ 1530 HRS
- C. LANEY & J. GOERDT PREP. FOR DPT WORK

1600 Hrs - CHECK SWMU 16 BORING LOCATION W/ SEWER MARKINGS FROM PUBLIC WORKS

1700 Hrs - CHECK BORING LOCATIONS @ SWMU 13 - MOWERS DISTURBED UTILITY MARKERS - WILL NEED TO GET SEWER & WATER REMARKED

1750 Hrs - RETURN TO FIELD OFFICE BLDG # 3245

1800 Hrs - LEFT SITE FOR HOTEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 8/9/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLING SUMMARY 8/10/04 :

Collected soil samples @ 13 5 8 26, 28, 29, 31-44 & 46
Also, Collected 2 Source Water & 2 Rinsate Blanks

DRILLING SUMMARY 8/10/04 :

Drilled, set & installed Monitoring wells
12 MW 23 & 24, Both @ 30'

TUES 8/10/04

Work continued from Page

WEATHER - Mostly Sunny 80's

0645 Hrs - ARRIVE @ BLDG #3245
PREP. to MEET w/ PUBLIC WORKS & PAPERWORK & DPT EQ INSPECTION.

0715 Hrs - ARRIVE @ PUBLIC WORKS
- MFB Dig PERMIT done #4558 SEE PAGE 30, however ... told Donna MOWERS disturbed pin flags @ MFB - ARRANGED to MEET MACS (SEWER & WATER location) @ 0815-0830 Hrs @ N. GATE
- MFA - Dig PERMIT almost READY - SECONDARY ELEC. only utility to check... will take ~ 1/2 hr
- Told Donna ABOUT small SECTION OF SEWER NEEDS Marked @ SWMU 16 North of BLDG #146
- ASKED ABOUT Battery SITE - only WATER out there will check w/ MACS on it AS WELL.

0750 Hrs - RETURN to BLDG #3245, BRIEF tailgate meeting
- Ask Stan to go to public works and Wait FOR MFA dig permit should be READY by 0815
- CL & JG ARE READY to go to MFB

0810 Hrs - CL, JG, TK & J. Dutton (DPT operator) ARRIVE @ North Gate OF MFB to check in with guard - had access problems will work out later w/ T. Brent

0830 Hrs - Cable locators (MACS) ARRIVED @ North Gate - they WENT inside MFB - Tetra Tech got in ~0840 Hrs

0840 Hrs - MEET Cable locators inside MFB - REMARKED All boring locations

0955 Hrs - FINISHED locating SEWER & WATER @ MFB will MEET MACS tomorrow @ 0830 Hrs / BLDG 146

1005 Hrs - CHECK IN W/ DPT CREW - OK

1025 Hrs - Stop @ Public Works - Donna will call MACS boss FOR MEETING @ BLDG #146 tomorrow

1040 Hrs - RETURN to BLDG #3245
- T. Brent NEEDS VEHICAL INFO. FOR VEHICAL PASSES
- Get driller VEHICAL INFO @ MFA
- " DPT " " @ MFB

1200 Hrs - RETURN to BLDG #3245 drop of VEHICAL INFO. FOR T. BRENT

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 8/10/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

30

DIGGING PERMIT

NSWC CRANE 11000/3 (REV. 8/02)

4558

REQUESTED BY Tetra Tech NUS Inc./Ralph Basinski 412-921-8308	DATE 6/24/04
WORK REQUEST OR E/S NO. 150740	Mine Fill "B"
WORK WILL BE PERFORMED BY Tetra Tech NUS, Inc.	DATE (Start - on or about) 7/2/04

WORK DESCRIPTION

22 Soil samples at various site in Mine Fill "B". Locations are marked with wooden stakes & orange flags + the number on the attached drawing. SWMU-13

EQUIPMENT TYPE

☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed Z2 6/24/04

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR Z2	N/A			per phone J. Beasley 8/10/0
HIGH VOLTAGE ELECTRICAL	NA			S.P. 7-6-04
FIRE ALARM Z2	NA			7-14-04 MA
GROUNDING Z2	N/A			6-29/04 BA
NATURAL GAS	N/A			6/24/04 dg
SECURITY ALARM Z2	NA			7/2/04 MA
SEWER	Yes	Yes		7-7-04 MG
STEAM	N/A			6-28-04 RT
TELEPHONE Faxed 6/24/03	N/A			7-5-04 RP
WATER	Yes	Yes		7-8-04 MW
SECOND ELECTRICAL Z2	N/A			6-29/04 BA
Faxed 6/24/03 GENERAL DYNAMICS/NMCI	N/A	N/A		6-30-04

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

PERMIT HOLDER SIGNATURE	DATE 8/10/04
DIGGING PERMIT APPROVED BY Donna L. Zollman	DATE 8/10/04

DISTRIBUTION:

ORIGINAL - Code 09Z5 File

TUES 8/10/04 Con't

Work continued from Page

1220 Hrs - LUNCH

1255 Hrs - RETURN to BLDG #3295

- PAPERWORK
- Check in w/ OFFICE T. JOHNSTON
- Order PID REPLACEMENT FROM US Environment
- Unload Casing FOR deep wells - Global Drilling SUPPLIES drop off FOR BOWSER MORNER
- TOUCH BASE W/ STAN LYN OF EMI about SWMU 3
- TOUCH BASE W/ Tom DICKSON - TRAVEL PLANS FOR 8/13
- RECEIVE SAMPLES FROM C.L & J.G
- TALKED to T. Patton - REGARDING malfunctioning PID & THURSDAY'S EQ. SHIPMENT
- RECEIVED E-mail FOR inside Bldg 146 USE AS Dig Plan SEE Pages 32 & 33.
- CALL FROM RALPH BASINSKI
  - Discuss EMI work & BLDG #146 work
  - T. Dickson Travel
  - H&S Plan FOR BLDG 146 & EMI work SHOULD have by THURSDAY
  - D. Westerhoff working on EQ list FOR inside BLDG #146

1630 Hrs - Collect TRIP BLANK TB08100401

1645 Hrs - Collect Source Blank (DI) SB08100401 (NERL Lot #

1700 Hrs - Collect " " TAP H_2O SB08100401

1730 Hrs - Collect Rinsate " CORE LINER

1745 Hrs - Collect Rinsate " DISPOSABLE TROWEL

PAPERWORK until JG & CL ARRIVE PREP. to LEAVE

1830 Hrs - LEFT BLDG #3295 FOR Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Patton DATE 8/10/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

E MAIL to USE AS DIG PERMIT FOR B-146 FLOOR.

Sent: Thursday, August 05, 2004 1:28 PM
To: Brent Thomas J CNIN
Subject: RE: Emailing: B146 Interior DPT Locations Field.Markup.pdf

Tom, to our knowledge, there are no utilities under the floor at B-146.

-----Original Message-----

From: **Brent Thomas J CNIN [mailto:brent_t@crane.navy.mil]**
Sent: Thursday, August 05, 2004 9:08
To: Thompson, Susan CIV NAVFAC MW Crane Det CROP2
Cc: Gates, William H CIV EFDSOUTH; Ralph Basinski (E-mail)
Subject: FW: Emailing: B146 Interior DPT Locations Field Markup.pdf
Importance: High

Susan,

Per my v-mail yesterday, I need some guidance on who clears utilities inside CAAA buildings. I understand that Zone 2 (or the PW Detachment formerly known as Zone 2) is responsible for this. We are needing to core through the floor inside B-146 to collect soils samples under the floor of the building. As such, we need to make sure that we're not going to hit any buried utilities under the building. Please get back with me as soon as possible.

Thanks,
Thomas J. Brent
Corrective Action Program Manager
Crane Division, Naval Surface Warfare Center (NSWC Crane)
Harnessing the Power of Technology for the Warfighter

-----Original Message-----

From: **Basinski, Ralph [mailto:BasinskiR@ttnus.com]**
Sent: Thursday, August 05, 2004 8:34 AM
To: Brent Thomas J CNIN
Cc: Bill Gates; Johnston, Tom; Rojahn, Terry
Subject: Emailing: B146 Interior DPT Locations Field Markup.pdf

<<B146 Interior DPT Locations Field Markup.pdf.pdf>> Tom:

Per our discussion, the mark-up figure showing the B146 interior DPT locations is attached to this e-mail. Terry Rojahn provided this mark-up based on the site visit made by you, Terry, and Doug Johnson. Please let me know if you need anything else for utility clearance by Zone II.

Ralph

<<B146 Interior DPT Locations Field Markup.pdf.pdf>>

Work conti

Brent Thomas J CNIN
From: Basinski, Ralph [BasinskiR@ttnus.com]
Sent: Thursday, August 05, 2004 3:45 PM
To: Brent Thomas J CNIN; Bill Gates
Subject: RE: Emailing: B146 Interior DPT Locations Field Markup.pdf

Tom

OK. We will keep a copy of the e-mail.

Ralph

-----Original Message-----

From: **Brent Thomas J CNIN [mailto:brent_t@crane.navy.mil]**
Sent: Thursday, August 05, 2004 4:35 PM
To: Bill Gates (E-mail); Basinski, Ralph
Subject: RE: Emailing: B146 Interior DPT Locations Field Markup.pdf

Bill/Ralph,

Other than what we have I don't know how to get a "dig permit." Perhaps we can check with Donna next week and see if she would cut us some sort of official dig permit. However, I think we're covered with this email.

Thanks,
Tom

-----Original Message-----

From: **Basinski, Ralph [mailto:BasinskiR@ttnus.com]**
Sent: Thursday, August 05, 2004 2:57 PM
To: Brent Thomas J CNIN
Cc: Bill Gates (E-mail); Johnston, Tom; Rojahn, Terry; Conti, Stanley
Subject: RE: Emailing: B146 Interior DPT Locations Field Markup.pdf

Bill and Tom,

I interpret that to mean "Drill at will".

Do Navy procedures call for issuing the equivalent of a "Digging Permit" in this case? Or are we to consider this the "Digging Permit?

Ralph

-----Original Message-----

From: **Brent Thomas J CNIN [mailto:brent_t@crane.navy.mil]**
Sent: Thursday, August 05, 2004 3:04 PM
To: Bill Gates (E-mail); Basinski, Ralph
Subject: FW: Emailing: B146 Interior DPT Locations Field Markup.pdf

Here is the official reply from "Zone 2."

-Tom

-----Original Message-----

From: **Thompson Susan L CNIN (NMCI)**

SCIENTIFIC BINDER, PRODUCTIONS CHICAGO MADE IN USA

Work continued to Page

SIGNATURE DATE 8/10/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

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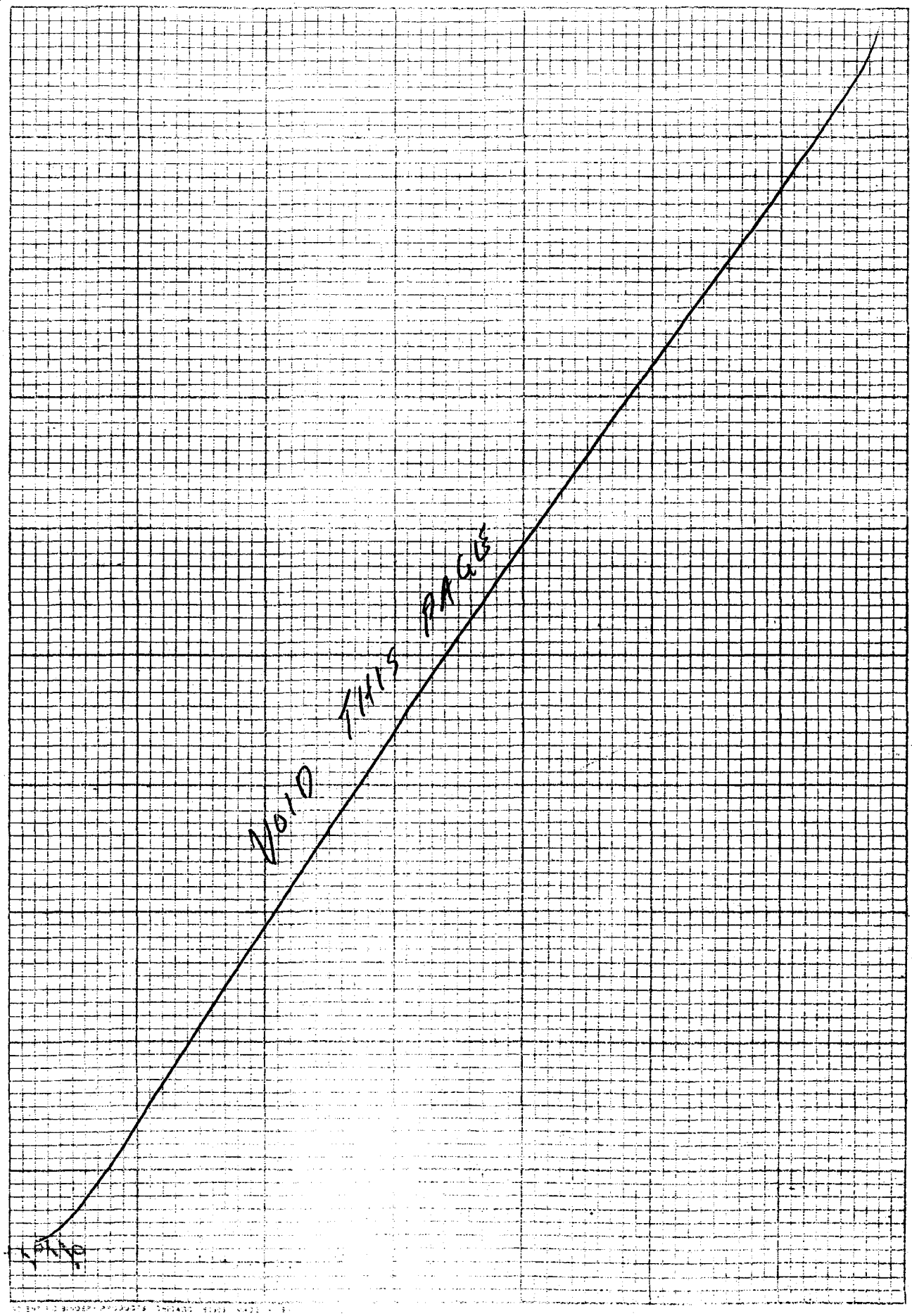
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DIGGING PERMIT
NSWC CRANE 11000/3 (REV. 8/02)

4594

REQUESTED BY: Tetra Tech NUS, Inc. Ralph Basinski 412-921-8305	DATE: 8/2/04
WORK REQUEST ON E/S NO.: 158106	Bldg 146 Area
WORK WILL BE PERFORMED BY: Tetra Tech NUS, Inc	DATE (Start - on or about): 8/9/04

WORK DESCRIPTION: Soil borings to obtain surface & subsurface samples. Locations are marked with wooden stakes with pink/orange flagging & the corresponding number on the attached drawings (solid circles). All are inside fence except 1 at the south end of area near the treeline.

EQUIPMENT TYPE: ☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed Z2 8/2/04

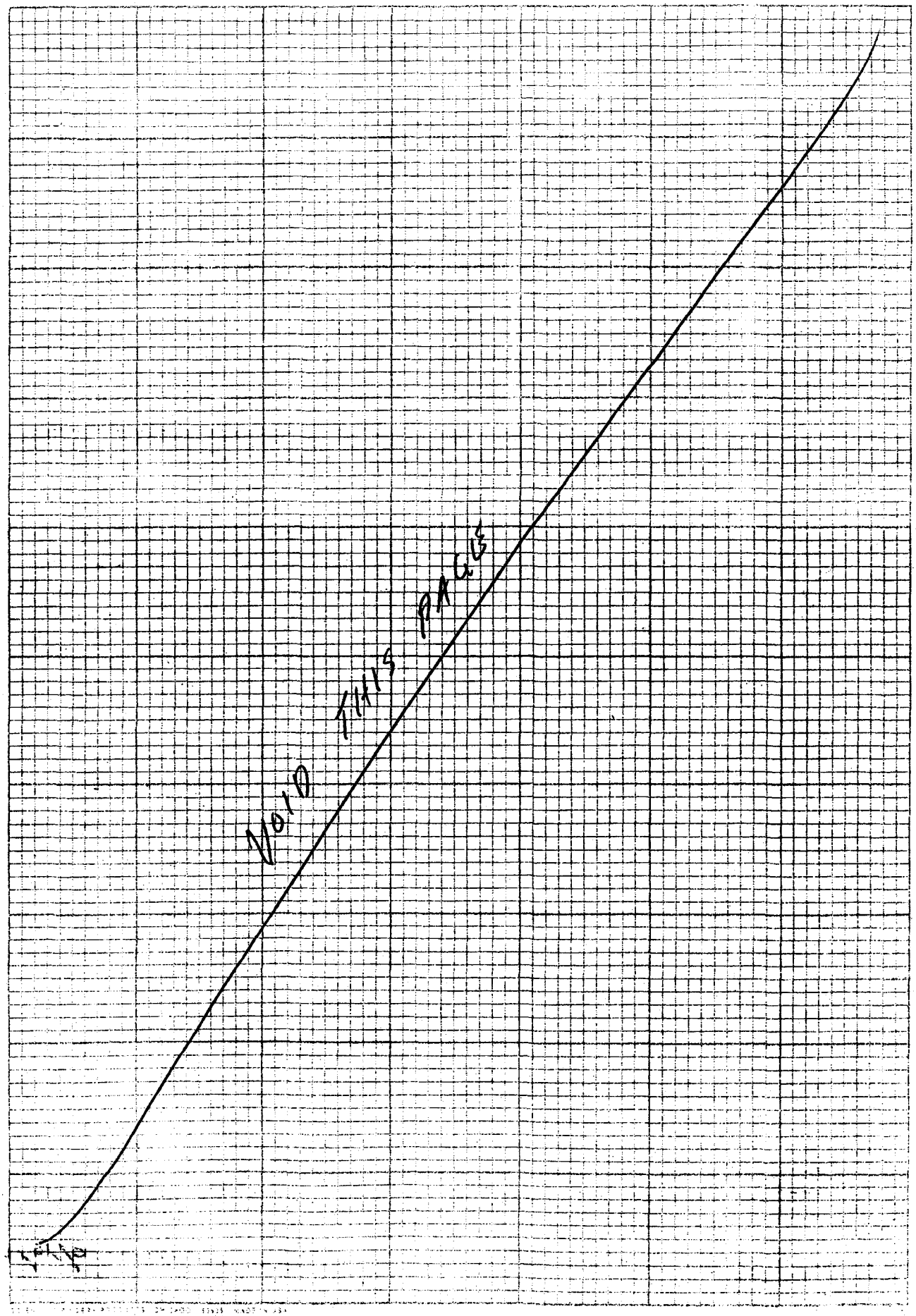
UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR Z2	N/A			per phone J. Bentley 8/10/04
HIGH VOLTAGE ELECTRICAL	Yes			S.T. 8-10-04
FIRE ALARM Z2	Yes	Yes		8-9-04 MH
GROUNDING Z2	N/A			8-6-04 BR
NATURAL GAS Exp 8/23 04080330044	YES	YES		8-5-04 RFH
SECURITY ALARM Z2	NA			8-9-04 MH
SEWER MW 8/11/04	Yes	Yes		8-4-03 - MJ
STEAM Z5	N/A			8-3-04
TELEPHONE Faxed 8/2/04	Yes	Yes		8-3-04
WATER MW 8/11/04	Yes	Yes		8-4-03 - MJ
SECOND ELECTRICAL Z2	N/A			8-6-04 BR
Faxed 8/2/04 GENERAL DYNAMICS/NMCI	N/A	N/A		8-11-04

In addition to the general precautions for excavating where underground utilites are present, comply with the following:

PERMIT HOLDER SIGNATURE: Terry Cook	DATE: 8/11/04
DIGGING PERMIT APPROVED BY: Norman L. Zollman	DATE: 8/11/04

DISTRIBUTION:
ORIGINAL - Code 09Z5 File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TR SUMMARY 8/11/04:

Morning clearing locations w/ cable locators & Bird Dogging dig permit for sumu 16.
- section of sewer line missed North of BLDG 141
- Isolated Fire Alarm - NO ADEMENT line only one old pull flag.

SHIPPED SAMPLES ON COCs - 0056 - 0060 & 0062
VIA FED. EX. AB# 8447 8135 5410

SAMPLING SUMMARY 8/11/04:

Soil Borings Completed - 135830, 45 & 47; 165860, 61, 63, 64 & 65.

Drilling Summary 8/11/04:

Set permanent casing @ 12MWT34 @ 39.5' and drilled, set & installed monitoring well 12MWT10 @ 29'

CREWS - SAME AS PAGE 27

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

WED 8/11/04

Work continued from Page

WEATHER: Mostly Sunny 70's

0645 Hrs - ARRIVE @ BLDG #3245

- PHONE IN WORK SUMMARY FROM 8/10/04 to R. BASINSKI
- CHECK w/ T. Brent to Pick up VEHICLE PASSES

0715 Hrs - Pick up Contractor VEHICLE PASSES FOR TTNUS, EFS & B-M VEHICLES w/ T. BRENT

0740 Hrs - CHECK on Dig Permit FOR SWMU-16; NEEDS one signature for MCI - but All markings are complete CAN PICK UP AROUND 0930 Hrs

0800 Hrs - BRIEF H&S Tailgate w/ DPT CREW @ BLDG #3245

0815 Hrs - ARRIVE @ late to SWMU 16 to wait FOR Public Works Cable locator (MACS)

0835 Hrs - MEET MACS & check in w/ DAN @ Break BLDG

0840 Hrs - ARRIVE BLDG 146

0900 Hrs - LEAVE SWMU 16

0915 Hrs - Check in @ Public Works (Fire Alarm)
NEED MCI signature & CHECK isolated ORANGE paint Flag - that TTNUS pointed out

1030 Hrs - Return to Bldg #3245 - DPT CREW is Finished @ MFB

1100 Hrs - Return to Public Works
MCI still no signature on Dig Permit & Fire Alarm Not check yet

1130 Hrs - Lunch

1205 Hrs - Check back w/ Public Works
Fire Alarm locator called in will meet him @ BLDG 146 - still waiting for MCI

1230 Hrs - Meet w/ Mike (Alarm locator) @ BLDG #146

1240 Hrs - Mike marked out Fire Alarm cable

1250 Hrs - Return to Public Works

1300 Hrs - MCI SIGNED dig Permit #4594 SEE PAGE 35

1330 Hrs - Got DPT Crew inside SWMU 16 to start work

1345 Hrs - Check on drilling crew - drop off PID

1400 Hrs - Return to BLDG #3245
PAPERWORK

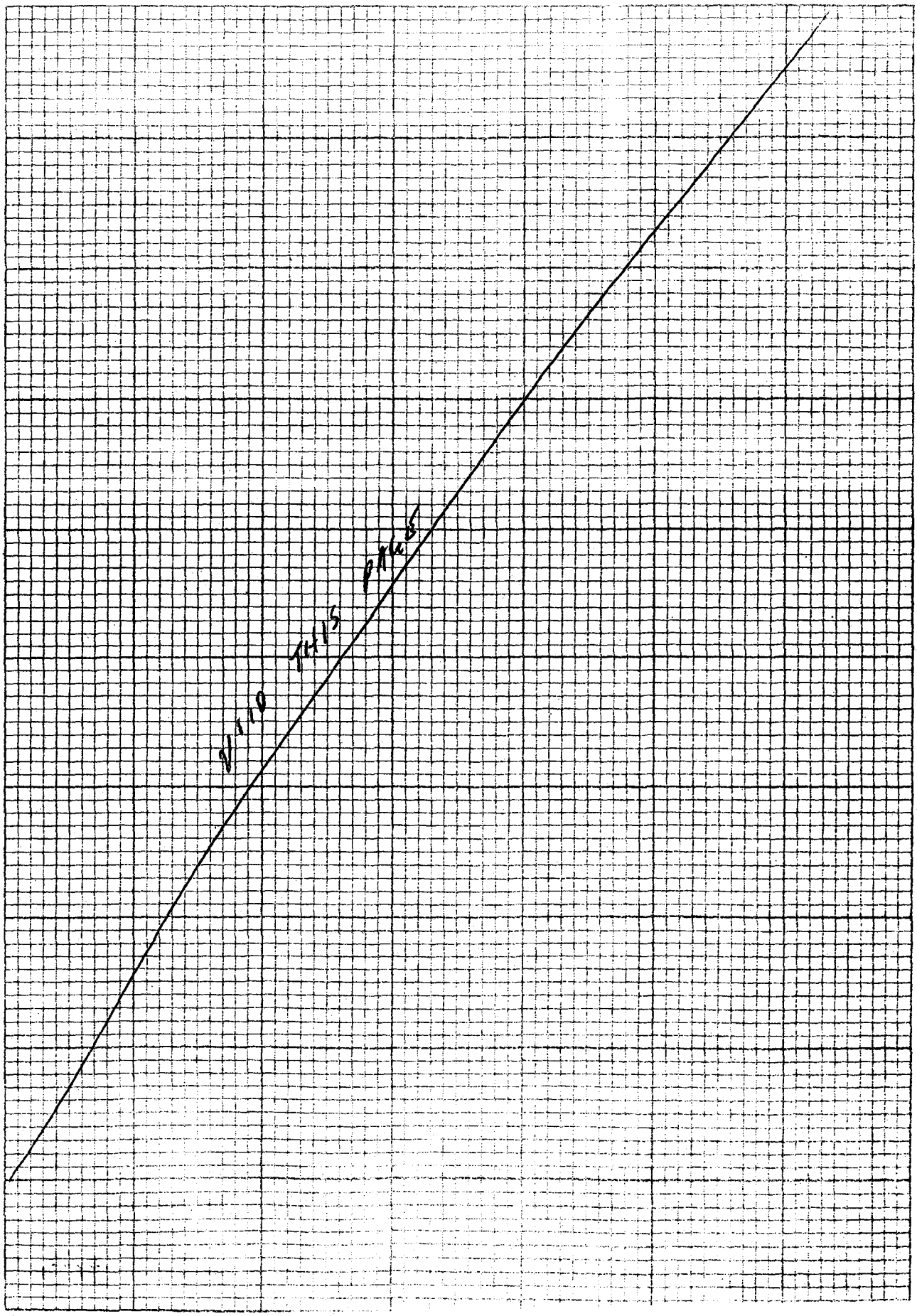
SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature]

DATE 8/11/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE


V 1.10
V 1.15
V 1.15

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

WED 8/11/04 Con't

Work continued from Page

1605 Hrs - Arrive @ BLDG #146
Start COC for swmu 16 samples
1700 Hrs - Return to BLDG #3245
Paperwork & Packaging samples on COCs 0056-0061 & 0062 for shipment on FED EX AB# 8447 8135 5410.
1730 Hrs - Left BLDG #3245 for FED EX
1805 Hrs - Drop off samples @ FED. EX. and 340 PID returned to U.S. Env. on AB# 8447 8135 5421
1830 Hrs - Purchased supplies @ MENARDS

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 8/11/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS

DRILLING SUMMARY 8/12/04:

Drilled, set & installed 12MW40 @ 28'
Cont. Coring at deep well 12MW34 from 40-58'

SAMPLING SUMMARY 8/12/04:

SAMPLED the following soil borings: 16SB52, 53, 55, 56
66-69, 71-73, & 75-78.

SHIPPED SAMPLES on COCs 0063-0066 VIA FED EX
AB # 8227 8135 5432

PRODUCTS CHICAGO MADE IN USA

CREWS SAME AS Page 27

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

THURS 8/12/04

Work continued from Page WEATHER: Mostly Sunny Temp in 70's

0650 Hrs - Arrive @ BLDG # 3245
- FAX COCs to LAB & OFFICE (0056-0060 & 0062)
- Talk w/ R. Basinski - SCH. for Drilling & Sampling NEXT SHIFT; ACCESS for sampling & drilling @ SWMU 12
- H. Prentice called regarding the amount of VOA samples to be collected this SHIFT - maybe A PROBLEM - he will look into it w/ his staff and CALL Ralph if there is a problem
- Called Ralph - heads up on conversation w/ Prentice
- PAPERWORK; Talk to T. Dickson (SCH.) & T. Patton (EQ.)
- H&S Tailgate - drilling w/ utility pin flags & markings IN MIND.
- RECEIVE FED. EX. EQUIPMENT delivery

0930 Hrs - Check in w/ DPT CREW
1010 Hrs - Return to BLDG # 3245
PAPERWORK
TRIED to REACH MR BAKER @ MFA
1053 Hrs - Talked to Mr. Baker OK to check stakes & Public Work Pin Flags for drilling.
1100 Hrs - LEFT BLDG # 3245 FOR MFA
- Work on updating MFA digging PERMIT - LB # 1374
1430 Hrs - Return to BLDG # 3245
Start PAPERWORK for DPT sampling
1600 Hrs - Arrive @ BLDG # 146
- Assist DPT CREW in clean up
1635 Hrs - Return to BLDG # 3245
PAPERWORK & PACKAGE SAMPLES ON COFCs 0063-0066
FOR SHIPMENT VIA FED EX AB # 8497 8135 5432
1720 Hrs - LEFT SITE FOR FED. EX.
1750 Hrs - Arrive @ FED. EX DROP OFF SAMPLES
1805 Hrs - Arrive @ SAMS CLUB - to PURCHASE SUPPLIES
1835 Hrs - FINISH @ SAMS

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 8/12/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

DRILLING SUMMARY 8/13/04:

Installed 12MW739 @ 76-86'

Start Drilling 12MW712 to 9.5'

SAMPLING SUMMARY 8/13/04:

Soil Borings Completed:

SWMU 16 - 165851, 54, 57, 58 & 59 & 62

SWMU 12 - 125812-15

PHones & Radio CHECK on 600 Hill this date

CREWS SAME AS PAGE 41

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

FRI 8/13/04

Work continued from Page WEATHER: Mostly Sunny Low 70's High

0650 Hrs - ARRIVE @ BLDG # 3245

- UNLOAD SUPPLIES FROM SUV have brief tailgate
- FAX COCs 0063-0066 to OFFICE & LAB
- CHECK IN W/ T. Brent - will check out Radios & Phone @ 600 Hill today - Called RR will let T. Brent know when tracks are clear

0755 Hrs - Collect TB08130401

0800 Hrs - Collect RB08130401 Cover Sleeve

0815 Hrs - Collect RB08130402 Drilling Shoe

0830 - 1015 Hrs - Radio check and Phone check on 600 Hill For SWMU 12

1030 Hrs - Check Eq. ~~[illegible]~~ RECEIVED 8/12 ; Also drager tubes for Nitrogen Dioxide came today but no drager pump Tried to CALL T. Patton but Not in WAREHOUSE will try later.

1130 Hrs - Lunch

1200 Hrs - Pick DPT CREW to sample @ SWMU 12 - Go with crew to help them get started sampling @ the Battery site - Showed C. Laney all Boring location inside MEA FENCED AREA AS WELL

1330 Hrs - Return to BLDG #3245 - to do paperwork for SWMU 16 samples - COCs 0067 & 0068 PACK SWMU 16 samples ON FED EX AB# 8447 8135 5443.

1600 Hrs - ARRIVE @ SWMU 12 (Battery Site), CHECK in W/ DPT CREW ... CREW Starting to clean up

1630 Hrs - Return to BLDG # 3245

- PAPERWORK COC # 0069
- PACKAGE SAMPLES FOR SHIPMENT ON AB# 8447 8135 5443

1720 Hrs - LEAVE BLDG # 3245 FOR FED EX.

1750 Hrs - Drop OFF samples @ FED EX

END.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE T. Brent

DATE 8/13/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Drilling Summary 8/14/04:

12MWT11, 12 & 16, set & installed @ 14-24'
TDs 25'; and set up on T17.

Sample Summary 8/14/04:

Soil Borings Collected: 163B85-89
GW Samples Collected: 13MWT48, 49 & 50
All Bladder Pumps installed @ SWMU 16

CHIGGERS/TURKEY MITES:

CREWS SAME AS ON P. 27

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

SAT. 8/14/04

Work continued from Page

WEATHER: Mostly Sunny MID 70S

0650 Hrs - Arrive @ BLDG #3245 CL & TR soil sampling; JG, GW sampl

- Prep to sample soils, Decon Bucket Auger Bits; HES tailg
- Collect RB08140401 - 0830 Hrs

0850 Hrs - Arrive @ SWMU 16

Prep. to Locate sampling locations outside SWMU 16 FENCE.

- Locate sample Locations - 1C3885-89

1020 Hrs - Start sampling

1330 Hrs - Finish @ SWMU 16 soil sampling

1335 Hrs - Lunch @ SUBWAY

1400 Hrs - Return to BLDG #3245

- Secure soil samples / Paperwork
- Prep to install Bladder Pumps @ SWMU 16
- Check in w/ R. BASINSKI
- Remove ticks off clothing - 1005

1515 Hrs - Arrive @ SWMU 16 - *mites or ticks on clothing

- Install all bladder pumps see pp. 46-49 for certificate
- Cut hubs close to ground @ Boring locations in grass & gravel lot

1730 Hrs - Return to BLDG #3245

- Removed shoes & socks found tiny mites on skin around ankels SEE PAGE 44.
- Paperwork; clean out vehicles
- Decon Bucket Bits
- SEE PAGE 50 FOR Bladder pump design & filter
- General clean up
- SEE PAGE 51 FOR WELL Piece Protection steeps

1830 Hrs - Start leaving SWMU 12 - got drilling summary

1850 Hrs - Check on JG @ 13MWT48

JGs SUV Broke down (starter problem possibly)

1930 Hrs - Arrive @ BLDG #3245

- Secured samples from 13MWT50, 49 & 48
- Called security regarding JGs SUV
- JG Calling AUTS for replacement.

1945 Hrs LEAVE BLDG #3245 FOR Motel.

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 8/14/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SEVERN TRENT SERVICES

16MW02

QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

SEVERN TRENT SERVICES

16MW03

QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

SEVERN TRENT SERVICES

16MW04

QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

Work continued

QED PUMP CERTIFICATION

16MWT04

Quality Certification Manager

MAR 1 2004

Date

T1250

Pump Model

020402

Batch Serial Number

If you need further information on QED's Pump Certification Program, please contact QED Environmental Systems at 1-800-624-2026

QED PUMP CERTIFICATION

16MWT06

Quality Certification Manager

MAR 1 2004

Date

T1250

Pump Model

020402

Batch Serial Number

If you need further information on QED's Pump Certification Program, please contact QED Environmental Systems at 1-800-624-2026

QED PUMP CERTIFICATION

16MWT09

Quality Certification Manager

MAR 1 2004

Date

T1250

Pump Model

020402

Batch Serial Number

If you need further information on QED's Pump Certification Program, please contact QED Environmental Systems at 1-800-624-2026

SCIENTIFIC BINDERY PRODUC

inued to Page

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SEVERN TRENT SERVICES

16MWT 10

▼QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

SEVERN TRENT SERVICES

16MWT 11

▼QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

SEVERN TRENT SERVICES

16MWT 02

▼QED ENVIRONMENTAL SYSTEMS

P.O. Box 3726 Ann Arbor, MI 48106
www.qedenv.com

QED PUMP CERTIFICATION

The enclosed pump has been tested for the EPA priority pollutant parameters under conditions more critical than those required in current accepted ground water monitoring practices. We certify that this pump will not adversely affect the results of your ground water sample analysis.

Work continued from Page

QED PUMP CERTIFICATION

16MWT13

Quality Certification Manager: NSWC TWC UNIT

Date: MAR 1 2004

Pump Model: T1250

Batch Serial Number: 020402

If you need further information on
QED's Pump Certification Program,
please contact QED Environmental Systems at 1-800-624-2026

QED PUMP CERTIFICATION

16MWT15

Quality Certification Manager: NSWC TWC UNIT

Date: MAR 1 2004

Pump Model: T1250

Batch Serial Number: 020402

If you need further information on
QED's Pump Certification Program,
please contact QED Environmental Systems at 1-800-624-2026

QED PUMP CERTIFICATION

16MWT17

Quality Certification Manager: NSWC TWC UNIT

Date: MAR 1 2004

Pump Model: T1250

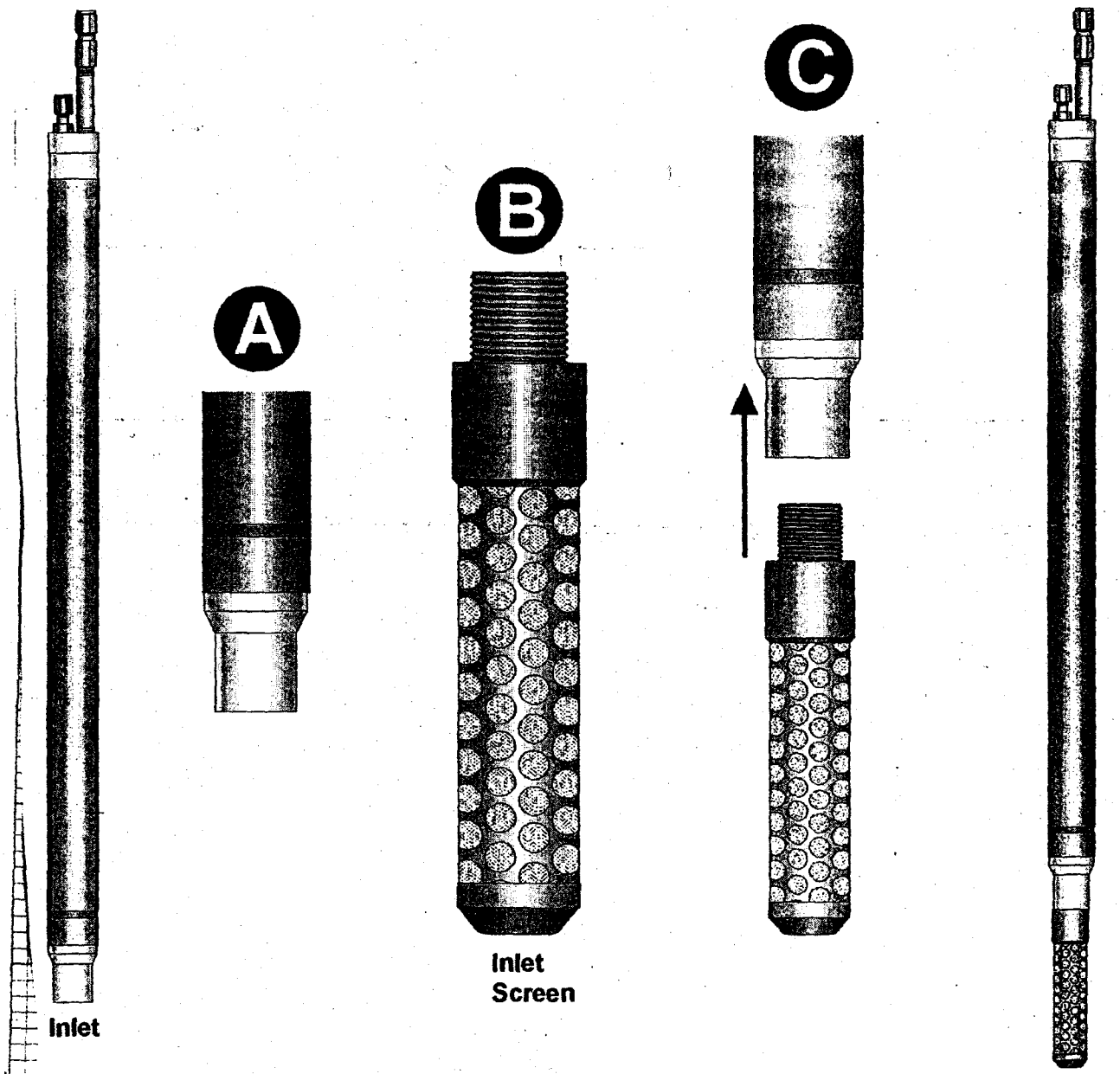
Batch Serial Number: 020402

If you need further information on
QED's Pump Certification Program,
please contact QED Environmental Systems at 1-800-624-2026

itinued to Page

WELL WIZARD® Stainless Steel Pump Inlet Screen Attachment

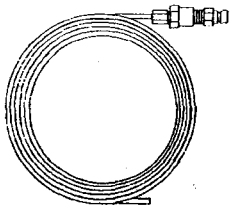
Thread screen (clockwise) into the threaded inlet of the bladder pump until snug.



WELL WIZARD® Well Cap Freeze Protection P/N 38458

Parts

Freeze Protection tube- 1/8" OD tube with brass quick-connect at one end.



Optional in-line filter for sites with serious concern with airborne contaminants.

Tubing Freeze Protection Instructions

There are two optional methods for preventing freezing blockage of the sample discharge tube above the frost line: a simple mechanical displacement method for 1/4" OD discharge tube, and a pressurized blowout method for both 1/4" and 3/8" OD discharge tubes.

Displacement Method (for 1/4" OD discharge tubing)

1. Immediately after samples have been collected, insert the small, 1/8" OD freeze protection tubing down into the sample discharge tube to a depth equal to twice the depth of the local frost line, any extra tubing may be cut off and discarded. Before inserting the 1/8" OD tube into the sample discharge tube, seal the end of the brass fitting with your thumb to prevent escape of air during insertion. The insertion action will displace the water out through the end of the discharge tube.
2. After the 1/8" tube is fully lowered and the water has been displaced, remove your thumb from the tube and pull the 1/8" OD tube up slowly until it is out of the well. Shake or blow out the tube to remove any remaining water.
3. Store the freeze protection tube by hanging it in the well. Insert the tube into the small hole in the cap until the brass fitting at its end rests on the cap (**Figure 3**).

Blowout Method (for 1/4" and 3/8" OD tubing)

1. Immediately after samples have been collected, insert the small, 1/8" OD freeze protection tubing down into the sample discharge tube to a depth 2 feet greater than the depth of the local frost line. Any extra tubing may be cut off and discarded.
2. Turn the controller throttle fully counter-clockwise, so that very low or no pressure will be initially supplied to the 1/8" OD tube.
3. Make sure that the compressed gas source and pump controller are turned off at this time.
4. Connect the air supply hose from the pump controller to the freeze protection tube fitting (**Figure 1**).
5. Direct the discharge tube away from all personnel and into any desired collection container (**Figure 2**)
6. Turn on the compressed gas source and enter the controller into a prolonged discharge cycle, following controller instructions specific to your model of controller.
7. Slowly turn the controller throttle clockwise until the water in the discharge tube is displaced and flows out the end of the tube. High pressure is unnecessary and may spray personnel with contaminated water. When water ceases to flow from the discharge tube, pull the 1/8" OD tube out of the discharge tube while compressed gas flow continues, then disconnect the freeze protection regulator.
8. Store the freeze protection tube by hanging it in the well. Insert the tube into the small hole in the cap until the brass fitting at its end rests on the cap.

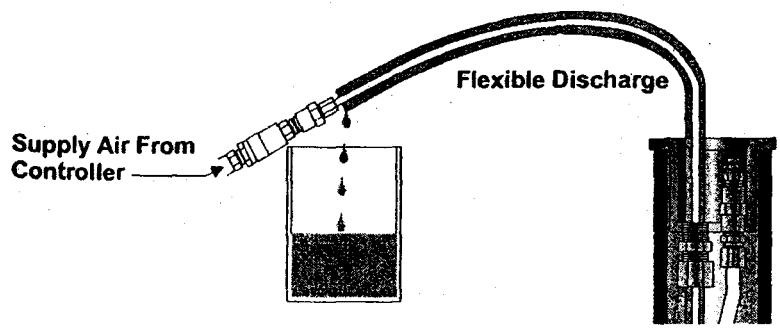


FIGURE 2

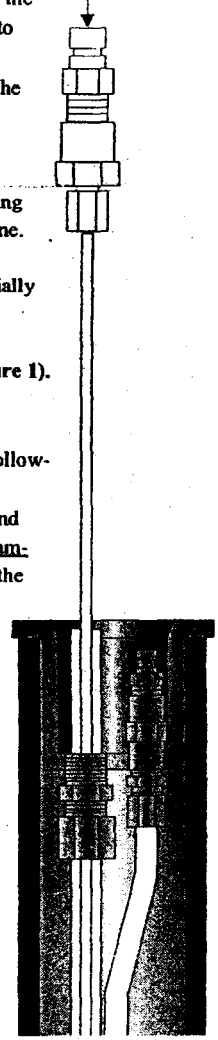


FIGURE 1

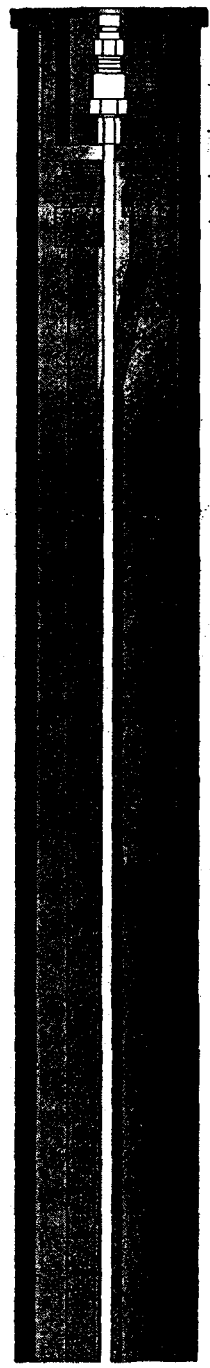


FIGURE 3

P/N 95190 REV. # 1-31-01

DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

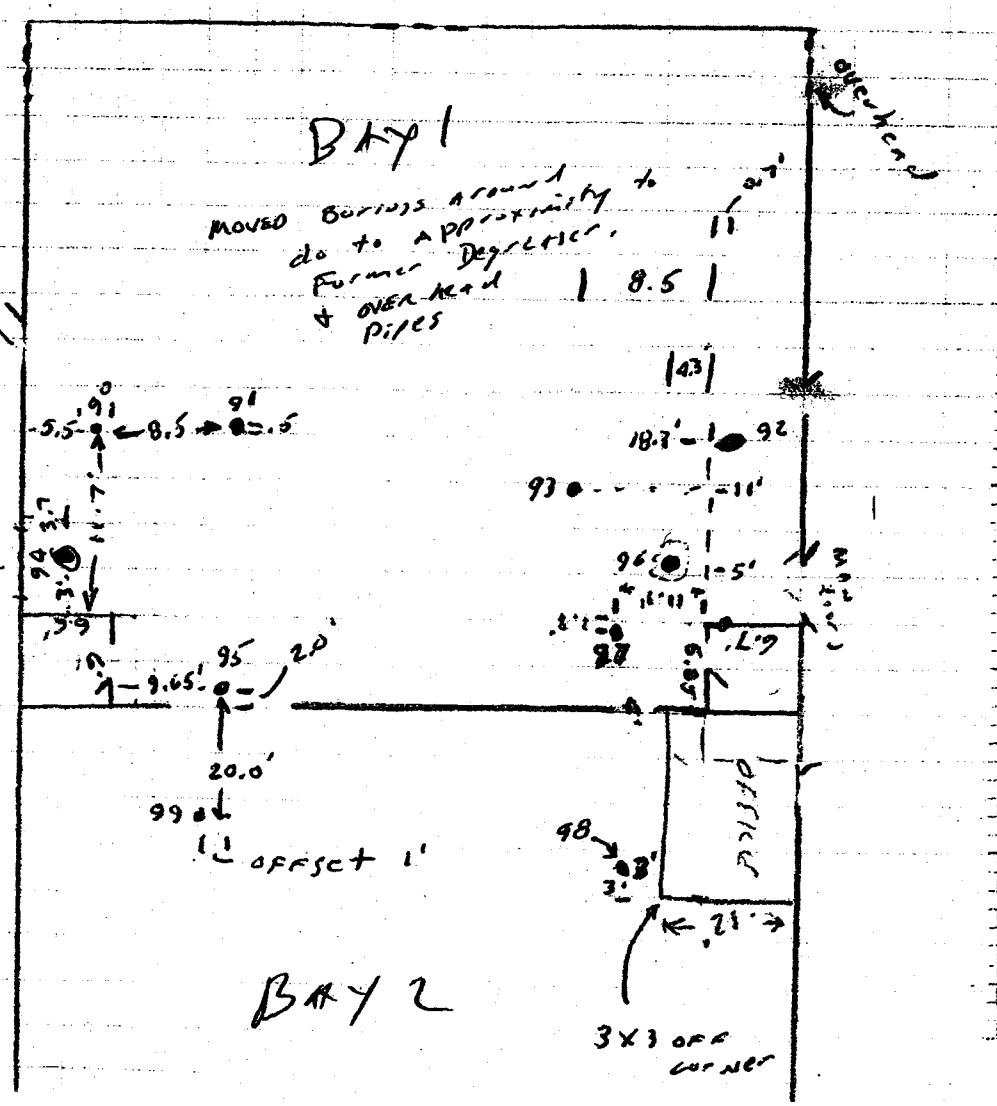
Drilling summary 8/16/04

- Installed 2nd well @ 12MW124A First well Dry
  → set @ 54'
- Remainder of Day - Clean up and prep. to move to Summit

Sampling summary 8/16/04

Collected Soil Boring samples @ 165890-99 inside BLDG #146

Shipped samples collect 8/19-16/04 (COCs 0070, 0072 0073, 0075 - 0078, 0080 & 0081) via FEDEX AB# 8447 8135 5844.



MON 8/16/04

Work continued from Page

WEATHER - Mostly sunny w/ Temp in 70°s

0655 Hrs - Arrive @ BLDG #3245
- PREP. to sample in B-146
- T. Dickson - Cali. CO meter
- PREP. to meet w T. Brent @ B-146
- Meeting @ B-146 w/
  T. Brent, T. Dickson, T. Rowan
  Frank Mitchell - Army
  Don Mills - Fire inspector (SEE Hot Work Permit on P
  Pam Gould - SUPERVISOR B-146
  Safety Specialist - (SEE SAFETY & Bldg availability Perm
  Charles Wesley on P. 57
- Fill out Contractor Vehicle Passes - For T. Brent to sign (Coren Eric Westerley, T. Dickson & J. Gocraft New vehicle)

0915 Hrs - Escort Coring Contractor to B-146
- T. Dickson & T.R open over head doors & man doors set up FANS to push & pull fumes out of bld
- T. Dickson prep. monitoring instruments

1030 Hrs - DPT work begins - T.D. H&S over sight. Train C.L. w/
1045 Hrs - Left for BLDG #3245
- Paperwork

1200 Hrs - EMI personnel arrive Stanley Lynn & Rob Porges
- Go to B-146 and get T. Dickson - Tom will Escort EMI personnel while they are @ CRANE

1230 Hrs - Return to B-146 to oversight Bldg and Coren (Eric) until DPT crew return from Lunch
1315 Hrs - DPT crew return
1330 Hrs - Return to BLDG #3245
Paperwork
1600 Hrs - Return to B-146 - help DPT crew clean up
1640 Hrs - Return to BLDG #3245
- Paperwork & Package samples on COCs 0070, 0072, 0073 0075 - 0078 & 0080 & 0081 for shipment on AB# 8947 8355
1800 Hrs - Leave BLDG #3245 for FED. EX
1930 Hrs - Drop samples @ FED. EX.

Work continued to Page

SCIENTIFIC BOOKS PRODUCTION CHICAGO 60606 MADE IN USA

SIGNATURE [signature] DATE 8/16/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

FLAME TOOL/HOT WORK PERMIT
NSWC CRANE 11320/19 (REV. 1-02)

ITEM	FROM	TO	ISSUED TO
EFFECTIVE DATES	8-16-04	8-20-04	☐ NSWC ☐ CAAA ☑ CONTRACTOR ☐ TENANT
TIME	0800	2300	NAME OF TRADE/CONTRACTOR/TENANT ACTIVITY: TETRA TECH

TYPE OF EQUIPMENT TO BE USED *(Cutting Torch, Arc Welder, etc.)*

CORE DRILL

PURPOSE OF USE

DRILL HOLE FOR CORE SAMPLE

WHERE USED *(Building/Structure/Other location)*

CLDL 146

☑ INSIDE
☐ OUTSIDE

INSTRUCTIONS OF THE FIRE SUPPRESSION/PREVENTION BRANCH, FIRE DEPARTMENT

☑ GENERAL FIRE PREVENTION INSTRUCTIONS ON REVERSE SIDE MUST BE COMPLIED WITH.

☑ IN ADDITION TO THE GENERAL FIRE PREVENTION INSTRUCTIONS ON REVERSE SIDE, YOU SHALL COMPLY WITH THE FOLLOWING:

☑ REMOVE ALL COMBUSTIBLES 35 FEET, ALL FLAMMABLE LIQUIDS 50 FEET, AND ALL EXPLOSIVES (UNLESS APPROVED TO STAY BY THE SAFETY DEPARTMENT (CAAA OR NAVY ESO) AND FIRE PREVENTION) 100 FEET FROM THE HOT WORK AREA.

1) F.P. WATCH REQUIRED UNTIL 30 MINUTES AFTER WORK COMPLETE

2) KEEP CORE DRILL AREA WET/DAMP

PERSON DESIGNATED AS FIRE WATCH *(NOT SAME PERSON AS PERMIT HOLDER)*

Thomas M. Quatrara

REQUIRED FIRE EXTINGUISHER AT WORK SITE		OTHER FIRE PROTECTION STANDBY REQUIREMENT(S)
TYPE	SIZE	
☐ WATER ☐ CO_2 ☑ DRY CHEMICAL		

I have read, understand and will comply with the above "Instructions of the Fire Suppression/Prevention Branch, Fire Department"

SIGNATURE *(Permit Holder)* [signature] DATE 8/16/04

HAZARDOUS AREAS ONLY

I agree that the "Instructions of the Fire Suppression/Prevention Branch, Fire Department" stated above are adequate and area is safe to work in.

SIGNATURE *(Building Supervisor/Forman/Representative)* [signature] DATE 8-16-04

Permission is hereby granted the Trade/Contractor/Tenant Activity named above to use specified equipment in accordance with the "Instructions of the Suppression/Prevention Branch, Fire Department as stated above.

SIGNATURE *(Fire Department/Representative)* [signature] DATE 8-16-04

DISTRIBUTION: Original *(Code 0631 File)*
Yellow *(Work Site)*

TITLE PROJECT NO 7

SAFETY & BUILDING AVAILABILITY PERMIT
NON-ROUTINE REPAIR OR MAINTENANCE
SND-NWSCC 10470/1 (REV. 12-78)

FROM	TO
SAFETY SPECIALIST	TETRA TECH
ISSUED TO: SAMK	DATE: 8/16/04

PERMIT TO PERFORM THE FOLLOWING WORK

DESCRIPTION OF WORK

CORE DRILL FLOOR IN BLDG. CORE DRILL REQD

LOCATION	DATES
AREA N/E (MKA) BUILDING 146	FROM 8/16/04 THROUGH 8/21/04

APPLICABLE SAFETY PRECAUTIONS

[X] General Safety Instructions on the reverse side deemed adequate.

[ ] In addition to the General Safety Precautions on the reverse side, comply with the following:

WET DRILL ONLY

BUILDING AVAILABLE AND WORK APPROVED

SIGNATURE (Supervisor) Pam Gould

SIGNATURE (Issuing Safety Specialist) [signature]

Drilling summary:

set isolation casing for 16MW17C1

Sampling summary 8/17/04

Complete Soil Boring - 165874
Purge & sample monitoring wells 16MW17 09, 10 & 15
& Purge 16MW17 13 (will sample 8/18/04)
Ship samples on COC 0082 via FED EX #
8447 8135 5822

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

Crews same as on Page 27
except J. Dutton
Demobed on the 16th

TITLE NSWC CRANE **PROJECT NO.** 7448 **BOOK NO.** 1376

TUES 8/17/04

Work continued from Page

WEATHER: Mostly Sunny Temp in 70's

0650 Hrs - Arrive @ BLDG #3245
- Brief Tailgate
- Fax COCs to office & Lab
- Prep. for sampling GW @ 16MWT13
- Prep. for T. Dickson while he helps Ch. collect soil samples @ 165874
- Paperwork / organize office / select wells for sampling

1040 Hrs - Arrive @ 16MWT13; T.D. will sample 16MWT16 so that TR can assist.

1110 Hrs - Start Purge @ 16MWT13
END Purge @ 1510 Hrs

1512 Hrs - Start sampling @ 16MWT13 - No pump dry will let recover and sample 8/18/04.

1530 Hrs - Finish clean up @ 16MWT13

1535 Hrs - Check in on UG

1545 Hrs - Arrive @ BLDG #3245
- Unload SUV
- Paperwork & Packaging
- Prep samples on COC #0082 to ship via FED EX AB# 8447 8135 5822
- Prep. U.S. Gov. Equipment for shipment (Comstar, Augerkits & Cable Locator) on FED EX AB# 8447 8135 5833.

1800 Hrs - Left BLDG #3245 for FED EX

1830 Hrs - Drop off samples & SQ @ FED. EX.

EHR

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLE SUMMARY 8/13/04:

SAMPLED 16 MWT 13 (PURGED ON 8/17/04)

SHIPPED SAMPLE ON COC 0083 VIA FED EX
AB# 8847 8135 5811

SCIENTIFIC BINDERY PRODUCTS CHICAGO 47635 MADE IN USA

TITLE NSWC CRANE

CREW
T. DICKSON TD
T. ROSAHN TR

PROJECT NO. 7448
BOOK NO. 1376

WED. 08/18/04

Work continued from Page

0645 Hrs - Arrive @ BLDG # 3245
T.D. Prep to sample 18MW13
TR. Prep to Triangulate Soil Borings inside B-146

0700 Hrs - Arrive @ B 146 / SWMU 16
Sample 16MW13 (Purged 8/17/04) & Triangulated Soil Borings @ B-146 - Checked in & out w/ Charles

0820 Hrs - Return to BLDG # 3245
- Package & Paperwork of samples on COFC 0003 to be shipped VIA FED EX AC# 8847 8135 5011
- Check in w/ office, S. Cont. & C. Laney
- Bottle Inventory
- Check in w/ Lab - order Trip Blanks, discuss shipment on 8/17 & 18
- File COCs 0002 & 0003 to office & Lab.
- Clean & mop Floors

1030 Hrs - Left BLDG # 3245 for FED. EX
1105 Hrs - Drop off Samples on COFC # 0003 at FED. EX.
1230 Hrs - Arrive @ Inhay Airport - Remainder of day Travel.

END

Work continued to Page

SIGNATURE Terry Rosahn
DATE 8/18/04
DISCLOSED TO AND UNDERSTOOD BY
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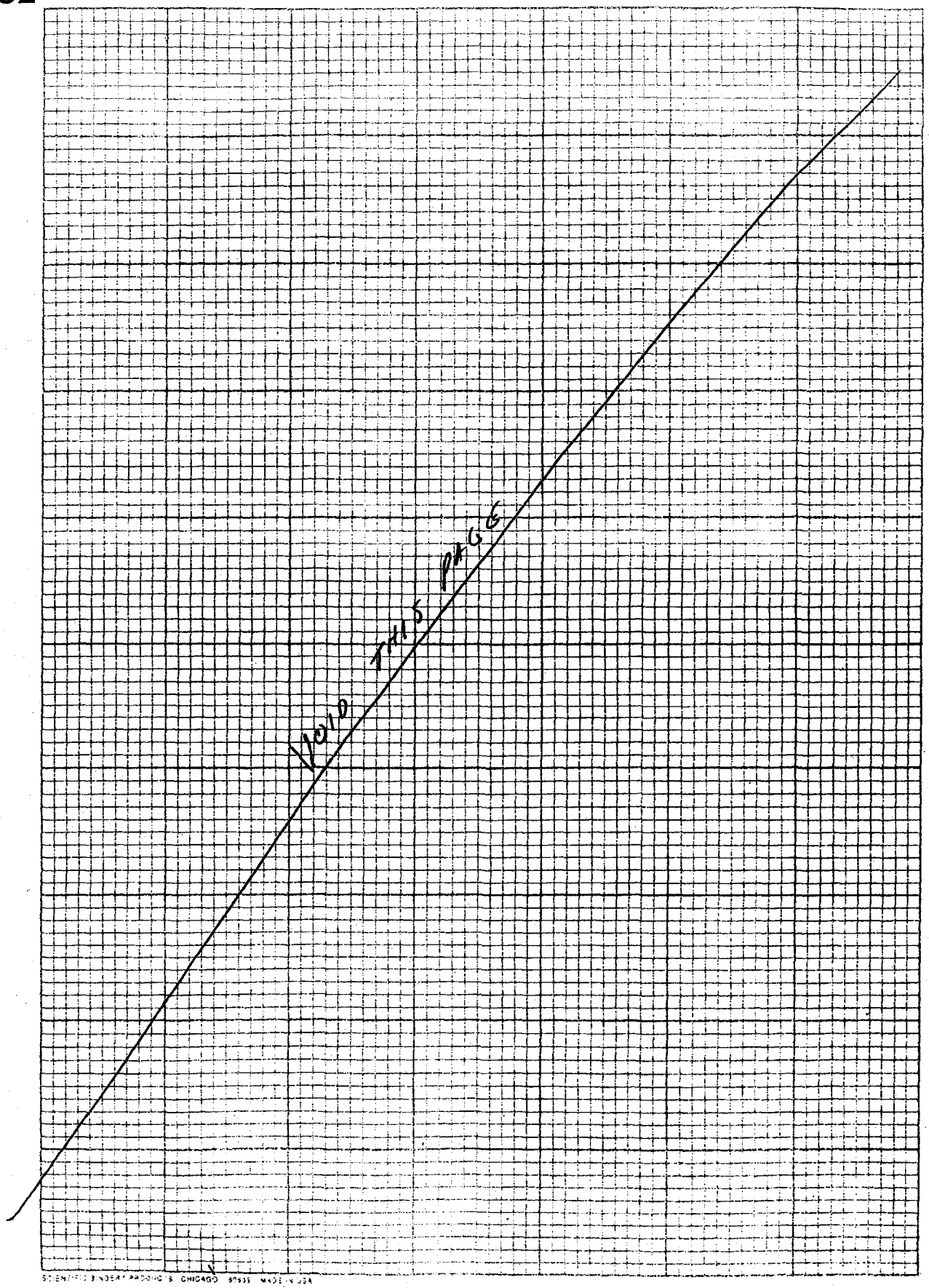

SCIENTIFIC & INDEX PRODUCTS CHICAGO 80935 MADE IN USA

TITLE NSWC CRANE

CREW
J. Goerdt
T. Kolman

PROJECT NO. 7448

BOOK NO. 1376

Mon - 8/23/04

Work continued from Page

1205 - ARRIVE @ BLDG # 3245

CHECK PSI on ALL Nitrogen Gas Cylinders

- 2 EMPTY & 1 almost empty called IN Oxygen for REPLACEMENTS
- Assemble & Decon bladder pumps
- Prepare list of things to purchase
- Check in w/ OFFICE - Army maybe working NEXT WEEK @ MPA / may not have drilling ACCESS the week of 8/30 AS shown on Army SCH.
- REPAIRED anchor holes @ BLDG # ~~3240~~ 146

1600 Hrs - LEFT SITE / BLDG # 3245 FOR MOTEL

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 09/23/04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

SAMPLING SUMMARY 8/24/09:

MONITORING WELLS PURGED & SAMPLED:
16MWT06 & 12 and 16MW03

MONITORING WELLS PURGED ONLY: 16MWT11

SCIENTIFIC BINDERY PRODUCTS CHICAGO 43605 MADE IN U.S.A.

TITLE NSWC CRANE

CREW
J. GOERDT
T. ROJAHN

PROJECT NO. 7448
BOOK NO. 1346

TUES. 8/24/04

Work continued from Page

WEATHER: Partly sunny, TEMP low 80's

0700 Hrs - ARRIVE @ BLDG # 3245; Collect Trip Blank TB08240401
- Talk to T. Brent regarding B-166 & 165 SCH.
- Prep. For GW sampling @ SWMU 16; H&S Tailgate
- Check in w/ OFFICE (R. BASINSKI)
- SELECT WELLS to be sampled/purged this date
- TRANSFERRED Purge water from 16MW24 w/DYE from 8 gal containers to manageable 5 lb Polys

1000 Hrs - ARRIVE @ 16MWT11
END Purge @ 1125 Hrs & Clean up

1150 Hrs - LUNCH

1125 Hrs - ARRIVE @ SWMU 16; 16MWT06

1335 Hrs - FINISH @ SWMU 16; 16MWT06 collected samples
checked on J. G. (will start sampling in 10 min)

1545 Hrs - ARRIVE @ BLDG # 3245
- Stocked containers IN OFFICE
- PAPERWORK

1845 Hrs - LEAVE BLDG # 3245 for Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

B 100 P ©

Sampling Summary 8/25/14:

Collected samples @ 16MWT11 & 17
16MW02, 04, 05
Shipped samples on COC 0095 via FED EX AB#
8447 8135 5454

WED 8/25/04

Work continued from Page

WEATHER: Mostly Cloudy Temp 80's hot & hum.

0655 Hrs - ARRIVE @ BLDG #3245
- Prep. to collect groundwater @ SWMU 16
- H&S Tailgate
- Check in w/ R. Basinski
- T. Brent secured a Lock out / Tag out for Fri. night @ 12MWT09 & 30 Location - Also has D. Johnson looking into night work @ SWMU 1

0830 Hrs - ARRIVE @ SWMU 16

0855 Hrs - Start SAMPLING 16MWT11 (Purged 8/24)

0953 Hrs - Filled VOAs & 1/2 L or EXPLOSIVES - DKY will return later to check recharge / continue sampling.

1013 Hrs - Start ~~Sampling~~ Purging TK @ 16MW04

1120 Hrs - Start Sampling @ 16MW04

1250 Hrs - Finish @ 16MW04

1202 Hrs - LUNCH

1230 Hrs - RETURN to BLDG #3245 to meet w/ Drilling Crew
- PAPERWORK
- CHECK IN W/ R. BASINSKI
- TALK to Donna Z. Regarding extention on GAS Tag @ MFA (Permit #4562) - Exp. 8/31
- Get office set up for H&S Site Specific Training for new drillers

1400 Hrs - Arrive @ SWMU 16 to Cont sampling 16MWT11

1430 Hrs - Complete Filling of Explosive container

1443 Hrs - Return to BLDG #3245
- Collect Rinsate of Bladder Pump @ 1530 Hrs NERL DI, Lot #1209163 EXP: 12/04
- PAPERWORK & PACKAGE Samples on CoC #0085

1720 Hrs - LEFT BLDG #3245 FOR FED.EX.
- Drop off samples @ FED EX on AB #9947813554 5

1750 Hrs

1800 Hrs - SHOP FOR H&S Supplies

1900 Hrs - Return to Motel

SIGNATURE

DATE 8/25/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLING summary 0126/04:

Collected samples @ 16MW705 & 16MW01
Finished collecting sample 16MW711 &
Purged 16MW716.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60635 MADE IN USA

TITLE NSWC CRANE

J. Gourdt, T. Rojahn, S. Conti, C. Laney

Jim Walsh, J. Dean, C. Mahaffey, K. Bochmer, J. Davis, Joe Wattenhauer

PROJECT NO. 7448

BOOK NO. 1346

THUR. 8/26/04

Work continued from Page WEATHER: Rain all morning

0655 Hrs - ARRIVE @ BLDG # 3245; FAX CORC 0085 to Lab & OFFICE

Work on MFA All morning SEE ARB 1374

1300 Hrs - C. LANEY ARRIVED

- Filled ~~him~~ CL in on days activities
- Prep. to sample GW @ SWMU 16

1420 Hrs - Arrive @ SWMU 16

CHECK IN w/ J.G.

1500 Hrs - Start collect metals @ 16 MWT 11

1545 Hrs - CLEAN OUT WELL VAULT @ 16 MWT 18 & FOUND

Lid - WELL WAS damaged during SNOW REMOVAL

1610 Hrs - Arrive @ 16 MWT 16

1640 Hrs - Finish CLEAN UP @ 16 MWT 16 & 18; CHECK ON J.G.

1700 Hrs - Arrive @ BLDG # 3245

- REFRIG Sample
- Unload VEHICLE

1730 Hrs - LEAVE BLDG # 3245 FOR Lowes

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rojahn

DATE 8/26/04

DISCLOSED TO AND UNDERSTOOD BY | **DATE** | **WITNESS** | **DATE**

SAMPLE SUMMARY 8/27/04:

Collected sample @ 16MWT18 & started sampling 16MWT16 (low yield well).
Developed 16MWT19 & 20
Shipped samples on COC # 0087

DRILLING SUMMARY 8/27/04:

Installed 4 WELLS T35, T36, 07 & 18 @ SWMU 12

SCIENTIFIC & INDUSTRIAL PRODUCTS CHICAGO 60605 MADE IN USA

CREWS SAME AS ON PAGE 69

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

FRI. 8/27/04

Work continued from Page WEATHER:

0655 Hrs - Arrive @ BLDG #3245
- PAPERWORK
- BRIEF TAILGATE MEETING
- SELECT WELLS FOR SAMPLING
- CALL FED. EX. PACKAGE DELIVERED to LAUCKS PRIOR to 0900 Hrs AB# 8447 8135 5454
- PREP to SAMPLE GW & DEV. WELLS 16MWT19 & 20

0950 Hrs - Arrive @ 16MWT16
1000 Hrs - Start sampling
1100 Hrs - WELL DRY WILL HAVE to return later (TC or JG)
1115 Hrs - LUNCH
1145 Hrs - Arrive @ 16MWT18 to drop off lunch for JG
1205 Hrs - Arrive @ 16MWT20 to DEVELOPE
1315 Hrs - FINISH @ 16MWT 20.
1316 Hrs - Arrive @ 16MWT 19 to DEVELOPE
1450 Hrs - FINISH @ 16MWT 19
1505 Hrs - DUMP PURGE WATER @ #327 M.H.
1515 Hrs - Arrive @ SWMU12 to check on Drilling
Also, MATT SOLTIS ARRIVED FOR HES AUDIT
1600 Hrs - Return to BLDG #3245
Note From J.G. - SECURITY locked system up on his AUTOCAD
1615 Hrs - Checked on Sim @ SWMU 16
NEED GAS cylinder & NEED to call security to let them KNOW AUTS IS BRINGING A REPLACEMENT
1630 Hrs - Dropped off Gas @ SWMU 16 for JG.
1640 Hrs - Returned to BLDG #3245
- Called security & T. Brent to OK AUTS new car drop off / Pick up.
- PAPERWORK, PACKAGE SAMPLES; AUDIT ASSIST etc.

1730 Hrs - LEFT SITE FOR FED. EX. W/ MATT SOLTIS
LEFT JG. Keys to my SUV in AUTS had problems
1800 Hrs - Drop off Samples on COC #0087 to ship on AB# 8447 8135 5465.

Work continued to Page

SIGNATURE [signature] DATE 8/27/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLING SUMMARY 8/28/04:

Collected samples @ 16MWT03 & 01, also purged 16MWT02 (will sample tomorrow). H&S Audit debriefing. Purchased PE Tubing in Bloomington

Drilling Summary 8/28/04:

Set isolation casing @ 12MWT30 & installed shallow well @ 12MWT19 @ 26'. Severe thunder storms in afternoon (no drilling).

SCIENTIFIC STATIONERY PRODUCTS CHICAGO 60610 MADE IN U.S.A.

CREWS SAME AS ON PAGE 67.

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

Sat: 08/28/04

Work continued from Page WEATHER: OVERCAST MORNING; SEVER thunder storms in the afternoon

0645 Hrs - Arrive @ BLDG #3245
- H&S Tailgate; went over Work Permits w/ Drillers
- Collected TB @ 700 Hrs
- PREP FOR GW Samplers
- Select wells to sample
- Decon (2) WHALER PUMPS
- Stan called BM personnel need Power @ B#3245 will wait until they arrive for their access.

1000 Hrs - Arrive @ SWMW16; check in on d.G.

1020 Hrs - Start Purge @ 16MWT02; Also H&S Audit debriefing.

1425 Hrs - Well dry to intake - will sample tomorrow

1435 Hrs - Finish clean up @ 16MWT02
- Rain delay - SEVER thunder storm

1520 Hrs - Sampled Explosives @ 16MWT16 - 1L glass amber ~ 1/3 FULL well cont tomorrow

1535 Hrs - Arrive @ B#3245
Unload VEHICLE - NEED ROOM FOR purchasing PE tubing in Bloomington

1600 Hrs - LEFT B-3245 FOR Bloomington

1730 Hrs - Purchase PE tubing in Bloomington

1800 Hrs - Return to Motel in BEDFORD

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogers

DATE 8/28/04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

Drilling Summary 8/29/04:

Installed isolation casing @ 12MWT 31 & 32.
Installed monitoring wells 12MWT 09 & 30
14 area of lock out / tag out.

SAMPLE SUMMARY 8/29/04:

Collected samples @ 16MWT 02, 19 & 20.
Cont sampling @ 16MWT 16.

TITLE NSWC CRANE

PROJECT NO. 7448
BOOK NO. 1376

Sun 8/29/04

Work continued from Page

WEATHER: Mostly Sunny Temp High 70s

0700 Hrs - ARRIVE @ BLDG #3245
- HES Audit DEBRIEFING @ Tailgate
- PAPERWORK - Prep. well sampling sheets
- ID all wells that were installed on SWMU 12 may will cont development today
- Prep. some bg for development

0945 Hrs - Arrive @ SWMU 16
1000 Hrs - Start sampling 16MW T02 03 TK
1045 Hrs - Finish clean up @ 16MW T02 03 TK
1055 Hrs - ARRIVE @ SWMU 16 - WELL 16MW T20
1355 Hrs - Start Sampling 16MW T20
1530 Hrs - Finish Cleanup @ 16MW T20
1540 Hrs - Arrive @ BLDG #3245
- Call R. Basinski (Respond to message) @ Home
- Complete COC #0086 for samples collected @ SWMU 16
- Unload ~~vehicle~~ TO vehicle
- Pick wells to be sampled tomorrow @ SWMU 12

1700 Hrs - LEAVE BLDG #3245 for Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 8/29/04

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SCIENTIFIC STATIONERY PRODUCTS CHICAGO 32535 MADE IN U.S.A.

WED. 9/1/04

Work continued from Page

Monday 8/30/04 SEE Notebook # 1374 CT. 357
Tues. 8/31/04 SEE Notebook # 1374 CT. 357
WED. 9/1/04 TRAVEL DAY
END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE
DATE 9/1/04
DISCLOSED TO AND UNDERSTOOD BY
DATE
WITNESS
DATE

SAMPLE SUMMARY 9/20/04:

RECON SWMU 13 FOR VEG SAMPLING LOCATIONS.
SELECTED 9 SAMPLING LOCATIONS.

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

MON 9-20-04

Work continued from Page WEATHER: SUNNY & 70s

1100 HRS - ARRIVE @ B3245 - TRAVEL DAY
- PREP. to STAKE out VEG. sampling locations
- CALL DAY ICE supplier PACK ENTERPRISES
SET UP pickup on TUES OF min amount 57 lbs

1520 HRS - ARRIVE @ SWMU 13

SOF WELL 13MWT50
- 13VEG01 - HERB & Sugar Maple (SM)
- 13VEG02 - HERB & SM

SOF Sewer Line & MH 298
- 13VEG03 - WHITE OAK (WO)
- 13VEG04 - HERB, WO & SM

N of MH 298
- 13VEG05 - HERB & WO

W. slope of Pond 13MWT42 down from MH
- 13VEG06 - SM & HERB
- 13VEG07 - WO (UPGRADE from 13VEG05 & E of 13MWT46 & 39)
- 13VEG08 - WO (ACORNES only) @ cluster 13MWT46 & 39
- 13VEG09 - ~75' west of well cluster 13MWT37 & 38 WO saplings

Collect HERBACEOUS plant for ID/VALCER SPECIMEN

1820 HRS - LEFT BLDG #3245 for SAMS CLUB

1934 HRS - PURCHASED ~~supplies~~ supplies @ SAMS CLUB

END

SIGNATURE Terry [illegible] DATE 9/20/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAMPLE SUMMARY 9/21/04:

Collect 5 HERBACEOUS SAMPLES, 10 LEAF SAMPLES & 1 ACORN SAMPLE (13 VG 001 - 016).
SEE Plant TISSUE Data Sheets & COCs 0095 & 0097 FOR Additional INFORMATION.

STENTOR SINDERY PRODUCTS CHICAGO 60656 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

TUES 9/21/04

Work continued from Page

Weather: Mostly Sunny & Temp High 70s Low 80

0640 HRS - ARRIVE @ BLDG #3245

- UNLOAD SUPPLIES
- PAPERWORK
- PREP FOR VEG. SAMPLING

0730 HRS - CHRIS FREEMAN NEEDED CONFORMATION SAMPLING PRETEST @ the SWMU 12 BATTERY SITE

1300 HRS - RETURN to FIELD PREP FOR COLLECTING VEG. SAMPLES

1330 HRS - BEGAN SAMPLING VEG. TISSUE @ SWMU 12

1640 HRS - FINISHED COLLECTING VEG. TISSUE @ SWMU 13 &

- RETURNED to BLDG #3245

Collected 5 HERBACEOUS PLANT SAMPLES
10 TREE LEAF SAMPLES
1 ACORN SAMPLE
1 RINSATE SAMPLE

SEE PLANT TISSUE SAMPLE LOG SHEETS FOR detailed INFORMATION.

- PREP. SAMPLES W/ TAGS & LABELS SECURE IN FREEZER

1730 HRS - LEFT B 3245 FOR MOTEL.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Troy [illegible] DATE 9/21/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

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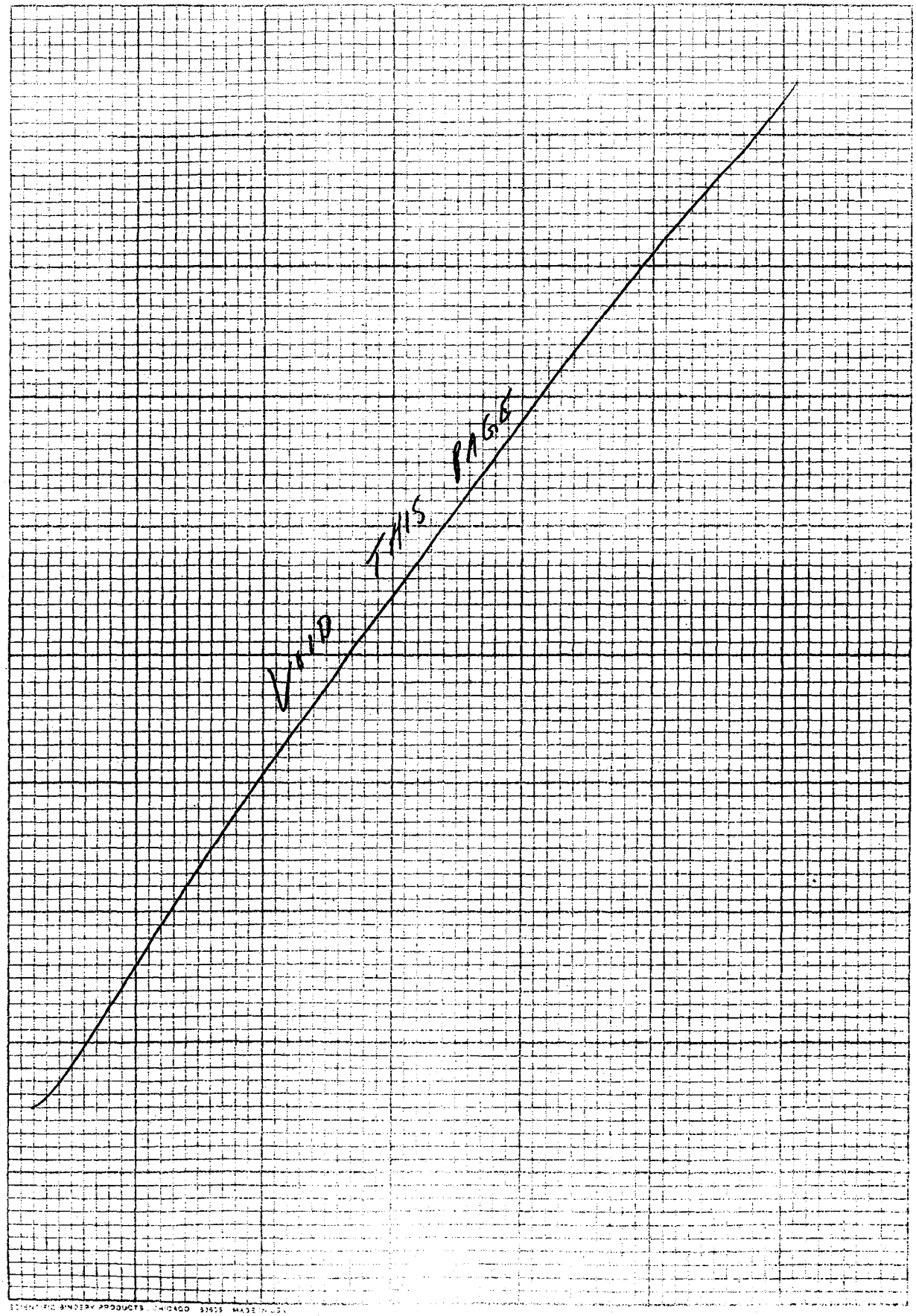

SCIENTIFIC SINGERY PRODUCTS CHICAGO 33625 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. 7498

BOOK NO. 1376

9-22-04

Work continued from Page

1600 Hrs - PACKAGED & SHIPPED Plant tissue samples
this date; samples on COCs 0095 & 0097
AB# 83663236 2343 Plant Tissue w/ DRY ICE
AB # 84478135 5720 Rinsate w/ ICE
1700 Hrs - LEFT B 3245 FOR FED. EX.
1740 Hrs - DROPPED OFF SAMPLES

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/22/04

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SCIENTIFIC BINDERY PRODUCTS CHICAGO 40633 MADE IN U.S.A.

WED 9/29/04

Work continued from Page

Weather - Mostly Sunny & 60°F

0645 Hrs - Arrive @ B-3245

Prep to Dev 16MW721

0730 Hrs - Start Dev @ 16MW721

0830 Hrs - END Dev @ 16MW721

0840 Hrs - Return to B#3245 SEE NB 1374 page 63

For Remainder of Day Info

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 9/29/04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

Sample Summary 10/18/04:

Sampled 1650/1602; and Kick off
Survey of Monitoring Wells & Soil Borings
@ Swmu 13.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 63635 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

THURS 10-14-04

Work continued from Page WEATHER OVERCAST W/ PERIODS OF RAIN & 50's

0700 Hrs - ARRIVE @ B 3245

- FAX COPCS 0119, 0120 & 0121 to LAB & OFFICE (E.S.)
- PREP. FOR SURVEYORS ARRIVE

0800 Hrs - SURVEYORS - Cory ALLEN & Gary Wood ARRIVE @ B-3245

- DISCUSS SURVEY APPROACH & ~~SEW~~ TM HES

0830 Hrs - ARRIVE @ SWMU 13

- SHOW CREW MWs & SOIL borings

0935 Hrs - ARRIVE @ SWMU 12

- SHOW SURVEY CREW MWs & Soil borings
  ALSO, mark ACTUAL SAMPLE locations 12 SB 21-24
  FROM OFF SET STAKES

1015 Hrs - SURVEY CREW to SET up control - Return to OFFICE to do PAPERWORK & Picked up Subway sub

1115 Hrs - MEET SURVEY CREW @ SWMU 13 S. GATE - let CREW in & OVERSIGHT SAMPLE SURVEYING in ALL NEW Soil borings.

1200 Hrs - CREW finished inside SWMU 13 will work outside ~~SW~~ TM SWMUs REMAINDER OF DAY - (A.C. WORK ON control and locate 13MW T48 → 51).

- REMAINDER OF DAY T.M. WORKED @ SWMU 12 (ID MONITORING WELLS & 11 OF 12 STAFF GAUGES). ALSO, SAMPLED 165016 @ 1335 & 123028 @ 1540

1710 Hrs - LEFT SITE FOR HOTEL

END

SCIENTIFIC ENDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Ted Agel

DATE 10/14/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Sample Summary for 10/15/04

Purge only Monitoring Wells

16MWT 08 & 21

IN SCIENTIFIC & ENGINEERING PRODUCTS CHICAGO 37515 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. ~~6878~~ 7447 (TR)

BOOK NO. 1374

FRI - 10/15/04

Work continued from Page

WEATHER - (TR) AM OVERCAST & Cool - PM Partly Sunny & S

0700 Hrs - ARRIVE @ B3245

WORK ON SWMU 12 until 0845 Hrs

0845 Hrs - ARRIVE @ B 3245

- Prep to SAMPLE GW @ SWMU 16
- Cal: Instruments

1000 Hrs - ARRIVE @ SWMU 16 - 16MWT08

Start PURGE - 1130 Hrs <2' of WATER in WELL

END PURGE - 1320 Hrs (WELL DRY to Pump intake)

Vol. Removed - only 300ml w/ ~1L in tubing

1402 Hrs - Start Purge @ SWMU 16 - 16MWT21

1802 Hrs - END Purge AFTER 4hrs FOR PURGING

will allow WELL to recharge & sample tomorrow

due to late hour & increased turbidity

1825 Hrs - ARRIVE @ B-3245

unload meters, etc.

1845 Hrs - LEAVE B-3245 FOR Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 10/15/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Staff Gauges Installed 10/16/09:

SG #

SG01 - PK Nail on top of Culvert up gradient of 16SW/SD28

SG02 - Green & Yellow metal Stake near 16SD08

SG03 - " & " " " @ Fence between 16SD06 & 09

SG04 - PK Nail on top of Culvert near 16SD05

SG05 - PK Nail on top of culvert @ Fences down gradient of 16SD03

SG06 - 3 holes drilled on top of Poly Pipe (Center Pipe) West side of H-77

SG07 - Green & Yellow stake on west bank of Stream near 16SW/SD18

SG08 - 3 holes drilled on top of Poly Pipe (South Pipe) on the up stream side of H-77

SG09 - Green & Yellow metal stake on the west bank of the stream just down gradient of 16SW/SD19

Samples Summary 10/16/09:

Collected 16TB1016040 1, 16SS8600002 (missing sample), 16GWT2100 & Started Sampling 16GWT0802

SAT - 10/16/04

Work continued from Page

WEATHER - Partly Cloudy & Cool (50°s)

0700 Hrs - Arrive @ Lowe's - Purchase supplies for Marking (TR) the Staff Gauges & installation of Well Tags

0825 Hrs - Arrive @ B-3245 - Collect 16TB10160401

- Prep to collect GW samples & mark Staff gauges & install Well tags @ SWMU 16

0945 Hrs - Arrive @ SWMU 16

1000 Hrs - Collect 16SS860002

1030 Hrs - Collect 16GWT2101

1130 Hrs - Cont to purge out the w/ in tubing @ 16MWT08 to obtain one casing vol.

1154 Hrs - Start collecting Exp. sample for 16MWT08 Collected ~300ml before well was dry to pump

1315 Hrs - Installed well tag on stick ups ~~well~~ of the following wells 16MWT07, 08, 09, 10, 11, 12, 13, (TR) & 15 & 17

1425 Hrs - Marked staff gauges @ SWMU 16

SEE PAGE 90 & ID monitoring wells T19 & T20

1700 Hrs - Finished Marking staff Gauges 01-09 and Arrive @ B-3245

- Drop off Eq.

1715 Hrs - Leave B-3245 for Hotel

END

SIGNATURE [signature] DATE 10-16-04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 10-17-04:
UNSUCCESSFULL ATTEMPT @ SAMPLING 16MW108 -
WELL CALL IT DRY.

SCIENTIFIC SINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

SUN 10-17-04

Work continued from Page

WEATHER - Mostly Sunny & TEMP 90's

0800 Hrs - ARRIVE @ B-7245

- PAPERWORK
- TRANSFER STAFF GAUGE INFO to SURVEYOR'S MAPS
- PREP to collect additional sample @ 16GWT08

1095 Hrs - Pick up Subway Sub for Lunch @ WELL

1105 Hrs - ARRIVE @ SWMU 16

- WATER LEVEL FOR 16MWT08 - 96.43 (TO 97.6)
- Prep. 3/4" PUMP FOR WELL 16MWT08

1140 Hrs - Start Pumping to collect SAMPLE

1240 Hrs - No WATER FROM PUMP tubing

1245 Hrs - Pull PUMP - Extract ~~only~~ TR < 50ml FROM tubing

Will call WELL DRY - No Samples

Note - WELL RECOVERY in 24 Hrs < 0.2'

WATER column ~4' less than during last Round

1300 Hrs - LEFT SWMU 16 to work on SWMU 12 the REMAINDER OF the day.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 10-17-04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

Sample Summary 10/10/19

- Staked out contingency wells @ SWMU 12
- Ship samples on COCs # 0122 & 0123
  (Sample on COC # 0123 was from SWMU 12)
- Surveyors CANCELED ~~CANCELED~~ (TR) this date due to Rain

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN U.S.A.

MON 10-18-04

Work continued from Page

WEATHER - RAIN, 50°c

0700 Hrs - Arrive @ B-3245

- Paint Metal Posts for Staff Gauges
- Transfer Staff Gauge info to survey maps
- Prep for staking out contingency wells @ SWMU 12
- Prep. to install staff Gauges & Freeze Protection @ SWMUs 13 & 16; Freeze Protection for dedicated bladder pumps
- Paperwork

1100 Hrs - Lunch

1130 - 1425 Hrs - State out contingency wells @ SWMU 12 12 MWT 41, & 43-50 along RR tracks & Transmission line corridor

1435 Hrs - Talk to Donna Z. @ Public Works - Donna said dig permit should be ready by the 25th of Oct.

1500 Hrs - Arrive @ B-3245

- Fax J. Schubert water level readings for SWMU 12
- Fax COC's #0122 & 0123 to office & lab for this day's shipment
- Prep samples for shipment on AB# 8447 8135 5590

1610 Hrs - Leave B-3245 for FED. EX.

1650 Hrs - Drop off sample shipment @ FED. EX.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 10-18-04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

DRILLING activities 10/19/04:

SURVEY SBs & MONITORING WELLS @ SWMU 16

	ARRIVE	LEAVE
Cory Allen	0755	1130
Gary Wood	0755	1130

SAMPLING Activities 10/19/04

Install FREEZE Protection @ SWMUS 13 & 16
Install additional staff Gauges 12 → 18
& REVISIT old staff Gauges AND INSTALL PK NAIL
@ most CULVERT locations 1 → 8

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TUES 10/19/04

Work continued from Page

WEATHER: Overcast & 50's

0700 Hrs - ARRIVE @ B-3245

- PAPERWORK
- Prep. FOR Staff Gauge installation @ SWMU 13 & FREEZE PROTECTION INSTALLATION @ SWMU 16
- Wait FOR SURVEY CREW Arrival - Plan on surveying NEW Boring locations & Monitoring WELLS 16MWT19 T20 & T21

0755 Hrs - Surveyors arrive @ BLDG 3245

0815 Hrs - Arrive @ SWMU 16

- Install FREEZE Protection @ ALL DEDICATED Bladder Pump monitoring wells

1032 Hrs - Finish FREEZE Protection installation @ SWMU 16

- Wait FOR SURVEYORS to Finish inside FENCED AREA @ SWMU 16

~~Hrs @~~

1050 Hrs - Survey Finish inside FENCED AREA @ SWMU 16

1055 Hrs - Arrive @ B3245

- Sit survey sign out SHEET outside of door FOR SURVEYORS

1100 Hrs - LUNCH

1125 Hrs - Arrive @ SWMU 13 - to install Freeze Protection @ DEDICATED Bladder Pump WELLS
install ALL WELLS Except 13MWT02 w/ FREEZE Protection - will wait until after hours to install Freeze Protection @ T03 WHICH is inside B-165 BUFFER ZONE

1400 Hrs - Start installation of STAFF GAUGES @ SWMU 13

1735 Hrs - Finish Staff Gauge installation & waited to get Freeze Protection @ 13MWT01

1742 Hrs - Arrive @ B-3245
Drop off Nitrogen Cylinder

1750 Hrs - LEAVE B3245 FOR CAR WASH

END

SIGNATURE Terry Rogers

DATE 10/19/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

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EMPIRE BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7498

BOOK NO. 1376

WED 10/20/04

Work continued from Page

0730 Hrs - Arrive @ B 3245
- General Clean up
- Decon Bladder Pumps
- Prep. (2) 1 3/4" Pumps & (1) 3/4" Bladder Pumps For Return to U.S Env. on AB# 8447 8135 5605 INSURE for $3500
- Prep. Field Paperwork for Return to Pittsburgh
- Clean & mop Floors - offices, lab, Hallways & Bathroom
- Clean out SAV

1000 Hrs - Prep. to leave B 3245 for FED EX

1035 Hrs - Drop off FED. EX Package

Remainder of Day - Travel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 10/20/04

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

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SCIENTIFIC SUPPLIES CO. CHICAGO 10305 MADE IN USA

TITLE

PROJECT NO. ~~6076~~ 7448 (TR)

BOOK NO. 1376

MON 10-25-04

Work continued from Page

TRAVEL DAY & WORKED @ SWMU-12

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Pogal

DATE 10-25-04

DISCLOSED TO AND UNDERSTOOD BY | **DATE** | **WITNESS** | **DATE**

Sample Summary 10/26/04

Collected SW samples:

16SW2601, 16SW3001, 13SW3301
13SW3002 & 13SW2802

Dry Locations checked:

16SW19 & 16

SCIENTIFIC BINDERY PRODUCTS CHICAGO 93633 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

TUES 10/26/04

Work continued from Page WEATHER - AM OVERCAST TEMP 60's; STEADY RAIN IN PM

0700 Hrs - ARRIVE @ B-3245 16TB10260401 @ 0700 Hrs

- FAX R. Osinski RR NES Training SIGN OFF SHEET & WATER LEVELS FOR SWMU 12
- CALL VSI & La Motte
- PREP. to SAMPLE SW @ SWMU 16

0930 Hrs - 16SW19 DRY

0955 Hrs - 16SW16 DRY

1105 Hrs - 16SW2601 Collected DUP & MS/MSD NITRATE & NITRITE

1200 Hrs - 16SW3001 Collected DUP & MS/MSD EXPLOSIVES

1235 Hrs - LUNCH

1250 Hrs - END LUNCH

1305 Hrs - REQ FLAGS up @ B-146

1312 Hrs - RETURN to B-3245

- PROCESS SAMPLES collected @ SWMU 16
- PREP. to SAMPLE SW @ SWMU 13

1510 Hrs - Collect 13SW3301 During Rain Event

1535 Hrs - Collect 13SW3002 " " "

1600 Hrs - Collect 13SW2802 DUP & MS/MSD During Rain EVENT

1650 Hrs - RETURN to B-3245

- PROCESS SAMPLES Collected @ SWMU 13

1830 Hrs - PREP. to LEAVE B 3245 FOR Motel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 10-26-04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

SAMPLE SUMMARY 10-27-04

Collected SURFACE WATER SAMPLES:

13SW14, 15, 16 & 22

SHIPPED SAMPLES ON COCs 0124 & 0125

VIA FED EX AB# 8447 8135 6623

SCIENTIFIC BINDERS PRODUCTS CHICAGO 60603 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

WED 10/27/04

Work continued from Page

WEATHER OVERCAST MILD & TEMP IN 60°S

0700 HRS - ARRIVE @ B-3245
- CALI YSI & LaMotte
- PREP to sample SW @ SWMUS 13 & 12
- CHECK IN W/ R. BOSINSKI (PITT OFFICE)
- CHECK IN W/ T. BRANT

0830 Hrs - C. ALLEN & G. Wood OF BT&R CHECK in with WORK @ SWMU 13 this Date
- FINISH PREPING SUV FOR SW SAMPLING

0920 Hrs - Stop @ GAS Station to Request that the B3245 ice MACH BE Filled

0950 Hrs - Collected 13SW1502

1028 Hrs - Collected 13SW1402

1055 HRS - Collected 13SW2202

1125 Hrs - Collected 13SW1602

1215 Hrs - ARRIVE @ SWMU 12
FINISH Collecting SW @ SWMU 13 ALL proposed locations have been sampled

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Troy Nagel

DATE 10/27/04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

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SCIENTIFIC STATIONERY PRODUCTS CHICAGO 95933 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

SAT. 10/30/04

Work continued from Page

WEATHER: Mostly sunny & mild (Temp 70's)

1600 Hrs - Start sampling @ 16MW708

1700 Hrs - Finish @ 16MW708

WELL NEEDS to RECHARGE, will continue tomorrow

1710 Hrs - Arrive @ B 3245

SECURE all samples in Frig

Drop off EQ

1730 Hrs - LEAVE B 3245 for Hotel

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

SAMPLE SUMMARY 10/31/04 :

Continued sampling @ 16 MWT 03

RIDBNOEAR PRODUCTS 42-3432 63933 MADE IN USA

SUN 10-31-04

Work continued from Page

WEATHER: Partly Cloudy Temp 60's

1615HRS - ARRIVE @ SWMU 16

- Continue sampling for EXPLOSIVES @ 16MW108 w/ Geotech - collect 200ml (Total vol. collected since 10/30/04 = ~700ml)

(TC) ~~1650HRS~~ - 1

1650HRS - Return to bldg 3245

Refrigerate sample container

Note: most of this data worked @ SWMU 12

END

SIGNATURE Tylopel

DATE 10-31-04

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

SAMPLE SUMMARY 10/02/04:

Collect SURFACE WATER SAMPLES @
16SW 03, 06, 09, 12, 13, 16, 19 & 27

SHIP SAMPLES ON COCs # 0131, 0132 & 0133
VIA FED EX AO # 8897 8195 6601.

COC # 0132 FOR SWMU 12 Groundwater Sample
FROM 12 MW T30

TITLE NSWC CRANE

PROJECT NO. ~~6078~~ 7448

BOOK NO. 1376

TUES 11-02-04

Work continued from Page WEATHER: RAIN & 60'S

0650 Hrs - Arrive @ B3245
- Cal: Meters (YSI & LaMotte)
- CHECK IN W/ R BASIASKI
- FAX COACS 0129 & 0130 to OFFICE & LAB
- PREP. FOR SURFACE WATER SAMPLING @ SWMU 16

1000 Hrs - Collected SURFACE WATER @ 16SW19

1045 Hrs - Collected " " @ 16SW16

1110 Hrs - RETURN to B-3245
- DROP OFF SAMPLES

1130 Hrs - LUNCH

1215 Hrs - ARRIVE @ Visitors Center for Picture Badge

1305 Hrs - Arrive @ B-3245
- PREP FOR Additional SURFACE WATER SAMPLING
- DON RAIN GEAR

1330 Hrs - ARRIVE @ SWMU 16

1405 Hrs - Collect SW SAMPLE 16SW13

1420 Hrs - Collect " " 16SW27

1440 Hrs - Collect " " 16SW12

1500 Hrs - Collect " " 16SW09

1520 Hrs - Collect " " 16SW06

1530 Hrs - Collect " " 16SW03

1550 Hrs - RETURN to B-3245
- PROCESS SAMPLES
- PACKAGE SAMPLES ON COACS 0131, 0132 & 0133 FOR SHIPMENT ON AB# 8447 8135 6601

1720 Hrs - LEAVE B-3245 for FED EX.

1800 Hrs - Drop off SAMPLES @ FED EX. → Go to Car Wash

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogel

DATE 11-02-04

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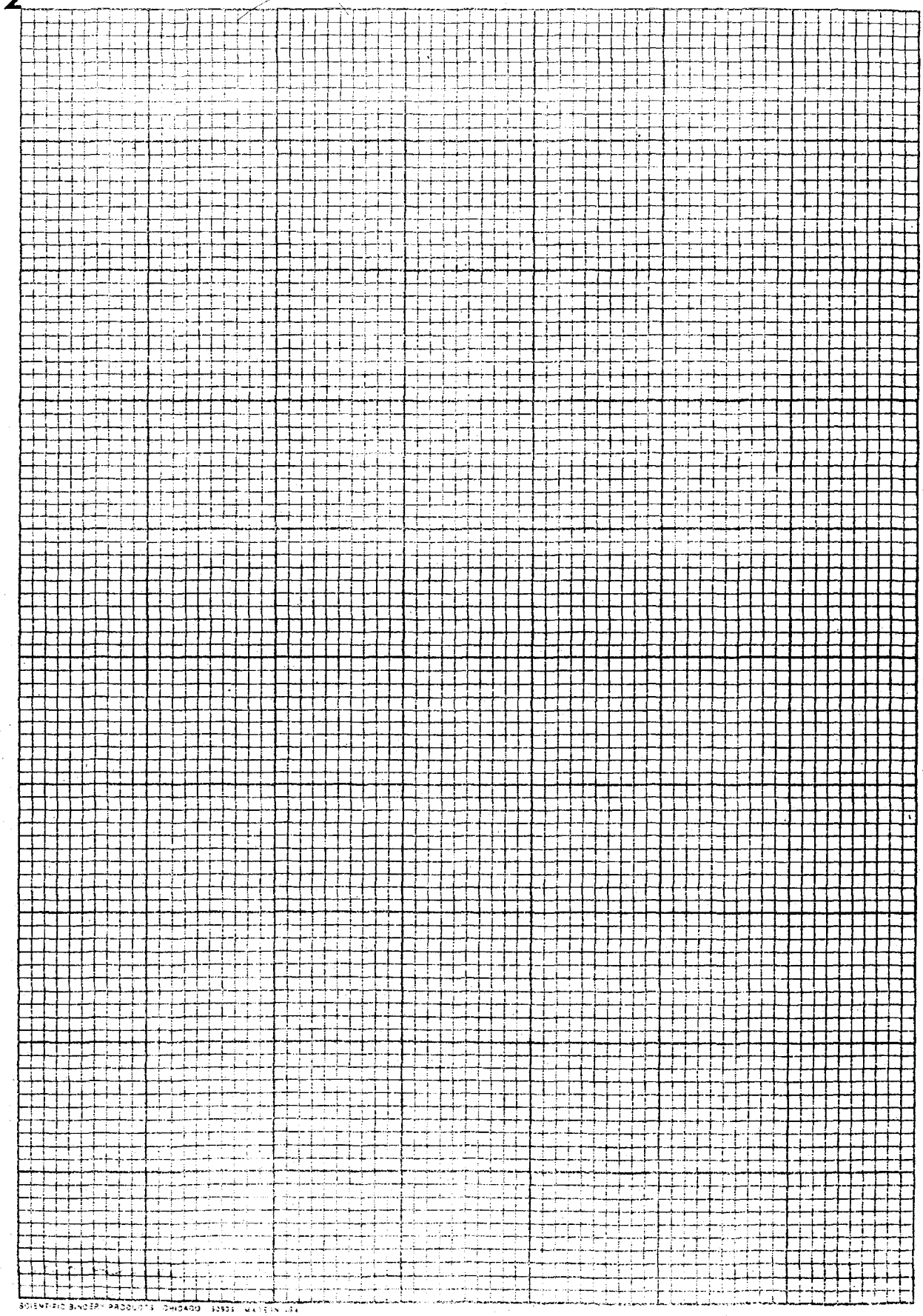

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

WED 11-03-04

Work continued from Page

0720 Hrs - ARRIVE @ B-3245

- FAX CORCS to LAB & OFFICE (0131 & 0133
- LEAVE Daily summary message on R. Basinski's voice mail
- Clean office, lab, hallways & bathroom
- Clean out Rental Car inside
- Prep. paperwork & office to travel to Pittsburgh

0930 Hrs - LEAVE B-3245 for Airport

TRAVEL Reminder of the day

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE

DATE 11-03-04

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DATE

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SAMPLE SUMMARY 11-11-04:

COLLECTED SURFACE WATERS @

12SW 04, 05, 08, 10, 11, 23, 28 & 29

SHIP SAMPLES ON COCs 0135 & 0136 VIA

FED. EX. AB # 8441 0135 6586

SCIENTIFIC BINDERY PRODUCTS CHICAGO 13993 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

THURS 11-11-04

Work continued from Page

WEATHER: RAIN 40's HIGH 51°

0645 Hrs - ARRIVE @ B3245
- CALI. YSI & LAMOTTE
- PREP to SAMPLE SURFACE WATER
- PAPERWORK

0910 Hrs - ARRIVE @ SWMU 16 Collected ~~for~~ TO SURFACE WATER SAMPLES @ 16SW04, 05, 08, 10, 11, 23, 28 & 29
SEE COCs 0135 & 0136 for additional details

1215 Hrs - RETURN to B-3245
Drop off EQ & SAMPLES (REFRIGERATE)

1235 Hrs - LUNCH @ SUBWAY

1259 Hrs - RETURN to B 3245
- PROCESS samples FOR SHIPMENT ON COCs 0135 & 0136.
- PAPERWORK
- ORGANIZE OFFICE / CLEAN

1700 Hrs - LEAVE B 3245 FOR FED. EX.

1730 Hrs - DROP OFF SAMPLE SHIPMENT ON AB# 8447 8135 6586 @ FED EX

1810 Hrs - FAX OFFICE & LAB COPIES OF COCs FROM Hotel

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Tony Rail

DATE 11-11-04

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SAMPLE SUMMARY 11-14-08:

SYNOPTIC WATER LEVELS MEASURED

@ SWMU 13 - SEE PAGE 117 &

STAFF GAUGES MEASURED

SEE PAGE 119.

SCIENTIFIC SINGER PRODUCTS CHICAGO 60605 MADE IN USA

SUN 11-14-04

Work continued from Page

WEATHER: Mostly Sunny & 40's

1205 Hrs - PREP to SAMPLE W.L. @ SWMU 13

MW ID	W.L.	TIME	PID READING	MW ID	W.L.	TIME	PID
13MWT01*	7.56	1649	0.0	T31	10.74	1720	0.0
T02	15.88	1644	0.0	T32	10.55	1716	0.0
T03	12.17	1652	0.0	T33	11.54	1725	0.0
T04	15.42	1619	0.0	T34*	6.45	1527	16.1
T05	8.73	1629	0.8	T35 (Bailer)	64.40	1605	0.0
T06	14.78	1655	0.0	T36	19.56	1433	0.0
T07	4.84	1616	0.0	T37*	14.71	1439	57.0
T08	3.87	1623	0.0	T38	62.33	1436	0.1
T09	8.64	1701	0.0	T39	13.84	1444	1.2
T10	16.11	1626	0.0	T40*	18.74	1454	13.5
T11*	8.82	1608	0.0	T41 (Bailer)	67.05	1456	1.9
T12	11.50	1602	0.0	T42	21.21	1500	0.4
T13*	4.40	1258	0.0	T43	9.70	1637	0.0
T14*	14.69	1735	0.0	T44	69.80	1634	0.0
T15*	15.49	1556	0.0	T45*	69.83	1530	31.0
T16	14.23	1541	0.0	T46*	58.25	1446	0.3
T17*	9.04	1538	7.9	T47*	7.02	1240	0.2
T18	20.52	1553	0.0	T48	10.02	1315 SC	0.0
T19	11.31	1728	0.0	T49	7.21	1315 SC	0.0
T20	5.23	1704	0.0	T50	~~3.77~~ 7.02 (TS)	~~1318~~ 1400 (TS)	0.0
T21*	9.20	1534	7.9	T51	3.77	1315 SC	0.0
T22	9.13	1523	0.4				
T23	9.25	1706	0.0				
T24	10.04	1709	0.0				
T25	6.79	1515	0.0				
T26	11.09	1512	0.2				
T27	9.86	1559	0.0				
T28*	78.38	16:58	13.6				
T29	5.46	1255	0.0				
T30	11.37	1732	0.0				

* = DEDICATED Bladder Pump WELLS

SC = got W.L. from S. Conti

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE Terry Rogal

DATE 11-14-04

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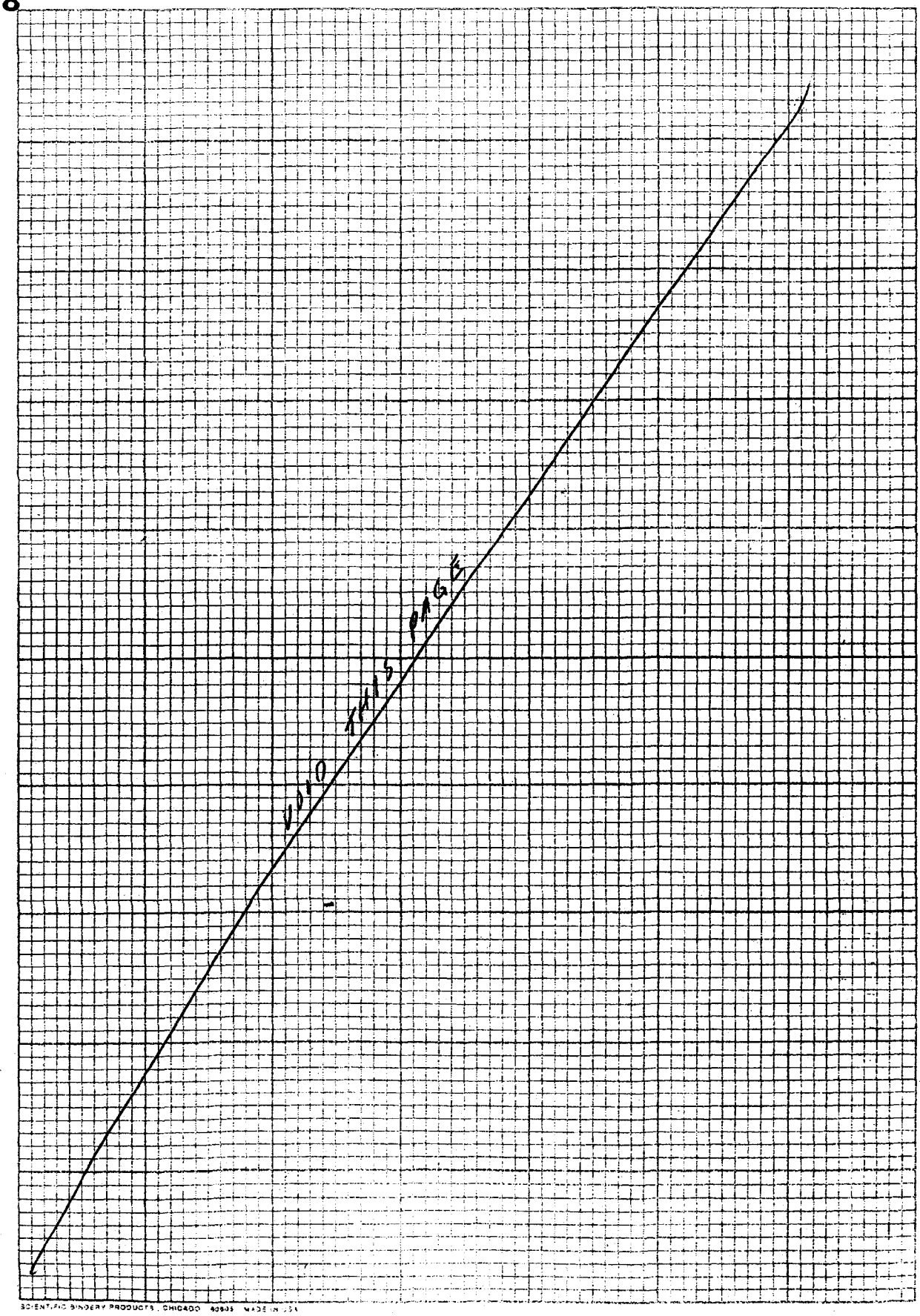

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 40833 MADE IN U.S.A.

TITLE NSWC CRANE

PROJECT NO. 7448

BOOK NO. 1376

SUN 11-14-04 Cont

Work continued from Page

STAFF GAUGE ID	WATER LEVEL	TIME	FLOW gpm ↓	FLOW: MEAS. OR ESTIMATE
1356 01	1.76	1643	<1gpm	<1gpm
02	3.71	1647	~5	~5-10gpm
03	1.95	1234	<5	~~<5gpm~~ (Est) <5gpm
04	2.46	1254	1.5	SAME FLOW AS SG11 1.5
05	3.92	1301	<1	<1gpm
06	2.35	1304	<1	<1gpm
07	1.55	1712	—	stagnant / Pondsed
08	5.18	1520	5-20	5-20gpm
09	4.18	1549	12	0.03' x 0.9 1ft/sec Bottom of Rocks
10	4.96	1613	5	0.03' x 0.8 ~~2ft~~ 2sec/ft
11	2.30	1246	1.5	1.5gpm meas. Flow @ Pipe
12	6.87	1336	162	0.03x 12' 1'/sec
(TD) ~~13~~14	6.37	1324	20-30	~20-30gpm
(TD) ~~14~~13	5.87	1356	15	15gpm (Bucket meas.)
15	3.97	1409	682	0.08 x 19' 1sec/ft
16	DRY	1416	—	DRY
17	DRY	1420	—	DRY
18	8.16	1310	242	0.03' x 48' 1sec/ft

1748 Hrs - Arrive @ B-3245

• Unload Pick up - secure EQ.

1800 Hrs - Leave B 3245 for Bloomington

END

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 11-14-04

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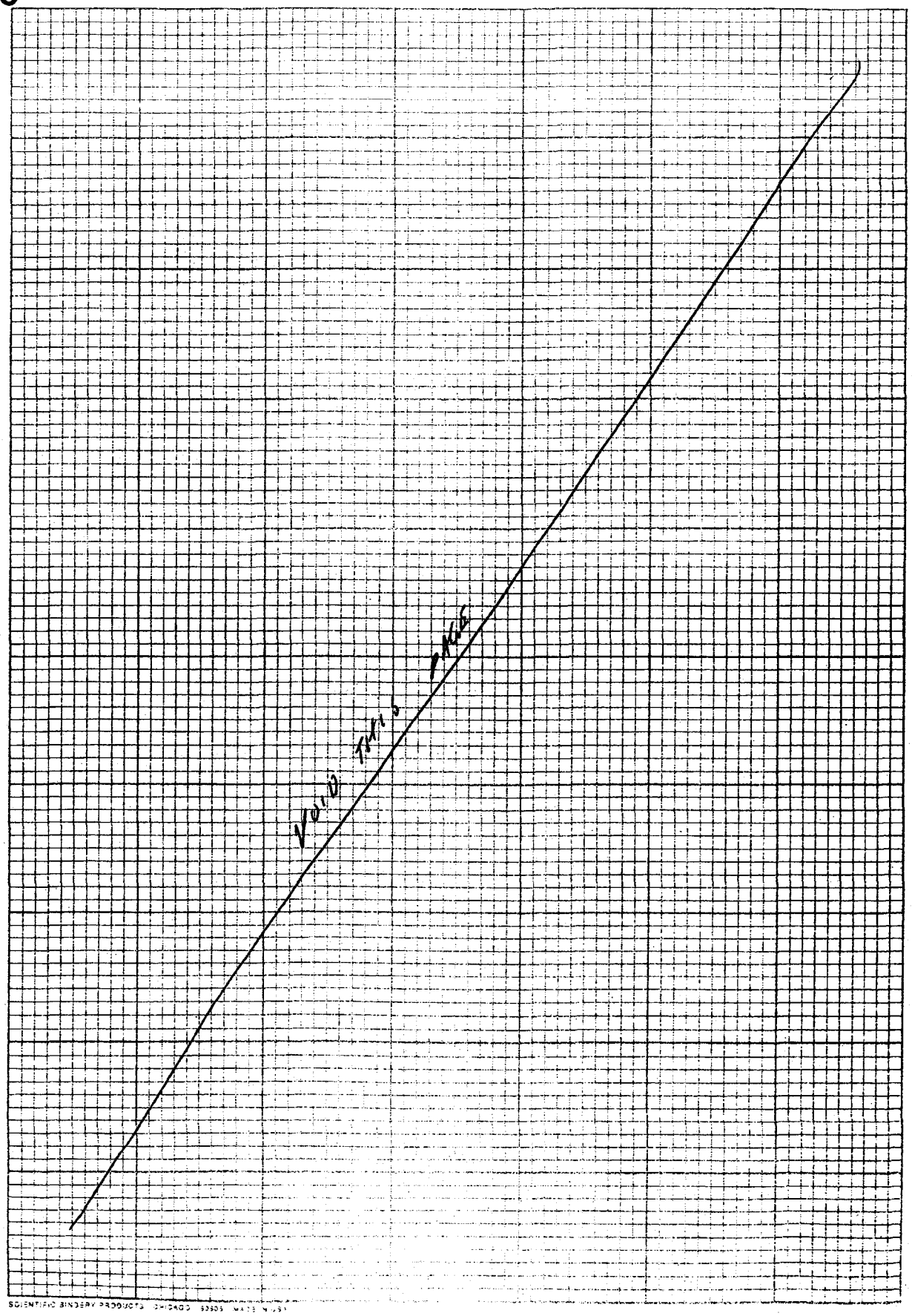

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 13765 (EL)

BOOK NO. 7448

WED. 12/15/04

Work continued from Page

0700 HLS - Arrive @ B-3245, prep. to measure staff gauges @ SWMU 16.

Staff Gauge	W.L.	Time	Vol. Est.
165G01			
02			
03			
04			
05			
06	3.20	8:24	30-50 gpm
07	44.7+1.64	8:30	3.5" x 3.5' 250c/ft
08	3.86	817	20-30 gpm. (bucket) - Rent pipes
09	DRY	819	

0830 HLS - Stop @ Break Room to check on status of B-146 - Pam called Supervisor B-146 is in RUN mode for the next couple of months - need to do W.L. & Staff Gauges on a weekly basis.

END

SIGNATURE [signature] DATE 12/15/04

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	2/13/06	**Weather/Temp**	Mostly sunny & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	2/13/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**	EFS:;J. McFall	**Modified By**	James Goerdt
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	9/7/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/13/06	06:00	Terry Rojahn	Arrive at PIT airport - TRAVEL DAY
2/13/06	13:45	Terry Rojahn	Arrive at NSWC Crane, Bloomington Gate - obtain gate pass
2/13/06	14:00	Terry Rojahn	Arrive at B-3245:
2/13/06	15:10	Terry Rojahn	DH to show J. McFall soil boring sampling locations.
2/13/06	17:30	Terry Rojahn	Left B-3245 for Sam's Club.
2/13/06	18:49	Terry Rojahn	Check out at Sam's Club - purchased field supplies.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	2/14/06	**Weather/Temp**	Mostly sunny & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;J. Goerdt;T. Rojahn	**Created Date**	2/14/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**	EFS:;J. McFall	**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	8/17/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/14/06	07:00	Terry Rojahn	Arrive at B-3245:
2/14/06	09:00	Terry Rojahn	TR organize office - wait for Digging Permits - Branda Chen to call office when the permits are ready.
2/14/06	10:00	Terry Rojahn	Pick up Digging Permits @ Public Works:
2/14/06	10:15	Terry Rojahn	Deliver Digging Permit 4961 for MFB to DH @ MFB.
2/14/06	10:30	Terry Rojahn	Return to B-3245:
2/14/06	12:50	Terry Rojahn	Lunch
2/14/06	13:10	Terry Rojahn	Arrive at MFB
2/14/06	13:50	Terry Rojahn	Start purging 13TW002.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/14/06	14:10	Terry Rojahn	Start collecting temporary well sample 13GWTW002.
2/14/06	16:40	Terry Rojahn	Start purging 13TW001.
2/14/06	17:25	Terry Rojahn	Start collecting temporary well sample 13GWTW002 (MS/MSD) and 13FD02140602 (DUP).
2/14/06	18:10	Terry Rojahn	Finish clean up at SWMU 13 (MFB).
2/14/06	18:20	Terry Rojahn	Arrive at B-3245:
2/14/06	18:30	Terry Rojahn	Leave site for Bloomington:

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/15/2006	**Weather/Temp**	Cloudy & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;J. Goerdt;T. Rojahn	**Created Date**	2/15/06
TtNUS Project #	112GN6878			**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Subcontractor Personnel**	EFS:;J. McFall	**Modified Date**	2/17/06
WBS Code #	0000	**Visitors**		**Printed By**	James Goerdt
Client	SOUTHDIV	**Status**	Archive	**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/15/06	06:50	Terry Rojahn	Arrive at B-3245:
2/15/06	08:45	Terry Rojahn	Arrive @ MFB - check in w/ DPT crew
2/15/06	09:05	Terry Rojahn	Start purging 13TW003 - converted from soil boring 13SB68.
2/15/06	09:08	Terry Rojahn	End purging - 13TW003 dry after purging ~400ml.
2/15/06	09:55	Terry Rojahn	Start purging 13TW004 - converted from soil boring 13SB70.
2/15/06	10:50	Terry Rojahn	Start collecting temporary well sample 13GWTW004.
2/15/06	11:45	Terry Rojahn	Check in with DPT crew.
2/15/06	12:10	Terry Rojahn	Lunch

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/15/06	12:35	Terry Rojahn	Arrive at B-3245:
2/15/06	16:45	Terry Rojahn	Left B-3245 for Bloomington Fed. Ex
2/15/06	16:55	Terry Rojahn	Drop off soil and temporary well samples on the above COC at Fed. Ex.
2/15/06	17:15	Terry Rojahn	SAMPLE SUMMARY THIS DATE - 1) Completed 14 soil borings 13SB52 - 59, 60, 61,and 64 - 67. 2) Installed seven temporary wells at borings 13SB59, 57, 56, 64, 52, 54 and 60. 3) Sampled one temporary well 13TW004 at 13SB70 and began sampling 13TW003 at 13SB68.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/16/2006	**Weather/Temp**	Cloudy & 50s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;J. Goerdt;T. Rojahn	**Created Date**	2/16/06
TtNUS Project #	112GN6878			**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Subcontractor Personnel**	EFS:;J. McFall	**Modified Date**	2/18/06
WBS Code #	0000	**Visitors**		**Printed By**	James Goerdt
Client	SOUTHDIV	**Status**	Archive	**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/16/06	06:55	Terry Rojahn	Arrive at B-3245:
2/16/06	09:50	Terry Rojahn	Arrive at 13TW003 (began sampling on 2/15)- removed ~400ml of ground water sample.
2/16/06	10:10	Terry Rojahn	Temporary well 13TW005 installed at soil boring 13SB59 was dry - NO SAMPLE
2/16/06	10:30	Terry Rojahn	Start purge at 13TW006 (installed at soil boring 13SB57).
2/16/06	10:35	Terry Rojahn	Dried out temp well 13TW006 - saved ground water for sample ~700ml
2/16/06	10:50	Terry Rojahn	Start purge at 13TW007 (installed at soil boring 13SB56).
			Dried out temporary well

2/16/06	10:55	Terry Rojahn	13TW007 - saved ground water for sample ~1000ml
2/16/06	11:45	Terry Rojahn	Slow recharge at 13TW007 - collected an additional 200ml - will return tomorrow for additional volume.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/16/06	12:00	Terry Rojahn	Start purge at 13TW010 (installed at soil boring 13SB54).
2/16/06	12:40	Terry Rojahn	Finish purge at 13TW010.
2/16/06	12:45	Terry Rojahn	Start collecting groundwater sample 13GWTW010.
2/16/06	13:30	Terry Rojahn	Start purge at 13TW009 (installed at soil boring 13SB52).
2/16/06	13:35	Terry Rojahn	Dried out temp well 13TW009 - saved ground water for sample ~800ml
2/16/06	14:55	Terry Rojahn	Start purge at 13TW008 (installed at soil boring 13SB64).
2/16/06	15:15	Terry Rojahn	Dried out temp well 13TW008.
2/16/06	15:25	Terry Rojahn	Start collecting groundwater sample 13GWTW008 - well recharging.
2/16/06	15:25	Terry Rojahn	Start collecting groundwater sample 13GWTW008 - well recharging.
2/16/06	17:23	Terry Rojahn	Finish sampling and clean up at 13TW008.
2/16/06	17:32	Terry Rojahn	Arrive at B-3245:
			Leave B-3245 for

2/16/06	18:00	Terry Rojahn	Bloomington. SAMPLE SUMMARY THIS DATE - 1) Completed 13 soil borings 12SB40, 44, 45, 51-55, 59, 60 and 68-70. 2) Installed four temporary wells at borings 12SB40, 53, 69 and 70. 3) Sampled two temporary wells 13TW008 at 13SB64 and 13TW010 at 13SB54 and began sampling 13TW006 at 13SB57, 13TW007 at 13SB56 and 13TW009 at 13SB52

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	2/17/06	**Weather/Temp**	Mostly sunny & 20s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey;T. Rojahn	**Created Date**	2/17/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**	EFS:;J. McFall	**Modified By**	James Goerdt
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	7/25/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/17/06	07:05	Terry Rojahn	Arrive at B-3245:
2/17/06	08:55	Terry Rojahn	Return to temporary well 13TW006 to obtain additional volume for ground water sample 13GWTW006.
2/17/06	09:43	Terry Rojahn	Finish clean up at 13TW006
2/17/06	09:50	Terry Rojahn	Return to temporary well 13TW007 to obtain additional volume for ground water sample 13GWTW007.
2/17/06	10:10	Terry Rojahn	Finish clean up at 13TW007.
2/17/06	10:15	Terry Rojahn	Return to temporary well 13TW009 to obtain additional volume for ground water sample 13GWTW009.

2/17/06	11:00	Terry Rojahn	Finish clean up at 13TW009.
2/17/06	11:10	Terry Rojahn	Check on DPT crew.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/17/06	11:30	Terry Rojahn	Lunch
2/17/06	11:50	Terry Rojahn	Arrive at B-3245:
2/17/06	17:15	Terry Rojahn	Leave B-3245 for Fed Ex.
2/17/06	17:50	Terry Rojahn	Drop off samples on the above COC at Fed Ex.
2/17/06	18:00	Terry Rojahn	SAMPLE SUMMARY THIS DATE - 1) Completed 11 soil borings 12SB46-50 and 61-66. 2) Installed six temporary wells at borings 12SB46, 48, 50, 63, 64 and 66.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	2/18/06	**Weather/Temp**	Cloudy, snow and temp in the teens	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC			**Created Date**	2/18/06
TtNUS Project #	112GN6878	**TtNUS Personnel**	D. Hickey;J. Goerdt;T. Rojahn	**Modified By**	James Goerdt
Task/Contract #	CTO 0357			**Modified Date**	7/25/06
WBS Code #	0000	**Subcontractor Personnel**	EFS:;J. McFall	**Printed By**	James Goerdt
Client	SOUTHDIV	**Visitors**		**Printed Date**	2/6/07
		Status	Archive		

Daily Activity

Date	Time	Author	Notes
2/18/06	07:00	Terry Rojahn	Arrive at B-3245:
2/18/06	09:45	Terry Rojahn	Rig hydraulics frozen - CANCEL DPT work until Monday.
2/18/06	10:00	Terry Rojahn	Office prep to sample soil boring 12SB67 w/hand auger.
2/18/06	10:40	Terry Rojahn	Arrive at SWMU 12 - prep to sample soil boring 12SB67
2/18/06	11:08	Terry Rojahn	Collect soil sample 12SS670002.
2/18/06	11:30	Terry Rojahn	Made 2 attempts at acquiring a deeper sample at 12SB67 and got refusal at 3' both times.
2/18/06	12:10	Terry Rojahn	Lunch
2/18/06	12:30	Terry Rojahn	DH & TR prep to check sump locations at SWMU 12 and 13. JG prep to sample

			temporary wells.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/18/06	13:10	Terry Rojahn	Arrive at SWMU 12 : Check all 11 sumps and catch basins clear away debris, determine method of sampling and loosen grates and covers.
2/18/06	14:50	Terry Rojahn	Arrive at SWMU 13: Check all 9 sumps and catch basins clear away debris, determine method of sampling and loosen grates and covers.
2/18/06	16:10	Terry Rojahn	Finish checking sumps and catch basins at SWMU 13 and check on JG at SWMU 12.
2/18/06	16:30	Terry Rojahn	Return to B-3245:
2/18/06	17:00	Terry Rojahn	Leave B-3245 for Lowe's
2/18/06	17:56	Terry Rojahn	Finish shopping at Lowe's.
2/18/06	18:15	Terry Rojahn	SAMPLE SUMMARY THIS DATE - 1) Completed 1 soil boring 12SB67 w/hand auger - Rig froze up. 2) Sampled one temporary well 12TW002 at 12SB70 and began sampling 12TW001 at

			12SB53 (~900ml), 12TW004 at 12SB40 (~800ml), 12TW006 at 12SB50 (~400) and 12TW007 at 12SB48 (~500ml)

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/19/2006	**Weather/Temp**	Mostly sunny and 20s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey;T. Rojahn	**Created Date**	2/19/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	3/8/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/19/06	07:15	Terry Rojahn	Arrive at B-3245:
2/19/06	10:20	Terry Rojahn	Arrive at SWMU 12 - Collected aqueous samples within two sumps (locations 12SU/SL005 and 008) and one catch basin (location 12SU/SL001). Sample sediment within all catch basins (locations 12SU/SL001-004, 006, 007, 009 and 010) and sumps (locations 12SU/SL005, 008 and 011).
2/19/06	12:15	Terry Rojahn	Lunch
2/19/06	12:45	Terry Rojahn	Process SWMU12 sump water and sediment samples.
			Arrive at SWMU 13. Collected aqueous samples within

2/19/06	14:30	Terry Rojahn	one sump (locations 13SU/SL009) and one catch basin (location 13SU/SL007). Sample sediment within all catch basins (locations 13SU/SL001, 002 and 004-008) and sumps (locations 13SU/SL003 and 009).
2/19/06	16:10	Terry Rojahn	Return to B-3245:
2/19/06	17:30	Anonymous	Left B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/20/2006	**Weather/Temp**	Cloudy and 20s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey;T. Rojahn	**Created Date**	2/20/06
TtNUS Project #	112GN6878			**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Subcontractor Personnel**	EFS:;Josh Dutton	**Modified Date**	3/8/06
WBS Code #	0000	**Visitors**		**Printed By**	James Goerdt
Client	SOUTHDIV	**Status**	Archive	**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/20/06	07:01	Terry Rojahn	Arrive at B-3245:
2/20/06	10:45	Anonymous	Arrive at SWMU 12
2/20/06	11:10	Anonymous	Start purging temporary well 12TW011.
2/20/06	12:30	Anonymous	End purge at 12TW011.
2/20/06	12:32	Anonymous	Start collecting ground water sample 12GWTW011.
2/20/06	13:05	Anonymous	Completed the sampling of temporary well 12TW001 initiated on 2/18.
2/20/06	13:12	Anonymous	Completed the sampling of temporary well 12TW006 initiated on 2/18.
2/20/06	13:16	Anonymous	Continued the sampling of temporary well 12TW007 initiated on 2/18 acquired ~100ml.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/20/06	13:30	Anonymous	Continue to collect sample volume at 12TW003 initiated on 2/19.
2/20/06	13:50	Anonymous	Sampling completed at temporary well 12TW003.
2/20/06	14:20	Anonymous	Completed the sampling of temporary well 12TW004 initiated on 2/18.
2/20/06	14:35	Anonymous	Arrive at B-3245:
2/20/06	18:05	Anonymous	Leave B-3245 for Fed Ex.
2/20/06	18:45	Anonymous	Drop off samples at Fed Ex.
2/20/06	19:00	Anonymous	SAMPLE SUMMARY THIS DATE - 1) DH and JG completed soil borings 12SB41-43, 56 -58 and 67. 2) Installed five temporary wells (12TW011 at 12SB67, 12TW012 at 12SB57, 12TW013 at 12SB56, 12TW014 at 12SB42 and 12TW015 at 12SB41). 3)TR sampled one temporary well 12TW011 at 12SB67

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/21/2006	**Weather/Temp**	Mostly sunny & 30s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey;T. Rojahn	**Created Date**	2/21/06
TtNUS Project #	112GN6878			**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Subcontractor Personnel**		**Modified Date**	3/8/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV	**Visitors**		**Printed Date**	2/6/07
		Status	Archive		

Daily Activity

Date	Time	Author	Notes
2/21/06	07:10	Terry Rojahn	Arrive at B-3245:
2/21/06	09:55	Terry Rojahn	Arrive at temporary well 12TW007.
2/21/06	10:37	Terry Rojahn	Finish clean up at 12TW007 - collected ~100ml.
2/21/06	10:50	Terry Rojahn	Return to B-3245:
2/21/06	11:50	Terry Rojahn	Lunch
2/21/06	12:25	Terry Rojahn	Return to B-3245:
2/21/06	17:00	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/28/2006	**Weather/Temp**	Mostly sunny and 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	2/28/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	3/8/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/28/06	07:05	Terry Rojahn	Arrive @ B-3245:
2/28/06	09:30	Terry Rojahn	Check in at B-2531 - OK to access temp wells @ SWMUs 12 & 13.
2/28/06	09:40	Terry Rojahn	Meet Corey Allen out side cafe - give CA maps and print out survey location tables for SWMUs 12 & 13 - planned on Thursday recon of soil boring and sump locations.
2/28/06	10:00	Terry Rojahn	Start collecting water levels at SWMU 12.
2/28/06	11:36	Terry Rojahn	End collecting water levels at SWMU 12.
2/28/06	11:55	Terry Rojahn	Start collecting temporary well sample 13GWTW005 (~100ml).
2/28/06	12:20	Terry Rojahn	Finish clean up at 13TW005 (acquired

			~100ml).
2/28/06	12:40	Terry Rojahn	Start collecting temporary well sample 12GWTW013 (Dry at ~600ml).

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
2/28/06	13:55	Terry Rojahn	Finish collecting temporary well sample 12GWTW013 - acquired 2000ml after well dried out - allowed well to recharge several times.
2/28/06	14:08	Terry Rojahn	Start collecting temporary well sample 12GWTW008 (Dry @ ~600ml).
2/28/06	14:28	Terry Rojahn	End collecting temporary well sample 12GWTW008 - well played out, collected ~900ml.
2/28/06	14:45	Terry Rojahn	Start collecting temporary well sample 12GWTW012 (Dry @ ~500ml).
2/28/06	15:25	Terry Rojahn	End collecting temporary well sample 12GWTW012 - well played out, collected ~900ml
2/28/06	15:33	Terry Rojahn	Start collecting temporary well sample 12GWTW014 (Dry @ ~400ml).
2/28/06	15:43	Terry Rojahn	End collecting temporary well sample 12GWTW014 - well played

			out, collected ~400ml.
2/28/06	15:50	Terry Rojahn	Start collecting temporary well sample 12GWTW015 (Dry @ ~400ml).
2/28/06	16:15	Terry Rojahn	End collecting temporary well sample 12GWTW015 - well played out, collected ~800ml.
2/28/06	16:24	Terry Rojahn	Return to 13TW005 - got zero additional volume.
2/28/06	16:35	Terry Rojahn	Start collecting temporary well sample 13GWTW012 (Dry @ ~200ml).
2/28/06	17:20	Terry Rojahn	End collecting temporary well sample 13GWTW012 - well played out, collected ~500ml.
2/28/06	17:30	Terry Rojahn	Arrive at B-3245:
2/28/06	17:45	Terry Rojahn	Left B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	02/27/2006	**Weather/Temp**	Mostly sunny and 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	2/27/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	3/8/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
2/27/06	12:45	Terry Rojahn	Arrive @ B-3245 (Travel Day):
2/27/06	13:47	Terry Rojahn	Attempted to check in w/ Mr. Mike Roach (production supervisor) - he was gone for the day - will access MFA tomorrow after check in.
2/27/06	13:59	Terry Rojahn	Start collecting water levels at SWMU 13.
2/27/06	14:41	Terry Rojahn	Finish collecting water levels at SWMU 13.
2/27/06	14:55	Terry Rojahn	Arrive @ B-3245:
2/27/06	15:00	Terry Rojahn	Leave B-3245 for Bloomington.
2/27/06	17:00	Terry Rojahn	Prep surveying tables for SWMUs 12 & 13 for surveyors to track completed survey locations.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	03/01/2006	**Weather/Temp**	Mostly Cloudy and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	3/1/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	3/8/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
3/1/06	07:15	Terry Rojahn	Arrive at B-3245:
3/1/06	09:00	Terry Rojahn	Investigate B-2773 for J. Schubert - empty paint locker.
3/1/06	09:15	Terry Rojahn	Start measuring water levels of wells and staff gauges at SWMU 8.
3/1/06	11:10	Terry Rojahn	Finish measuring water levels of wells and staff gauges at SWMU 8.
3/1/06	11:30	Terry Rojahn	Fax water level measurements to Jeff Schubert.
3/1/06	11:50	Terry Rojahn	Arrive at SWMU 12.
3/1/06	12:00	Terry Rojahn	Returned to temporary well 12TW008 for additional sample volume.
3/1/06	12:25	Terry Rojahn	Acquired an additional ~100ml from temporary well

			12TW008.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
3/1/06	12:35	Terry Rojahn	Returned to temporary well 12TW012 for additional sample volume.
3/1/06	14:10	Terry Rojahn	Acquired an additional ~1100ml from temporary well 12TW012.
3/1/06	14:20	Terry Rojahn	Returned to temporary well 12TW014 for additional sample volume.
3/1/06	14:45	Terry Rojahn	Acquired an additional ~400ml from temporary well 12TW014.
3/1/06	14:50	Terry Rojahn	Returned to temporary well 12TW015 for additional sample volume.
3/1/06	15:20	Terry Rojahn	Acquired an additional ~150ml from temporary well 12TW015.
3/1/06	15:35	Terry Rojahn	Acquired an additional ~25ml from temporary well 13TW005 - well played out!.
3/1/06	15:45	Terry Rojahn	Returned to temporary well 13TW012 for additional sample volume
3/1/06	16:15	Terry Rojahn	Acquired an additional ~500ml from temporary well 13TW012.

3/1/06	16:30	Terry Rojahn	Start purge at temporary well 13TW011.
3/1/06	17:10	Terry Rojahn	End purge at temporary well 13TW011.
3/1/06	17:15	Terry Rojahn	Start collecting ground water sample 13GWTW011.
3/1/06	17:40	Terry Rojahn	Finish clean up at 13TW011 (collected an MS/MSD).
3/1/06	17:50	Terry Rojahn	Arrive at B-3245:
3/1/06	18:20	Terry Rojahn	Leave B-3245 for Bloomington:

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Project Information

Activity Date	03/02/2006	**Weather/Temp**	Mostly cloudy, windy & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	3/2/06
TtNUS Project #	112GN6878	**Subcontractor Personnel**	BR&G:;Corey Allen;Eli Cook	**Modified By**	Terry Rojahn
Task/Contract #	CTO 0357	**Visitors**		**Modified Date**	3/8/06
WBS Code #	0000	**Status**	Archive	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
3/2/06	06:55	Terry Rojahn	Arrive at B-3245:
3/2/06	08:30	Terry Rojahn	Surveyors arrive at B-3245.
3/2/06	08:40	Terry Rojahn	Arrive at MFA - introduce CA & EC to Mr Mike Roach & Mr Tom Flynn (NSWC Crane production supervisors) for access info and approval POCs.
3/2/06	08:45	Terry Rojahn	Begin to show surveyors SWMU 12 & 13 soil boring and sump survey locations.
3/2/06	10:15	Terry Rojahn	Finish showing surveyors all soil boring and sump survey locations.
3/2/06	10:30	Terry Rojahn	Returned to temporary well 12TW014 for additional sample volume.
3/2/06	11:00	Terry Rojahn	Acquired an additional ~200ml from

			temporary well 12TW014.
3/2/06	11:10	Terry Rojahn	Returned to temporary well 12TW015 for additional sample volume - collected an additional 50ml - top off 1L bottle as well played out!

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 12 and 13 External Sump/Drainage Investigation - February 2006 - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
3/2/06	11:20	Terry Rojahn	Finish at temporary well 12TW015.
3/2/06	11:35	Terry Rojahn	Returned to temporary well 13TW005 for additional sample volume.
3/2/06	11:45	Terry Rojahn	Acquired an additional ~25ml from temporary well 13TW005 - well played out.
3/2/06	11:50	Terry Rojahn	Lunch
3/2/06	12:25	Terry Rojahn	Return to B-3245:
3/2/06	13:00	Terry Rojahn	Arrive at MFA to abandon temporary wells.
3/2/06	15:10	Terry Rojahn	Complete temporary wells abandonment at both MFA and MFB.
3/2/06	15:20	Terry Rojahn	Return to B-3245:
3/2/06	17:30	Terry Rojahn	Leave B-3245 for Bloomington Fed Ex.
3/2/06	18:00	Terry Rojahn	Drop off Fed Ex shipments.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/31/2006	**Weather/Temp**		**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/1/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 377	**Visitors**		**Modified Date**	6/1/06
WBS Code #	TP00050125	**Status**	Archive	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
5/31/06	15:00	Terry Rojahn	Arrive at Bloomington gate - obtain 10 day pass. Flight in was delayed almost 2Hrs.
5/31/06	15:15	Terry Rojahn	Arrive at B-3245:
5/31/06	16:45	Terry Rojahn	Leave B-3245 for Sam's Club to pick up supplies (paper towels,copy paper & drinking water).
5/31/06	17:44	Terry Rojahn	Check out at Sam's Club.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/02/2006	**Weather/Temp**	lt. rain - overcast & 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/2/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 377	**Visitors**		**Modified Date**	6/2/06
WBS Code #	TP00050125	**Status**	Archive	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
6/2/06	07:10	Terry Rojahn	Arrive at B-3245:
6/2/06	09:15	Terry Rojahn	Checked on dig permits @ public works (Mr Ryan Roberts and Mr Steve Reddick) -up dated SWMU 9 - told above that holes would be installed via DPT to ~11' and that two additional holes were added 1 between each cluster of 2.
6/2/06	09:45	Terry Rojahn	Stopped @ Mr Mike Roach and Mr Tom Flynn's office to check on SWMU 13 activity - Mike and Tom were both gone. Checked in office down stairs - got in touch w/ Mr Dave Baker - OK to access MFB this week and next.
			Arrive at

6/2/06	10:00	Terry Rojahn	monitoring well 13MWT01.
6/2/06	10:15	Terry Rojahn	Start purge at monitoring well 13MWT01.
6/2/06	11:25	Terry Rojahn	Finish purge at monitoring well 13MWT01.
6/2/06	11:30	Terry Rojahn	Start collecting ground water sample 13GWT0108.
6/2/06	11:54	Terry Rojahn	Finish clean up at monitoring well 13MWT01.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/2/06	12:00	Terry Rojahn	Start purge at monitoring well 13MWT11.
6/2/06	13:10	Terry Rojahn	Finish purge at monitoring well 13MWT11.
6/2/06	13:15	Terry Rojahn	Start collecting ground water sample 13GWT1108.
6/2/06	13:38	Terry Rojahn	Finish clean up at monitoring well 13MWT11.
6/2/06	13:50	Terry Rojahn	Start collecting ground water sample 13GWT4507 purged 6-01-06.
6/2/06	15:00	Terry Rojahn	Finish clean up at monitoring well 13MWT45.
6/2/06	15:12	Terry Rojahn	Return to B-3245:
6/2/06	16:55	Terry Rojahn	Prep to leave B-3245 for Fed Ex.
6/2/06	17:30	Terry Rojahn	Drop off samples for shipment at Fed Ex.
6/2/06	17:43	Terry Rojahn	Purchase supplies at Kroger to decon soil core sampler.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/01/2006	**Weather/Temp**	Overcast & 70s.	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/1/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 377	**Visitors**		**Modified Date**	6/1/06
WBS Code #	TP00050125	**Status**	Archive	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
6/1/06	07:15	Terry Rojahn	Arrive at B-3245: Complete 5/31/06 daily log.
6/1/06	08:45	Terry Rojahn	Arrive at monitoring well 13MWT40.
6/1/06	09:00	Terry Rojahn	Start purge at monitoring well 13MWT40.
6/1/06	10:20	Terry Rojahn	Finish purge at monitoring well 13MWT40.
6/1/06	10:25	Terry Rojahn	Start collecting ground water sample 13GWT4007.
6/1/06	11:15	Terry Rojahn	Finish clean up at monitoring well 13MWT40.
6/1/06	11:30	Terry Rojahn	Lunch
6/1/06	11:50	Terry Rojahn	Stopped @ Mr Mike Roach and Mr Tom Flynn's office to check on SWMU 13 activity - Mike and Tom were both gone. Will check again later.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/1/06	12:00	Terry Rojahn	Arrive at monitoring well 13MWT21.
6/1/06	12:15	Terry Rojahn	Start purge at monitoring well 13MWT21.
6/1/06	13:15	Terry Rojahn	End purge at monitoring well 13MWT21.
6/1/06	13:20	Terry Rojahn	Start collecting ground water sample 13GWT2108.
6/1/06	13:58	Terry Rojahn	Finish clean up at monitoring well 13MWT21.
6/1/06	14:10	Terry Rojahn	Start purge at monitoring well 13MWT45.
6/1/06	16:05	Terry Rojahn	End purge at monitoring well 13MWT45.
6/1/06	16:24	Terry Rojahn	Finish clean up at monitoring well 13MWT45.
6/1/06	16:34	Terry Rojahn	Arrive at B-3245:Ret
6/1/06	17:25	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/03/2006	**Weather/Temp**	Mostly sunny & 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/3/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 377	**Visitors**		**Modified Date**	6/3/06
WBS Code #	TP00050125	**Status**	Archive	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
6/3/06	07:15	Terry Rojahn	Arrive at B-3245:
6/3/06	08:20	Terry Rojahn	Arrive at monitoring well 13MWT09.
6/3/06	08:45	Terry Rojahn	Start purge at monitoring well 13MWT09.
6/3/06	09:55	Terry Rojahn	End purge at monitoring well 13MWT09.
6/3/06	10:00	Terry Rojahn	Start collecting ground water sample 13GWT0909 (MS/MSD).
6/3/06	10:55	Terry Rojahn	Start purge at monitoring well 13MWT28.
6/3/06	13:41	Terry Rojahn	End purge at monitoring well 13MWT28 will sample 6/04/06.
6/3/06	14:00	Terry Rojahn	Return to B-32435

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/3/06	14:45	Terry Rojahn	Arrive at monitoring well 13MWT51.
6/3/06	15:05	Terry Rojahn	Start purge at monitoring well 13MWT51.
6/3/06	15:45	Terry Rojahn	End purge at monitoring well 13MWT51.
6/3/06	15:50	Terry Rojahn	Start collecting ground water sample 13GWT5106.
6/3/06	16:47	Terry Rojahn	Finish clean up at monitoring well 13MWT51.
6/3/06	17:00	Terry Rojahn	Start purge at monitoring well 13MWT34.
6/3/06	18:30	Terry Rojahn	End purge at monitoring well 13MWT34.
6/3/06	18:35	Terry Rojahn	Start collecting ground water sample 13GWT3407 & FD06030601.
6/3/06	19:21	Terry Rojahn	Finish clean up at monitoring well 13MWT34.
6/3/06	19:30	Terry Rojahn	Arrive at B-3245:
6/3/06	19:50	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/04/2006	**Weather/Temp**	Mostly sunny and 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/4/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	CTO 377	**Visitors**		**Modified Date**	6/5/06
WBS Code #	TP00050125	**Status**	Archive	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
6/4/06	07:10	Terry Rojahn	Arrive @ B-3245:
6/4/06	08:10	Terry Rojahn	Arrive at monitoring well 13MWT31.
6/4/06	08:25	Terry Rojahn	Begin purging monitoring well 13MWT31.
6/4/06	09:35	Terry Rojahn	End purging monitoring well 13MWT31.
6/4/06	09:40	Terry Rojahn	Begin collecting ground water sample 13GWT3107.
6/4/06	10:19	Terry Rojahn	Finish clean up at monitoring well 13MWT31.
6/4/06	10:30	Terry Rojahn	Begin collecting ground water sample 13GWT3107 (purged 6/03/06).
6/4/06	11:00	Terry Rojahn	Finish clean up at monitoring well 13MWT28.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/4/06	11:25	Terry Rojahn	Begin purging monitoring well 13MWT17.
6/4/06	12:25	Terry Rojahn	End purging monitoring well 13MWT17.
6/4/06	12:30	Terry Rojahn	Begin collecting ground water sample 13GWT1708.
6/4/06	12:55	Terry Rojahn	Finish clean up at monitoring well 13MWT17.
6/4/06	13:10	Terry Rojahn	Begin purging monitoring well 13MWT15.
6/4/06	15:10	Terry Rojahn	End purging monitoring well 13MWT15.
6/4/06	15:28	Terry Rojahn	Begin collecting ground water sample 13GWT1508.
6/4/06	16:05	Terry Rojahn	Finish clean up at monitoring well 13MWT15.
6/4/06	16:15	Terry Rojahn	Returned to B-3245:
6/4/06	17:30	Terry Rojahn	Prep to leave B-3245 for Bloomington. SAMPLPE SUMMARY FOR THIS DATE - FINISH GROUND WATER SAAMPLING AT SWMU 12 WITH THE COLLECTION OF GROUND WATER SAMPLES AT MONITORING WELLS

			13MWT25, 17, 28 & 31.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	6/5/06	**Weather/Temp**	Mostly sunny & 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	6/5/06
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 377	**Subcontractor Personnel**		**Modified Date**	9/8/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv	**Visitors**		**Printed Date**	2/6/07
		Status	Archive		

Daily Activity

Date	Time	Author	Notes
6/5/06	07:00	Terry Rojahn	Arrive @ B-3245:
6/5/06	07:50	Terry Rojahn	Arrive @ Public Works - check on MFB dig permit. Talked to Mr Ryan Roberts - he thinks that all utilities been cleared, but a few signatures are needed on the permit - said to stop back at lunch time and the permit should been ready.
6/5/06	08:20	Terry Rojahn	Return to B-32435:
6/5/06	11:45	Terry Rojahn	Lunch
6/5/06	12:15	Terry Rojahn	Stop at Public Works - no one around - water wasn't signed off on as of yet.
6/5/06	12:35	Terry Rojahn	Return to B-3245:
6/5/06	13:55	Terry Rojahn	Pick up dig permit at Public Works - cancel permit request

			for SWMU 9.
6/5/06	14:20	Terry Rojahn	Arrive at SWMU 13: Collect sediment samples at locations 13SD46, 48 through 50 and 54. Sediment location 13SD47 was a catch basin/culvert w/ a concrete bottom - voil of any sediment material. Also, collect surface soil sample at location 13SB76 inside inclosed transport corridor w/ concrete floor.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/5/06	15:45	Terry Rojahn	Return to B-3245:
6/5/06	17:30	Terry Rojahn	Leave B-3245 for Fed Ex.
6/5/06	18:05	Terry Rojahn	Drop off rental equipment and ground water samples for shipment on the above AB#s at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	6/6/06	**Weather/Temp**	Sunny, Humid & 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D.Hickey;T.Rojahn	**Created Date**	6/6/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	John Wright
Task/Contract #	CTO 377			**Modified Date**	6/10/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv	**Status**	Archive	**Printed Date**	2/6/07

Daily Activity

Date	Time	Author	Notes
6/6/06	07:00	Terry Rojahn	Arrive at B-3245
6/6/06	08:30	Terry Rojahn	Arrive at SWMU 13 - collected sediment samples at 13SD51 through 53 and soil samples at boring locations 13SB73, 75 and 77.
6/6/06	11:55	Terry Rojahn	Return to B-3245:
6/6/06	12:10	Terry Rojahn	Lunch at cafe
6/6/06	12:35	Terry Rojahn	Return to B-3245:
6/6/06	16:10	Terry Rojahn	Return to SWMU 13: Collected soil samples at boring locations 13SB74, and 78 through 84.
6/6/06	18:45	Terry Rojahn	Return to B-3245:
6/6/06	19:45	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

ROUND 3

NSWC CRANE

N9060

CTO 0279

SWMUs 13 + 16

2555

DRILLING

START: 3/24/03

END:

TABLE OF CONTENTS

Subject	Page

TITLE CRANE

PROJECT NO. 9060

BOOK

Work continued from Page | SUNNY 70's

MON 3/24/03

1345 ARRIVE @ BLDG 3245. UN-PACK SUPPLIES.

1500 BOWSER MORNER ON-SITE. T. BOEHMER HAS CREW UN-LOAD MATERIALS AT BLDG. 3245.

1555 T. BOEHMER STATES W.S TRAINING W/ DRILLERS

1735 DRILLERS LEAVE SITE. WILL MEET @ BLDG 3245 @ 0700

1820 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkwill | DATE 3/24/03

WITNESS | DATE

TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page SUNNY 50's

TUES 3/25/03

0650 ARRIVE @ BLDG. 3245

0700 DRILLERS SHOW UP. START BULDOZING DOWN PAD.

0735 CONDUCT R26 INSPECTION W/ DAVE S. ON THE PUTNSUNZE R26.

0800 GO TO MEETING W/ NAVY PLANNER TO DISCUSS ACCESS FOR 13+16.

0850 BACK @ BLDG. 3245. UNABLE TO WORK @ SUMM 16 TILL THURS. CAN SET UP @ SUMM 13 BUT NEED TO WAIT FOR UTILITY CLEARANCE & 1200 START.

1055 FINISH WORK THERE. DRILLERS SET UP ON 13 MWT 15.

1226 START DRILLING W/ SAMPLE OUT TO BEDROCK.

1245 DRILLERS @ 15'. HIT SILTSTONE @ 13'.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkwill
WITNESS

DATE 3/25/03
DATE

TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page SUNNY 60's

TUES 3/25/03

1305 DRILLERS START W/ 6" CASING

1316 DRILLERS @ 15'. SET UP TO REAM W/ 5" BIT TO 25' TO SEE IF WE HAVE A H_2O PRODUCING ZONE.

1326 START REAMING THE HOLE.

1335 DOWN TO 25'. WILL FLUSH OUT HOLE AND SEE WHERE WATER COMES TO

1345 WATER UP TO 17' BGS AND STILL DRILLING.

1352 WL @ 17' BGS. DRILLERS TO SET WELL @ 25'

1359 STARTING TO THUNDER + LIGHTNING. STOP DRILLING.

1506 RAIN STOPPED START SETTING WELL

1600 WELL SET @ 25'
SAND TO 13' (15-17) CHIPS
VOL CLAY 30'. HIGH BENT. TO 11'-4'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkwill
WITNESS

DATE 3/25/03
DATE

TITLE CRANE

PROJECT NO. 9060

BOOK 2555

Work continued from Page RAINY 50's. WINDY

TUES 3/25/03

— MATERIAL USED:
GLOBAL #5 SAND
PURE GOLD MED CHIPS BENTONITE:
QUIK GROUT BENT. POWDER
- BOARD LONGYEAR ASTM F480-88A
↳ PIPE + SCREEN PVC SCH 40.
SLOT SIZE .20

1610 DRILLERS PULL OFF. WILL DECON CASING BEFORE NEXT HOLE.

1621 DRILLERS SETTING UP ON. 13MWT18.

1734 DOWN TO 20' CONT. SAMPLE.

1750 BACK @ BLDG 3245 GOING OVER DATA W/ DRILLERS

TODAY'S TOTALS:
OVB W/ SAMPLE 35'
ROCK W/O SAMPLE 10'
WELL INST. 25' 13MWT15

1800 HEAD TO BLOOMINGTON GATE TO GET ANOTHER

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Bulkner DATE 3/25/03

WITNESS DATE

TITLE CRANE

PROJECT NO. 9060

BOOK 2555

Work continued from Page

TUES 3/25/03

PAGES PER DAVES

1615 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Bulkner DATE 3/25/03

WITNESS DATE

TITLE Crane

PROJECT NO. 9060

BOOK 2555

Work continued from Page Cool 50's + Sunny.

WED 3/26/03

0600 Arrive @ Gate Vehicles searched by Security

0650 Arrive @ Bldg 3245. Dave S + John F. inside

0730 Back @ Bmwt18 setting up to core.

0751 Start coring.

0804 Drillers called to 30'. We run 12.50 minutes with flush out hole w/ air then begin up core run

0841 WL @ 13.0' bgs. will set well @ 30'. Seems to be a good H2O zone from 21.5'-25' v. wet.

0848 WL @ 11.0' bgs on 13mwt18

0940 13mwt18 set @ 30' 125 gal used
Sump to 18'
Bent chips to 16'
Vol clay to 3'

0946 Rig stuck. Dave S calls T. Boehmer

Work continued to Page

SIGNATURE Robert Bulkner

WITNESS

DATE 3/26/03

DATE

TITLE Crane

PROJECT NO. 9060

BOOK 2555

Work continued from Page 60's + Breezy

WED 3/26/03

Will try to get a backhoe or two truck out.

1000 Need to get a boiler out to the site. 2400.00 A day on-site. Dave S. will coordinate and have one delivered to the site.

1030 Told T. Rojahn about situation. Will work w/ M. Cochran + continue w/ ODT

1047 M. Cochran agrees that we should have the drillers send a dozer to the site.

1050 We head back to Bldg 3245 to see if Public Works can send out a wrecker to pull us out.

1100 M. Cochran talks w/ Chris. A wrecker will be sent to Mine Fill B.

1115 Arrive @ Mine Fill B. Security says we missed wrecker. Go to track down.

Work continued to Page

SIGNATURE Robert Bulkner

WITNESS

DATE 3/26/03

DATE

TITLE Crane

PROJECT NO. 9060

BOOK 2555

Work continued from Page Sunny 60's.

Wed 3/26/03

1130 Gal @ base Crane with blue wrecker ready after lunch

1230 Wrecker on-site

1320 Sampled 135807 0002 w/ M-e

1330 Sampled 135807 0810 w/ M-e

1335 Back w/ Sunoco Rig Stem stuck

1425 Rig unstuck

1433 Drillers Decon Equip

1448 Drillers set up on B-MW17.

1520 Drillers stop they need to help dot rig.

1535 Drillers back. Start drilling

1550 Drilled to 8' w/ 6" 5" from 8'-18' Flush out hole

Work continued to Page

SIGNATURE Robert Balkovec DATE 3/26/03

WITNESS DATE

TITLE Crane

PROJECT NO. 9060

BOOK 2555

Work continued from Page

Wed 3/26/03

1558 Water to 11' Will install well @ 18'.

1627 Well set @ 18' 2 130 gal used
Sand to 6'
Bent chips to 3'
Vol cuk to — NA —

1630 Well set @ 17.5' Some collapse.

1636 Drillers pull off + head to decon.

1656 Drilling totals.

Cuts w/ sampling 15'
Rock drilling w/o sample 3'
Rock coring 10'
Well installation 47.5'

1700 Back @ 3245 w/ Dales.

1735 Drillers leave site

1740 Leave site to get gas (End of Date)

Work continued to Page

SIGNATURE Robert Balkovec DATE 3/26/03

WITNESS DATE

TITLE CRANE

PROJECT NO. 9060

BOOK 2555

Work continued from Page | COOL 40's - SUNNY

THURS 3/27/03

0640 ARRIVE @ GATE

0650 ARRIVE @ BLDG 3245 CH D203

0705 DRILLERS ARRIVE ON SITE.

0740 ARRIVE @ SUMMA 13. DRILLERS NEED TO FINISH DECON. RAN OUT OF WATER YESTERDAY.

0745 @ 13MW17 WL = 6.7

0800 SET UP ON 13MW17. HAVE DRILLERS BLOW DOWN TO 15' BASED ON 13MW17.

0802 RIG DOWN. DRILLERS HEAR SOMETHING FUNNY W/ THE RIG.

0812 RIG BACK UP. DRILLERS ADDED GREASE TO THE DRIVE SHAFT.

0817 START DRILLING USING 6" CASING

0836 DRILLERS DOWN 15' WILL START TO SET WELL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkman DATE 3/27/03

WITNESS DATE

TITLE CRANE

PROJECT NO. 9060

BOOK 2555

Work continued from Page | WARM 60's - SUNNY

THURS 3/27/03

0962 WELL SET @ 15'
SAND TO 4'
BENT CHIPS TO 2'
- NO NEED FOR VOL CLAY DUE TO SHALLOW DEPTH.
* HARDER DRILLING @ 12'

0942 DRILLERS PULL OFF AND SET UP ON 13MW12

0934 HIT ROCK @ 7'. WEATHERED S.S. CORED TO 10' WILL SET 6' @ 10'

1014 CORED TO 15' 10-14.5' HAVE WET SEDIMENT ~~GLACIERINE~~ FLUSHED OUT HOLE

1025 WATER @ 11' BGS WILL DRILL TO 20' AND SET WELL

1050 WELL SET @ 20'
SAND TO 8'
BENT CHIPS TO 4'
WILL NOT USE VOL. CLAY. -

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkman DATE 3/27/03

WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page WARM 70° - SUNNY

THURS 3/27/03

1100 DRILLERS PULL OUT + HEAD TO DECATUR.

1219 DRILLERS @ BLDG 3245 FILLING UP HOT WATER

1245 BACK @ SUNNY 13.

1300 DRILLERS SETTING UP ON 13 MINUTE 10.

1314 REFUSAL @ 3' HIT CONCRETE.

1320 OFFSET A 2ND TIME + HIT CONCRETE

1328 OFFSET A 3RD TIME

1337 DOWN TO 5'.

1414 DOWN TO 15' PUSH SAT @ 10-12.5' WILL SIT FOR A HALF HOUR TO SEE IF WATER COMES IN.

1432 HOLE STILL DRY. DRILLER STARTS UP ON - SITE.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Robert Balkwill DATE 3/27/03
WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page WARM 70's

THURS 3/27/03

1442 HOLE IS DRY. WILL SEND 6" TO 15' THEN 5" REAM TO 20'.

1520 REAMED 15' - 20' WL @ 14' AFTER FLUSH

1530 REAMED 20' - 25' WL @ 14.2 AFTER FLUSH WILL SET WELL @ 25'

1620 WELL SET @ 25'
SAND TO 13'
BENT CLOSE TO 11'
VOL LIX TO 2'

1625 DRILLERS HEAD TO DECATUR

1700 DRILLERS @ BLDG 3245. GO OVER DAILY ACTIVITIES.

1730 DRILLERS LEAVE SITE

1750 LEAVE FOR FED-EX

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Robert Balkwill DATE 3/27/03
WITNESS DATE

TITLE Crane

PROJECT NO. 9060

BOOK 2555

Work continued from Page Cool 50's V. Windy Some Clouds

FRI. 3/28/03

0640 Arrive @ Front Gate

0650 Arrive @ Block 3345 Cal P70's

0715 Drillers on Site, Loading up well supplies.

0725 Head to Summit 13.

0730 Battery Dead on R36

0755 Drillers Setting up on 13MWT22.

0839 4" Samplers to 15' Dry @ 6'. Appears to be a cold zone from 6'-8' possible water. Will let hole sit to see if water comes in.

0849 Water @ 14' bgs. Will have drillers set 6" to 7' and ream 5" to 15'. (7'-15')

0911 Blew out hole twice. WL ~13' bgs. Will set well @ 15'.

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Work continued from Page 50's Cloudy & V. Windy

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0934 Well set @ 15'
Sand to 4'
Bent chips to 2'
- No vol clay -

0953 Will set up on 13MWT11 [redacted] Plan
Down to 15' & set well based on
13MWT12 TD 20' WL @ 7.2' bgs
13MWT16 TD 15' WL @ 7.0' bgs

1000 Set up on 13MWT11 Drillers to set
6" to 5' then 5" ream to 15'.

1004 Start w/ 6".

1008 Down to 5'. Start w/ 5" ream

1017 Down to 15'. Drillers flush out hole

1040 Well set @ 15'
Sand to 4'
Bent chips to 2'
- No vol clay -

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Work continued from Page V. WATER 20 OVERCAST 67°

FRI 3/28/03

1050 SETUP ON 13MW721.
WELL REAM W/ 5" TO 15' AND SET WELL
BASED ON 13MW717 WL = 7.61' BGS

1105 REAMED TO 15'. WELL FLUSH OUT HOLE.

1120 WELL INSTALLED @ 15'
SAND TO 4'
BENT. CHIPS TO 2'
→ DRILLER TELLS ME HE LOST HIS CIRCULATION @ 14'-15'. SHOULD BE GOOD PRODUCER.

1127 DRILLERS HEAD TO DECON.

1135 BREAK FOR LUNCH

1200 BACK @ BLDG. 3245 DOING PAPERWORK

1240 BACK @ SWMU 13. DRILLERS DECONTAMINATED.

1255 SET UP ON 13MW725.

1323 DOWN TO 14'. WELL REFUSH W/ 4" CASING.
POSSIBLE SATURATION @ 8' WELL 5" REAM

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FRI 3/28/03

TO 15' & FLUSH OUT HOLE.

1332 WL @ 13' BGS WELL LET SIT TO SEE IF MORE COMES IN NOT SURE IF BLOW OUT REMOVED ALL OF THE DRILLING WATER

1406 WATER @ 13.25' AND RISING. WELL SET WELL TO SCREEN THE 8' WET ZONE. HOPEFULLY IS WELL PRODUCE.

1417 WELL SET @ 15'
SAND TO 4'
BENT CHIPS TO 2'

1435 CHECKED ON 13MW722. WL = 10.0' BGS
DRILLERS WILL SETUP ON 13MW726.

1447 DRILLERS SET UP ON 13MW726
WELL SAMPLE OUT TO 10' THEN GUESS TO 20'.

1450 STAFF IN OUT @ 16' WELL GOING TO 15' W/ 4" CASING

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FRI 3/28/03

1553 DOWN TO 20' FLUSHED OUT HOLE.
WL @ 19' AND DRAINING. WELL SET WELL.

1600 WELL SET @ 20'
SAND TO 8'
BENT CHIPS TO 3'
VOL CLAY TO NAT

1610 STARTING TO THUNDER + LIGHTNING.

1658 DRILLING TOTALS

49' OF OVB + ROCK SAMPLING (5' ROUN)
14' OVB NS
17' ROCK NS
80' WELL MOST
5 STANDBY
1 DAY DRILL

GO OVER DAILY W/ DAVE S.

1705 DRILLERS OFF SITE.

1730 LEAVE FOR FED-EX.

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Work continued from Page CLOUD 30's + OVERCAST

SAT 3/29/03

0650 ARRIVE @ SITE

0705 DRILLERS ON-SITE.

0720 LEAVE FOR SUMMIT 13. DRILLERS STILL NEED TO DECON

0750 CHECK W/ MARTIN KLUESNER BLDG 165 SUPERVISOR

0800 DRL SET UP ON 13MW07

0846 OVB TO 5' CORE 5'-15'
WET @ 8' WILL SET 15' WELL

0900 WELL SET @ 15'
SAND TO 4'
BENT CHIPS TO 2'
-NO VOL CLAY.
WILL SET UP ON 13MW07
AND BLOW DOWN TO 16' + SET WELL

0917 SET UP ON 13MW05 SLIGHT INCLINE FROM

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SAT 3/29/03

13MWT 05 WILL SET WELL @ 16'.

0435 WELL SET @ 16'
SAND TO 4'
BENT CHAPS TO 8'

0955 DRILLERS HEAD OVER TO BLDG. 3245 TO GET WATER TRUCK.

1024 SET UP ON 13MWT02.

1152 OVB TO 7' ROCK CORE TO 17'
FLUSH OUT HOLE AND LET SET.

1355 WL = 16.7' BLS 3' FEET OF WATER.
WILL GO DEEPER

1457 DOWN TO 27'. LAST RUN HAD HEAVY FRACTURED SHALE & S.S. (WATER BEARING)
LOOKS LIKE A GOOD PRODUCING ZONE.
WL @ 23' BLS AFTER FLUSH OUT
WILL SET WELL.

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Work continued from Page CLOUDY 40° CLOUDY

SAT. 3/29/03

1543 WELL SET @ 27'
SAND TO 15'
BENT CHAPS TO 13'
VOL CLAY TO 4'

1550 DRILLERS HEAD TO DECON.

1630 DECON FINISHED DRILLERS WAND WATER INTO RIG. DRILLERS WILL TRY TO SET THE RIG UP ON 13MWT08 HARD ACCESS.

1636 RAINING

1654 RIG STUCK. DRILLERS GET DOZER.

1728 RIG SET-UP ON 13MWT08 HAD TO MOVE 3100' TOWARDS BLDG 165 DUE TO MUDDY CONDITIONS

1737 HEAD TO BLDG. 3245 TO GO OVER DAILY ACTIVITIES & FILL UP W/ WATER

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SAT 3/29/03

1800 DRILLERS LEAVE SITE.

1900 LEAVE SITE

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Work continued from Page GWD 31°

SUN 3/30/03

0655 ARRIVE @ SITE

0700 DRILLERS ON-SITE FILLING UP DRILL TANK

0735 START DRILLING ON 13MW108

0755 DOWN TO 10' PUSH SAT @ 8' WELL 10 TO 15'

0811 DOWN TO 15' W/4" SAMPLER. WET ALONG THE SIDES OF THE HOLE WELL SET 6' TO 5' THEN REAM (5" X 5'15'.

0830 DOWN TO 15. DRILLER LOSING WATER FLUSHED HOLE. WL 2 9' BGS. WELL SET WELL

0910 WELL SET @ 15'.
SAND TO 4'
BENT CHIPS TO 2'

0924 DRILLERS SET UP ON 13MW104.

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Work continued from Page CONT 30'S. V-WINDOW

SUN 3/30/03

0930 START DRILLING.

0945 DOWN TO 8'. HYD PUSHER WILL SET 6"
@ 5' DRIFT ABOVE POSS. SATURATION @ 7-7.5'.

1000 PULL UP TO 15' W/ 5". WILL FLUSH OUT HOLE.
WATER @ 13' AND RISING. WILL SET WELL @ 15'

1017 WELL SET @ 15'
SAND TO 4'
BENT CHIPS TO 2'

1030 DRILLERS HEAD TO DEEPER RIG.

1120 SETUP ON 13MW101
CHECKED WL ON 13MW102 WL = 23' BGS.

1150 DOWN TO 10'. DIFFERENT LEFT-HAND
13MW102. POSS MOZEMBIQUE @ 8'
HOLE COLLAPSED TO 6'. DRILLERS WILL OPEN
HOLE BACK UP & LET SIT TO SEE IF
THE WEATHERED S S WILL MAKE WATER.

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SUN 3/30/03

1300 DRILLERS TAKE A BREAK. HOLE OPEN TO 10'.
WILL LET SIT TO SEE IF WATER COMES UP.

1254 WATER @ 6.5' BGS. WILL SET
WELL @ 15'.

1335 WELL SET @ 15'
SAND TO [redacted] 3'
BENT CHIPS TO [redacted] 1'

1340 PULL OFF. WILL DRIVE OVER AND
DECON TOOLING

1410 DRILLERS TRYING TO SETUP ON 13MW103.

1428 NOT BACK FAR ENOUGH OFF OF THE WATER
LINE. RIG STUCK.

1510 RIG PULLED OUT. WILL INSTALL WELL
NEAR THE ROAD.

1512 WILL SEND 5" TO 18'. BASED ON 13MW101
DETAILS.

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SUN 3/30/03

1540 WELL SET @ 15'
SAND TO 3'
BENT TO 1'
- DRILLERS CLEAN UP. HEAD OVER TO DEKAL.
PLAN TO MOB DOZER OUT OF FENCED AREA.

1728 DOZER + RIG SET-UP ON BMW 14.

1740 HEAD TO BLDG. 3245.

1800 DRILLERS LEAVE SITE.

1830 LEAVE SITE. NEED TO FILL UP VEHICLES

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Work continued from Page CWD H2GW 2095

MON 3/31/03

0655 ARRIVE @ BLDG. 3245

0700 DRILLERS ON SITE.

0750 BACK @ BMW 14.

0852 DOWN TO 17.5' REFUSAL POSS. WATER @ 9' BGS WILL LET HOLE SIT TO SEE IF WATER COMES IN.

0912 WATER COMING IN THE HOLE. M-SCUPE CAME UP WET. 3.1' WATER. SCRAPED THE SIDE WALLS 2.8' OF SATURATION ALONG THE SIDE WALLS.

0948 TALKED W/ M. COCHRAN. REGARDING THE PLACEMENT OF BMW 14. HE SUGGESTS GOING 5' MORE FEET THEN PULLING OFF THE HOLE. DRILLERS TO BREAK 17.5 - 23'.

1023 DOWN TO 23'. FLUSHED OUT HOLE. WATER LEVEL @ 20' AND RISING. WILL SET WELL @ 23'.

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Work continued from Page COLD 27° + SUNNY

MONO 3/31/03

1050 WELL SET @ 23'
SAND TO 11'
BENT CHIPS TO 9'
[redacted] VOL CLAY. TO 2'.

1120 CLEAN UP + BREAK

1230 SET UP ON 13MW119.

1252 DOWN TO 9'. HARD @ 8'-9'. WILL
CORE THE REST.

1420 DOWN TO 19'. WL @ 17' AFTER FLUSH
OUT. WILL INSTALL @ 14' TO SCREEN
POSSIBLE SATURATION @ 13'.

1500 WELL SET @ 19'
SAND TO 17'
BENT CHIPS TO 2'

1530 PULLED OUT RIG. DRILLERS HEAD TO DEKUM

1600 DRILLERS TAKE RIG OVER AND TRY TO SIDE
UP ON 13MW113.

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MONO 3/31/03

1615 RIG STUCK.

1650 RIG OUT. M. COCHRAN RE-SET 13MW113
TOMORROW THE ROAD T. ROSMANN NEEDS
TO CLEAR UTILITIES BEFORE WE
CONTINUE.

1700 DRILLERS GO OVER AND DROP OFF RIG.

1730 HEAD TO BLDG. 3245 TO GO OVER
DAILY ACTIVITIES

1815 LEAVE SITE. DRILLERS LEAVE SITE

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Work continued from Page WARM 50's - WINDY.

TUES 4/1/03

0655 ARRIVE @ SITE.

0705 DRILLERS ON-SITE

0720 GO W/ McCUCHAN TO TALK ABOUT LOCATION FOR 13MW103 + 13MW104. 13MW103 MOVED TOWARDS THE POND. TIRUSHAN NEEDS TO CONTACT PUBLIC WORKS.

0750 @ 13MW104 LOCATION. WILL NEED TO USE THE DOZER. McCUCHAN WILL HELP.

0813 START DRILLING @ 13MW103

0850 DOWN TO 15'. WATER COMING IN. WILL WAIT TO SEE WHERE WATER COMES IN.

0909 WATER LEVEL @ 13.3' BLS

0925 DOWN TO 25'. WILL SET WELL + SCREEN THE 13' SATURATION

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TUES 4/1/03

0937 WELL SET @ 20'
SAND TO 8'
BENT CHIPS TO 2'

0943 DRILLERS HEAD TO DECON.

1007 DRILLERS SETTING UP ON 13MW104.

1040 DOWN TO 20': LOOKED WITH TIMES WILL SET WELL @ 20' BASED ON 13MW110. + LITHOLOGY SEEN @ 13MW114.

1050 WELL SET @ 20'
SAND TO 8'
BENT CHIPS TO 2'
WL ON 13MW110 = 14.5' BGS

1104 DRILLERS PULL OUT RIG. WILL CLEAN UP + SET UP ON 13MW123.

1215 DRILLERS SET UP ON 13MW123.

1312 SAMPLED TO 22'. WATER @ 16'? 2.5' OF WATER IN HOLE.

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THUR 4/1/03

1320 WELL SET @ 21.5'
SAND TO 4.5'
BENT TO 75' VOLUME TO 2'

1337 SET UP ON B1MWT24
WILL SET WELL @ 22' BASED ON
B1MWT23 + B1MWT26. W/L @ B1MWT26
=14.8 BLS.

1345. START DRILLING

1410 DOWN TO 22'. CUTTINGS ARE LOOKING
SIMILAR TO BOTH T26 + T23.
W/L @ 19' AFTER BLOW OUT WILL
SET WELL.

1420 WELL SET @ 22'
SAND TO 10'
BENT TO 2'
PULL OFF + DECON.

1425 T. BRENT + CHRIS ON-SITE:
SHOW THEM FINISHED WELLS

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THUR 4/1/03

1443 T. BRENT + CHRIS LEAVE SITE

1500 DRILLERS FINISHED DECON. HEAD
TO BLDG 3245

1610 DRILLERS LEAVE SITE.

1730 LEAVE FOR FEDEX

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WED 4/8/03

0700 ARRIVE @ SITE

0800 LEAVE FOR FED EX. 1400 FLIGHT

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Work continued from Page COOL 50° + OVERCAST

THU 4/9/03

1300 ARRIVE @ SITE

1310 DRILLERS ON-SITE DRILLING PADS.

1500 RECEIVED GO AHEAD FROM PW. TALKED W/ MR. BLUESNER @ BLDG. 165 O.K. TO START @ 1630 ON 13 MW TOB. JUST NEED TO CHECK IN @ 1630 FIRST.

1600 DRILLERS ROUNDING UP EQUIPMENT.

1700 SET UP ON 13 MW TOB AFTER TALKING W/ MARVIN K. DRILLERS ALLOWED TO KEEP DRILLING ALSO.

1729 DOWN TO 15'. POSSIBLE SATURATION @ 6.5'. WILL SET WELL @ 15'.

1800 DRILLERS OVER @ DEEPEST. DOZER LOADED UP. 13 MW TOB SET @ 15'
SAND TO 3'
BENT TO 1'

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MON 4/7/03

1830 @ BLDG 3245 TALKING W/ DAVE'S. UP B.M.

1840 DRILLERS OFF-SITE

1910 LEAVE SITE

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TUES 4/8/03

0700 ARRIVE @ BLDG 3245 CK P.J.D.

0720 DRILLERS ALL ON-SITE.

0730 HEAD TO SWMU 13. WILL SET UP ON 13MW-T13.

0740 SURVEYORS ON-SITE. DIRECT THEM TO BLDG 3245.

0830 DRILLERS UNABLE TO SET UP ON 13MW-T13. WILL NEED TO RE-LOCATE OR BLOCK TRAFFIC @ NIGHT TO SET WELL. WILL HEAD TO BLDG 3245 TO SEE ABOUT GETTING INTO SWMU 16.

1000 @ SWMU 16. DRILLERS SETTING UP ON 16MW-T01. TALKED W/ MATT CUNNAN REGARDING THE MOVEMENT OF 13MW-T13. HE SUGGESTS THAT WE MOVE MW CLOSER TO THE ROAD. IF NOT, WE MAY ELIMINATE.

1030 START DRILLING @ 16MW-T01.

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Work continued from Page COLD 40's - OVERCAST.

TUES 4/8/03

1147 @ 19' WILL FLUSH OUT HOLE + BREAK FOR LUNCH.

1300 BACK @ 3245 NEED TO TALK W/ T. BRENT ABOUT RECENT SWMU 13 ISSUES REGARDING ACCESS AND NO-WORK ZONES

1330 BACK @ SWMU 16. W/L @ 16MW104 = 16.5' BGS WILL CORE 5 MORE FEET.

1331 ROLL DOWN. ELECTRICAL PROBLEMS.

1344 BACKUP + RUNNING. WILL CORE TO 24'.

1400 WELL WILL BE SET @ 24'

1420 WELL SET @ 24'
SAND TO 12'
BENT. CHIPS TO 11'
VOL CLAY - 4'

1430 HEAD OVER TO DECON

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TUES 4/8/03

1510 BACK @ SWMU 16
NEED TO MOVE 2 DUMPSTERS IN ORDER TO SET UP ON 16MW104.

1522 ROLL SET UP ON 16MW104.

1530 START DRILLING

1535 HIT ROCK @ 4'. REFUSAL @ 5'

1637 DOWN 20' FLUSHED OUT HOLE.
WILL SEE WHERE WATER COMES IN OVERNIGHT

1645 BACK @ BLDG 3245. GO OVER DAILY W/ DRILLERS

1710 DRILLERS OFF-SITE

1715 LEAVE SITE

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Work continued from Page CRW 30'S UNDERCUT

WED 4/9/03

0700 ARRIVE @ SITE. DRILLERS ON-SITE
CALL P.J.D

0738 BACK @ 16MW-WL. WL IN HOLE = 15' BGS
WILL REAM TO 25' + SET WELL. VERY
RAINY. WANT TO MAKE SURE THE WELL WILL
PRODUCE IN DRY SEASON.

0829 WELL SET @ 25'.
SAND TO 13'
BENT CHIPS TO 12'
VOL CLAY TO 2'.

0848 DRILLERS HEAD TO DECON.

START COLLECTING SOIL SAMPLES W/ T. RUSAIN

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WED. 4/9/03

1130 DRILLERS DOWN TO 4' @ 16MW-WL
BREAK FOR LUNCH

1300 BACK @ 16MW-05.

1330 CHECKED WL FOR 14-05-83 = 30.65' BGS
+ 14-01-83: 28.5' BGS. BOTH WELLS
SET @ 45'.

1431 DOWN TO 40'. WILL SET WELL THERE
BASED ON NEARBY WELLS.

1510 WELL SET @ 39'
SAND TO 28'
BENT CHIPS TO 25'
VOL-CLAY TO 2'

1515 HEAD TO BLDG. 3245 TO DECON +
DISCUSS THE INSTALLATION OF 13MW-13.
WILL HAVE TO INSTALL IT ON SUNDAY

1625 SET UP RIG ON 13MW-03. WILL
DRILL TOMORROW.

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Wed 4/9/03

1655 Let drillers go @ SWMW 13. Checked job w/ the Guard. Will be able to access restricted area @ 1730. T. Rutman wants me to hang around until drillers leave. Drillers work into lines outside buffer zone.

1730 Granted access inside buffer zone. Drillers start digging pads.

1905 2 more pads to dig.

1940 Drillers finish last pads.

2000 Leave site. Will take care of paperwork tomorrow. SWMW 13 secured.

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Thurs 4/10/03

0740 Arrive on-site.

0720 Discuss possibility of using a track rig to install 13MW13. M. Cochran will coordinate w/ J. Nozlowski of Bunsier Mariner.

0805 Set up on 16MW03. Previously sampled to 3' w/ 16SB36. Drillers setting water tub.

0940 Down to 29'. Looks wet around 26' with cave to 34'.

0943 Down to 34'. Flush out hole

1023 Well set @ 35'
Sand to 23'
Bent. chips to 20'
Vol Clay to 2'
*Driller overdrilled a foot by mistake during clean out of hole.

1040 Pull off + head to Decon.

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THURS 4/10/03

1200 CEMENT TRUCK ARRIVES @ SWIMM 13. DRILLERS WILL START W/ 13 MUD T AND WORK BACK TOWARDS THE SOUTH GATE

1406 DAVE S. OFFSITE TO MEET W/ GLOBAL SUPPLY TRUCK.

1420 T. BRENT & C. FREEMAN ON-SITE TO CHECK ON THINGS. WANTED TO KNOW IF WE HAD PROBLEMS W/ CONCRETE TRUCK GETTING INTO SWIMM 13.

1433 T. BRENT & C. FREEMAN OFF-SITE.

1500 FINISHED ACCESSIBLE PADS. WILL TRY TO POUR THE 2 BY THE BUS STOP OUTSIDE OF SWIMM 13.

1515 HEAD OUTSIDE TO POUR THE LAST TWO PADS.

1760 BACK @ BLDG 3345. DO OTHER DAILY ACTIVITY W/ DATALOGER

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THURS 4/10/03

1720 LEAVE FOR FED EX

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FRI 4/11/03

0700 ARRIVE @ SITE

0710 DRILLERS ON SITE.

0743 @ SWMU 16.

0755 SET UP ON 16MW102. W.L @ 16MW103 = 25' BGS

0819 DOWN TO 13' WET @ ≈ 16.5'

0838 DOWN TO 15' WATER LEVEL @ 16.063. YOU CAN HEAR WATER RUNNING INTO THE HOLE. WILL SET WELL @ 15' TO STRADDLE THE 10' WET ZONE.

0854 WELL SET @ 15'
SAND TO 6'
BENT CHIPS TO 2'

0905 DRILLERS PULL OUT + HEAD TO DEPOT. THEY WILL MOB BOBCAT USED TO SWMU 16 TO FINISH DRILLING PADS.

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FRI 4/11/03

1000 GEAR UP TO DEVELOP W/ TROJAN

1815 LEAVE SITE. DRILLERS LEAVE SITE

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TITLE CRANE

PROJECT NO. 4060
BOOK 2555

Work continued from Page Cont 45° Sunny

Sat. 4/19/03

0625 Arrive on-site

0640 Drillers on-site. Concrete truck supposed to show up @ 0700 to pour pads @ Sump 13.

0850 Drillers go to meet concrete truck, will develop w/ T. Rutkin later to log box, B&B for development details

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkovec
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DATE 4/19/03
DATE

TITLE CRANE

PROJECT NO. 4060
BOOK 2555

Work continued from Page Cont 45°

Tues 4/22/03

0650 Arrive @ site. Gear up to collect GW samples

0755 Set up on 16MW101 to start sampling

0800 Start sampling 1

0807 Well dry. Only able to collect 4 vols.

0820 Set up on 16MW102

0828 Start pumping

0946 Sampled 16MW102.

1230 Set up on 16MW104.

1243 Start pumping

1437 Sampled 16MW104.

1612 16MW104 dry. Leave for

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkovec
WITNESS

DATE 4/22/03
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TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page

TUES 4/22/03
BLDG 3245.

1720 CHECK CALIBRATION FOR YSI?

1730 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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SIGNATURE Robert Balkwill
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DATE 4/22/03
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TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page COLD 35°

WED 4/23/03

0630 ARRIVE @ SITE. DENNY UNABLE TO MAKE IT TODAY. WILL ARRIVE ON-SITE TOMORROW.

0700 HEAD

0720 SET UP ON WELL 14-4-83

0723 START PUMPING

0811 START SAMPLING 16MW0401

0820 HEAD TO BLDG. 3245 TO PROCESS SAMPLES
DRILLERS SHOULD BE ON-SITE @ 1000

1020 DRILLERS ARRIVE ON-SITE
JOHN KEFER
CHAD MAHAFFY
DENNIS STARK
GO OVER JHA + CONDUCT PRE-INSPECTION.

1100 DRILLERS BREAK FOR LUNCH.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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SIGNATURE Robert Balkwill
WITNESS

DATE 4/23/03
DATE

TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page SUNNY + 60°

WED 4/23/03

1216 DRILLERS BACK + FINISH DECON.
HEAD TO SUMMIT3. WILL SET UP
ON 13 MWT13.

1230. SET UP ON 13MWT13.
WILL SPLIT SPOON TO REFUSAL
THEN ROLLER BIT.

1238 START DRILLING

1336 WATER @ 10'.
HIT SPOON REFUSAL @ 13'
WILL DRILL TO 18' + SET WELL

1350 ADVANCED TO 19' WILL SET WELL @ 18'.

1500 WELL SET @ 18'
SAND TO 6'
BENT TO 2'
6" HOLE 0-19'

1510 DRILLERS CLEAN UP + START TO
DRG OUT PAD.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill DATE 4/23/03

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TITLE CRANE

PROJECT NO. 9060
BOOK 2555

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WED 4/23/03

1600 DRILLERS OFF-SITE

1630 HEAD FOR FEDEX + GAS FOR VEHICLE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill DATE 4/23/03

WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page Cover 40's

THURS 4/24/83

0630 ARRIVE. TO MEET W/ DENNY TO OFF-LOAD MAT

0800 ARRIVE BACK @ BLDG. 3245
T. JOHNSTON WANTS TO REINSTALL 16MWT01

0930 TALK W/ T. BOEHMER. WILL AGREE TO
SEND MORE SUPPLIES DOWN FOR AN ADDITIONAL
65 HR FOR 8 HOURS.

1000 HEAD TO SWMU16. TO SET UP ON 16MWT01B
REDRILL

1035 DRILLERS SET UP ON 16MWT01B

1040 SET UP ON WES 14-02-83

1041 START PUMPING. NEED 8.5L FOR 1 vol

1055 CHECKED ON DRILLERS DOWN TO 15'
W/ HSA. HAD DRILLING AROUND 9'.

1122 DRILLERS DOWN TO 23'
HIT WET ZONE @ 9' THEN DRY AFTER
AROUND 16'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Robert Baltrus DATE 4/24/83
WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page 50's SLIGHT DRIZZLE

THURS 4/24/83

1130 DRILLERS BREAK

1201 START SAMPLING ~~16MW~~ 16MW01 201

1240 DRILLERS BACK. WILL CLEAN OUT
HOLE + WAIT FOR MORE AUGER FLIGHTS

1330 HOLE OPEN TO 23'.
WATER 5' BGS. NOT SURE WHY
1ST 16MWT01 IS DRY.

1345 FINISHED SAMPLING

1430 SETUP ON WES-14-03-83

1433 START PUMPING

1510 TALKED W/ JOHNSTON HE WANTS TO
SET REDRILL 16MWT01 @ 24'.

1515 DRILLERS AUGERED TO 25' W/ 4-25" AUGERS
WILL SET WELL @ 25' TO SCREEN (15-17)

1630 WELL SET @ 25'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Robert Baltrus DATE 4/24/83
WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page

THURS 4/24/03

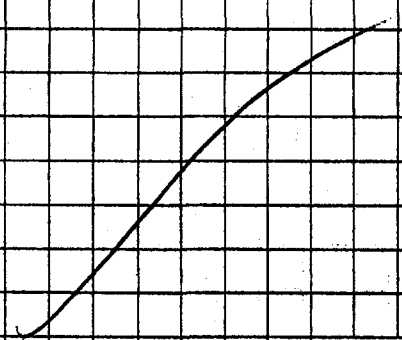
SAND TO 13'
BENT TO 4'
- CHIPS TO 11'
- VOLCLAY TO 4'

1632 START SAMPLING 16MW0301

1719 DRILLERS HEAD OVER TO BLDG 3245 TO CLEAN UP. T. RUTAHW GOES OVER TO 13MW701 REDRILL TO FIGURE OUT HOW BIG A PAD WE CAN INSTALL

1834 CLEAN UP & HEAD TO BLDG 3245-

1910 LEAVE SITE



SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill DATE 4/24/03
WITNESS DATE

TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

Work continued from Page 403 - PATERNAL

FRI 4/25/03

0630 ARRIVE @ SITE.

0720 HEAD FOR SWMU 13.

0800 SET UP ON 13MW726

0804 START PUMPING

0822 SAMPLING 13MW726

1105 SET UP ON 13MW725

1110 START PUMPING

1152 WELL PUMPED DOWN TO TURBINE INTAKE
3.25L PUMPED OUT 2L 1 vol.
WELL LOWER TURBINE AND PUMP OUT WELL. WELL DID NOT STABILIZE.

1210 WELL DRY - REMOVED 3.25L
→ 2 vols. WILL MOVE ON TO 13MW721.

1230 SET UP ON 13MW721

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill DATE 4/25/03
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TITLE CRANE

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BOOK 2555

Work continued from Page 50° + RAIN

FRI 4/25/03

1237 START PUMPING.

1346 START SAMPLING. 13GWT21101
COLLECT DUP FD042502W1

1458 FINISHED SAMPLING

1730 HEAD TO FEDEX

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner
DATE 4/25/03
WITNESS
DATE

TITLE CRANE

PROJECT NO. 4060
BOOK 2555

Work continued from Page WARM 50's

SAT 4/26/03

0630 ARRIVE @ SITE. LOAD UP TO SAMPLE @ SWMU 13.

0718 BACK @ 13MWT25.
WL = 17.31' TD 18.08'
ORIGINAL WL = 14.76 22% RECOVERY
2 438 ml TO WELL.
WAIT TILL 0800 AND RE-CHECK

0740 SETUP ON 13MWT03

0745 START PUMPING

0855 REMOVED INST. PARAMETERS NOT STABLE

1145 HAD TO PUMP FOR 4 HRS WELL NOT STABLE NTUS >10

1146 START SAMPLING 13GWT0301

1236 END SAMPLING HEAD OVER TO 13MWT25 TO CHECK ON WL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner
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TITLE Crane **PROJECT NO.** 9060
BOOK 2555

Work continued from Page Warm 70's

Sun 4/26/03

1228 WL @ 17.24' .07' RISE IN 5 HRS + 10 MIN.

1230 START SAMPLING FOR EXPLOSIVES.

1232 WELDOR FILLED ≈ 1/2 L.
WILL HEAD TO 13MW102.

1246 START PUMPING ON 13MW102.

1535 END PURGE TURBIDITY <10 NTUS

1536 START SAMPLING.

1546 WELL RUN DRY BEFORE SAMPLING COULD BE COMPLETE. WILL ALLOW FOR RECHARGE.

1605 WL @ 13MW125 = 17.90'. WILL CHECK TOMORROW.

1700 HEAD OVER TO SWMU 16 TO DEWATER 16MW106.

1800 LEAVE SITE.

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SIGNATURE Robert Balkwill DATE 4/26/03
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TITLE Crane **PROJECT NO.** 9060
BOOK 2555

Work continued from Page Warm 50's

Sun 4/27/03

0730 ARRIVE @ SITE

0835 2.35' = WL @ 13MW102
≈ 65' RECOVERY. WILL FINISH SAMPLING.

0830 RESUME SAMPLING. 6-0 NTU'S

0940 SETUP ON 13MW104

0946 START PUMPING

1051 START SAMPLING 13GW104GT

1150 13MW140 & 13MW141 BOTH UNDER PRESSURE. J-PLUG ON TO TIGHT
WL RESTORE ON BOTH WELL COME BACK LATER.

1213 @ 13MW125 WL = 17.31'
WILL COLLECT [redacted] MORE VOL FOR EXP.

1330 WELDOR REMOVED ≈ 400 gals

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Robert Balkwill DATE 4/27/03
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TITLE CRANE

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Work continued from Page SUMMY 70°

SUN 4/27/03

1240 SET UP ON 13MWT11 WL STABLE.

1245 START PUMPING.

1505 END PURGE REMOVED 123L 2 2mmb

1506 START SAMPLING 13MWT11.

1556 SET UP ON 13MWT10.

1 START PUMPING

1811 SAMPLING 13GWT1001

1940 MOVED OVER TO BLDG 3245

1952 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Bulkner
WITNESS

DATE 4/27/03
DATE

TITLE CRANE

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BOOK 2555

Work continued from Page SUMMY 70°

MON 4/28/03

0630 ARRIVE @ SITE. GROUP TO GET SAMPLE

START PUMPING @ 13MWT09

0911 SAMPLING 13MWT09
+ FD042803 0301

1320 BACK @ 13MWT25. RESUME SAMPLING
WL = 17.28'.

1325 WELL DRY. REMOVED 2 WEIRS FOR
MEANS.

1305 SET UP ON 13MWT24

1311 START PUMPING

1456 START SAMPLING 13GWT2401.

1530 FINISHED SAMPLING

1537 RELEASE TERRA R. CONTINUE ON 13MWT20

1606 START SAMPLING 13GWT2001

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Bulkner
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DATE

TITLE Crane

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Mon 4/28/03

1740 Finish Sampling

1745 Setup to sample 13MW02. Will try to fill vials.

1751 Well dry. Started sampling @ 1748. 3.400 gals. Will check on surveyors.

1825 Surveyors finished. Leave Summit. Head to 3245 to unload samples + equip.

1900 Leave Site.

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SIGNATURE Robert Balkwill DATE 4/28/03

WITNESS DATE

TITLE Crane

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BOOK 2555

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Tues. 4/29/03

0630 Arrive @ Site. Check cal on KSL

0750 Set up on 13MW114.

0755 Start pumping.

0925 End purge: Parameters stable

0926 Sampling 13GW114D1.

1023 Back @ 13MW085. WL=17.38'. Will continue to sample metals.

1032 Well dry. 2.400 gals removed.

1130 Will work w/ T.P. Development + Well restoration.

1630 Leave for Fed-Ex.

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SIGNATURE Robert Balkwill DATE 4/29/03

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TITLE CRANE

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BOOK 2555

Work continued from Page 60 - SUNNY

TUES 5/6/03

0640 ARRIVE @ SITE

0715 CAL YSI - LAMOTTE.

0730 HEAD TO SUMP 13 TO CONTINUE GW SAMPLING.

0748 START PUMPING ON 13MW-16

0842 START SAMPLING 13GW-1601

0930 SETUP ON 13MW-18

0938 START PUMPING

1342 SAMPLING 13GW-1801. NOD FLOATED METALS

1440 @ 13MW-25 w/: 11.20 FINISH SAMPLING AMMONIA

1445 SETUP - START PUMPING 13MW-15.

1702 START SAMPLING 13GW-1501.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Bulkner DATE 5/6/03

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TUES 5/6/03

1800 HEAD BACK TO BLDG 3245

1830 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Bulkner DATE 5/6/03

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TITLE CRANE

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BOOK 2555

Work continued from Page 60' - CLOUDY

WED 5/7/03

0640 ARRIVE @ SITE

0705 HEAD OVER TO SWMU 13.

0720 SET UP ON 13MW01B

0730 START PUMPING

0947 START SAMPLING 13GW01301 + COLLECT DUP FD05070301.

1100 HEAD OVER TO BLDG 3245 TO DROP OFF SAMPLES

1150 SET-UP ON 13MW019

1155 START PUMPING

1347 SAMPLING 13GW01901.

1450 HEAD OVER TO BLDG 3245 -

1700 @ 13MW06. FILL DRS. METALS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill

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1730 LEAVE SITE.

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SIGNATURE Robert Balkwill

DATE 5/7/03

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BOOK 2555

Work continued from Page 70's + [redacted]

5/8/03 THURS

0600 ARRIVE @ HAL MARTIN PICK UP SUPPLIES.

0740 GET LOAD OF TOP SOIL FROM NURSERY W/ T.R.

0810 ARRIVE @ SITE. WELL RESTORE WELL WATERING + COLLECT REMAINING SUN SAMPLES

1730 HEAD FOR FOREX

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Boelhner DATE 5/8/03
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5/9/03 FRI.

0640 GEAR UP TO CONDUCT SLUG TESTS

0730 SET UP ON 13MW17.

0900 FINISHED

0917 @ 13MW136 WAITING FOR WL TO STABILIZE WL 9.09' INITIAL WL @ 9.7'

0938 @ 13MW15 INITIAL WL 12.80' 12.80' W/ X-DUR. WELL WAIT FOR STABILIZER

0958 WL @ 8.85' ON 13MW136.

1002 @ 13MW11. WELL SET UP WL @ 7.78. INITIAL WL @ 7.6' WELL ALLOW WL TO STABILIZE

1018 WL @ 8.97' ON 13MW136

1105 @ 13MW136 WL 9.08' START FALLING HEAD TEST.

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SIGNATURE Robert Boelhner DATE 5/9/03
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5/9/03 5/9/03

1143 START 13MMUT15 FALLING HEAD TEST.

1208 START 13MMUT11 FALLING HEAD TEST

1235 FINISH FALLING HEAD TEST @ 13MMUT15

1240 START RISING HEAD TEST

1255 STOP FALLING HEAD TEST FOR 13MMUT11

1259 START RISING HEAD TEST FOR 13MMUT11.

1347 @ 13MMUT15.

1350 STOP TEST.

1410 CHECKING ON 13MMUT11

1416 STOP TEST WL= 7.78'

1436 END TEST ON 13MMUT26 97% RECOVERED
START RISING WL= 8.67'

1438 START RISING HEAD TEST.

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SIGNATURE Robert Balkwill DATE 5/9/03
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TITLE CRANE **PROJECT NO.** 9060
BOOK 2555

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FROM 5/9/03

1730 FINISH TEST. ACCIDENTLY TURNED OFF TEST

1735 SET XDCRS ON 13MMUT08 + 13MMUT02
HEAD BACK TO BLDG 3245

1800 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

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TITLE CRANE

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Work continued from Page COOL 50's + RAINING

SAT 5/10/03

0700 ARRIVE @ SITE
CONTINUE TO RUN SLUG TESTS:

CONDUCTED FALLING HEAD TESTS FOR

- 13MW720
- 13MW702 - FROZEN 5/11/03
- 13MW708
- 13MW714

CONDUCTED RISING HEAD TESTS FOR
- 13MW720
- 13MW708
- 13MW714

HELPED TIRUZMAN W/ WELL RESTORATION THROUGH OUT THE DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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1800 LEAVE SITE. WILL CHECK ON 13MW702 TOMORROW

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkwill DATE 5/10/03

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TITLE CRANE

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BOOK 2555

Work continued from Page 60's WEST & SUMP

SUN 5/1/03

0640 ARRIVE @ SITE.
GEAR UP TO CONTINUE SLUG TESTS @ SUMP 16.

0810 SET-UP & START FALLING HEAD TEST ON 16MW702

0816 END TEST

0817 START RISING HEAD TEST @ 16MW702

0835 SET UP & START FALLING HEAD TEST @ 16MW705.

0900 SET-UP @ 16MW704 WAIT FOR W/L TO STABILIZE.

0908 SET UP & START PUMPING ON 16MW705
NEED TO RE-SAMPLE SVOCs.

0924 START FALLING HEAD TEST @ 16MW704

0930 FALLING HEAD TEST FINISHED @ 16MW705

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner DATE 5/1/03
WITNESS DATE

TITLE CRANE

PROJECT NO. 9060
BOOK 2555

Work continued from Page 60's & V. WEST.

SUN 5/1/03

START RISING HEAD TEST

1005 FINISH FALLING HEAD TEST @ 16MW704
START RISING

1012 RISING HEAD TEST @ 16MW705 COMPLETE

1044 FINISH RISING HEAD TEST ON MW704
FINISH REMOVING FORMS AROUND PADS

1345 SAMPLING 16MW702
SVOCs ONLY

1330 HEAD OVER TO SUMP 13. TO HELP TR. W/
W.L MEASUREMENTS.

1540 FINISH UP. HEAD TO SUMP 16 TO SET UP
ON CWES - 14-02-03

1550 START PUMPING

1732 SAMPLING 16MW0702
SVOCs & METALS ONLY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner DATE 5/1/03
WITNESS DATE

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SUN 5/11/03

1838 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner

WITNESS

DATE 5/11/03

DATE

TITLE CRANE

PROJECT NO. 4060

BOOK 2555

Work continued from Page SUNRISE • WINDY 60's

MON 5/12/03

0630 ARRIVE @ SITE. START PARKING EQUIP

1000 GO W/ T.R TO FINISH RESTORATION

1630 BACK @ SUNNY 13. NEED TO DO WELL REPAIR ON TOP. TOB.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Robert Balkner

WITNESS

DATE 5/12/03

DATE

NSWC
CRANE

2565

10-21-63

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0700 - ON SITE

TINUS H+S TRAINING CONDUCTED.

DISCUSSED DUMPING DECON/WATER/PURGE WATER AT SUMMIT - TOM BRENT TO GET PERMISSION

ACCESS TO ADDITIONAL DRILL LOCATIONS NEEDED - T ROSMAN + M.G. COCKRAN TO CHECK

0800 H+S TRAINING COMPLETED GO TO CHECK DRILL LOCATIONS

1000 CHECK WITH P. WORKS ON UTILITY CLEARANCE FOR TRUCK MOUNTED RIG NO CLEARANCE GRANTED UNLESS AN ACCESS ROAD CAN BE BUILT TO CLEARED LOCS. NO OTHER ACCESS IS GRANTED AT THIS TIME BASED ON DISCUSSION W/ P. WORKS

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SIGNATURE DATE

WITNESS DATE

TITLE 10-21-03 (CONT.) PROJECT NO. BOOK

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1100 - ~~1200~~ 1130 LUNCH.

1130 - RETURN FROM LUNCH.
INSTRUCTED DRILLERS TO
SET UP DECON PADS + BUILD
FORMS. MET W. T. BRENT.
WILL MEET @ 2:00 TO
DISCUSS W. FORESTER
POSSIBILITY OF BUILDING ROADS
FOR ACCESS TO DRILL LOCATIONS

~~1300~~ 1200 MGC + F. WUDKNYCH GO
TO CHECK FOR SEEPS @ SWMU 13

1400 RETURN TO OFFICE. DISCUSS
ACCESS ISSUES W. T. BRENT +
B. GATES. ASKED PERMISSION
TO USE BULL DOZER TO
CLEAR LOCATIONS @ SWMU 13.

1500 T. BRENT INDICATES OK TO
CLEAR LOCATIONS W DOZER IF
TREES ≥ 5" Ø NOT TOUCHED
+ SHAG BARK HICKORY NOT
IMPACTED

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 10-21-03

WITNESS DATE

TITLE 10-21-03 PROJECT NO. BOOK

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1555 MGC + FCW GO TO SWMU 13
TO DIG SEEP AREAS W B-M +
BACKHOE. DUG SEEPS AT
3 LOCATIONS -
1) 13 SW15
2) SEEP DOWNSTREAM OF 13 SW15
3) 13 SW29
+ ALL LOCATIONS WILL BE SAMPLED
TOMORROW @ SWMU 13 AFTER
LOCATIONS ARE ALLOWED TO
STABILIZE FROM DIGGING

1700 RETURN TO OFFICE.
PROVIDE UPDATE TO OFFICE.

1730 LEAVE SITE FOR
DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE

WITNESS DATE

TITLE 10-22-03 PROJECT NO.

BOOK

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0700 ON-SITE SET UP TO START SAMPLING SURFACE WATER/SEDS @ SWMU 13. SAMPLED THRU A.M.

1100-1130 LUNCH

1130 RETURNED TO SWMU 13 TO CONTINUE SAMPLING

1630 RETURNED TO OFFICE TO PACK SAMPLES FOR DAY.

1800 LEAVE SITE FOR DAY - DRIVE TO FED EX TO DROP OFF SAMPLES

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE

WITNESS

DATE 10-23-03

DATE

TITLE 10-23-03 PROJECT NO.

BOOK

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0700 ON SITE, SET UP TO CONTINUE SW/SD SAMPLING @ SWMU 13

0800 START SAMPLING ACTIVITIES

1130-1200 LUNCH

1200 CONTINUE SAMPLING @ SWMU 13

1600 QUIT SAMPLING FOR DAY, PACK SAMPLES

1700 LEAVE SITE FOR DAY, DRIVE TO FED EX TO DROP SAMPLES.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE

WITNESS

DATE 10-24-03

DATE

TITLE 10-24-03 PROJECT NO.
BOOK

Work continued from Page

0700 ON-SITE. PREP. TO SAMPLE SURFACE WATER SEDS.

0850 DISCUSSED POSSIBILITY OF DISCHARGING CUTTINGS/DRILL WATER TO WOODS NEAR DRILL LOCATIONS. TOM BRENT + MGC INDICATED THAT WOULD BE ACCEPTABLE:

- ~ 250 GALLONS H_2O + 30 GALLONS OF WATER/CUTTINGS IS GENERATED FOR DEEP WELLS. LESS IS GENERATED FOR SHALLOW WELLS.
- DRILL WATER IS MOSTLY POTABLE THAT IS BEING DISCHARGED FROM HOLE.

0800 WENT TO SWMU 13 TO RESUME SAMPLING

0930 RETURN TO OFFICE, SET

SCIENTIFIC SUNDRY PRODUCTIONS CHICAGO 60606

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SIGNATURE [signature] DATE 10-24-03
WITNESS DATE

TITLE 10-24-03 PROJECT NO.
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UP TO START SAMPLING @ SWMU 16.

1000 WENT TO SWMU 16 TO START SAMPLING.

1145-1205 LUNCH

1205 RESUME SAMPLING ACTIVITIES

1600 STOP SAMPLING FOR DAY, START PACKING SAMPLES

1700 SAMPLES PACKED, MGC HELPS F. RAMSER PACK CORE BOXES T. ROJAN + F. WUDKWYCH TAKE SAMPLES TO FED EX.

1830 LEAVE SITE FOR DAY

SCIENTIFIC SUNDRY PRODUCTIONS CHICAGO 60606

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TITLE 10-25-03 PROJECT NO.

BOOK

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0700 ON SITE

0800 MGC + FCW COLLECT REMAINDER OF SURFACE WATER / SED SAMPLES @ SWMU 16

1130 RETURN TO OFFICE W/ SAMPLES

1200-1230 LUNCH

1230 SETUP TO PERFORM GW SAMPLING AT SWMU 16

1400 GO TO SWMU 16 TO START GW SAMPLING

1730 COMPLETED SAMPLING FOR DAY, RETURN TO OFFICE

1830 QUIT FOR DAY, LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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SIGNATURE

DATE 10-26-03

WITNESS

DATE

TITLE 10-26-03 PROJECT NO.

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0700 ON-SITE, SET UP TO CONTINUE GW SAMPLING.

0830 MGC SETS UP ON 16GW01 TO SAMPLE

1630 COMPLETED SAMPLING FOR DAY AT 16GW01, MGC HELPS F. WUDKWYCH W/ WELL SAMPLING

1730 RETURN TO OFFICE

1800 LEAVE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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TITLE 10-27-03 PROJECT NO. BOOK

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0700 ON-SITE SETUP TO COLLECT SURFACE WATER / ~~[illegible]~~ SAMPLES AT SWMU 13.

0800 GO TO COLLECT SW SAMPLES @ SWMU 13

1130-1200 LUNCH

1230 RETURN TO ~~[illegible]~~ OFFICE, DROP OFF SAMPLES, RETURN TO SWMU 13 TO COLLECT SW SAMPLES

1500 RETURN TO OFFICE, PACK SAMPLES FOR SHIPMENT.

1700 MCC CHECKS ON F. RANSER

1745 RETURN TO OFFICE.

1800 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60665

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TITLE 10-28-03 PROJECT NO. BOOK

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0700 ON-SITE. SETUP EQUIPMENT

0800 SET UP TO SAMPLE @ SWMU 3. PURGED AND SAMPLED WELL 13 MWT24 IN THE A.M.

1200-1230 LUNCH

1230 RETURN. SET UP TO SAMPLE 13 MWT 19.

1700 13 MWT 19 SAMPLED. RETURN TO OFFICE TO UNPACK EQUIPMENT.

1815 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60665

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TITLE 11-3-03 PROJECT NO. BOOK

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1400 ON-SITE LOAD EQUIPMENT

1500 DRILLERS ON SITE FOR ATV RIG.

JAMES WALSH
JOSHUA DEAN

T ROJAHN PERFORMS HIS TRAINING

1545 TRAINING COMPLETED, SETUP TO FILL H_2O TRUCK

1615 MOBILIZE TO DECON PAD TO CLEAN ATV RIG

1715 MOVE TO 13MWT29 TO SETUP.

1810 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60608

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DATE 11-3-03

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TITLE 11-4-03 PROJECT NO. 4060 BOOK

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0700 ON-SITE.

0730 ON-SITE AT 13MWT29 TO START DRILLING

1030 13MWT29 DRILLED + INSTALLED, DRILLERS TEAR DOWN + GO TO DECON

1130-1200 LUNCH.

1200 RETURN DRILLERS GET EQUIPMENT FOR WELL INSTALLATION

1300 SETUP ON WELL 13MWT41

1730 QUIT DRILLING FOR DAY. DRILLERS PLAN ON GETTING LARGER COMPRESSOR TO REMOVE CUTTINGS MORE EFFICIENTLY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60608

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TITLE 11-5-03 PROJECT NO.

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0700 ON SITE PREP EQUIPMENT + SETUP TO CONTINUE DRILLING

0800 RESUME CORING @ 13MWT41

0900 LOST BIT IN HOLE STARTED TO TEAR DOWN WILL MOVE ROTASONIC ON HOLE TO OVERRILL + FISH OUT BIT

1000 SETUP ON WELL 13MWT36 TO DRILL + INSTALL.

1230 WELL 13MWT36 INSTALLED

1230-1300 LUNCH

1300 RETURN TO TAKE DOWN RIG + DECON

1400 DECON RIG

1430 MOVE ONTO LOCATION 13MWT31 TO START DRILLING

SCIENTIFIC ENDERY PRODUCTIONS CHICAGO 60605

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1700 13MWT31 DRILLED + INSTALLED. DRILLERS TEAR DOWN + MOVE TO DECON. MGC RETURNS TO DO PAPERWORK IN OFFICE

1800 LEAVE SITE

VOID

SCIENTIFIC ENDERY PRODUCTIONS CHICAGO 60605

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0700 ON SITE, SET UP EQUIPMENT + COMPLETE DAILY ACTIVITIES

0815 SET UP ON 13MWT33 TO START DRILLING

1130 13MWT33 DRILLED + INSTALLED TAKE LUNCH

1200 RETURN FROM LUNCH, DRILLERS DECON RIG

1330 MOVE ONTO LOCATION 13MWT30 TO START DRILLING

1345 PULLED OFF HOLE TO TOW ROTASONIC RIG OFF HOLE

1430 BACK AT 13MWT30 TO START DRILLING

1600 13MWT30 INSTALLED. MGC CHECKS ON SITE 16 CLEARANCE

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1600 (CONT.) CHRIS FREEMAN INDICATED THAT UTILITY CLEARANCE IS MADE FOR SITE 16 DRILLERS DECON + WILL MOVE TO SITE 16 TO STAGE EQUIP. FOR A.M. START.

~~180~~

1700 DRILLERS MOB TO OFFICE w/ EQUIPMENT

1800 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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TITLE 11-7-03 PROJECT NO. BOOK

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0700 ON SITE, DISCUSS APPROACH FOR DRILLING SWMU 16

0730 MOB TO SWMU 16, SET UP ON WELL 16MWT14 TO START DRILLING

1030 16MWT14 DRILLED & INSTALLED DRILLERS TAKE RIG BACK TO DECON PAD TO FIX ANTIFREEZE LEAK & TO DECON AUGERS

1130 - 1200 LUNCH

1200 RETURN FROM LUNCH, DRILLERS WELD BIT.

1330 RETURN TO SWMU 16, SETUP ON 16MWT12 TO START DRILLING

1630 16MWT12 DRILLED & INSTALLED, GO TO DECON

1800 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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TITLE 11-8-03 PROJECT NO. BOOK

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0700 ON SITE, PREP EQUIPMENT FOR DAY

0745 SET UP ON 16MWT09 TO DRILL + INSTALL WELL

1000 WELL INSTALLED SETUP ON 16MWT17

1200 - 1230 LUNCH

1230 RETURN FROM LUNCH, CONTINUE WELL INSTALLATION

1430 16MWT09 INSTALLED RETURN TO DECON

1500 LEAK IN RADIATOR, DRILLER TO REPAIR WITH RADIATOR STOP LEAK.

1700 LEAK REPAIRED, MOVED ONTO LOCATION 16MWT10.

1800 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-8-03

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TITLE 11-9-03 PROJECT NO.
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0700 ON SITE. SET UP EQUIP. TO DRILL.

0730 MOB TO SWMU 16 16MWT10

0915 16MWT10 DRILLED. MOB TO 16MWT16 LOCATION TO DRILL WELL (NOTE: 16MWT16 IS DRY AT 25 FEET). IT WAS DECIDED TO INSTALL A DEEPER WELL AT THIS LOCATION TO MONITOR DEEPER GW.

1180 LUNCH

1200 RETURN FROM LUNCH, CONTINUE DRILLING @ 16MWT16

1530 16MWT16 INSTALLED, CLEAN UP SITE 16 AREA

1700 RETURN TO OFFICE

1800 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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DATE 11-9-03

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TITLE 11-10-03 PROJECT NO.
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0700 ON SITE. SET UP EQUIPMENT.

0800 MOB TO SWMU 13 TO DRILL 13MWT44

1230 LUNCH

1300 RETURN FROM LUNCH, CONTINUE DRILLING 13MWT44

1800 WELL INSTALLED

1830 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60606

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TITLE 11-11-03 PROJECT NO. BOOK

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0700 ON SITE SETUP EQUIP. TO DRILL FOR DAY, WAIT MOB TO SWMU 13 (13MWT34) TO DRILL SHALLOW WELL. MOVED EQUIP + RIG OFF OF 13MWT44 LOCATION.

1030 13MWT34 INSTALLED MOB TO DECON

1100-1130 LUNCH

1300 MOB TO SWMU 16 TO DRILL 16MWT13

1500 16MWT13 COMPLETE, MOB TO 16MWT07 TO DRILL

1700 16MWT07 DRILLED, CLEANED AREA + RETURN TO OFFICE W/ PAPERWORK

1800 LEAVE SITE FOR DAY

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

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TITLE 11-17-03 PROJECT BOOK

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1400 ON SITE, SETUP EQUIPMENT TO START DRILLING

1545 MOB TO WELL 13MWT35 TO START CORING. CLEANED OUT HOLE TO START CORING.

1700 QUIT FOR DAY

1800 LEAVE SITE

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0700 ON SITE, MOB EQUIP TO START DRILLING.

0800 SET UP AT 13MWT35. RAIN STEADY. DRILLERS WILL WAIT UNTIL RAIN DECREASES

1100 RAIN CONTINUES, DRILLERS DECIDE TO QUIT FOR DAY

1100-1130 LUNCH

1130 RETURN FROM LUNCH, SETUP TO COLLECT SW & GW SAMPLES @ SWMU 13

1330 SETUP TO SAMPLE #3 SW11

1430 13SW11 SAMPLED, SETUP TO DEVELOP 13MWT41.

1530 13MWT41 DEVELOPED, RETURN TO OFFICE TO PACK SAMPLES

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE M. [illegible] DATE 11-19-03

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TITLE 11-18-03 PROJECT NO.

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1800 LEAVE SITE FOR DAY

Void

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE M. [illegible] DATE 11-19-03

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TITLE 11-19-03 PROJECT NO. BOOK

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0700 ON-SITE, SET UP EQUIPMENT TO DRILL @ SWMU 13 13MWT35

1100 LUNCH

1130 RETURN FROM LUNCH, CONTINUE DRILLING 13MWT35

1330 WELL INSTALLED, DRILLERS DECON, MGC GETS TOW TRUCK AT MAINTENANCE TO PULL OUT STUCK ROTASONIC RIG

1430 ROTASONIC RIG PULLED OUT

1530 SET UP ON 13MWT47 TO START DRILLING

1730 QUIT FOR DAY

1800 LEAVE SITE

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-19-03

TITLE 11-20-03 PROJECT NO. BOOK

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0700 ON-SITE, PREP EQUIPMENT.

0800 RESUME DRILLING 13MWT47

0900 13MWT47 INSTALLED, ~~[illegible]~~ CHECK ON DRILLERS INSTALLING PADS & PRO CASINGS

0930 MGC & T BOEMER (B-M) DRIVE TO MGBG TO SCOPE DRILL LOCATIONS

1030 RETURN TO SWMU 13, MGC GETS TOW TRUCK TO PULL OFF RIG FROM 13MWT47

1100-1130 LUNCH

1130 RETURN FROM LUNCH, ASSIST J. GOERET WITH WELL SAMPLING

1330 CONCRETE TRUCK ARRIVES.

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

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TITLE 11-20-03 PROJECT NO.

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START POURING PADS

1800 DONE FOR DAY

1830 LEAVE SITE

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TITLE 11-21-03 PROJECT NO.

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0700 ON SITE, SET UP EQUIPMENT

0800 MGC + S. GRIER GO TO WELL 13 MWT46 TO AWAIT DRILLERS TO SET CASING

0900 MGC + ATU DRILLERS GO TO WELL 110 MWT14 TO ABANDON (WELL DRY TO DATE)

1000 110 MWT14 ABANDONED. PRODUCTION STAFF AT SWMU 110 INSTRUCTED TO STAY AWAY FROM BUILDING PERIMETER. WE ARE ALLOWED TO WORK ON WELLS ALONG BOUNDARY WE NEED TO LET THEM KNOW HOW MANY STAFF ARE WORKING IN THE AREA AT A TIME.

1130-1200 LUNCH.

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TITLE 11-21-03 PROJECT NO. BOOK

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1200 RETURN FROM LUNCH.
ASSIST T. ROSAHN IN WELL
DEVELOPMENT

1340 START DEVELOPMENT
WELLS 16MW T13 + 16MW T15

1800 LEAVE SITE FOR DAY

SCIENTIFIC SINGER PRODUCTIONS CHICAGO 60685

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DATE 11-21-03

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TITLE 11-22-03 PROJECT NO. BOOK

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0700 ON SITE. PREPARE
EQUIPMENT FOR SLUG TESTING

1000 START SLUG TESTING @ SWMW 16

1100 - 1130 LUNCH

1130 RETURN TO SWMW 16,
CONTINUE SLUG TESTING (16MWT10)

1230 MOV TO SWMW 13 TO
PERFORM SLUG TESTING
(13MWT37 + 12MWT38)

1800 QUIT FOR DAY

1830 LEAVE SITE FOR DAY

SCIENTIFIC SINGER PRODUCTIONS CHICAGO 60685

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DATE 11-22-03

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TITLE 11-23-03 PROJECT NO.

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0700 ON SITE, DOWNLOAD ~~EQ~~ DATA FROM SLUG TESTING, DO DAY ITEMS FOR DRILLING

0900 MOB TO SWMU 116 FOR SLUG TESTING, TESTED 116MWT03, 17&15

1330 RETURN TO OFFICE, DRILLERS PICK UP EQUIPMENT & LEAVE SITE

1345 DRIVE TO SWMU 13 TO SLUG TEST WELLS WITH W.L. IN ~~116~~ WELL AT SWMU 16 RETURNS TO EQUILIBRIUM (116MWT8)

1400 MOB CLEANS UP ACCESS ROAD & CLEARS DITCHES OF H_2O AT SWMU 13

1530 RETURN TO SWMU 116 TO CHECK WELL, STILL ~~RECOVERING~~ RECOVERING (116MWT15)

SCIENTIFIC SUNDRY PRODUCTIONS CHICAGO 60605

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TITLE 11-23-03 PROJECT NO.

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1600 SWMU 13, TESTED WELL 13MWT42

1800 RETURN TO SWMU 116, PULL EQUIP FROM WELL 116MWT15 (NOTE: HAD TO CLEAR AREA BEFORE A.M. MONDAY)

1830 LEAVE SITE TO SHOP FOR EQUIP

SCIENTIFIC SUNDRY PRODUCTIONS CHICAGO 60605

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TITLE 11-24-03 PROJECT NO. BOOK

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0700 ON SITE, PREP EQUIP FOR SLUG TESTING

0830 AT WELL # 13MWT33 TO SLUG TEST

1030 SETUP ON 13MWT30 WHILE 13MWT32 RECOVERS

1315 ~~PUSHED~~ STOP TEST @ 13MWT33

1330 STOPPED TEST @ 13MWT30

1345 MOB TO 13MWT32 TO TEST.

1500 13MWT32 TESTED.

1600 RETURN TO OFFICE, HELP PACK SAMPLES

1800 LEAVE SITE FOR DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-24-03

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TITLE 11-25-03 PROJECT NO. BOOK

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0700 ON SITE, PREP EQUIPMENT FOR SLUG TESTING

0830 WENT TO SWMU 13, CHECKED WELL 13MWT45 & 13MWT28 FOR RECOVERY, BACK TO STAND, COULD NOT TEST YET

0900 AT WELL 13MWT34 TO TEST

1000 13MWT34 TESTED, MOVE TO 13MWT47 TO TEST

1345 MOB BACK TO MEET WITH JACOBY (SEEDING CONTRACTOR) TO DISCUSS LOCATIONS TO RESTORE

~~1400~~ 1530 RETURN TO 13MWT47, PULL TRANSDUCER FROM WELL

1600 RETURN TO OFFICE TO DUMP DATA + PACK EQ + SAMPLES.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-25-03

WITNESS DATE

NSWC GAN

N9060

CTO 0279

SWMUs 13 + 16

2555

DRILLING

START: 3/24/03

END:

TITLE PM: CLEAR 70's PROJECT NO. 4060

10-20-03 BOOK

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0700 FWR
THRU FW } TENTS PERSONNEL ENROUTE
1300 TR } FROM PGH PA TO CRANE
1315 ARR AT CRANE NSWC TENTS
- UNPACKED SUPPLIES
- DRILLERS ARRIVED UNLOADING SUPPLIES AT LAY DOWN

- GO TO UTILITIES

1600 DISCUSS DRILLING PRIORITIES
- START DRILLING @ 13MWT37, T38, T39, T40 T41, T42

+ DO SITE VISIT W/ DRILLER FOR ACCESS PROBLEMS
- DRILL SITES IN THE SOUTH, T38, T37, T39, T40 TWO T41, T42. CAN BE ACCESSED FROM MAIN ROAD TO THE SOUTH OF THE SITES
- DRILL SITES IN THE NORTH WILL HAVE TO BE ACCESSED

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred W Rauser DATE 10-20-03

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TITLE PM CLEAR PROJECT NO. 4060

10-20-03 BOOK

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1700 THROUGH THE COMPOUND

1800 FWR FW TR LV CRANE NSWC FOR HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred W Rauser DATE 10-20-03

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10-21-03 PM: CLEARING BOOK 2555

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0700 FWR - FRED W. RAMSER } TENS
TR - TERRY R. } ONSITE
MGC - MATT COCHRAN } TENS
FW - FRANK WAD }

0715 DRILLERS ON SITE
- NO DRILLING ACTIVITIES TODAY DUE TO UTILITIES NOT CLEARED FOR TRUCK RIG. MAY MAKE ROADS FOR ACCESS TO ATV PTS W/ TRUCK RIG. SEE TR PROJECT NOTE BOOK FOR DEVELOPMENTS.

- WILL CLEAR ROAD/PATH FOR ACCESS

1745 FWR + TR LV CHAVE NSWC

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred W Ramser
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DATE 10-21-03
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10-22-03 WEDNESDAY BOOK 2555

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0700 FWR - TENS ARR AT FIELD OFFICE
DRILLERS ON SITE
TIM FIELD MANAGER
~~LOTTN~~ JONKEFER LEAD DRILLER
TODD WOLLENHAUPT
DENNIS SINK

0956 SET RIG (TRUCK) ON 13MWT42
ROTOSONIC RIG

BEGIN USING 4" CORE CASING
- DRILLERS WERE GOING TO ATTEMPT INSTALLING 2" PVC WELL USING ONLY 4" CORING
1100 CASING? w/o H_2O + w/o AIR
HOWEVER BECAUSE BED ROCK IS @ ~ 5'-8' TO OF WELL PROJECTED TO BE 25-35' DRILLERS SAY AIR OR WATER WILL BE NEEDED.
ALONG W/ 6" CASING (TEMP) 0-10' BG

1130 BREAK FOR LUNCH
1200 - DRILLERS GO TO LAYDOWN TO GET
1300 H.O. DRILLERS ARR @ RIG ON 13MWT42
1320 BEGIN TO ADVANCE 6" TEMP CASING

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred W Ramser
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DATE 10-22-03
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TITLE PM: 60s WINDY PROJECT NO.

10-22-03 WEDNESDAY BOOK

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1430 BEGIN ADVANCING 4" DRILL RODS BEYOND 10' USING WATER

1508 TD HOLE @ 13MWT42 TO 25' BGS USED WATER TO CORE CANNOT DETECT WATER PRODUCING ZONE. AIR PURGED HOLE MADE ABOUT 0.5' OF H_2O IN 16 MINS INSTALLED WELL SCREEN TO 11-21 SAND 9-25 BENT 6-9'

13MWT42 WELL MATERIALS

+ GLOBAL FILTER PACK NSF 8003566400 QUARTZ SAND 10-30 SEP/18B 4 50# BAGS
+ PVC SCH 40 RISER
+ PVC 20 SLOT SCREEN
+ PURE GOLD MED CHIPS BENTONITE CETCO POLYMER-FREE NSF HYDRATED W/ 15 GALS H_2O

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ranson DATE 10-22-03

WITNESS DATE

TITLE PM: 60-50s PROJECT NO.

10-22-03 WEDNESDAY BOOK 2555

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1630 SET RIG ON 13MWT40 (SHALLOW WELL)

1640 BEGIN DRILLING DRY USING 4" PIPE.

1700 SWITCH RIG UP TO USING H_2O AND WILL SET TEMP 6" CASING TO 5' BGS. WILL STOP HERE. DRILLERS NEED TO MAKE BIT FOR 5' LENTH.

TODAYS TOTALS:

WELL	4" DRILL	6" DR	2" WELL
13MWT42	25'	15'	21'
13MWT40	5'		

NICK POST DRILLER WILL FILL IN FOR JON K. ON SATURDAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ranson DATE 10-22-03

WITNESS DATE

TITLE 10-23-03 THURSDAY

PROJECT NO. 9060

BOOK 2555

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0700 PUR TENTS

0730 DRILLERS ON-SITE JON K, TODD W. DENNIS S.

0800 WL @ 17.5' BGS @ 13MWT42

080 BEGIN TO INSTALL 6" TEMP CASING TO 5' @ 13MWT40

085 PROCEED TO DRILL W/ 4" CORE PIPE BEYOND 6" TEMP CASING.

- NOTE STREAM NEXT TO 13MWT40 IS DRY

08[illegible] @ 25' @ 13MWT40 BLOW OUT H_2O

08[illegible] MEASURED H_2O @ 25' BELOW DRILL PLATFORM

0906 WL ROSE TO 23' DECIDED TO FLUSH WELL @ 15-25 13MWT40

SAND 12-25.5

BENT ~~10-15~~ 9-12

0930 GO TO DECON RIG + RODS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred Ramer

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DATE 10-23-03

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TITLE 10-23-03 THURSDAY

PM: CLEAR CO's

PROJECT NO. 9060

BOOK 2555

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1035 BAILED DRY WELL 13MWT42

1100 WL @ 13MWT40 @ 15.5 bgs

DRILLERS BREAK FOR LUNCH

1105 BAILED 13MWT40 ~~DRY~~ DOWN TO 18.5 ft bgs w/ 8 bails SEEM TO MAKE PLENTY OF WATER

1110 WELL RECOVERED TO 17.5' BGS

1215 WL @ WELL 13MWT42 @ 18' BGS

1230 DRILLERS RETURN FROM LUNCH
- LOAD UP MORE WATER NEED TO GROUT ISOLATION CASING
CONT. TO DRILL @ 13MWT41

1345 SHOW DRILLER WHERE TO DUMP H_2O WASTE

1445 ENCOUNTERED A VERY SOFT MUDSTONE @ ~30' DOWN TO 40' BGS @ 13MWT41 WILL INSTALL THE 6" ISOLATION CASING FROM 0'-38' BGS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred Ramer

WITNESS

DATE 10-23-03

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TITLE Pm: CLEAR 60's PROJECT NO. 9060

10-23-03 THURSDAY BOOK 2558

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1600 DRILLED DOWN TO 38' WITH 8" DRILL PIPE WORKER TO INSTALL THE 6" CASING, ~11" NOMINAL OUTSIDE DIA. LOWERED 30' OF 6" BEGIN TO MIX GROUT/SURE CEMENT/BENTONITE MIX

1700 BEGIN TO TREMIE THE CEMENT BENTONITE SLURY

1730 COMPLETED GROUTING W/6" CASING BEGIN TO CLEAN UP

1800 SET RIG ON 13MWT37/38

1830 DRILLERS + FWR LV DRILL SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred McCauser DATE 10-23-03

WITNESS DATE

TITLE PROJECT NO. 9060

10-24-03 FRIDAY BOOK 2555

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0700 FWR ON SITE, JON KEIFER ON SITE - DISCUSS DAILYS - DISCUSS IDW WATER HANDLING. TOM BRENT GAVE US THE PERMISSION TO DISCARD WATER (DRILLING FLUIDS) ONTO THE GROUND SURFACE NOTE: THIS IS ONLY IN THE WOODS IN SWMU 13

0815 DRILLERS EMPTY IDW H_2O + FILL UP W/ POTABLE H_2O

0830 MEASURE H_2O LEVEL IN 13MWT42 @ 18' BGS TD OF WELL = 21' BGS THREE FEET OF H_2O

0840 DRILLERS ~~BEGIN~~ SETUP TO ADVANCE PIPE 4" @ 13MWT37

0905 BEGIN TO ADVANCE 4" DRILL PIPE

1015 DRILLERS ON STANDBY

1020 MEASURE 22.5' BELOW SURFACE CASING THEN

1027 BAILED H_2O DOWN TO 23.3' BSC

1030 H_2O @ 22.3' BSC 1050 WL = 21.3

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE 10-24-03 Fred McCauser DATE

WITNESS DATE

TITLE 10-24-03 FRIDAY PM: 50-60's SUNNY PROJECT NO. 9060 BOOK

Work continued from Page 13MWT37

1100 WL = 20' 4" @ BSC. BREAK FOR LUNCH DRILLERS ARE EXPECTING A/C COMP NEW EMPLOY.

1205 WL = 17' 3" @ BSC (45 MIN STANDBY)

NOTE: CASING @ 1.5' ABOVE GROUND SURFACE

WL = 17' BSC WL BGS = 15.5

PROPOSE TO DRILLERS TO PLACE SCREEN 14.5 - 24.5

1300 DRILLERS RETURN TO DRILL SITE 13MWT37

CLEAN OUT HOLE TO 25' TO INSTALL WELL 14.5-24.5 SAND

1340 INSTALLED PVC WELL 13MWT37:

WELL SCREEN 14.5 - 24.5

SAND 11.5 - 25

BENTONITE 8.5 ~~8.5~~ 8 - 11.5

1400 NICK POST DRILLER, JON REPLACEMENT FOR SAT + SUN

1500 ADMINISTERED SSH+S TRAINING TO NICK POST

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE Fred M Rauer DATE 10-24-03

WITNESS DATE

TITLE 10-24-03 FRIDAY PROJECT NO. 9060 BOOK

Work continued from Page

1505 MOVE/SET UP RIG ON 13MWT38 (DEEPW)

+ APPROACH

- START BY ADVANCING 8" PIPE (TO ACCOMADATE THE ISOLATION CASING

1520 BEGIN TO ADVANCE THE 8" PIPE

1535 SWITCH OVER TO 4" PIPE TO DRILL DOWN TO 25' NO SAMPLIN

1650 DRILLED TO 40' SAMPLED 25'-40' w/ 4" PIPE @ 13MWT38

TODAY TOTALS

	WELL	BDRK w/SPL	OB w/SPL	BDRK w/o/SPL	OB w/o/SPL
13MWT37	24.5	20'	5'	20	
13MWT38	-	15'	-	20	5

CLEAN UP WATER TANK (TENS), PREP TO INSTALL 6" ISOLATION CASING @ 13MWT38

1830 FULL + DRILLERS LV SITE

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE Fred M Rauer DATE 10-24-03

WITNESS DATE

TITLE 10-25-03 SATURDAY [CLOUDY @ 10 am] PROJECT NO. 9060 BOOK

Work continued from Page

0700 FUR TENNIS ONSITE CALIBRATED @ FIELD OFFICE PID

DENNIS SINK - DRILLER
TODD W. HELPER } BOWSER
NICK POST HELPER } MORNER

- LOAD H_2O BOTH SUPPORT TRUCKS
- DRILLS

0800 GOTO SUMM 13. SITE 13MWT38

0830 BEGIN TO ADVANCE 8½" PIPE

0910 TD 8½ PIPE, BEGIN TO INSTALL 6" ISOLATION CASING
+ LOWERED 30' OF 6" CASING TREMIE SOME BENTONITE/CEMENT SLURRY

1000 + PULLED 8" DRILL PIPE CONTINUE TO TREMIE THE BENTONITE/CEMENT

1010 COMPLETED ISOLATION CASING 6" @ 13MWT38 MOVE RIG + TOOLS TO DECON WATER @ 39.0' BGS.

1115 BREAK FOR LUNCH

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Sre M Ramer DATE 10-25-03

WITNESS DATE

TITLE 10-25-03 SATURDAY PM: CLOUDY. 60s-60s RAIN PROJECT NO. 9060 BOOK

Work continued from Page

1244 WL @ 13MWT40 = 15.5' BGS

1300 DENNIS S. DOES NOT WANT TO TAKE THE RIG INTO THE WOODS DARK SKY RAIN THREATENING

1330 DRILLERS WILL WORK ON BUILDING PADS ON THE THREE INSTALLED WELLS

- GO OFF SITE TO GET SAKCRETE FOR PADS AND OTHER SUPPLIES.

STARTED TO RAIN @ 1430

1500 LIGHTING + THUNDER.

1525 DRILLER RETURNED TO SUMM 13

1530 THEY HAVE PAD + BOX SUPPLIES BUT DUE TO THE LIGHTING + THUNDER WE DECIDED TO CALL IT A DAY. SENT DRILLERS HOME. TO DATE TOTAL: 40' OF ISOLATION CASING INSTALLED

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Sre M Ramer DATE 10-25-03

WITNESS DATE

TITLE 10-26-03 SUNDAY

PROJECT NO. 9060

BOOK

Work continued from Page

0700 FWR - FIELD GEOLOGIST THNUS
- CAL PID
- DAILY ACT. SUMMARY

0720 DRILLERS ARR AT FIELD OFFICE
TOO WET TO DRILL, CONCERN THAT RIG WILL SLIDE OFF OR TIP OFF ROADS.
- DECIDED TO INSTALL PROTECTIVE CASING + 4'X4' PADS

FWR - SWEEP FIELD OFFICE
MANSC CLEAN UP

HELP TR DO ~~NT~~ MNA FIELD TEST KITS

1500 DRILLERS INSTALLED ONE PAD/PROT. @ 13MWT37. TOP OFF GROUT @ DEEP WELLS T38 + T41, SHALLOW WELLS T42+T40.

- WORK W/ TERRY R
NO DRILLING ACTIVITIES FOR REMAINDER OF DAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE

WITNESS

DATE 10-26-03

DATE

TITLE 10-27-03 MONDAY

COLD 30s CLOUDY

PROJECT NO. 7060

BOOK

Work continued from Page

0700 FWR ARR @ FIELD OFFICE

0720 DRILLERS ARR @ FIELD OFFICE
- WILL COMPLETE TWO PADS at WELLS T42 + T40
- STILL UNCERTAIN ABOUT UTILITY CLEARANCE INSIDE SWMU 13 COMPOUND.

1000 DRILLER COMPLETED PADS AT WELLS T42+T40 @ SWMU 13
- STILL UNCERTAIN ABOUT UTILITYS INSIDE SWMU 13. TERRY R IS DISCUSSING ISSUE W/ TOM BRENT FACILITY POC.

1300 UTILITY CLEARANCE IS GOOD/SIGNED
WERE OFF STANDBY.
- GLOBAL DELIVERY OFF 6" CASING AND OTHER WELL SUPPLIES.

1430 UNLOADED GLOBAL SUPPLIES

1451 SET UP RIG ON 13MWT45 DEEP WELL MEETING W/ TRI. - WILL ADVANCE TO 20' BGS W/O SAMPLING.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE

WITNESS

DATE 10-27-03

DATE

TITLE PM. PARTLY CLOUDY 50's **PROJECT NO.** 9060

10-27-03 MONDAY **BOOK** 2555

Work continued from Page

1504 BEGIN TO ADVANCE 8" DRILL PIPE @ 13MWT45 (AIR OLLY)
- SWITCH TO H_2O @ 15'

1700 DRILLER LV. SITE (OFF BASE) FWR CONTINUES TO LOG THE CORES.

1800 FWR LVS BASE

TODAY'S TOTALS

OB DRILLING w/o SPL = 10'

BORK DRILLING w/o SPL = 9'

BORK DRILLING w SPL = 20'

STANDBY: 700 AM THRU 1300 HR
~5 HRS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60608

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SIGNATURE Fred M Ramer DATE 10-27-03

WITNESS DATE

TITLE RAINY 40's **PROJECT NO.** 9060

10-28-03 TUESDAY **BOOK**

Work continued from Page

0700 FWR ARR @ FIELD OFFICE

0710 DRILLERS ARR @ FIELD OFFICE
JON K
TODD
DENNIS SINK
NICK P.
- LOAD WATER TRUCK

0800 CHECK IN @ NORTHERN GATE @ SUMM
- DRILLERS GO TO DECON PAD
-

0815 AT DRILL SITE 13MWT45
- PREP TO GROUT IN THE 6" ISOLATION CASING.

0845 COMPLETING ISOLATION CASING @ 39' BGS + GO TO DECON PAD @ 13MWT45
- 8" CASING
- 4" CA DRILL PIPE
- RIG MOVE TO 13MWT35

1040 BEGIN TO CORE w/ 4" DRILL PIPE 20-30' @ 13MWT35

1116 SPL TO 39 BREAK FOR LUNCH AT 13MWT35

1200 DRILLERS GO TO GET MORE WATER

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60608

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SIGNATURE Fred M Ramer DATE 10-27-03

WITNESS DATE

TITLE RAINY 50's - 60's PROJECT NO. 9060
10-28-03 TUESDAY BOOK

Work continued from Page

LITHOLOGIC DESCRIPTION
WELL 13MW T35
19-39 FT BGS

19-20 GREY MED HARD SANDSTONE POORLY BEDDED (BIOTURBATION) CHARCOAL PLANT FOSSILS

20-21.5 DK GREY VERY SOFT SILT + CLAY W/ ROCK FRAGMENT (SHALE)

21.5-22.5 SILTSTONE ALT GREY + BLK THINLY LAMINATED ~~MED~~ SOFT VBR

22.5-25 GREY MED HARD/HARD BR POORLY BEDDED SANDSTONE BIOTURBIDATION RARE CHARCOAL/PLANT FOSSILS

27.5-29 - SILTSTONE ALT GREY + BLK THINLY LAMINATION VBR

29-33 INTERLAYER SILT + SANDSTONE PLANT FOSSILS/CHARCOAL @ 31-32 V.BR

34-39 FINE TO MED LAMINATION MOD ~~[illegible]~~ MED-FINE BED TO LAMINATE BLK

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ramer DATE 10-28-03
WITNESS DATE

TITLE RAIN 50's F PROJECT NO. 9060
10-28-TUESDAY BOOK

Work continued from Page

SILTSTONE + CLAYSTONE GRADING TO ~~FEW~~ VERY SOFT CLAY + SILT W/ ROCK FRAG MED BEDDED

1420 COMPLETED INSTALLATION OF 39' ISOLATION CASING 6" @ 13MWT35 + MOVE TO DECON EQUIPMENT + DRILL PIPE + RIG

1500 DRILLER WILL MOVE TO 13MWT32 20'
- WILL ATTEMPT TO INSTALL WITHOUT USING H_2O

1515 BEGIN ADVANCE ~4" DRILL PIPE ~ 5" HOLE. 13MWT37

1520 HIT BDRK @ ~2.5' WILL CONVERT TO USING H_2O TO DRILL.
- GO GET H_2O EQUIP
-

1600 ADVANCE 6" TEMP CASING (SURFACE) 5'
- NO RECOVER TO 10' SUSPECT IT TO BE WEATHER BDRK.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ramer DATE 10-28-03
WITNESS DATE

TITLE RAIN 60s PROJECT NO. 9060

10-28-03 TUESDAY BOOK

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1700 TD @ 25' @ 13MWT32 WILL ALLOW TO SIT OVER NIGHT TO STATIC H_2O LEVEL
DRILLERS LV SITE
- LOG CORE
- BOX CORE ETC

1730 FWR GO TO TENNS FIELD OFFICE
1800 FWR LVS NSWC

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE [signature] DATE 102803

WITNESS DATE

TITLE CLEAR 30's PROJECT NO. 9060

10-29-03 WEDNESDAY BOOK

Work continued from Page

0700 FWR @ FIELD OFFICE
- CLEAN UP
- PAPER WORK FOR DAILY ACT
- DRILLERS ON SITE

0745 GO TO 13MWT32 DRILL SITE

0800 WL IN 13MWT32 @ 9' BGS
DECIDED TO PLACE SCREEN @ 8'-18' BGS, THEREFORE USE HOLE PLUG TO BACK FILL 20-25
SAND 20-5
BENTONITE SEAL 5-2

0820 INSTALLED WELL 13MWT32

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE DATE

WITNESS DATE

SUNNY 70's

TITLE PM: SUNNY 70's PROJECT NO. 906

NOV 3, 03 BOOK

Work continued from Page

0700 FMC - ENROUTE FROM PGH TO CRANE
-1430

+DRILLERS ONSITE (TRUCK RIG CREW)
- JON KEIFER
- DENNIS SINIC
- TODD WOLLENHAUPT
- NICK POST
} BOWSER MORNER
- DRILL RIG READY TO GO

1600 MOVE RIG OVER TO 13MWT28 (DEEP WELL)
- DRILLED TO 12.5 w/o SPL
- DRILLED TO 12.5-37.5 w SPL
PLAN TO INSTALL 6" ISOLATION CASING TO 38.5

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-3-03

WITNESS DATE

102

TITLE AM: CLEAR 60's PROJECT NO. 4060

11-4-03 BOOK

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0700 FMC - ARR AT TENNS FIELD OFFICE
- CALIBRATE PID
- DAILY PRE SUMMARY
DRILLERS ARR.
- JON KEIFER
- TODD W.
- DENNIS SINIC
- NICK POST

0800 FMC + DRILLERS GO TO 13MWT28
- 15 MIN DELAY DUE TO GATE AT NORTH GATE

0815 REAM HOLE (13MWT28) TO 38.5 w/ 1" DRILLPIPE.

0930 COMPLETED INSTALLATION OF ISOLA CASING (6") TO ~~38.5~~ 36.5' BGS, 39' BGS
- MARKING L OF BOWSER/MORN
SUGGEST USING ROTO SONIC RIG IN WOODS
- BEGINS TO SMOOTH/CLEAR AREA FOR ACCESS
- PLAN TO SET UP ON 13MWT3 3

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-4-03

WITNESS DATE

11

TITLE 11-4-03 PM: SUNNY 205 PROJECT NO. 9060

BOOK

Work continued from Page

1250 SET UP ON WELL 13MWT39
- TEMP CASING TO 5'
- CORE BEGIN @ 5-15?

1320 BLOW OUT HOLE
WL = 20.5

1335 WL = 19.5 13MWT39

1345 WL - 19.0

1352 18.8

DECIDED TO ATTACK WELL
@ 14-24 13MWT39

1450 NOTE - CORE STEM COLLASPED
IN HAD TO CLEAN OUT HOLE BEFORE
WELL INSTALLATION
13MWT39 - SCREEN 14-24
SAND 1-25
BENT 8-11

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred Mauser DATE 11-4-03

WITNESS DATE

TITLE 11-4-03 PM: SUNNY 205 PROJECT NO. 9060

BOOK

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1520 DRILLERS DECON EQUIP.
- MOVE TO 13MWT38
- CASING INSTALLED 10-25-03

1535 BEGIN TO LOWER 4.5 DRILL PIPE

1800 CORED TO 80' @ 13MWT38

TODAYS TOTALS:

13MWT39: 24' PVC WELL
2.5' OB DRILL W/O SPL
22.5 BORE DRILL W SPL

13MWT38 40' BORE DRILL W/SPL

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred Mauser DATE 11-4-03

WITNESS DATE

TITLE 11-5-03 PROJECT NO. BOOK

Work continued from Page

0700 FIR ARR AT FIELD OFFICE
DRILLERS JON E
TODD
DENNIS S.
NICK

+ DISCUSS SCREEN INTERVAL
w MATT COCHRAN. FOR DEEP WELL T38
+ SUGGEST PLACEIN SCREEN
@ 55-65
(WL IN 13MWT38 @ 44' BGS)
BACK FILL 80→68
SAND PACK 68-52

0945 INSTALLED WELL 13MWT38
· SCREEN 55-65
SAND 68-52
BENTONITE CHIPS
PURE GOLD
WILL COMPLETE THE WELL WITH
VOL CLAY TO 5' FROM SURFACE

BELOW SAND PACK
BENTONITE 80-68

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE WITNESS DATE 11-5-03 DATE

TITLE FM. CLOUDY COLD 40s 11-5-03 PROJECT NO. 9060 BOOK 2555

Work continued from Page

1000 CORING BIT LOST IN HOLE
AT ATV DRILL SITE 13MWT4,
- TRUCK RIG WILL ATTEMPT
TO RETRIEVE THE BIT (2") USING
4" CORE/DRILL PIPE.
- RAIN STARTED, DECIDED TO
MOVE TRUCK RIG TO SHALLOW
WELLS INSIDE COMPOUND
1030 - RIG GETS STUCK MOVING TO
13MWT34.

1200 GET RIG UN-STUCK. DECIDED TO
LET THE ATV RIG DO 13MWT34
BREAK FOR LUNCH, PLAN TO MOVE
TO 13MWT27
CLEAN OFF RIG

1320 SET UP RIG ON 13MWT27

1330 BEGIN TO DRILL w/ 4½ DRILL PIPE

1500 INSTALLED 13MWT27
- SCREEN 10-20
SAND 7-21
BENT. 2-7'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE WITNESS DATE 11-5-03 DATE

TITLE 11-5-03 PM: CLOUDY 40° PROJECT NO. 9060

BOOK

Work continued from Page

1530 DISCUSS W/ TERRY R. TBNUS FOL WE HAVE ACCESS TO T44 + T43

1600 DISCUSS W/ DRILLERS DECIDED TO GO INTO T44/T43 AREA AND NOT TO GO TO T41 W/ 2" CORE BIT IS IN THE HOLE @ ~55' BGS

- DRILLERS LOAD UP TO INSTALL CASING

1700 @ T44, MOVE TO T44 G.

1715 GO BACK TO LOC DOWN TO GET GROUT MIXER AND

1730 LV DRILL SITE:

TO DAYS TOTALS

+ 13MWT 38: INSTALLED 65' PVC WELL

+ 13MWT 27: 10' OB DRILLING W/SPL
2" BORE DRILLING W/SPL
1" BORE DRILLING W/O SPL
20' PVC WELL

1800 FOR RETURN TO TBNS FIELD OFFICE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ramer DATE 11-5-03

WITNESS DATE

TITLE 11-6-03 AM: 40° RAIN PROJECT NO. 9060

BOOK

Work continued from Page

0700 FOR TBNUS ARR @ FIELD OFFICE
DRILLERS B/M: JON KEIFER
TODD W.
DENNIS S.
NICK P.

- CALIBRATED PID
- DAILY ACT. PAPER WORK
+ CALLED MARVIN KLUESNER
- OK TO GAIN ACCESS THROUGH NORTH GATE TO WELL DRILL SITE 13MWT44.

0815 GOTO 13MWT44, CONTINUES TO RAIN.

0845 RAIN STOPPED BEGIN TO DRILL @ 13MWT44

1115 INSTALLED ISOLATION CASING TO 40' BGS @ 13MWT44
BREAK FOR LUNCH

1300 TRUCK RIG STUCK ON WAY TO WELL 13MWT43.

1340 UNSTUCK TRUCK, CONT. TO MOVE OTHER MISC. EQUIP TO 13MWT43 TRAILERS ETC.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ramer DATE 11-6-03

WITNESS DATE

TITLE 11-6-03 PROJECT NO. BOOK

Work continued from Page

WELL CONSTRUCTION SUMMARY

DATE INSTALLED	WELL ID	SCREEN TOP	SCREEN BOTTOM	INTERVAL	TD	8&5 ISO. CASING
11-5-03	13MWT27	10'	20'	21'		N/A
10-28-03	13MWT32	8'	18'	25'		N/A
10-24-03	13MWT37	14.5'	24.5'	25'		N/A
11-4-03	13MWT38	55	65'	80'		39'
11-4-03	13MWT39	14	24'	25		N/A
10-23-03	13MWT40	15'	25'	25.5		N/A
10-22-03	13MWT42	11'	21'	25		N/A
11-6-03	13MWT43	10'	20'	21		N/A
	13MWT28					38.5
	13MWT35					39'
11-10-03	13MWT41	55	65	66		38'
	13MWT44					40'
11-10-03	13MWT45	70	80	84		39'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred Ramee DATE 11-6-03

WITNESS DATE

TITLE 11-6-03 PM: OVERCAST 40's PROJECT NO. BOOK

Work continued from Page

1400 TRUCK RIG ON 13MWT43
- ADVANCE 6" TEMP DRILL PIPE/CASING TO 10'

1520 COMPLETED 13MWT43 WELL
- SCREEN 10-20
- SAND 7-21
- BENTONITE 2-7

TOTALS 13MWT43: 10' OB DRILL W/SPL; 11' BORE DRILL W/SPL; 21' 2" WELL INSTLD

1540 DECON EQUIP
- MATT COCHRAN HAS INFORMED US THAT SWMU 16 IS CLEARED.
- DRILLERS TO LOAD ALL EQUIP TO MOBTO THAT SWMU 16

1700 DRILLERS MOVE EQUIPMENT TO THUS FIELD OFFICE AREA READY TO MOVE INTO SWMU 16.

TOTALS 13MWT44: 10' OB DRL W/SPL; 30' BORE DRL W/SPL; 40' 150 CASING INSTLD

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred Ramee DATE 11-6-03

WITNESS DATE

TITLE 11-7-03 AM: CLEAR 30 PROJECT NO. 9060 BOOK

Work continued from Page

0700 PUR MTR ON SITE
— START @ 16MWT5

0750 GOTO 16MWT15
— TAG OUT LS NOT IDENTIFIED
MOVE TO 16MWT08

0900 BEGIN TO ADVANCE 4" DRILL PIPE
@ 16MWT08

1100 FINISH SPL TO 38', BEGIN TO
INSTALL 6" CASING USING 11" (8" ID)
DRILL PIPE @ 16MWT08.
BREAK FOR LUNCH

1130 DECON RIG + EQUIP
— WELD HARDWARE

1330 SET UP RIG ON 16MWT15

1600 COMPLETED DRILLING TO 38' w/SPL 4" CORE
BEGIN TO REAM w/ 8" ID PIPE =
11" HOLE TO INSTALL 6" ISOLATION
CASING.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred McCarver DATE 11-7-03

WITNESS DATE

TITLE 11-7-03 PM: CLOUDY 30's PROJECT NO. 9060 BOOK

Work continued from Page

1700 INSTALLED 6" CASING TO 38.5
GROUTED IN LS COMPLETED.

TOTALS:

16MWT15: 7.5' OB w/SPL
31' BDRK w/SPL
38.5 ISO. CASING

16MWT08: 7' OB w/SPL
31.5 BDRK w/SPL
38.5 ISO. CASING

1800 LV SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred McCarver DATE 11-7-03

WITNESS DATE

TITLE 11-8-03 SAT. PROJECT NO. BOOK 2555

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0700 FUR ARR AT FIELD OFFICE
- CALIBRATED PID.
- DO DAILY DRILL SUMMARY

DRILLERS ON SITE:
DON KEIFER
DENNIS SINKS } BOWSER MOTHER
TODD W.
NICK P.
- LOAD SUPPLIES, FILL WATER TANKS

0830 SET UP ON 16MWT11

0900 4" CORE BIT AS BECOME WORN, DRILLER GO TO LAT DOWN TO GET NEWER BIT.

0930 CONTINUE TO DRILL 16MWT11

1045 COMPLETE SPL TO 38.5' BGS @ 16MWT11.
BEGIN TO ADVANCE 8" ID DRILL PIPE

1350 COMPLETED INSTALLING 6" ISO CASING BLACK STEEL USING 8" ID (11" OD)
GO TO DECON.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Romer DATE 11-8-03
WITNESS DATE

TITLE 11-8-03 SAT PROJECT NO. BOOK 2555

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1500 DRILLERS SET UP ON 16MWT08
- CLEAN OUT GROUT

1525 BEGIN TO DRILL w/ 4" ID DRILL PIPE TO CORE (5" OD)

1700 REACHED 79' BGS HIT SOME HARD SAND STONE @ 79', IN SHALE FROM 39' TO 79'. DRILLERS LV SITE

TOTALS: 16MWT11
- ~~39'~~ 9' OB DRILL w/SPL
30' BORK w/SPL
39' ISO CASING

16MWT08
BORK DRILL w/ SPL = 40'
w/o SPL = 1'

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Romer DATE 11-8-03
WITNESS DATE

TITLE 11-9-03 AM: CLEAR 50's -40's PROJECT NO. 7060 BOOK

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0700 PUL ARR AT FIELD OFFICE
- CALIBRATE PID
- PAPER WORK
DRILLERS ARR
- LOAD MOD. SUPPLIES
- FILL WATER TANK

0730 GO TO SUMW 16, DRILLERS WARM UP RIG.

0815 BEGIN TO DRILL W/ 4" ID

0945 DRILLED TO 99' @ 16MWT08
MOSTLY SHALE TO TR SAND STONE
BEDS @ 85-89, SANDY SILTSTONE
89-93 GRADING TO SILTSTONE
THEN TR CLAYEY SILTSTONE
TO 97, 97-99 SANDY SILTSTONE

DRILLER GO TO DECON
- GET H_2O
- BOXES

1040 SET UP ON 16MWT15

1055 BEGIN TO DRILL OUT GROUT FROM ISO. CASING.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-9-03
WITNESS DATE

TITLE 11-9-03 PM: CLEAR 40's PROJECT NO. 7060 BOOK

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1200 BREAK FOR LUNCH DRILLED FROM 39 THRU 87. PLAN TO DRILL TO THE SAND STONE

1300

1380 DRILLED TO 92 DISTINCT SAND STONE INSTALL SCREEN
SCREEN • 81-91 } 16MWT15
SAND • 78-92 }
BENTONITE TO TOP OF WELL (5' BGS)

1500 COMPLETED INSTALLATION OF 16MWT15. MOVE TO 16MWT08 TO INSTALL WELL ON A SIMILAR SAND STONE @ 85' SCREEN 85-95' SAND 82-99 BENT. TO GROUND SURFACE

1630 DRILLER LV SITE

1700 - CLEAN UP SUMW 16
• COLLECT CORE BOXES

17

TOTALS	BORE W/SPL	BORE W/O SPL	WELL
16MWT08	20		95
16MWT15	53	1	91
	73	1	186

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 11-9-03
WITNESS DATE

TITLE DRILLING AM: 30's CLOUDY PROJECT NO. 9060
11-10-03 MONDAY BOOK

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0700 FUR ARR AT TENS FIELD TRAIL OFFICE
- CALIBRATED
- DRILLERS ONSITE, DECON RIG + TOOLS

0800 DRILLERS SET UP ON 13MWT41
IN ATTEMPT TO RECOVER A
2" CORE BIT LOST IN HOLE
BY THE ATV RIG

0930 RETRIEVED THE LOST BIT, WILL
PROCEED TO 66' BGS TO INSTALL
WELL TO ~~50-60~~' BGS 55-65

1015 TD @ 66' (13MWT41) BEGIN TO
INSTALL WELL @ 55-65' SCREEN
SAND 66' - 52'
BENT 52' - 5'
SUBTOTAL: 13MWT41: DRILLED 6'
BORE W/SPL
WELL INSTAL 65'

1050 COMPLETED WELL (13MWT41) INSTALLATION
+ DRILLERS HAVE MANY CHORES BEFORE
THEY CAN MOVE ON TO 13MWT45
• UNLOADING NEW SHIPMENT OF SAND + BENT
• DECON • LOAD WATER
• BREAK

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Mauser DATE 11-10-03
WITNESS DATE

TITLE PM: PARTLY SUNNY 50's PROJECT NO. 9060
11-10-03 MONDAY BOOK

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1300 MOVE RIG INTO SWMU COMPOUND (SIGNED
IN AT THE NORTH GATE.

1325 SET UP RIG ONTO 13MWT45
• DECIDED TO DRILL DOWN 20'
BELOW ISO CASING BEFORE
CORING WILL LOG CUTTING

1345 BEGIN TO DRILL USING 4½" ID
~~DRILL~~ DRILLPIPE
DECIDED TO DRILL DOWN
20' BEYOND THE CASING W/O SPL
WILL LOG THE CUTTINGS.

1400 LOGGED 39' TO 57' CUTTING
NO SPL.

1430 BEGAN SPL ~~START @ 57'~~ BGS CORE

1615 FINISH DRILLING CORED TO 84'
BASE ON DISCUSSIONS W/MATT C.
FINDINGS @ WELL 13MWT44 CORES,
RECOMMEND INSTALLING WELL IN
V. BR SILT STONE ABOVE + BLOCKY
GREY SANDSTONE WHICH IS DRY @
T44. THE VBr SHALE HAS SOME H_2O.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Mauser DATE 11-10-03
WITNESS DATE

TITLE PM: CLOUDY 40's-50's PROJECT NO. 9060
11-10-03 MONDAY BOOK 2555

Work continued from Page

1615 DECIDED TO INSTALL SCREEN @ T45 AT 70' TO 80' BGS ACROSS THE SECTION THE DRILLERS COULD NOT RETRIEVE FROM HOLE AFTER MANY ATTEMPTS.

630 DRILLER BEGIN TO INSTALL WELL 13MWT45
SUB TOTAL:
- DRILL w/o SPL (BORE): 39' TO 57' = 18'
- DRILL BORE w/SPL: 57 TO 84 = 27'
- 80' WELL INSTALLATION @ T45

705 COMPLETED WELL INSTALLATION
- SCREEN 70'-80'
- SAND 67'-84'
- BENTONITE 5'-67'

715 DRILLER GO TO DECON CLEAN RIG + TOOL PREP TO GO TO SWMU 16.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Monser DATE 11-10-03
WITNESS DATE

TITLE CRAVE NSWC AM RAINY PROJECT NO. 9060-1
11-11-03 TUESDAY BOOK 2555

Work continued from Page

0700 FUR ARR AT FIELD OFFICE
- CALIBRATE PID
- DO DAILY ACTIVITIES SHEETS
DRILLERS ARR ON SITE
- LOAD SUPPLIES
- FILL WATER TANKS

0750 MOVE TO SWMU 16MWT11

1130 LOG FOR 16MWT11
38-48: 38-40: SAND
48: SILT STONE
REC = 70%
RQD = 20%
LAM. DK GREY ALT TO LT GREY FOSSILS PI OCC
40-42: MUD STONE
42-48: LT. GREY f-g SAND
BLOCK X BEDDED OCC PLAN FOSSILS LAM TO F. BRED
LO Δ FRAC OCC VUGS

48-58: MED DK CLAYEY SILT STONE
RQD = 0%
REC = 100%
FISSIL V. BR

58-68
RQD = 0% MED DK CLAYEY SILT STONE
REC = 100%
FISSIL V BR

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Monser DATE 11-11-03
WITNESS DATE

TITLE 11-11-03 PROJECT NO. BOOK 2555

Work continued from Page

68-78 DK GRAY VC BLK
SOFT CLAYEY SILT STONE 68-72
REC = 75% -FISSL
RQD = 20% -VBR
68-72 SILT STONE LT GREY
MED 72-75 BLK BLOCK
HARD POOR BEDDING
SMALL? BED.
72-78 ? LOTS OF FRAG.
BIOTURB.?

78-88 SILT STONE
REC = 75% CLAYEY (SHALE)
RQD = 0% SOFT LAM.
V.BR. V.F BRDS

85-88 SILTY SAND STONE
MED LAM. ~~VERY~~ THIN BEDDED
SOFT ALT GREY + DK GRY
LAM BR

88-98 REC = 100%
RQD = 30%

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred M Ramer DATE 11-11-03
WITNESS DATE

TITLE 11-11-03 PROJECT NO. BOOK 2555

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88-96 SANDSTONE
LAM. TO THIN BEDS
ALT. GREY + BLK LAM.
OCC. IRREGULAR LAM
LOW Δ FRAG BECOMING SILTY @ 95'
96-98 COAL BED.

1200 DRILLERS INSTALLED 16MWT11
SCREEN 86-96
SAND 83-98
BENT 5'-83'

1215 BREAK FOR LUNCH

1400 DECIDED TO LET THE ATV RIG DO THE SHALLOW WELL 16MWT07. JON K AND CREW WILL GO TO SUMMIT

SUBTOTALS 16MWT11

BORE DRILL W/SPL 40 TO 98
58'
96' WELL INSTALLATION

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred M Ramer DATE 11-11-03
WITNESS DATE

11-11-03 BOOK 2555

Work continued from Page

1700 JON K. CREW
- CLEAN UP AT SWMU 16 + SWMU 13
- TOP OFF BENTONITE AT DREP WELLS @ SWMU 16
- MOVE CORE BOXES TO STORAGE NEAR FIELD OFFICE

FWR CLEAN UP PREP TO DEPART AM TO-MORROW.

1830 FWR LV SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [illegible]

WITNESS

DATE 11-11-03

DATE

11/17/03 BOOK

Work continued from Page

1400 S. GRIER (TETRA TECH) ARRIVES ON SITE.

1530 S. GRIER + MATT COCHRAN (TETRA TECH) GO TO SWMU 13 ~~28~~ + DRIVE TO SET A PIEZOMETER ON BMW 28 TO CONTINUE FROM 40'

JOHN KEIFER + NICK PIST SET UP ON (BOWSER MORNER)

1630 13 MWT 28 + clean it out.

TODD WOLLENHAUPT + DENNIS SINK (BOWSER MORNER) SUPPORT JOHN KEIFER.

1700 JOHN KEIFER SETS BAD TO 40' + WE FINISH FOR THE DAY.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [illegible]

WITNESS

DATE 11/17/03

DATE

NSWC CRANE

N9060

CTO 0279

SWMUs 13 + 16

2555

DRILLING

START: 3/24/03

END:

TITLE SWMU 16 CRANE SWMU PM: RAIN 50's PROJECT NO. 9060
11-11-03 BOOK 2555

Work continued from Page

1700 JON K. CREW
- CLEAN UP AT SWMU 16 + SWMU 13
- TOP OFF BENTONITE AT DEEP WELLS @ SWMU 16
- MOVE CORE BOXES TO STORAGE NEAR FIELD OFFICE

FINAL CLEAN UP PREP TO DEPART AM TO-MORROW.

1830 FINAL LV SITE

Work continued to Page

SIGNATURE Scott M Reuter DATE 11-11-03
WITNESS DATE

TITLE CRANE SWMU PM: SUNNY ≈ 60°F PROJECT NO. 9060
11/17/03 BOOK

Work continued from Page

1100 S. GRIER (TENNS) ARRIVES ON SITE.
1530 S. GRIER + MATTOCHERA (TENNS) GO TO SWMU 13 + DRIVE TO SET A PIEZOMETER ON BMW 28 TO COMPANIE FROM 40'
JOHN KEFER + NICK POST SET UP ON (BOWSER MORNER)
1630 13 BMW 28 + clean it out.
TODD WALLENHAUPT + DENNIS SINK (BOWSER MORNER) SUPPORT JOHN KEFER.

1700 JOHN KEFER SETS BO TO 40' + WE FINISH FOR THE DAY.

Work continued to Page

SIGNATURE Scott Grier DATE 11/17/03
WITNESS DATE

NSWC CRANE 7060

TITLE PROJECT NO.

TUE. 11/18/03 RAINY, ≈65°F BOOK

Work continued from Page

Scott Grier (TENS) 13

0700 ON SITE @ 0700

S. GRIER CALIBRATES PID.

BOWER MORNER CREW ARRIVES.

0815 S. GRIER, (TENS) J. KEIFER,

~~Set up~~ RAIN WASHES OUT THE DRILLING.

1345 S. GRIER SETS UP ON 13 MWT 25.

USING THE PARASTOLTIC PUMP

initial H_2O level = 15.68' produced total = 24

H_2O was slightly turbid ≈ 25-40 ntu.

1355 S. GRIER FINISHES clearing H_2O.

1530 S. GRIER SETS UP ON 13 MWT 34

~~FOR~~

1730 S. GRIER + TERRI ROTHAN FINISH

DEVELOPMENT ING 13 MW 34.

1830 All personel leave site for the day.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 11/18/03

WITNESS DATE

NSWC CRANE 7060

TITLE PROJECT NO.

WED. 11/19/03 Cloudy, 50°F BOOK

Work continued from Page

0655 Scott GRIER (S.G.), Terri ROTHAN (TR)

MATT COCHRAN (MC), JIM Goeret (JG)

arrive onsite.

Personel calibrate eq. + prepare for

the days drilling activites.

0800 S. GRIER (SG TENS), J. KEIFER, D. SINK,

N. POST (BOWER MORNER) SET UP ON 13 MW 28

0830 13 Coring - 10

30' of coringing completed

blow out well checking recovery for H_2O

1000 Water Level 77.0' @ 40' cored

1100 WATER LEVEL 76.95' S. GRIER (SG TENS)

& J. KEIFER DECIDE TO TAKE 1 MORE 10'

CORING RUN & REMEASURE H_2O level

1130 H_2O level = 86' waiting for recovery

1230 H_2O level = 85.5' S. GRIER + M. COCHRAN

DECIDE TO INSTALL THE WELL AT TOTAL DEPTH 88'

SCREENED INTERVAL 88'-78' with 3' of sand pack.

38.88' (50.BR)

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 11/19/03

WITNESS DATE

TITLE NBWC CRINE 1060 PROJECT NO.
11/19/03 BOOK

Work continued from Page

8

1300 S. GRIER (TENS) J. KEFER + D. SINK (BOWSER MORNEN) INSTALL WELL 13 MWT 28.

1400 J. KEFER, D. SINK + TODD WOLLENHAUT COMPLETE WELL 13 MWT 28.

1430 RIG IS STUCK -

1530 RIG IS OUT.
J. GRIER BOXES CRINE
13 MWT 27.

1800 S. GRIER + MATT COCHRAN LEAVE THE SITE.

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SIGNATURE Scott Grier DATE 11/19/03

WITNESS DATE

TITLE NBWC CRINE 1060 PROJECT NO.
11/20/03 BOOK

Work continued from Page

0700 S. GRIER (SG), Terri Rojahn (TR), MATT COCHRAN (MC) and JIM GORET (JG) ARRIVE ONSITE.

0900 S. GRIER sets up on 13 MWT 45 for development.

0920 SG. BEGINS PURGING 13 MWT 45 with the

hose valve in well.

1020 Get other valve + dry well

1209 S. GRIER FINISHES DEVELOPING 13 MWT 45.

TOTAL VOL. PURGED = 7.25 g
RECHARGE RATE = 0.08' per 10 min OR
" Δ = 0.48' per 60 min
see well devep. sheet for parameters + other details

Work continued to Page

SIGNATURE DATE

WITNESS DATE

TITLE NSWC CRANE 11/20/03 PROJECT NO. BOOK

Work continued from Page

1330 S. GRIER SETS UP ON 13 MWT 30.
The well dries in 3 minutes.
aprox. 5.25 gal.
The well is allowed to recharge
recharge is aprox 1.5 - 1.8 foot/10 min
see monitoring well develop. sheet for details

1430 S. GRIER SURGES THE WELL WITH THE BLOCK

1455 S. GRIER PUMPS DRY AGAIN 13 MWT 31

1500 S. GRIER FINISHES DEVELOPMENT.

1544 S. GRIER SETS UP ON 13 MWT 30.

1550 SG BEGINS PUMPING 13 MWT 30.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Bruce DATE 11/20/03

TITLE NSWC CRANE 11/20/03 PROJECT NO. BOOK

Work continued from Page

SG surges the well 2x (1606 + 1642)
total vol. purged = 7.59
See M.W. dev. sheet for details.
1655 S. GRIER ENDS PURGING 13 MWT 30.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Bruce DATE 11/20/03

TITLE 11/21/03 Clear, 58°F PROJECT NO. BOOK 9060

Work continued from Page *WELL DRILLING*

→ 0700 S. GRIER, MATT COCHRAN, TERRI ROTHAN + JIM GOERDT ARRIVE ONSITE.

→ 0900 13 MWT 46 = casing set.

S. GRIER (THUS) J. KEFER, D. SINK + TODD WOLLENHOPT set up on 13 MWT 46. (BOWER WORNER)

→ 0930 S.G + BOWER WORNER PERSONEL BEGIN DRILLING. 13 MWT 46.

* SEE BORING LOG FOR DETAILS *

INSERTING CASING TO 39' BGS.

DRILLED TO ~~38'~~ ≈ 40'

1110 DRILLERS WENT TO LUNCH.

1230 DRILLERS RETURNED.

DRILLING ENDS TO GROUT CASING.

1400 GROUTING COMPLETE 13 MWT 46.

1530 S. GRIER HELPS T. ROTHAN + M. COCHRAN develop 16 MWT 13 + 16 MWT 15.

1830 All personal leave the site for the night.

SCIENTIFIC SINBERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 11/21/03

WITNESS DATE

TITLE 11/22/03 SUNNY, 68°F PROJECT NO. BOOK

Work continued from Page

0700 S. GRIER, T. ROTHAN, M. COCHRAN, + J. GOERDT ARRIVE ONSITE.

Personel calibrate eq., make activities report w/ drillers and plan the day activities.

1000 S. GRIER SETS UP ON 13 MWT 28 FOR DEVELOPMENT.

1000 S. GRIER DRILLS THE WELL.

* See well development sheet for 13 MWT 28 for details.

1130 S. GRIER COMPLETES DEVELOPING 13 MWT 28. TOTAL PURGED = 3.25 g

1500 S. GRIER (THUS), J. KEFER + TODD WOLLENHOPT set on 13 MWT 46 for drilling.

screen = 65 → 55'

sand = 52'

bentonite chip = surface

1730 FINISHED INSTALLATION

SCIENTIFIC SINBERY PRODUCTIONS CHICAGO 60605

Work continued to Page MWT 46

SIGNATURE Scott Grier DATE 11/22/03

WITNESS DATE

11/20/03 NOWC CRANE

TITLE Cloudy, Windy PROJECT NO. BOOK

Work continued from Page

0650 S. GRIER ARRIVES ONSITE.
T. ROJAHN, J. GOERDT + M. COCHRAN ARRIVE.
ALL PERSONEL PREPAIR FOR THE DAY
ACTIVITIES (CAL. EQ, GO OVER LOGS, ETC.)

0910 S. GRIER + T. ROJAHN SET UP ON
16 MWT 16. development

1000 S. GRIER + T. ROJAHN set up on
13 MWT 34.

1330. S. GRIER SETS UP ON 13 MWT 08
FOR SAMPLING.

PID = ?
sample 13GWT08 taken @ 1515
* see sampling log for details *

1900 S. GRIER leaves the site
to pick up 2 *(100' x 3/4") Rolls
OF POLY TUBING.

SCIENTIFIC NOTEBOOK PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 11/23/03

WITNESS DATE

NOWC CRANE

TITLE 11/24/03 COLD, WINDY, 30°F PROJECT NO. BOOK

Work continued from Page

0700 S. GRIER, T. ROJAHN, M. COCHRAN,
+ J. GOERDT ARRIVE ON SITE.

ALL Personel prepair for the days
activities.

0900. S. GRIER SETS UP ON 13 MWT 14.
→ 1115 S. GRIER SAMPLES 13 GWT 14.

* See low flow data + g.w. sample sheets
for details *

1400. S. GRIER SETS UP ON 13 MWT 30.

1615. S. GRIER SAMPLES 13 GWT 30.

1800 S. GRIER GOES TO FIND J. GOERDT
AND HELPS HIM FINISH 13 MWT .

1900 S. GRIER + J. GOERDT leave the
site for the day.

SCIENTIFIC NOTEBOOK PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 11/24/03

WITNESS DATE

TITLE 11/25/03

PROJECT NO.

BOOK

Work continued from Page

0700 S. GRIER, T. ROJAHN, M. COCHRAN + J. GOERDT ARRIVE ONSITE.

ALL PERSONEL MAKE PREPARATIONS FOR THE DAYS ACTIVITIES.

0930 S. GRIER SETS UP ON 13 MWT 27.

1005 S. GRIER BEGINS PURGING 13 MWT 27.

1425 S. GRIER SAMPLES 13 MWT 27.

1600 Personel clean up office + decon pad.

2200 S. GRIER leaves the site for the day.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Scott Grier DATE 11/25/03

WITNESS DATE

TITLE 12/03/03

PROJECT NO.

BOOK

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@ 1400 S. GRIER ARRIVES AT THE MAIN GATE AND GETS HIS PASS.

S. GRIER SAMPLES RINSATE BLANKS.

1815 S. GRIER LEAVES THE SITE FOR THE DAY.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Scott Grier DATE 12/03/03

WITNESS DATE

TITLE NSWC CRANE 12/04/03 PROJECT NO. 9060

Rainy, Cold 38°F

Work continued from Page

0650 S. GRIER (SG) T. ROTHAN (TR) + J. GOERTO (JG) ARRIVE ONSITE.

Personel prepair for the day's activities.

0900 S. GRIER SETS UP ON 13 MWT 43.

1050 S. GRIER SAMPLES 13 MWT 43.

1200 S. GRIER SETS UP ON 13 MWT 44.
PROBLEM WITH LIFT - HAVE H2O IN TUBING.

1430 S. GRIER BEGINS PURGING 13 MWT 44.

1700 S. GRIER SAMPLES 13 MWT 44.

1745 S. GRIER LEAVES THE SITE.

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO

SIGNATURE Scott Grier DATE 12/4/03

WITNESS DATE

TITLE Rain, SG + [illegible] 12/05/03 PROJECT NO. BOOK 9060

Work continued from Page

0650 S. GRIER ARRIVES ONSITE.

0915 S. GRIER + T. ROTAHN BEGIN HAND AUGERING 16 SB 47

0940 S.G + T.R SAMPLE (SOIL) 16 SB 47

1000 SG + TR AUGER 16 SB 48.

1015 SG + TR SAMPLE 16 SB 48 0203.

1030 S.G + T.R. AUGER 16 SB 49.

1050 SG + TR SAMPLE 16 SB 49 0405.

1130 SG + TR AUGER 16 SS 42

1155 SG + TR SAMPLE 16 SS 42 0002.

1205 SG + TR AUGER 16 SS 43

1210 SG + TR SAMPLE 16 SS 43 0002.

1225 SG + TR AUGER 16 SS 44.

1225 SG + TR SAMPLE 16 SS 44 0002

1237 SG + TR SAMPLE 16 SS 45 0002.

1250 SG + TR SAMPLE 16 SS 46 0002.

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO

SIGNATURE Scott Grier DATE 12/5/03

WITNESS DATE

TITLE 9060 SNOW PROJECT NO. BOOK

Work continued from Page

1450 S-GRIER SETS UP ON 16 MWT 11.

1540 WATER LEVEL IN 16MWT 11 drops below pump intake.

1630 S-GRIER BAILS 16 MWT 11 dry.

1700 S-GRIER CHECKS H2O level in 16 MWT 15.
H2O level = 53.36'

1800 S-GRIER LEAVES THE SITE FOR THE DAY.

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SIGNATURE Scott Grier DATE 12/5/03

WITNESS DATE

TITLE 12/6/03 PROJECT NO. BOOK Clear, LA Breeze 40°F

Work continued from Page

0655 S.GRIER ARRIVES ONSITE.
S.G + TR SAMPLE THE SUMPS AND 16 GWT 08.

1200 S-GRIER SETS UP ON 13 MWT 02.
S.G pumps the well @ 50-100 ml/min
S.G calculates the H2O level drop to be risky for enough water to purge + sample

1345 S.G. pumps the well dry. (13 MWT 02)

500 S.G set up on 13 MWT 06.

1628 S.G purges 13 MWT 06 dry.
Total volume purged = 2.0 g.

1715 S.G. LEAVES THE SITE FOR THE DAY.

Work continued to Page

SIGNATURE Scott Grier DATE 12/6/03

WITNESS DATE

TITLE 12/7/03 PROJECT NO. Clear, Calm, 25°F

Work continued from Page

0655 S. GRIER ARRIVES ONSITE.

0900 S. GRIER SETS UP ON 13 MW 28.

1500 WATER LEVEL DROPS BELOW PUMP INTAKE.

1530 SG + TR SET UP ON 13 MW 45.

WELL 13 MW 45 WATER LEVEL 1755 DROPS BELOW INTAKE ON PUMP.

1830 SG LEAVES THE SITE.

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 12/7/03

WITNESS DATE

TITLE 12/8/03 PROJECT NO. Clear, Calm, 25°F

Work continued from Page

0700 S. GRIER ARRIVES ONSITE.

S.G., T. ROTANN + J. GOERTD MAKE PREPARATIONS FOR THE DAYS ACTIVITIES. (SOIL + GW SAMPLING).

0830 SG + TR BEGIN HAND AUGERING @ SWMU 13.

13 SB 16 H2O in hole @ 2'

0002 INTERVAL SAMPLED @ 0848

.5' loam (DK-BR)

1.5' Silty Clay BR/LT BR/GR

4.0' WET + COHESIVE

0204 INT. SAMPLED @ 0900

13 SB 17

0002 sampled @ 0900

0'-1.5 DK BR LOAM

0204 sampled @ 0930

1.5-4.0 LT BR/GR SILTY CLAY

10-1.5 INC. CLAY + GR COLOR DRAMA

3.0-4.0 INC. FINE SAND WHITE

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 12/8/03

WITNESS DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

13 SB 18 → 0002 sampled @

0-.5' DK BR LOAM 0002

.5'-2.0'-3.0' BR SILTY CLAY 0204 sampled @ 0930

3.0'-4.0' OR/YELLOW FINE SANDY CLAYEY SANDY 70%

13 SB 19 → 0002 sampled @ 0920

0-.5' DK BR LOAM 0203 sampled @ 0930

.5-1.0' LT BR SILTY CLAY

1.0'-2.0' BR LOAM W/ FINE GRAVEL

2.0-3.0' DK BR SILTY CLAY

3.0- FINE CLAY DK BR

REFUSAL @ 3.0'

0002

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 12/8/03

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

13 SB 20 0001 sampled @ 1005

0-.5' DK BR LOAM W/ ORGANICS

.5'-1.0' LT BR/OR CLAYEY FINE SAND W/ ROCKS + GRAVEL

REFUSAL @ 1.0

13 SB 21 0002 sampled @ 1004

0204 " " " 1019

0-.5' DK BR LOAM

.5-2.0' LT BR/OR SILTY CLAY, 30%

2.0-3.0 FINE SAND W SAND FINE

DK COLOR

3.0'-4.0' SANDY, SILTY CLAY 30%, 30%, 40%

13 SB 22 0002 sampled @ 1030

0204 " " 1045

0-.5' DK BR/BK LOAM W/ GRAVEL FILL

.5'-1.0' DK BR SILTY CLAY

1.0'-3.0' LT BR/OR CLAYEY SAND (FINE)

GRAVEL @ 2.0'

3.0'-3.5 [illegible] CLAY (FINE) OR/OR/WHITE

GRAVEL

REFUSAL @ 3.5'

SCIENTIFIC SINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 12/8/03

DATE

TITLE

PROJECT NO.

BOOK

13SB23 0'-.5' DR GR. SILTY LOAM w/ GRAVEL

0002 sampled @ 1036 1'-2' OR/BLK SANDY CLAY w/ BLK PATCHES OF ORGANIC MATTER

0204 sampled @ 1045 2'-4' CLAYEY SAND (FINE) OR SEMI COHESIVE

13 SB 24 0-.5 ~~GRY~~/BLK SANDY LOAM w/GRAVEL

0002-1110 .5'-1.0' OR. CLAYEY SAND (FINE) 70% SAND

0203-1120 1.0-2.0' OR./GR SANDY CLAY 70% clay

2.0-3.0' OR. SILTY SAND W/GRAVEL 70% SAND

REFUSAL @ 3.0

13 SB 25

0002-1104 0-.5' GR/BL SANDY LOAM w/GRAVEL

0204-1115 .5-4.0' OR. ~~CLAYEY~~ SILTY SAND (FINE) 70% w/clay

3.0-4.0 INCREASING CLAY 25-30%

Scott Grier 11/8/03

NSWC CRANE 9060

TITLE 11/8/03

PROJECT NO.

BOOK

Work continued from Page

1500 ~~0650~~ S. GRIER ~~ARRIVE~~ SETS UP ON 13 MWT 28.

1530 S. GRIER GETS THE REMAINDER OF THE SAMPLES FOR 13GWT2901.

1540 S. GRIER SETS UP ON 13 MWT 45.

1558 S. GRIER SAMPLES 1½ AMBER BOTTLES BEFORE WATER LEVEL DROPS BELOW INTAKE OF PUMP.

1700 S. GRIER DOES BORING LOGS FOR ALL HAND AUGERING.

1820 S. GRIER LEAVES THE SITE.

Scott Grier 11/8/03

TITLE 12/9/03 PROJECT NO. Cloudbreak Breeze, SFF BOOK

Work continued from Page

0650 S. GRIER ARRIVES ONSITE.

0930 S. GRIER SETS UP ON 13 MWT 47.

1110 S. GRIER SAMPLES 13 MWT 47

* see GW sample sheet for details.

1400 S. GRIER CONSTRUCTS ~~WELL~~ SOIL BORING LOGS 13 SB16 → 13 SB25.

1500 S. GRIER LEAVES TO CLEAN RENTAL.

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE Scott Grier DATE 12/9/03

WITNESS DATE

TITLE PROJECT NO. BOOK

Work continued from Page

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE DATE

WITNESS DATE

TITLE 12/9/03 PROJECT NO. Cloudy, Light Breeze, 51°F

Work continued from Page

0650 S. GRIER ARRIVES ONSITE.

0930 S. GRIER SETS UP ON 13 MWT 47.

1110 S. GRIER SAMPLES 13 MWT 47

* see GW sample sheet for details.

1400 S. GRIER CONTINUES ~~WELL~~ SOIL BORING LOGS 13 SB16 → 13 SB25.

1500 S. GRIER LEAVES TO CLEAN RENTAL.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Scott Grier DATE 12/9/03

WITNESS DATE

TITLE 1-15-04 FRIDAY 16 OVERCAST PROJECT NO. 9060 BOOK

Work continued from Page

1200 DRILLERS LOAD SUPPLIES
- GO TO SUMM 16 SET RIG ON HOLE WELL 16MWT18
- BREAK FOR LUNCH

1300 FUR SHOWS DRILLERS WHERE TO DISCHARGE DRILLING FLUIDS INTO IWD LINE.

1330 DRILLERS CONTINUE TO SET UP ON 16MWT18.
+ PREP TO DO SLUG TESTS AT DEEP WELLS ON SUMM 16
- WELLS THAT NEED TO BE TESTED
16MWT08 DTW = 97.05 TD:
16MWT11 DTW ~ 99 BAILER IN WELL CAN NOT MEASURE WL. THE BAILER SEEMS TO BE ON THE BOTTOM SUGGESTING THAT THE WATER LEVEL IS ~ 3' OFF BOTTOM INSUFFICIENT AMOUNT OF H_2O TO DO SLUG TEST.
NOTE: ~4' OF WATER IN 16MWT08

1400 BEGIN DRILLING w/ 11" DRILL PIPE
- SET MUD PAN.

1700 LOWERED 6" CASING

1715 BEGIN TO GROUT IN CASING CEMENT/BEN

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Fred M Ramsey DATE 1-15-04

WITNESS DATE

TITLE FUR 16
1-15-04

PROJECT NO. 9060

BOOK

Work continued from Page

1730 COMPLETED INSTALLATION OF 6" CASING 0-40' @ 16 MWT18 USING CEMENT/BENTONITE GROUT

1800 CLEAN UP ON SITE
- LEFT RIG ON HOLE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred M Romer

DATE 1-15-04

WITNESS

DATE

TITLE 17
1-16-04 SAT.

PROJECT NO. 9060

BOOK

Work continued from Page

0700 FUR AT FIELD OFFICE
DRILLER AT FIELD OFFICE
- PAPER WORK (DAILYS
- DISCUSS PROJECT +

FUR CALIBRATE EQ.

- PLAN TO MOVE OUT TO MGBG TO INSTALL OITO7 WELL SEE NOTE BOOK 1347 FOR THESE ACT. AT MGBG.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Fred M Romer

DATE 17 1-16-04

WITNESS

DATE

TITLE 1-17-04 SAT PM: RAIN PROJECT NO. 9060 BOOK

Work continued from Page

1430 SET UP TO DO RECON FOR LOC OF ADD WELLS AT SWMU 13 TO DEFINE DOWNGRADIENT EXTENT OF CONTAMINANT.
- GET WATER LEVELS @ DEEP WELLS TO DO SLUG TEST:

T46 SWL=57.63, TD=67.65
T41 SWL=66.02 TD=67.81
T44: 64.36 SWL, TD=85.9

1ST SWL=57.63, TD=67.65

+ LOCATE WELLS/PROPOSED WELL ALONG ROAD IN AREAS TO AVOID OVERHEAD UTILITIES + UNDER GROUND LOC. ALONG ROAD ARE TRUCK ACCESSIBLE

1730 PUR RETURNS TO FIELD ~~OUT~~ OFFICE

1800 CLV SITE W/ TR.

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605

Work continued to Page

SIGNATURE Fred W Rosser DATE 1-17-04

WITNESS DATE

TITLE 1-18-04 SUNDAY AM: CLOUDY 20's PROJECT 9060 BOOK

Work continued from Page

0700 PUR ARR AT FIELD OFFICE,
- CALIBRATE PIDS
- MISC HOUSEKEEPING

0730 DRILLERS ARR
- DO PAPER WORK
- LOAD WATER + OTHER SUPPLIES FOR

0820 MOVE TO 16MWT18 LOC
- MAY CONSIDER USING 15' SCREEN

NOTE SWL = 96.4 @ 16MWT11
TD = 98.7

0830 BEGIN TO ADVANCE 4.5" DRILL PIPE ~5" HOLE. AT 16MWT18 40'-50'

1115 HAVING TROUBLE EXTRACTING CORES 60'-70' SHALE/MUDSTONE

1330 AGAIN HAVING TROUBLE EXTRACTING CORES 70-80 SHALE

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605

Work continued to Page

SIGNATURE DATE

WITNESS DATE

TITLE 20's PROJECT NO. 9060
1-18-04 SUNDAY BOOK

Work continued from Page

1930 CLOCKED DRILLING BIT SHORT RUN 80-88.

1700 TD AT 105' BGS ⇒ 16MWT 18 ENCOUNTERED COAL SEAM @~

BEGIN TO INSTALL WELL 16MWT18
SCREEN 94-104
SAND 91-105
BENTONITE 3' - 91' CHIPS HYDRATED

1800 DRILLERS CLEAN UP SITE

TOTALS:

16MWT 18

40-105 BORE w/SPL 65'

104' 2" WELL INSTALL.

850 DRILLER + FOR LV SITE 16 + FOR GO TO FIELD OFFICE

1900 - CLEAN OUT BLUE POLY TANK LV SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE [signature] DATE 1-18-04
WITNESS DATE

TITLE PROJECT NO. 9060
1-19-04 MONDAY BOOK

Work continued from Page

0700 FOR ARR AT TERRS FIELD OFFICE
- UNLOAD SUPPLIES USED FOR WELL INSTALL
- PAPER WORK

0730 DRILLERS ARR.
- LOAD WATER MAIN WELLINE FROZEN USE GARDEN HOSE FROM INSIDE SPIGOT.
-

0815 SURVEYORS ON SITE DISCUSS PROJECT W/T.R.
- JOE McCLOUD GOES TO SUMMIT TO DECON DOZER + TO PULL CATOR UP HILL
+ SCOTT + DON (DRILLERS) GO TO SUMMIT 16 TO INSTALL FLUSH MT.
+ CUT 6" ISOLATION CASING
HAVING PROBLEMS + DELAY

0900 FOR ESCORTS SURVEYORS TO SUMMIT 16

0915 FOR GOTO FIELD OFFICE, SCOTT + DON WENT TO MGD6 TO DISCUSS PLAN C" TO CUT 6" CASING USING GENERATOR + SAWS ALL?
- CATCH UP ON PAPER WORK

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE [signature] DATE 1-19-04
WITNESS DATE

TITLE 1-19-04 MONDAY, TEEN'S PROJECT NO. 9060 BOOK

Work continued from Page

1200 DRILLER CONTINUE TO CUT THE 6" SURVEYOR CONTINUE TO DO SITE 1

1530 FINNISH FLUSHMT @ 16MWT18

GOTO FIELD OFFICE, DO PAPER WORK & DRI-

1630 — PREP TO DEVELOPE WELL 16MW12

1825 BAILED 16MWT18 DOWN TO 104.1 TD = 104.5

PURCHED 22 GAL (DRY)

→ TOO DRILL DEMOB, LV SITE.

1900 FUR LV. SITE.

— NOTE: WATER LEVELS IN WELLS TO BE SLUG TESTED:

13MWT35 : SWL = 63.96 TD ~ 69.5 ??

13MWT45 = SWL = 72.75 TD ~ 82

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE [signature] DATE 1-19-04

WITNESS DATE

TITLE 1-20-04 TUESDAY 15°F SUNNY PROJECT NO. 9060 BOOK

Work continued from Page

0700 FUR ARR AT FIELD OFFICE.

→ DISCUSS W/ TR FIELD ACTIVITES

— ESCORT SURVEYORS AT SWMU 13

— COMPLETE SYNOPTIC WL AT SWMU 13 (OUTSIDE WELLS)

— PREFORM SLUG TESTS @ TWO WELLS INSIDE SWMU 13 ALONG RAILROAD.

0815 SURVEYORS ON SITE

0830 FUR + SURVEYORS GO TO SWMU

SURVEYORS GO TO SWMU 1 TO COMPLETE WELL MT @ SWMU 16 @ NOON.

0900 FUR BEGIN SYNOPTIC WLS @ SWMU 13.

1130 COMPLETED WL's,

1200 MTG WILL SURVEYORS,

— WILL CONTINUE WORK @ SWMU 1 THEN DROVE TO 'OUTSIDE GATE' @ SWMU 13. EXPECT WORK TILL END

— OF DAY WILL MEET UP W/ THEM TO-MORROW @ 0800 HRS.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE DATE

WITNESS DATE

TITLE PM: SUNNY + CLOUDS 16°F PROJECT NO. 9060
1-20-04 BOOK

Work continued from Page

1240 SET UP EQUIPMENT FOR SLUG TESTS.

EQUIPMENT:
- MINITROLLS:
  US ENV. RENTAL { S/N 008670 100 PSI
  S/N 012487 100 PSI
  BOTH MODEL "PROFESSIONAL"
- COMPUTER
  DELL S/N 222 FROM US ENV. RENTAL W/ SOFTWARE

PROGRAM TROLLS

+ SET UP 8670 FOR T35
- RUN TEST ON X-DUCER USING GRADUATED CYLINDER OF "THIS IS NOT CALIBRATION JUST CHECK"

+ SET UP 12487 FOR T45
- RUN CHECK OK
- TOC, Ref 00.00, LOG 10 min.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Mauser DATE 1-20-04
WITNESS DATE

TITLE PROJECT NO. 9060
1-20-04 BOOK

Work continued from Page

1400 SET UP AT T45.

1445 - READING WATER COL. ABOVE XD @ 9.554 PRIOR TO INSTALLING BAILERS (TWO) Δ TO 9.553

1450 INSERT BAILERS
1457 XD = 9.892
1500 XD = 9.886

1510 MOVE TO T35, BEGIN TO SET UP TEST
1520 INSERT XD TO BOTTOM (JUST OFF) OF
1520 WELL T35 (XD 8670)
XD WL @ 6.166 (PRIOR TO BAILER INSERTION)
1535 INSERTED BAILER H_2O XD = 6.251

1540

1550 $XD_{H_2O\,WL}$ = 9.844
1637 $XD_{H_2O\,WL}$ = 9.824

1655 STARTED SLUG TESTS @ ~~16~~ 13 MWT 35

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Fred Mauser DATE 1-20-04
WITNESS DATE

TITLE NSWC CRANE PM: CLEAR 16°-20° 1-20-04 PROJECT NO. 9060 BOOK

Work continued from Page

1740 STARTED TEST @ T45

1800 LV SWMU 13

1830 LV FIELD OFFICE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 1-20-04

WITNESS DATE

TITLE NSWC CRANE AM: 20's 1-21-04 PROJECT NO. 9060 BOOK

Work continued from Page

0700 FLUR ON SITE AT FIELD OFFICE
- PREP TO SLUG TEST
- PREP TO T46 SLUG TEST T46

0830 GO TO SWMU 16, CHECK IN WITH SECURITY

0850 ARR @ T35

SET UP TEST FOR T46 ON 8670 XD/TROLL

0925 @ T35 H_2O @ XD = 5.871
NOTE SWL H_2O @ XD = 6.166
5.871
.295

h_o = 1.3 $\frac{.295}{1.3}$ = 0.22 ~~100%~~ = 22%

DECIDED TO STOP TEST

0930 STOPPED TEST
SET UP TEST FOR T46 TROLL 8670

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 1-21-04

WITNESS DATE

TITLE INSUC CONTROL PROJECT NO. 7060

1-21-04 BOOK

Work continued from Page

0945 PUL LV FOR T 46

0955 MEET SURVEYORS, TAKE TO NORTH GATE TO CHECK IN.

1000 PUL GOES TO T46
- SURVEYORS INSIDE GATE AREA

1010 PUL @ T46 SET UP FOR SLUG TEST.

1015 INSERTED TROLL 8620
H_2O @ X_0 = 9.475 PRIOR TO BAILER INSERTION.

1030 CAN NOT INSERT BAILER, MIGHT BE DUE TO BEND IN RISER WILL GO GET LONG + SMALL DIA SOLID SLUG.

1130 MET SURVEYORS AT GATE, LET THEM OUT OF GATE

1145 ARR @ T46 SET UP SOLID SLUG.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Greg M Rouse DATE 1-21-04

WITNESS DATE

TITLE CLOUDY 30's PROJECT NO. 4060

1-21-04 BOOK

Work continued from Page

1156 XD_{H_2O} = 9.512 BEFORE SLUG INSERTED
WILL DO FALLING HEAD TEST
NOTE: SWL = 57.93 TD = 67.66

67.66
57.93
9.73

DECIDED TO DO FALLING HEAD DUE TO TIME CONSTRAINTS.

1 XD_{H_2O} = 9.544 AT END OF FALLING HEAD TEST

1245 COMPLETE SLUG TEST & CLEAN UP LV. T46 AREA FOR INSIDE T45

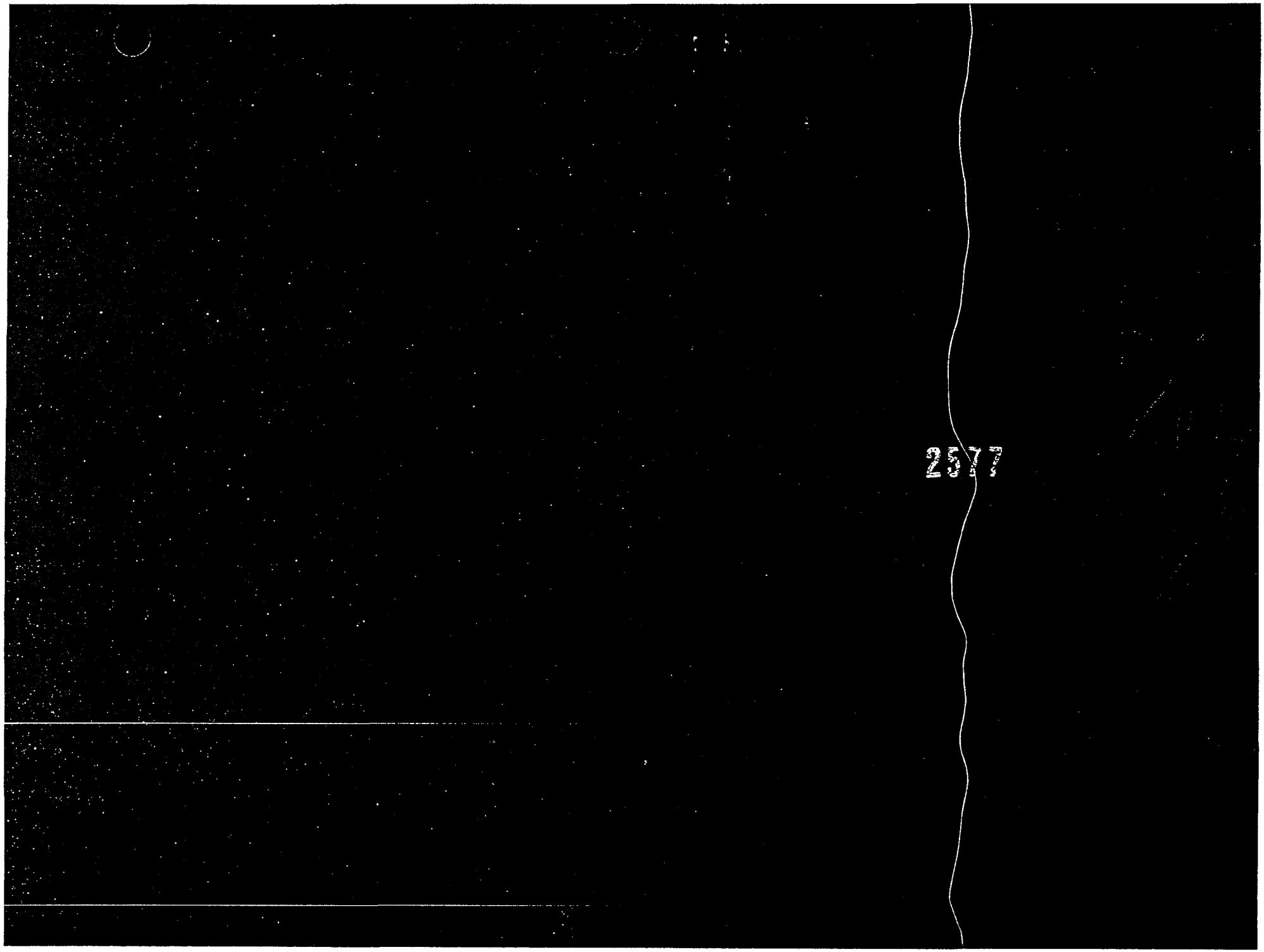
1300 AT 13 MW T45. CHECK DRAWDOWN DATA
Δh @ 0.992 WILL ALLOW TO RUN LONGER

1403 AT FIELD OFFICE LOAD EQUIPMENT FOR MGBG SEE NOTE BOOK 1347 FOR MINUTES.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Greg M Rouse DATE 1-21-04

WITNESS DATE


2577

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Subject	Page

TITLE NSWC CRANE
MON JULY 26 2004

PROJECT NO. N7448
BOOK 2577

Work continued from Page

AT SITE: SJC JW, CM, JD } B/M

AM: CLOUDY, RAIN, COOL
PM: " " "

0700 - AT SITE CALLED PID - DRILLERS GET WATER - GO OVER QUANTITIES.

0800 - STILL RAINING - B/M WILL WAIT TO SEE IF IT SUBSIDES.

0930 STILL RAINING - DRILLERS GO GET SUPPLIES, GAS ETC.

1100 - DRILLERS - BACK ON SITE - B/M DECIDES (DUE TO RAIN) NOT TO WORK TODAY.

1230 B/M OFF SITE - SJC WORKS W/ TR - GETS SUPPLIES ETC.

NO ITEMS FOR B/M TODAY

SCIENTIFIC BINDING PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 7/26/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448

TUES JULY 27 2004 BOOK 2577

Work continued from Page AT SITE: SJC JW CM JD B/M

AM: SUNNY, WARM

PM: " "

0640 AT SITE - CALIB PID - UNLOAD SUPPLIES, THAT I PICKED UP ON MON.

0730 MOVE TO DECON PAD THEN TO 13MWT51

0800 SET UP AT 13 MWT51.

0812 START TO SAMPLE T51 (T51)

0845 @ 15.5 REF (SHALE) WILL AUGER TO 16. SET WELL @ 15-5, SAND 16-4 THEN PELLETS

0920 TALKED TO JEFF SCHUBERT - HE AGREED WITH THE ABOVE WELL - FOR NEXT 3 WELLS - WILL TARGET THE O.B. UNLESS THERE IS NOT ENOUGH SATURATION. HE WOULD LIKE TO CORE 5 TO 8' OF NEXT HOLE TO SEE HOW THICK IS THE SHALE.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJ Conti DATE 7-27-04

WITNESS DATE

TITLE NSWC CRANE

CONT. (TUES) 2004 BOOK 2577

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SAND USED GLOBAL FILTER PACK
50lb Bags
GLOBAL DRILLING SUPPLIERS INC.
1-800-356-6400
#5 QUARTZ SAND PACK

BENTONITE USED: Pure Gold Medium Chips by CETCO
50lb. Bags
CETCO ENVIRONMENTAL TECHNOLOGIES CO.
1-800-527-9948

SWMU 2
QUANT. (TUES)

	OB W/SAMPLES	2" WELL	CORE REAM	TEMP CASIN	
13MWT51	16'	15	—	—	← OB WELL
13MWT50	9.5	25	16.5	9.5	
13MWT49	10	9	—	—	← OB WELL
13MWT48	10				
	45.5	49	16.5	9.5	

Core T50 25.0 − 9.5 = 16.5
Ream T26 16.5 − 9.5 = 7.0

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJ Conti DATE 7-27-2004

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
TUES (CONT) 2004 BOOK 2577

Work continued from Page

1000 START @ 13MW T 50.

1015 HIT SHALE ≈ 8'-9.5 - HOLE DRY

1020 WAIT TO SEE IF HOLE MAKES WATER

1045 NO WATER - DECIDE TO CORE SET 6" TEMP CASING TO 9.5' ±

1105 SET UP FOR CORING W/ AIR.

1110 START TO CORE @ 13MW T51

1125 RUN (1) 9.5 > 15

1130 START RUN (2)

1155 RUN (2) 15 → 20 - POOR REC VERY "CRUMBLY" SILTSTONE.

1205 DECIDE TO LET SIT (LUNCH)

1245 AT FIELD OFF - TR SAYS THAT MEETING AT 1300 WAS POSTPONED TO THURS.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 7/27/04
WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
(TUES) 2004 BOOK 2577

Work continued from Page

1330 SIT AT 13MW T 50 - CHIP SAYS THAT HOLE HAS ≈ 3' WATER IN HOLE IE FROM 20-17 - DECIDE TO CORE 5 MORE FEET - PLAN TO SET WELL AT ≈ 25' → 15 SCREEN (T 50)
12 → 26 SAND
1430 4 → 12 CHIPS

1500 GO DECON TOOLS ETC. MOVED TO 13MW T 49.

1545 BACK FROM DECON. START @ T49 (T 49)

1605 AT 10' - SHALE ≈ 8.5 - WATER AT 4' BGS AT 1625 - CALL J SCHUBERT SAYS OK TO SET WELL IF WE HAVE ≈ 3' OF WATER FROM 8.5' - WHICH WE DO. WILL SET WELL 9-4 (5' SCREEN) SAND FROM 3 TO 9.5 - CHIPS TO 1'

1635 START TO SET WELL. CHIPS TAKES WL OF T 50 WAS ≈ DRY BGS.

1700 WELL SET @ T49 TO 9'.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 7/27/04
WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
(TUES) 2004 BOOK 2577

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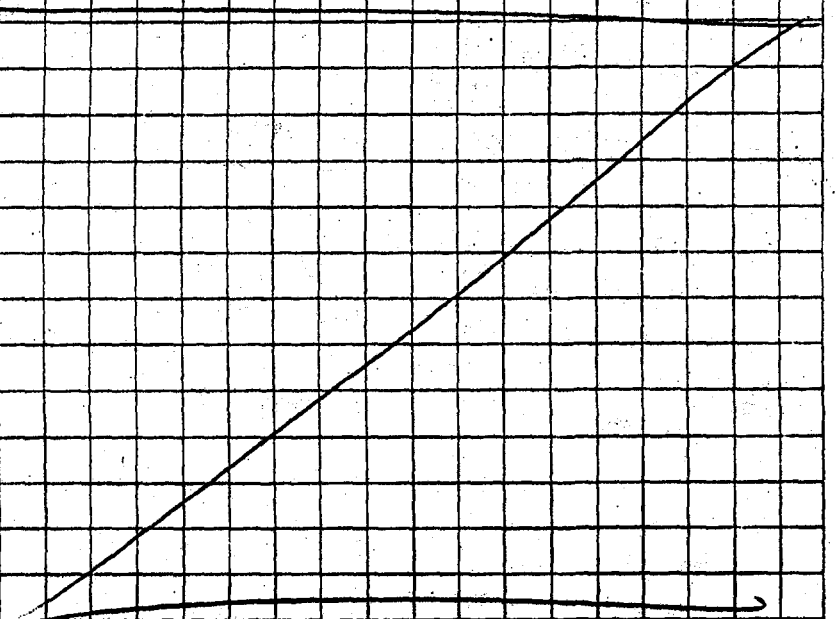
1710 MOVE TO/START 13 MWT 48 - HSA RIG (ATV).

1723 DOWN TO 10 w/ SPOONS - LAST 1.5 WAS WET, BUT DOESNT SEEM TO BE RISING.

1750 JIM WILL AUGER TO 10' CLEAN OUT AND LIFT AUGERS - WILL CHECK HOLE IN THE MORNING.

1830 LV SITE



SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 7-27-04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
WED JULY 28 2004 BOOK 2577

Work continued from Page

AT SITE SJC JW, CM, JD } BM

AM: SUNNY COOL - WARM
PM: " " V WARM.

0650 AT SITE - CALIB PID - GO OVER QUANT

0750 WL @ T48 (13MW13) WAS ≈ 5 BGS DECIDE TO SET WELL AT 10'±

JD

WL T49 - ≈ 4' BGS
WL T50 - 24.8 BGS 25.5 BGS

0800 SETTING WELL AT 13MWT48 - SCREEN FROM 5 - 10, SAND 3.5 TO 10.5, CHIPS FROM 1.5 TO 3.5.

T48

0830 13MWT48 IS INSTALLED AS ABOVE

0900 MOVE TO DECON

1000 GET SUPPLIES AT FIELD OFFICE GO TO 16MWT20

1010 SET UP AT T20.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 7-28-04

WITNESS DATE

TITLE NSWC CRANE WED (CONT) 2004 **PROJECT NO.** N7448 **BOOK** 2577

Work continued from Page

1055 DOWN TO 16' - HIT SOME H_2O AT 10-12' ± - WILL CLEAN OUT HOLE AND WAIT TO SEE IF IT MAKES WATER.

1200 WL ≈ 12' BGS AT TD 16' ± AUGERS ARE AT ≈ 12' ± BASED ON 2' OF H_2O ABOVE STICK IN HOLE NOW AND WATER HIT AT 10-12. DECIDE TO PUT IN WELL FROM 5-15. SAND 4 TO 15.5, CHIPS TO 2'.

1288 PLACING SAND PACK (15.5 TO 4) AT WL 11' ±

1310 MOVE TO 16MWT19 - SET UP ATV.

1348 ~~DONE~~ DOWN TO 16' AT T19 @ 16' WILL WAIT TO SEE IF IT MAKES WATER

1430 HOLE HAD ≈ 2.5' WATER AND STILL RISING - DECIDE TO SET WELL AT 15' - 5' SAND 5.5 → 4, CHIPS TO 2'.

1500 - SETING WELL - SAND PACK AND PELLETS AT 16MWT ~~20~~ 19

SJC.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 7/28/04

WITNESS DATE

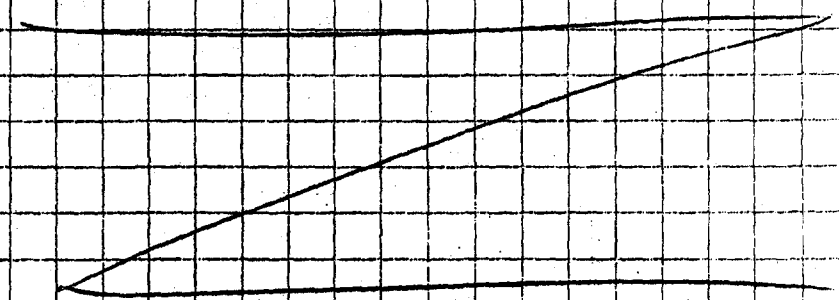
TITLE NSWC CRANE WED (CONT) 2004 **PROJECT NO.** N7440 **BOOK** 2577

Work continued from Page

1600 CLEAN UP - GO TO DECON PAD

1700 FINISH DECON - CLEAN UP AROUND DECON PAD

1830 LV SITE



QUANT WED

	2' well	CB/CONT	Core Ream	Temp Casing
13MWT48	10		NA	NA
16MWT20	15	16	NA	NA
16MWT19	15	16		
	40	32		

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 7/28/04

WITNESS DATE

TITLE N[redacted]C CRANE PROJECT NO. N7448

THURS JULY 29 2004 BOOK 2577

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AT SITE SJC JW CM JD } BM

AM PARTLY CLOUDY WARM, BREEZY

PM

0645 AT SITE - CALIB PID - LOAD VAN - GO OVER DAR W/ JIM W.

0740 PREPARE TO GO TO 600 RR MTG @ 0800

0800 AT MTG FOR RR 600 CORRIDOR WRKS.

6' OFF RAIL TO DRILL
MAY NOT NEED COMM ON SUNDAY
DONT RUN ON SUN, BUT NEED COMM

≈ 3 TIMES A DAY - TRAIN PASSES

TES
812-225 - 7013 Mike Lochford RR Insp.
854 - 1613 Dispatcher RR
854 - 3300 Security

Inchworm Alpha - Call Sign.

BLDG 7

Call Sec on Sunday

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE S. Conte DATE 7/29/04

WITNESS DATE

TITLE NSWC CRANE PROJECT N[redacted] N7448

THURS (CONT) 2004 BOOK 2577

Work continued from Page

0900 MTG OVER - TENUS WILL DRAFT UP A WORK PLAN - WORK TO START ON RR AT LEAST 4 WKS AWAY.

0930 OK TO GO TO MFA - WE CAN WORK ON WELLS NEAR THE BLDG 151 ARC. JIM W WENT TO CHECK ON PADS AT SUMU 16

1000 PREPARE TO GO TO SUMU 12 - PLEASE REFER TO NB 2576 FOR DETAILS.

QUANT THURS

PADS

600 RR MTG CORRIDOR

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE S. Conte DATE 7/29/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
TUE AUG 17 2004 BOOK 2577

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AT SITE SJC JWJ B/ JDS/ TO CMA

AM: SUNNY, WARM 68° → 80°F
PM: " V WARM 10 TO MID 80°F

0630 AT SITE - CALIB PID - SWEED OUT OUR AREA OF BLDG 3245 - COMPLETE DAR

0715 DRILLERS ARRIVE - GET WATER - TAILGATE MEETING.

0745 LOAD UP EQUIP - HOOK UP COMPRESSOR MOVE TO SWMU 16

0800 CHECK IN AT SWMU 16 OFFICE - SET UP ON 16MWT 21

0830 6¼" HSA TO ≈ 9.5 - TO MAKE HOLE FOR 8" (TEMP) CASING SET

0850 SETTING 8" Ø TEMP CASING

0900 BEGIN AIR ROT (8" BIT)

1045 DOWN TO ≈ 49' - BEGIN PULLING RODS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 8/17/04
WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448
TUES (CONT) 2004 BOOK 2577

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1050 RODS OUT (8" BIT) PROCEED TO SET 6" ID STEEL CASING (PERM) FLUSH JOINT THREADED AT 10' LONG SECTIONS.

1130 6" CASING SET - HAD A LITTLE TROUBLE SETTING THE LAST 10' - HAD TO BLOW OUT SOME CUTTINGS TO SET AT ≈ 49'

1140 BEGIN TO MIX CEMENT / BENT GROUT

1200 HOLE GROUTED - CLEAN UP PULL EQUIP OUT OF SWMU 16 - WILL CONTINUE THIS HOLE NEXT SHIFT.

QUANT TUES

	PERM CAS	OB DRILL NO SAMPLES (?)	TEMP CAS	BR DRILL NO SAMPLES OR CORING (?)
16MWT21	50 (49)	9.5	9.5	39.5

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE SJ Conte DATE 8/17/04
WITNESS DATE

TITLE NSWC CRANE
~~WED~~ THURS SEPT 9 2004

PROJECT NO. N7448
BOOK 2577

Work continued from Page

AT SITE STC — JW, JD, TW } B/M

AM CLOUDY, COOL
PM PARTLY CLDY WARMER

0630 AT SITE - CALIB PID, LOAD VAN, TAILGATE MTG.

0730 GO TO SWMU 16 TO COMPLETE WELL 16MWT21

0810 SET UP OVER T21 - WILL REAM W/ ROLLER BIT FIRST TO CLEAN OUT CASING

0840 CORE RUN (1) 50-57

0950 DONE RUN (2) 57-67

1030 " " (3) 67-77

1120 " " (4) 77-87

1315 " " (5) 87-97 HOLE IS MAKING "SUBSTANTIAL" AMOUNT OF WATER FROM ≈ 78 TO 95 - DECIDE TO REAM TO 96 AND SET A

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE S. Conte DATE 9/9/04
WITNESS DATE

TITLE NSWC CRANE
THURS (CONT) 2004

PROJECT NO. N7448
BOOK 2577

Work continued from Page

WELL FROM ≈ 80-95, SAND 77 TO 96, CHIPS TO

1500 PULLING RODS (REAMING) NOW

1515 START SETTING WELL SCREEN & RISER AT DEPTHS MENTIONED ABOVE. WILL LET PELLETS SET UP AND GROUT LATER.

QUANTITIES THURS

	CORE REAM	2" WELL
16MWT21 50→97	47' ✓	95' ✓

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE S. Conte DATE 9/9/04
WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N7448

WED OCT 6 2004 **BOOK** 2577

Work continued from Page AT SITE SJC / JG.

AM: SUNNY, COOL
PM: " WARM

0630 AT SITE - NOTE 10/5/04 - TRAVEL AND PREP DAY. TODAY GET VANS LOADED AND CALIB YSI & LAMOTTE START PAPER WORK.

0830 GO TO SWMU 13 - START SW/SD SAMPLING AT LOCATION 33

0900 SAMPLE TIME FOR [redacted] 13SD3301 (NO SW)

0930 " " " [redacted] 13SD3002 (NO SW)

1010 " " " [redacted] 13SD2802 (NO SW)

1045 " " " [redacted] 13SW3401
1100 " " " [redacted] 13SD3401

1245 13SW/SD (IC) WAS DRY - NO SED REQ HERE

1305 13SW/SD (15) WAS DRY NO SED REQ

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJ Conte DATE 10/6/04

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N7448

WED (CONT) 2004 **BOOK** 2577

Work continued from Page

1315 13SW/SD14 WAS DRY NO SED REQ

1345 Sample Time [redacted] 13 SW3501 ← (MS/MSD) + DUP
1410 " " [redacted] 13 SD3501

1445 CANT FIND 13 SW/SD 31 - CANNOT FIND STAKE OR RIBBON - PACED OFF FROM 13SW/SD 29 AND FOUND POOL OF WATER TO SAMPLE.

1515 Sample Time [redacted] 13 SW3102
1520 " " [redacted] 13 SD3102 ← MS/MSD + DUP

Summary - Went to 9 Location / 11

Sampled 6 of 8 Sediments
" 3 of 9 Surface Waters

[redacted] Sed @ 28, 30, 31, 33, 34, 35 = 6
" SW @ 31 34, 35 = 3

1730 PROCEED TO LABEL, PREPARE SAMPLES

1900 LV SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE SJ Conte DATE 10/6/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448

THUR OCT 7 2004 BOOK 2577

Work continued from Page AT SITE SJC / JG

AM: SUNNY COOL
PM: " WARM

0630 AT SITE - GET SUPPLIES READY FOR SW/SD - CALIB YSI AND LAMOTTE LEFT MSSG FOR R.B.

0830 AT SWMU 13 - 13SW/SD 01

0855 Sample [redacted] 13SW0102
0900 " [redacted] 13SD0102

0930 Sample [redacted] 13SD2202 (NO SW)

THIS COMPLETES SWMU 13 SW/SD.

1050 Sample [redacted] 16SD1302 (NO SW)

1100 " [redacted] 16SD2701 (NO SW) ENCORES (6)

1115 " " [redacted] 16SD0902 (NO SW)

1145 PACK UP SAMPLES FROM YESTERDAY AND TODAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 10/7/04

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TITLE NSWC CRANE PROJECT N7448

THURS (CONT) 2004 BOOK 2577

Work continued from Page

1300 CALL FED EX FOR PICKUP (PU# 42)

1330 3 COOLERS READY FOR PICKUP.

1400 Sample [redacted] 16SD1902 (NO SW)

1440 " [redacted] 16SD2601 (NO SW)

1500 TRY TO FIND 16SD16 CANT FIND TO HEAVILY VEGETATED

1600 LAY OUT 13SW/SD24, 25 & 30 BOTH 24 & 25 HAVE POOLED WATER 30 IS DRY, BUT REQUIRES ENCORES

1730 RETURN TO FIELD OFFICE - PREPARE FOR FRIDAY

1830 LU SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 10/7/04

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N7448

FRI OCT 8 2004 **BOOK** 2577

Work continued from Page

AT SITE: STC/JG

AM: SUNNY COOL → WARM TO CLOUDY WINDY &
PM: CLOUDY, BREEZY WARM.

0630 AT SITE - PREPARE FOR SW/SD SAMPLING
FAX COPIES OF COC TO LAUCKS AND
TO SEDLMYER.

0800 PREPARE TRIP BLANK FOR TODAY.

0840 Sample [redacted] 16 SW2501 MS/MSD (Metals) + DUP 01
0845 " [redacted] 16 SD 2501

0900 Sample [redacted] 16 SW2401 MS/MSD (VOAS) + DUP 02 (VOAS)
0910 " [redacted] 16 SD 2401

1035 Sample [redacted] 16 SD 3001 MS/MSD + DUP 03

1100 TOOK SAMPLES TO FIELD OFFICE
WRITE OUT LABELS.

1230 RETURN TO SWMU 16 - WILL GO
TO LOCATIONS 28, 29 TO PICK
UP THE LAST 2 SED THAT REQ
VOAS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 10/8/04

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** N7448

FRI OCT 8 2004 **BOOK** 2577

Work continued from Page

1300 Sample [redacted] 16 SD 29 01 (NO SW)

1315 Sample [redacted] 16 SD 28 01 (NO SW)

1430 Finish Labeling - return to field
office

1500 PREPARE SAMPLES FOR SHIPPING.
LABELS, COC, ETC WILL SHIP
FOR SATURDAY PICKUP

1700 SHIP SAMPLES

1800 PREPARE FOR GW SAMPLING ON SAT

1830 LV SITE

Fri Summary:

Sampled 2 SW
" 5 SD

WILL GO TO
SWMU 12 FOR
GW SAMPLES ON
SATURDAY

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 10/8/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448

SUN OCT 10 2004 BOOK 2577

Work continued from Page

AM: CLEAR, COOL
PM: SUNNY, WARMER

AT SITE: SJC / JG (T+ NUS)

RESUMED SW/SD @ 1030 HRS - SAMPLED AT SWMU (GW) EARLIER - SEE NB 2576 FOR DETAILS.

1030 UNLOAD GW SAMPLING EQUIP FROM VANS - PREPARE FOR SW/SD SAMPLES

1115 Sample [redacted] 16SD0802 (NO SW)

1130 " [redacted] ~~16SD08~~ 16SD1202 (NO SW)

1255 " [redacted] 16SD0502 (NO SW)

1305 " [redacted] 16SD0402 (NO SW)

1310 " [redacted] 16SD1002 (NO SW)

1330 " [redacted] 16SD2302 (NO SW)

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60405

Work continued to Page

SIGNATURE SJ Conte DATE 10/10/04

WITNESS DATE

TITLE NSWC CRANE PROJECT N7448

SUN (CONT) 2004 BOOK 2577

Work continued from Page

1340 Sample [redacted] 16SD1102 (NO SW)

1425 " [redacted] 16SD0602 (NO SW)

1445 " [redacted] 16SD0302 (NO SW)

1530 BACK AT FIELD OFFICE - WORK ON SAMPLE PREP PAPER WORK ETC.

1700 GO TO SWMU 12 - TRY TO LOCATE A FEW SW/SD LOCATIONS

1830 LU SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60405

Work continued to Page

SIGNATURE SJ Conte DATE 10/10/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. ~~N6878~~ N7448

MON ~~OCT 11~~ DEC 15 2004 BOOK 2577

Work continued from Page AT SITE: STC, JG

AM: CLOUDY COLD
PM: " "

0830 16MWT19 3.24
0832 16MWT20 3.63

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE SJ Conte DATE 12/15/04

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448

FRI JAN 7 2005 BOOK 2577

Work continued from Page AT SITE STC

AM: CLOUDY COLD
PM: " "

0630 AT SITE - CHECK OUT RENTAL COMPUTER - LOAD VAN.

0730 FINISH UP NOTES

0800 GO TO SWMU 16 - HAD TROUBLE W/ LOCKS FROZEN.

0855 START SLUG TESTS:

HAD TO BAIL H_2O @ T16 → 16MWT03 - R, F
16MWT05 - R, F
16MWT16 - NOT ENOUGH H_2O

VERY SLOW REC 16MWT18 - WILL START W/ PDA AND RUN ALL NITE
16MWT19 - R, F

1600 DUMP DATA ONTO HYD COND SHEETS

1800 LV SITE.

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE SJ Conte DATE 1/7/05

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. N7448

SAT JAN 8 2005 BOOK 2577

Work continued from Page AT SITE: STC, CD TENUS

AM: CLOUDY COLD

PM:

0630 AT SITE - PREPARE FOR SLUG TESTS

0700 TR - SAYS THAT COLIN WILL WORK W/ ME TODAY ON SLUG TESTS. WILL HEAD OVER TO SUMU 16 AND SHUT DOWN TEST @ 16MWT18. THEN GO DOWN TO 16MWT20.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE SJ Conte DATE 1/8/05

WITNESS DATE

TITLE NSWC CRANE PROJECT N7448

BOOK 2577

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE DATE

WITNESS DATE

2565

2565

TITLE

PROJECT NO.

BOOK

8/11/04 Partly Cloudy, 65°F

Work continued from Page

0700 Arrive @ Office Bldg on site. Calibrate PID & Load supplies for the day. Plan is to mob back to site 13 & then, if we get digging permit, to go to site 16.

0815 Mob to Site 13 w/ DPT Rig.

0830 Set up on 13 SB30.

0840 Collect Sample 13SS30 0002 along w/ MS/MSD (2 Jars TOTAL)

0846 Collect Sample 13SB30 0204 along w/ Duplicate: 13FD0811 04-01.

0900 Set up on 13 SB47.

0904 Collect sample 13SB47 0406. Only able to get 4' sample here.

0910 Set up on 13SB45 again & attempt to get rods out that were stuck there yesterday. Success in getting the rods out

0928 Collect sample 13SB45 0406.

0940 Mobilize back to Office Building. Await Terry R. with digging permits for SWMU 16

1020 Terry R. returns and says that we still cannot drill @ SWMU 16 because they have not signed off on the Digging Permit yet. They are concerned w/ Fiber Optic & the Fire Alarm System on-base.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Charles C. Fry III

DATE 8/11/04

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

1318 Terry returns w/ dig permit for Site 16. We all mob over to start DPT Work.

1348 Collect 16SS65 0102
1356 Collect 16SB65 0206 from middle.
1405 Collect 16SB65 0608 from middle.
} 16SB65

1423 Collect 16SS64 0102
1435 Collect 16SB64 0206 from middle.
1441 Collect 16SB64 0608 from middle.
} 16SB64

1456 Collect 16SS63 0102
1508 Collect 16SB63 0206 from middle
1517 Collect 16SB63 0608 from middle
} 16SB63

1537 Collect 16SS61 0102
1545 Collect 16SB61 0206 from middle
1550 Collect 16SB61 0607 from middle
} 16SB61

1605 Collect 16SS60 0102
1616 Collect 16SB60 0206 from middle
1622 Collect 16SB60 0609 from middle
} 16SB60

1645 Return to Office & pack samples for shipment.

1730 All done site for day.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Charles C. Fry III

DATE 8/11/04

WITNESS

DATE

TITLE 8/12/04 Sunny, 60°F **PROJECT NO.** **BOOK**

Work continued from Page

0700	Arrive @ Office Bldg. on-site. Calibrate PID & Load supplies for the day		
0745	Mob over to site 16 for DPT Work.		
0815	Collect	16SS66010 2	
0823	Collect	16SB66020 6	16SB66
0828	Collect	16SB66060 8	
0842	Collect	16SS68010 2	
0854	Collect	16SB68020 6 Also with Duplicate Sample 16FD0812 04-01	16SB68
0859	Collect	16SB68060 9	
0912	Collect	16SS67010 2	
0917	Collect	16SB67020 6 *	* MS/MSD 16SB67
0936	Collect	16SB67060 9	
0946	Collect	16SS69010 2	
0954	Collect	16SB69020 6	16SB69
1002	Collect	16SB69060 7	
1022	Collect	16SS72010 2	
1033	Collect	16SB72020 6	16SB72
1037	Collect	16SB72060 7	
1046	Collect	16SS73010 2	16SB73
1050	Collect	16SB73020 4	
1102	Collect	16SS75010 2	16SB75
1106	Collect	16SB75020 3	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Charles C. Fry III **DATE** 8/12/04

WITNESS **DATE**

TITLE **PROJECT NO.** **BOOK**

Work continued from Page

1240	Collect	16SS77010 2	& Dup: 16FD0812 04-02
1249	Collect	16SB77020 6	16SB77
1304	Collect	16SB77060 1	
1317	Collect	16SS78010 2	
1323	Collect	16SB78020 6 *	* MS/MSD 16SB78
1338	Collect	16SB78060 9	
1348	Collect	16SS76010 2	
1357	Collect	16SB76020 6	16SB76
1402	Collect	16SB76060 7	
1413	Collect	16SS71010 2	16SB71
1418	Collect	16SB71020 6	
1515	Collect	16SS52010 2	16SB52
1520	Collect	16SB52020 5	
1528	Collect	16SS53010 2	16SB53
1531	Collect	16SB53020 5	
1427	Collect	16SS70010 2	
1435	Collect	16SB70020 6	16SB70
1440	Collect	16SB70060 7	
1545	Collect	16SS55010 2	
1548	Collect	16SB55020 6	16SB55
1555	Collect	16SB55060 7	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SIGNATURE Charles C. Fry III **DATE** 8/12/04

WITNESS **DATE**

TITLE

PROJECT NO.

BOOK

Work continued from Page

16ϕϕ	Collect	16SS56ϕ1ϕ2	16SB56
16ϕ3	Collect	16SB56ϕ2ϕ6	
1615	Collect	16SB56ϕ6ϕ8	
163ϕ	Return to Main Office. Pack samples for Fed Ex.		
173ϕ	All leave site for day.		

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Mark C. Fry III

DATE 8/12/ϕ4

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

8/13/ϕ4 Partly Cloudy +60°F

Work continued from Page

ϕ7ϕϕ	Arrive @ Office Bldg. on-site. Calibrate PID. Load supplies for the day. Help Terry & Jim take a Rinse Blank on the DPT Liner & on the DPT Metal Shoe. Driller is making repairs to the DPT which was cutting off a lot while it was idling yesterday.		
ϕ83ϕ	Mob over to Site 16.		
ϕ846	Collect	16SB59ϕ1ϕ2	16SB59
ϕ851	Collect	16SB59ϕ2ϕ6	
ϕ9ϕϕ	Collect	16SB59ϕ6ϕ8	
ϕ912	Collect	16SS62ϕ1ϕ2	16SB62
ϕ917	Collect	16SB62ϕ2ϕ6	
ϕ923	Collect	16SB62ϕ6ϕ7	
ϕ938	Collect	16SS58ϕ1ϕ2	16SB58
ϕ941	Collect	16SB58ϕ2ϕ6 along w/ Duplicate: 16FDϕ813ϕ4-ϕ1	
1ϕϕ1	Collect	16SB58ϕ6ϕ7	
1ϕ1ϕ	Collect	16SS57ϕ1ϕ2	16SB57
1ϕ13	Collect	16SB57ϕ2ϕ6	
1ϕ3ϕ	Collect	16SS51ϕ1ϕ2	16SB51
1ϕ33	Collect	16SB51ϕ2ϕ4	
1ϕ5ϕ	Collect	16SS54ϕ1ϕ2	16SB54
1ϕ59	Collect	16SB54ϕ2ϕ5 + MS/MSD	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Mark C. Fry III

DATE 8/13/ϕ4

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

1130 Return to office. Prepare to mob to Site 12.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE 8/13/04

WITNESS

DATE

TITLE

PROJECT NO.

8/14/04 Partly Cloudy, 70°F

BOOK

Work continued from Page

0745 Arrive @ Office Bldg on-site. Prepare for ~~today activities~~: Hand Auger @ Site 16.

0850

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 8/16/04

PROJECT NO.

BOOK

Work continued from Page

0700 Arrive @ Office. Load up supplies for Today. Going to Core inside Bldg @ SWMU 16 & then use the DPT Rig.

0830 Going contractor arrives. Jim and I and the driller arrive @ the site to determine how to get the geoprobe up & inside the Bldg.

0915 Going contractor & Terry R. arrive @ the site. DPT Rig is on load dock. Concrete Cover Subcontractor is:

CAPITOL DRILLING & SAWING
(317)-875-7601
(800)-648-0702

1000 Going begins on Boring 12SB98
Concrete w/Rebar @ Collar 0-8"
Large Granule & SAND from 8"-12"

1034 Collect 16SS980102
1042 Collect 16SB980206 } 16SB98
1050 Collect 16SB980607
Refusal in hole @ ≈ 6'6".

1059 Collect 16SB990102
1113 Collect 16SB990608 } 16SB99
1116 Collect 16SB990206
Refusal in hole @ ≈ 7'6"

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 8/16/04

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TITLE

PROJECT NO.

BOOK

Work continued from Page

1137 Collect 16SB920406
1158 Collect 16SB920608 } 16SB92
1211 Collect 16SB900406
1219 Collect 16SB900608 Refusal @ 8' } 16SB90
1335 Collect 16SB910406 along w/ DUP
16FD0816040 1 } 16SB91
1342 Collect 16SB910609
Refusal in hole @ 9'

1410 Collect 16SB940708 } 16SB94
Refusal in hole @ 7'6"
NO SS collected in SB's 92, 90, 91 & 94 due to lack of recovery in sleeves.

1435 Collect 16SB950406 along w/MS/MSD
1445 Collect 16SB950607 } 16SB95
Refusal in hole @ 7'
No SS collected due to No Recovery
Only 1-4oz Jar collected on % Moisture
(NOT 3 as usually Done on MS/MSD)

1458 Collect 16SB930406
1505 Collect 16SB930608 } 16SB93
NO SS collected due to No Recovery
Refusal in hole @ 7'6"

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature] DATE 8/16/04

WITNESS DATE

TITLE **PROJECT NO.**

BOOK

Work continued from Page

1520 collect 16SB96Ø4Ø6 } 16SB96
1525 collect 16SB96Ø6Ø8
1545 collect 16SB97Ø4Ø6 along ~~w/DUP~~ } 16SB97
1555 collect 16SB97Ø6Ø7 along w/DUP
16FDØ816Ø4Ø2
17ØØ Return to Office & begin to pack samples
1830 Leave all for the day.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Charles C. Fry III DATE 8/16/Ø4

WITNESS DATE

TITLE **PROJECT NO.**

8/17/Ø4 Sunny +60°F **BOOK**

Work continued from Page

Ø7ØØ Arrive @ Office. Load up supplies for today.
Going to Hard Acquer 16SB74 w/ Tom Dickson.
Ø816 Collect 16SS74Ø1Ø2 along w/DUP } 16SB74
16FDØ817Ø4Ø1
Ø842 Collect 16SB74Ø2Ø6 along w/MS/MSD
Refusal @ 6'.
Ø93Ø Return to Office & begin finishing paperwork.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE DATE

WITNESS DATE

SURVEY DATA FOR MINE FILL B (SWMU13)
NSWC CRANE
CRANE, INDIANA

LOCATION	NORTHING	EASTING	GROUND SURFACE ELEVATION	TOP OF CASING ELEVATION	TOP OF PVC ELEVATION
MONITORING WELLS					
13MWT01	490305.15300	572268.53800	713.10	715.91	715.34
13MWT02	490540.13400	571996.14500	702.10	705.28	704.72
13MWT03	490004.52900	572144.25400	718.34	721.60	721.10
13MWT04	490146.98000	571798.70700	704.37	707.32	706.84
13MWT05	490522.50900	571632.62300	693.61	697.12	696.44
13MWT06	489679.76400	571747.86000	715.30	718.47	717.93
13MWT07	490302.90700	571346.72500	684.38	687.70	687.22
13MWT08	490011.44600	571590.15400	698.42	701.11	700.56
13MWT09	489425.65800	571301.61900	703.29	706.37	705.90
13MWT10	489743.28300	571253.85400	697.77	700.64	700.15
13MWT11	489997.31100	571002.68200	679.76	682.82	682.29
13MWT12	489843.79900	570827.53900	679.96	682.66	682.12
13MWT13	489204.86300	571416.19200	699.28	702.40	701.98
13MWT14	488905.82800	571362.75200	703.15	705.98	705.50
13MWT15	489329.11300	570970.39200	694.27	697.16	696.65
13MWT16	489617.87100	570594.50800	682.13	684.83	684.35
13MWT17	489368.87000	570376.55700	690.68	693.68	693.01
13MWT18	489090.57900	570546.00400	700.05	703.43	702.92
13MWT19	488657.57000	571087.14800	703.10	706.32	705.82
13MWT20	488830.35700	570779.81800	699.33	702.65	702.07
13MWT21	489154.61000	570168.80700	688.37	691.26	690.74
13MWT22	488699.94300	570038.25800	669.53	672.38	671.96
13MWT23	488471.62000	570497.70000	696.66	699.69	699.14
13MWT24	488160.83900	570169.06500	691.33	694.39	693.93
13MWT25	488389.22600	569930.02700	678.87	682.00	681.57
13MWT26	487996.29700	569942.72200	684.86	687.92	687.49
SOIL BORINGS					
13SB01	489421.85300	571329.32300	701.65	NA	NA
13SB02	489396.70100	571297.96400	700.20	NA	NA
13SB03	489375.03300	571273.03400	700.58	NA	NA
13SB04	489385.84300	571330.45100	701.26	NA	NA
13SB05	489376.78300	571304.92500	699.79	NA	NA
13SB06	489352.52400	571292.62900	699.09	NA	NA
13SB07	488743.91300	570447.02600	689.03	NA	NA
13SB08	490012.98800	571588.35200	697.80	NA	NA
13SB09/15	488815.46300	570768.05300	697.30	NA	NA
13SB10	488836.34400	570767.42100	698.32	NA	NA
13SB11	488838.53000	570804.33700	700.14	NA	NA
13SB12	488864.33600	570835.20900	701.19	NA	NA
13SB13	488870.59400	570857.80800	702.11	NA	NA
13SB14	488731.63000	570710.62400	694.90	NA	NA

SURVEY DATA FOR MINE FILL B (SWMU13)
NSWC CRANE
CRANE, INDIANA

LOCATION	NORTHING	EASTING	GROUND SURFACE ELEVATION	TOP OF CASING ELEVATION	TOP OF PVC ELEVATION
SURFACE WATER AND SEDIMENT					
13SW/SD01	490596.61600	572020.84300	696.86	NA	NA
13SW/SD02	490504.19100	572103.57100	697.90	NA	NA
13SW/SD03	489732.34500	572333.87800	715.89	NA	NA
13SW/SD04	489349.74200	571689.14500	694.32	NA	NA
13SW/SD05	489242.08300	571570.04500	686.51	NA	NA
13SW/SD06	489107.59400	571437.21900	691.10	NA	NA
13SW/SD07	488755.84800	571101.89700	702.49	NA	NA
13SW/SD08	488280.24800	570580.34900	684.35	NA	NA
13SW/SD09	487926.41400	569874.59800	678.37	NA	NA
13SW/SD10	488609.31900	570001.82100	661.24	NA	NA
13SW11	489188.95100	570197.88400	687.59	NA	NA
13SD11	489233.71900	570161.02900	679.45	NA	NA
13SW/SD12	489711.54500	570582.67100	661.78	NA	NA
13SW/SD13	490163.75400	571029.10100	690.77	NA	NA
13SD14	489968.57900	569906.49400	575.25	NA	NA
13SD15	489884.66300	569754.91000	583.37	NA	NA
13SD16	489320.66700	569400.94800	575.81	NA	NA
13SD17	487816.46100	569751.53500	669.80	NA	NA
13SD18	487356.24200	569753.78600	633.40	NA	NA
13SD19	487904.93700	571123.18600	619.14	NA	NA
13SD20	487999.72700	571997.68800	578.15	NA	NA
13SD21	490202.93400	573035.24200	689.98	NA	NA
13SD22	490817.19800	571833.43900	666.78	NA	NA
13SD23	490638.06500	571834.51200	692.08	NA	NA
STAFF GAUGES					
13SG01	490600.47300	572024.03400	698.35	NA	NA
13SG02	490510.14500	572106.96400	701.95	NA	NA
13SG03	489349.29000	571689.47900	696.24	NA	NA
13SG04	489241.85000	571570.45100	688.99	NA	NA
13SG05	489105.05200	571437.99000	692.94	NA	NA
13SG06	488755.58000	571102.25900	704.88	NA	NA
13SG07	487927.86000	569874.64400	680.30	NA	NA
13SG08	488610.34100	569997.36300	665.95	NA	NA
13SG09	489632.20200	570664.74200	675.30	NA	NA
13SG10	490130.56400	571073.84300	676.10	NA	NA

SURVEY DATA FOR MINE FILL B (SWMU 13)
NSWC CRANE
CRANE, INDIANA

LOCATION	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Top of PVC Elevation
13SB16	1309644.53	3024109.94	704.73	NA	NA
13SB17	1309603.41	3024091.61	703.67	NA	NA
13SB18	1309569.54	3024057.47	700.78	NA	NA
13SB19	1309569.11	3024032.95	699.65	NA	NA
13SB20	1309109.72	3023520.23	698.62	NA	NA
13SB21	1309143.49	3023643.96	705.44	NA	NA
13SB22	1309073.36	3023628.64	701.76	NA	NA
13SB23	1309004.34	3023563.33	700.41	NA	NA
13SB24	1308950.01	3023513.53	699.75	NA	NA
13SB25	1308938.63	3023443.64	697.49	NA	NA
13MWT27	1309786.55	3023829.07	696.09	698.18	698.13
13MWT28	1309678.62	3024066.67	703.54	705.53	705.55
13MWT29	1309538.75	3024290.72	698.10	700.50	700.44
13MWT30	1309174.84	3024237.45	696.57	698.97	698.94
13MWT31	1308631.83	3023583.85	693.56	696.15	696.21
13MWT32	1308214.11	3023162.00	693.62	696.06	696.04
13MWT33	1308749.27	3023868.77	700.14	702.05	701.97
13MWT34	1309304.31	3023084.25	693.35	695.83	695.93
13MWT35	1310254.91	3023773.29	679.51	681.73	681.73
13MWT36	1309053.39	3022677.86	664.91	667.17	667.21
13MWT37	1309402.93	3022617.27	659.96	662.38	662.29
13MWT38	1309376.76	3022619.53	659.03	661.03	661.04
13MWT39	1309804.48	3022589.03	652.42	654.39	654.44
13MWT40	1309622.33	3022833.33	664.93	667.27	667.18
13MWT41	1309645.20	3022819.00	663.65	665.81	665.67
13MWT42	1309862.28	3023113.22	668.05	670.35	670.31
13MWT43	1310558.56	3023939.45	688.88	690.96	690.90
13MWT44	1310621.14	3023530.33	682.11	684.06	683.82
13MWT45	1309373.68	3022901.38	688.76	690.54	690.59
13MWT46	1309812.02	3022565.94	651.64	653.68	653.61
13MWT47	1309389.47	3024437.45	675.41	677.32	677.23
13SP01	1309723.29	3021982.45	558.94	NA	NA
13SP02	1310315.90	3022574.54	567.87	NA	NA
13SP03	1311091.03	3022745.09	574.29	NA	NA
13SP04	1311053.97	3024465.59	660.80	NA	NA
13SW/SD24	1308767.99	3024782.09	612.91	NA	NA
13SW/SD25	1307717.82	3025181.47	550.41	NA	NA
13SW/SD26	1309927.94	3026328.70	588.77	NA	NA
13SW/SD27	1309923.03	3026476.80	583.08	NA	NA
13SW/SD28	1308827.77	3021144.45	555.68	NA	NA
13SW/SD29	1311065.29	3022760.50	572.40	NA	NA
13SW/SD30	1308982.53	3020612.39	528.14	NA	NA
13SW/SD31	1311321.27	3022611.01	569.16	NA	NA
13SW/SD32	1308877.82	3024614.15	623.48	NA	NA
13SG11	1309388.01	3024416.84	675.36	(Top Guage)	NA

SB = Soil Boring SW = Surface Water SG = Staff Gauge
MW = Monitoring Well SD = Sediment SP = Seep

SURVEY DATA FOR CAST HIGH EXPLOSIVES FILL/B146 INCINERATOR (SWMU 16)
NSWC CRANE
CRANE, INDIANA

LOCATION	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Top of PVC Elevation
16SB42	1320695.93	3033088.62	752.50	NA	NA
16SB43	1320625.18	3033128.42	751.92	NA	NA
16SB44	1320573.49	3033158.25	744.26	NA	NA
16SB45	1320496.42	3033085.00	742.47	NA	NA
16SB46	1320451.82	3033020.17	749.06	NA	NA
16SB47	1321100.87	3032594.91	759.83	NA	NA
16SB48	1321081.68	3032601.85	760.26	NA	NA
16SB49	1321117.41	3032618.95	761.32	NA	NA
16SB50	1321088.19	3032626.34	761.50	NA	NA
16MWT07	1321176.93	3033001.57	760.54	762.91	762.87
16MWT08	1321179.45	3033009.24	759.57	761.62	761.56
16MWT09	1321068.49	3033041.44	762.43	764.47	764.28
16MWT10	1320936.05	3033074.74	761.93	764.48	764.43
16MWT11	1320934.64	3033062.79	763.23	765.47	765.24
16MWT12	1320729.14	3033074.92	753.23	755.54	755.45
16MWT13	1321125.78	3032562.41	757.62	759.66	759.57
16MWT14	Abandoned	-	-	-	-
16MWT15	1321120.81	3032563.53	757.73	759.77	759.69
16MWT16	1321059.41	3032814.52	764.98	Flush Mt.	764.74
16MWT17	1321235.88	3032675.07	764.79	766.52	766.53
16MWT18	1321068.96	3032807.84	764.99	Flush Mt.	764.44
16SW/SD12	1320984.27	3032193.49	681.09	NA	NA
16SW/SD13	1320296.86	3032110.65	639.33	NA	NA
16SW/SD14	1321752.05	3034042.95	625.32	NA	NA
16SW/SD15	1320773.46	3034509.17	595.51	NA	NA
16SW/SD16	1320361.12	3034191.41	597.61	NA	NA
16SW/SD17	1319010.15	3033272.07	585.01	NA	NA
16SW/SD18	1320758.36	3034589.83	595.44	NA	NA
16SW/SD19	1318678.18	3033398.54	578.89	NA	NA
16SW/SD20	1320338.90	3032013.81	642.09	NA	NA
16SW/SD21	1321738.16	3034075.17	623.94	NA	NA
16SW/SD22	1321416.93	3032998.48	713.03	NA	NA

SB = Soil Boring
MW = Monitoring Well
SW = Surface Water
SD = Sediment

SWMU 13 SURVEY LOCATIONS- OCTOBER, 2004					
DATA COMPILED BY: BLEDSOE, TAPP, & RIGGERT, INC					
Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation
MONITORING WELL			Elevation	Elevation	Elevation
13MWT48	1309618.82	3021409.02	546.20	548.75	548.67
13MWT49	1309795.96	3021713.21	551.05	553.92	553.90
13MWT50	1310002.40	3022085.22	557.77	560.49	560.49
13MWT51	1310206.30	3022381.03	569.28	571.24	571.36
SOIL BORING					
13SB26	1308977.87	3023412.07	696.34	N/A	N/A
13SB27	1309019.05	3023506.70	698.46	N/A	N/A
13SB28	1308957.59	3023462.53	697.66	N/A	N/A
13SB29	1309072.31	3023493.85	697.39	N/A	N/A
13SB30	1309125.49	3023478.91	696.65	N/A	N/A
13SB31	1309089.71	3023523.44	699.50	N/A	N/A
13SB32	1309164.94	3023567.00	699.47	N/A	N/A
13SB33	1309214.12	3023604.99	699.90	N/A	N/A
13SB34	1309199.57	3023640.37	704.67	N/A	N/A
13SB35	1309163.30	3023669.49	700.89	N/A	N/A
13SB36	1309091.92	3023689.59	700.85	N/A	N/A
13SB37	1309042.68	3023591.93	700.09	N/A	N/A
13SB38	1309586.06	3023995.86	701.22	N/A	N/A
13SB39	1309554.95	3024003.47	698.33	N/A	N/A
13SB40	1309546.83	3024040.70	700.48	N/A	N/A
13SB41	1309581.91	3024040.83	698.93	N/A	N/A
13SB42	1309621.03	3024065.68	700.65	N/A	N/A
13SB43	1309512.30	3023895.30	696.64	N/A	N/A
13SB44	1309478.27	3023922.51	697.28	N/A	N/A
13SB45	1308991.43	3023350.47	689.29	N/A	N/A
13SB46	1308937.59	3023379.57	694.95	N/A	N/A
13SB47	1308844.66	3023159.60	680.62	N/A	N/A
SURFACE WATER/					
SEDIMENT					
13SW01/SD33	1308432.31	3019851.58	519.16	N/A	N/A
13SW02/SD34	1309899.21	3021700.73	544.92	N/A	N/A
13SW03/SD35	1310607.45	3022473.11	558.00	N/A	N/A
STAFF GUAGE					
13SG12	1312371.18	3022662.06	595.28	N/A	N/A
13SG13	1311077.60	3022704.86	572.52	N/A	N/A
13SG14	1310424.91	3022481.79	567.75	N/A	N/A
13SG15	1309660.62	3021524.54	544.18	**TOP OF STAKE=**	546.13
13SG16	1309270.46	3021074.88	537.01	**TOP OF STAKE=**	538.97
13SG17	1309034.25	3020747.93	532.48	**TOP OF STAKE=**	534.56
13SG18	1308276.51	3019633.62	524.23	N/A	N/A
VEGETATION					
13VG01	1309943.71	3022181.04	565.50	N/A	N/A
13VG02	1309912.02	3022053.44	555.46	N/A	N/A
13VG03	1309706.50	3022121.22	590.73	N/A	N/A
13VG04	1309685.02	3022200.09	608.26	N/A	N/A
13VG05	1309834.90	3022337.85	619.95	N/A	N/A

13VG06	1309904.81	3022880.39	644.68	N/A	N/A
13VG07	1309794.13	3022407.12	635.16	N/A	N/A
13VG08	1309655.99	3022427.09	643.92	N/A	N/A
13VG09	1309479.50	3022560.24	653.04	N/A	N/A
SB= Soil Boring SW = Surface Water SG = Staff Guage					
MW = Monitoring Well SD = Sediment SP = Seep VG = Vegetation					

SURVEY TABLE
SWMU 13 - MINE FILL B
NSWC CRANE
CRANE, INDIANA

Sample Location	Northing (feet)	Easting (feet)	Ground Surface Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Top of PVC Elevation (feet amsl)
The following data was collected in April of 2005, but not previously published.					
Surface Water/Sediment					
13SW/SD036	1308866.44	3019243.68	518.28	NA	NA
13SW/SD037	1308413.20	3019478.35	513.59	NA	NA
13SW/SD038	1308019.19	3019461.05	511.94	NA	NA
13SW/SD039	1307874.49	3019417.83	511.22	NA	NA
13SW/SD040	1306032.96	3019790.03	501.31	NA	NA
13SW/SD041	1305092.91	3019408.94	498.38	NA	NA
13SW/SD042	1303638.67	3019362.37	491.77	NA	NA
13SW/SD043	1301382.91	3025289.56	488.65	NA	NA
13SW/SD044	1302663.81	3026143.05	487.61	NA	NA
13SW/SD045	1304178.26	3026775.79	487.15	NA	NA

MW = Monitoring Well TW = Temporary Well SP = Seep SG = Staff Gauge SW = Surface Water
SD = Sediment SU = Sump SB = Soil Boring

location_id	easting	northing	coordinate_system
13SB048	3024189.4	1309813.94	NAD 1983 SPCS Indiana West (Feet)
13SB049	3024094.65	1309806.11	NAD 1983 SPCS Indiana West (Feet)
13SB050	3024077.9	1309815.54	NAD 1983 SPCS Indiana West (Feet)
13SB051	3023988.76	1309812.53	NAD 1983 SPCS Indiana West (Feet)
13SB052	3023485.02	1308991.98	NAD 1983 SPCS Indiana West (Feet)
13SB053	3023458.32	1308967.35	NAD 1983 SPCS Indiana West (Feet)
13SB054	3023492.82	1309071.8	NAD 1983 SPCS Indiana West (Feet)
13SB055	3023387.4	1308999.91	NAD 1983 SPCS Indiana West (Feet)
13SB056	3023355.47	1308989.67	NAD 1983 SPCS Indiana West (Feet)
13SB057	3023356.77	1309051.2	NAD 1983 SPCS Indiana West (Feet)
13SB059	3023402.28	1309094.47	NAD 1983 SPCS Indiana West (Feet)
13SB060	3024174.91	1309713.37	NAD 1983 SPCS Indiana West (Feet)
13SB061	3024137.06	1309677.15	NAD 1983 SPCS Indiana West (Feet)
13SB062	3024013.7	1309791.85	NAD 1983 SPCS Indiana West (Feet)
13SB063	3024009.53	1309817.68	NAD 1983 SPCS Indiana West (Feet)
13SB064	3022920.62	1308586.09	NAD 1983 SPCS Indiana West (Feet)
13SB065	3022935.39	1308588.59	NAD 1983 SPCS Indiana West (Feet)
13SB066	3022941.78	1308580.24	NAD 1983 SPCS Indiana West (Feet)
13SB067	3022927.74	1308578.42	NAD 1983 SPCS Indiana West (Feet)
13SB068	3023854.32	1310130.88	NAD 1983 SPCS Indiana West (Feet)
13SB069	3023841.37	1310127.59	NAD 1983 SPCS Indiana West (Feet)
13SB070	3023111.96	1309355.05	NAD 1983 SPCS Indiana West (Feet)
13SB071	3023103.69	1309344.92	NAD 1983 SPCS Indiana West (Feet)
13SB072	3023397.43	1308968.06	NAD 1983 SPCS Indiana West (Feet)
13SB073	3023497.674	1308987.889	NAD 1983 SPCS Indiana West (Feet)
13SB074	3023473.418	1308975.911	NAD 1983 SPCS Indiana West (Feet)
13SB075	3023483.117	1309070.937	NAD 1983 SPCS Indiana West (Feet)
13SB076	3023490.469	1309082.542	NAD 1983 SPCS Indiana West (Feet)
13SB077	3023485.181	1309096.733	NAD 1983 SPCS Indiana West (Feet)
13SU/SL001	3023767.03	1310156.18	NAD 1983 SPCS Indiana West (Feet)
13SU/SL002	3023884.05	1310307.7	NAD 1983 SPCS Indiana West (Feet)
13SU/SL003	3023888.84	1310252.75	NAD 1983 SPCS Indiana West (Feet)
13SU/SL004	3022970.62	1309298.47	NAD 1983 SPCS Indiana West (Feet)
13SU/SL005	3022980.01	1309329.47	NAD 1983 SPCS Indiana West (Feet)
13SU/SL006	3023075.77	1309433.63	NAD 1983 SPCS Indiana West (Feet)
13SU/SL007	3023116.45	1309466.92	NAD 1983 SPCS Indiana West (Feet)
13SU/SL008	3023120.78	1309434.08	NAD 1983 SPCS Indiana West (Feet)
13SU/SL009	3023406.07	1308963.3	NAD 1983 SPCS Indiana West (Feet)

ROUND 4

NSWC CRANE

N7448

SWNU 13416

1376

* START ROUND #4 *

SUMMARY 1/19

- COMPLETE GW & STAFF GAUGE MEAS.
- CONDUCT WELL INSP. @ MONITORING WELLS 7/1 - 7/5

SCIENTIFIC BINDER PRODUCTS CHICAGO 60605 MADE IN USA

Varo THIS PAGE

SCIENTIFIC BINDERY PRODUCTS CHICAGO 37524 MADE IN USA

VOID THIS PAGE

SCIENTIFIC BINDERY PRODUCTS: CHICAGO 60605 MADE IN USA

SAMPLE SUMMARY 1/22/05

- PURGE 13MWT45
- PURGE & SAMPLE 13MWT21
- CUT DAY SHORT DUE TO VERY BAD WEATHER CONDITIONS.

Sample Summary for 11/23/05

Sample ID	Start Purge	End Purge	VOC Purged	Sample Time	Sampler
13GWT0104	0950	1100	7.3 L	1105	T.R.
13GWT1704	0935	1225	16.6 L	1235	C.D.
13GWT4503	1122	1122	16 L	1250 (11/23)	T.R.
13GWT1104	1400	1500	5.5 L	1505	TR
13GWT3403	1345	1505	10.6 L	1510	CD

SCIENTIFIC BINDERY PRODUCTS CHICAGO AREA MADE IN USA

SAMPLE SUMMARY 1/25/05 :

- RECON B-2930 W/ T. BRENT
- CONF. CALL W/ B. GATES, T. BRENT & R. BASINSKI
  NEED to lay out sample locations ASAP for utility clearance
- RECON RIFLE RANGE for bullets
- PICK 30 Gal Drums (ten RECEIVED) w/ ~50 lbs of additional weight
- Assemble bladder pump for 13MWT5 1
- Sample monitoring wells 13MWT 17 & 14
- Meas. WLs of NEW WELLS @ SWMU 16 PER R. BASINSKI'S request for Round 3

END

Cont From P. 135 :

WELL ID	W.L.	TIME
16MWT21	65.44	1745
16MWT20	3.43	1602
16MWT19	3.21	1800

1810 Hrs - Leave Base
1855 Hrs - Finish Car Wash
1932 Hrs - Check out supplies & eq. @ Lowe's

END

SCIENTIFIC BINDERY PRODUCTS MADE IN USA

V1.0 THIS PAGE.

SCIENTIFIC & INDEPENDENT PRODUCTS CHICAGO 60606 MADE IN USA

TRAVEL DAY 1-31-2005:

- CHECKED ON STATUS OF WATER CHEM. CONTAINERS W/ H_2SO_4 & TOC CONTAINERS W/ H_3PO_4 WITH ANN HO OF LAUCKS; ANN SAID THEY WERE DAY SHIPPED BY SUPPLIERS & SHOULD ARRIVE ON THURS. 2/3/05.
- SEE PAGE 139

SCIENTIFIC SINDERY PRODUCTS CHICAGO 60621 MADE IN USA

SAMPLE SUMMARY 2-01-05 :

SAMPLE #/ID	Start Purge	END PURGE	VOL. PURGED	SAMPLE TIME	SAMPLER
13GWT 0905	0925	1045	9.33 L	1050	CD
13GWT 2803	0930	1330	19.6 L	1345	JG
13GWT 3103	1245	1445	12.9 L	1450	CD

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

SAMPLE SUMMARY 02/02/05:

SAMPLE ID	Start Purge	END Purge	VOL. Purged	SAMPLE Time	SAMPLER
13GWT4603	0850	1010	8.9L	1015	CD
136WT4003	0930	1100	11L	1105	JG
13GWT3703	1135	1255	8.6L	1300	CD
13GWT1304	1235	1455	21.6L	1500	JG

COMPLETED SURFACE WATER SAMPLING @ SWMU 13.

SCIENTIFIC SUPPLY PRODUCTS CHICAGO

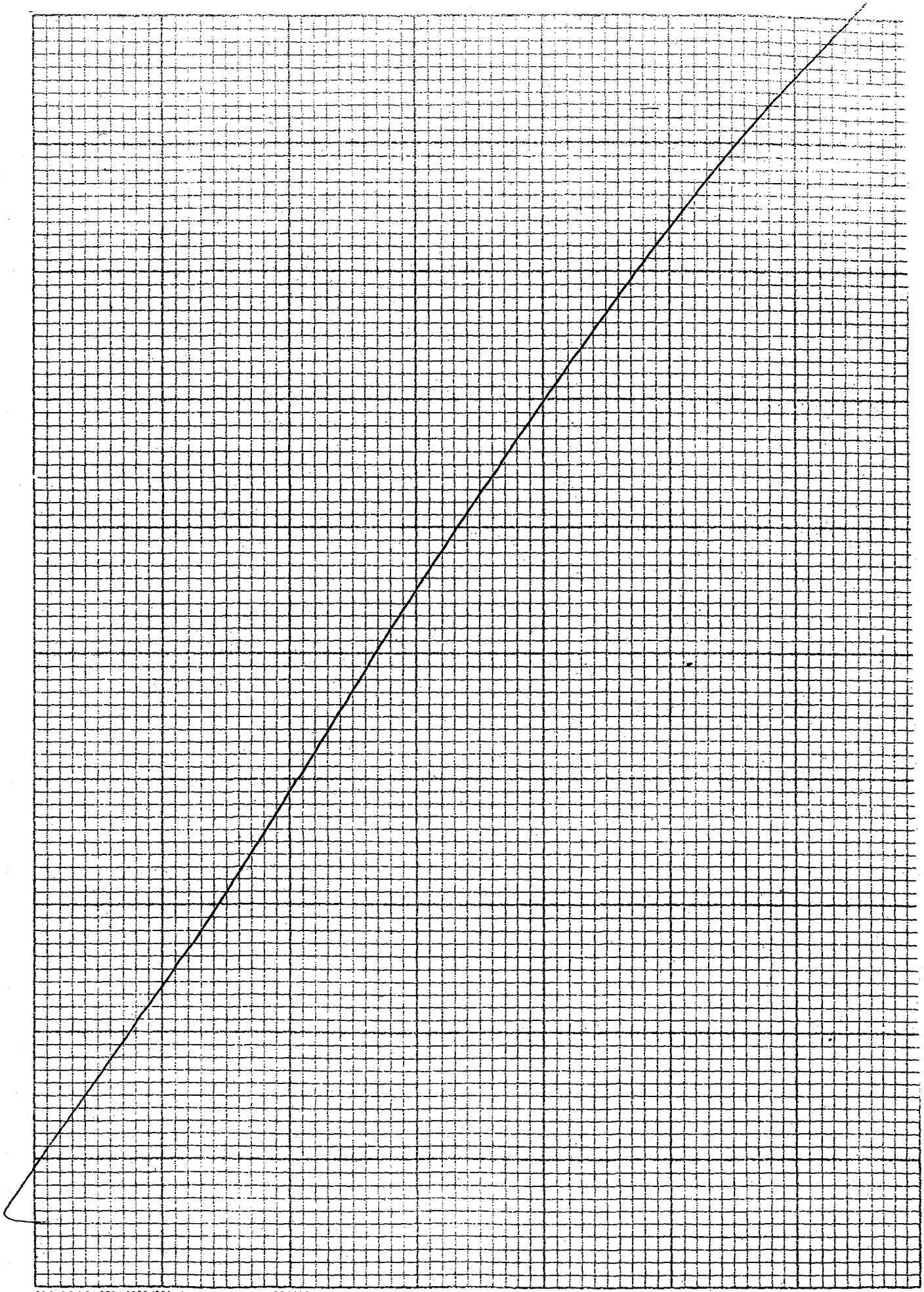
SAMPLE SUMMARY 020305:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	SAMPLER
13GWT1504	0850	1110	15.9L	1115	CD
13GWT5102	0850	1135	26.8L	1140	JG

FINISHED SAMPLING GW @ SWMU 13 this date.
Completed surface water sampling @SWMU 16 with the collection of SW @ 16SW20, 22, 13 & 30

SHIPPED SAMPLES IN COCS 3677 & 3679 via FED EX. 1134 8447 8135 7413

SCIENTIFIC BINDERY PRODUCTS CHICAGO 8 ILL. MADE IN USA



SCIENTIFIC BINDERY PRODUCTS CHICAGO 60625 MADE IN USA

MONITORING WELLS @ SWMU 16

WELL ID	WL	TIME		
16MW 01	~~15.88~~	~~0848~~	32.33	0947
02	15.94	0840		
03	~~28.88~~	~~0917~~	20.45	0932
04	~~14.29~~	~~0917~~	28.70	0938
05	34.88	0942		
16MW 01	15.88	0848		
02	12.61	0921		
03	28.88	0914		
04	14.29	0911		
05	32.11	0924		
06	17.79	0850		
07	Dry	0854	* Bottom @ 28'	
08	96.60	0859		
09	15.25	0903		
10	22.30	0906		
11	96.41	0908		
12	20.94	0928		
13	11.36	0919		
14	ABANDONED			
15	54.99	0917		
16	34.40	1135		
17	15.78	0844		
18	95.75	0956		
19	3.25	1012		
20	3.66	1014		
21	65.46	0936		

0830 - Attempted to enter in @ Bldg 2108. Doors locked. (SWMU 16)

SCIENTIFIC SINDERY PRODUCTS CHICAGO 60605 MADE IN USA

STAFF GAUGES @ SWMU 16 (2-04-05)

STAFF GAUGE ID	W.L	TIME	DEPTH ~~WIDTH~~ (TC) (AVE)	WIDTH ~~LENGTH~~ (AVE)	FLOW (SEC/FT)	FLOW Rate
165601	DRY	1245	—	—	—	0
02	5.29	1314	STAGNATE	→		0
03	5.03	1253	STAGNATE	→		0
04	2.15	1259	"	→		0
05	DRY	1301	DRY	→		0
06	3.51	1119	NA	NA	NA	20-25
07	5.99	1130	0.34	3.8'	1 SEC	580
08	4.16	1141	NA	NA	NA	18
09	6.34	1151	0.17	3	3 sec	76
~~10~~ (TC)						
~~11~~ (TC)		END				

SCIENTIFIC SINDERY PRODUCTS CHICAGO 60605 MADE IN USA

SAMPLE SUMMARY 02/05/05 :

SEE TABLE PAGE 153

SCIENTIFIC BINDERY PRODUCTS CHICAGO 93695 MADE IN USA

Sample Summary 02/06/05 :

See TABLE on Page 155

CD ALSO Sampled 12MWT01

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

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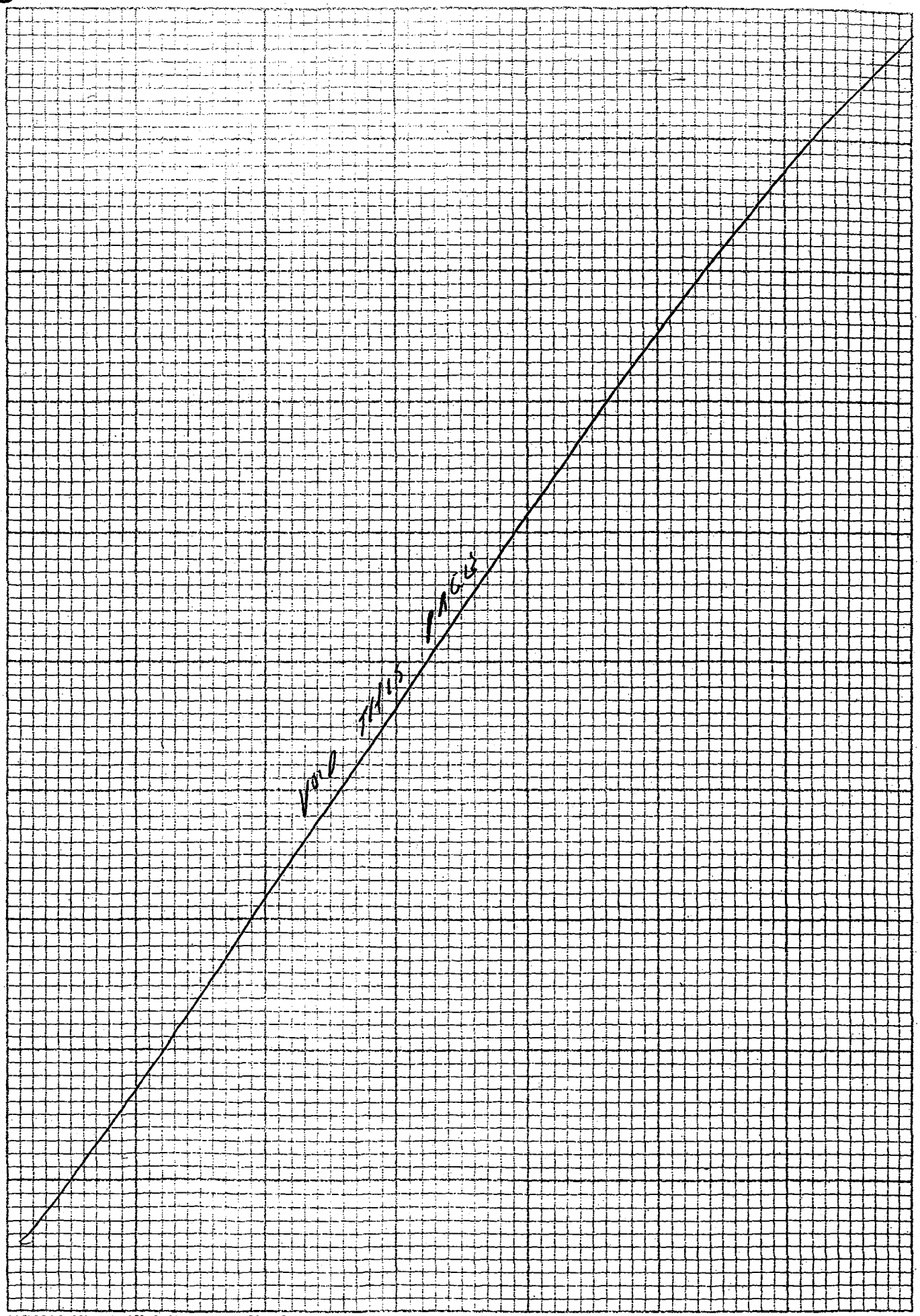
SCIENTIFIC SINGERY PRODUCTS, CHICAGO 60605 MADE IN USA



SCIENTIFIC BINDERY PRODUCTS CHICAGO 60635 MADE IN USA

ROUND 5

NSWC CRANE

N7448

SWMU 13 & 16

1376

Start Round 5

SAMPLE SUMMARY:

SAMPLE ID	START PURGE	END PURGE	VOL. PURGED	SAMPLE TIME	COMMENTS
13GWT0906	1025	1155	13.5	1200	JW SAMPLER
13GWT2804	1015	1415	22.8L	1420	JG SAMPLER
13GWT0105	1545	1745	12.3L	1750	JG SAMPLER

TOOK WATER LEVELS @ MINE FILL B (WELLS & STAFF GAUGES)

164 TUES 5-03-05

STAFF GAUGE ID	TIME	W.L	AVE W	AVE D	SEC/FT	Flow Rate
1356 01	1122	1.77	—			< 1 gpm
02	1111	3.73	~~8"~~	~~0.07'~~	~~1ft~~	~1-2 gpm
03	1809	1.96				No Flow
04	1812	2.45				< 1 GPM
05	1816	3.89				< 1 GPM
06	~~15.39~~ 12.39 JSW	DRY				DRY
07	1455	1.69				STAG.
08	1437	5.13				1-5 GPM
09	1430	4.21				1-5 GPM
10	1444	4.84				1-5 gpm
11	1830	2.51				~1 GPM
12	1621	6.85	11"	0.03'	1 ft/sec	148 gpm
13	1634	6.06				6 GPM
14	1636	6.41				5-10 GPM
15	1641	5.24	12'	0.01'	1 ft/sec	377 gpm
16	1725	DRY				DRY
17	1708	DRY				DRY
18	1726	8.19	18'	0.05'	1 ft/sec	404 gpm

SCIENTIFIC SINDERY PRODUCTS CHICAGO 60605 MADE IN USA

SAMPLE SUMMARY

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE ~~SUMM~~ TIME	COMMENTS
13GWT4504	0923	1040	9.3 L	NA	(TR)
13GWT2105	0930	1040	7.0 L	1050	(JW)
13GWT4004	0945	1115	8.3 L	1118	(JG)
13GWT1105	1305	1400	5.3 L	1405	(TR)
13GWT1705	1250	1410	8.0 L	1420	(JW)
13GWT4604	1250	1420	9.0 L	1425	(JG)
13GWT3704	1505	1655	14.6 L	1658	(JG)

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60625 MADE IN USA

SAMPLE SUMMARY 5-05-05:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
13GWT4504	SEE PAGE 166		→	1015	(TR)
13GWT1405	0830	1015	10.3L	1018	(JG)
13GWT5103	1000	1120	8.0L	1130	(JW)
13GWT3104	1045	1245	12.8L	1250	(JG)
13GWT3404	1055	1325	18.2L	1330	(TR)
13GWT4704	1225	1345	9.6L	1355	(JW)
13GWT1505	1440	1620	9.6L	1625	(TR)
13GWT1305	1445	1625	14.3L	1630	(JG)

Note: Laid out SWMU 9 DPT locations

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 50905 MADE IN USA

SAMPLE SUMMARY

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
16GWT1104	NA	NA	NA	0845	(JG) WELL DRIES OUT RAPIDLY. sampling incomplete
16GW0405	1000	1135	14.05L	1140	(JG)
16GW0205	1000	1145	8.5L	1145	(TR)
16GW0305	1400	1650	15.3L	1655	(JG)

Collected staff gauge & well measurements

SW work on electronic form entry this morning

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

FRI 05-06-05 (Con't)

Staff Gauge ID	W.L.	Time	Meas. W	Meas. D	sec/ft	Flow Rate
135G01 → 05	DRY	1320-1609 ~~1320-1609~~ (FC)	—	—	0	DRY
135G06	3.67	1624	20-25 gpm			→
135G07	Staff Gauge Washed Away	1633	.22' x 4' 0.5 sec/ft .22' x 4' x 2 ft/sec			790 gpm
136G08	4.22	1651	—			1-5 gpm
135G09	DRY	1655	—			0

Note: SWI ~~Keep~~ Kept (FC) above INFO. Electronically & Page 173

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60636 MADE IN USA

SAMPLE SUMMARY 5-07-05:

SAMPLE ID	START PURGE	END PURGE	VOL PURGED	SAMPLE TIME	COMMENTS
TB0507050	NA	NA	NA	0800	TR
16GWT0904	0909	1059	9.2 L	1103	(TR) Also DUP 16FD0507050
16GWT0606	1312	1712	10.6 L	1715	TR
16GWT1304	0830	1100	15.0 L	NA	JW
16GWT1504	1150	1550	18.0 L	1610	JW
16GWT0405	0850	1020	9.3 L	1025	JG
16GWT1004	1135	1335	12.0 L	1400	JG
16GWT1204	1445	1555	7.0 L	1600	JG
16GWT1104	1110	1920	12.5 L	1925	JG

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 93805 MADE IN USA

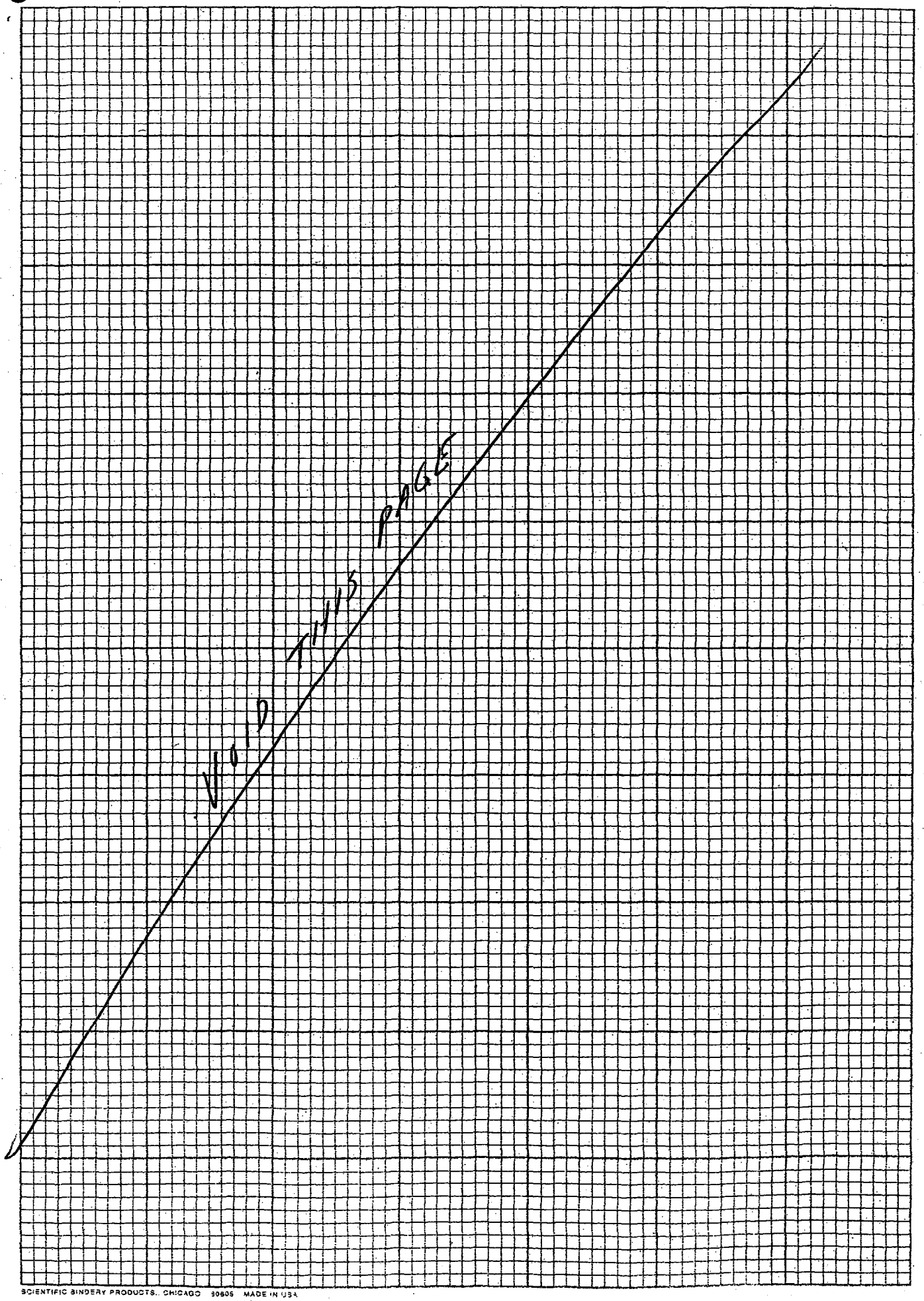
SAMPLE SUMMARY :

FINISHED collecting samples @ 16 MWT 13 & 11

Collected SW samples @ SWMW's 13 & 16

JW worked on Electronic Form Entry this afternoon

SCIENTIFIC BINDERY PRODUCTS CHICAGO



SCIENTIFIC BINDERY PRODUCTS, CHICAGO 90605 MADE IN USA

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SCIENTIFIC BINDERY PRODUCTS, CHICAGO 90605 MADE IN USA

ROUND 6

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/08/2005	**Weather/Temp**		**Created By**	John Wright
Facility Name	CRANE NSWC	**TtNUS Personnel**		**Created Date**	8/8/05
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	
Task/Contract #		**Visitors**		**Modified Date**	
WBS Code #	xxx			**Printed By**	Joseph Lucas
Client	SOUTHDIV			**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/8/05	16:00	John Wright	Arrived at Base and checked in with security. Issued gate pass and went to field office to prepare for E-Data use. Met with Terry R. and Jim G. and trained in E-Data demo and Crane-specific projects (SWMUS 13/16 and 12).

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/09/2005	**Weather/Temp**	Hazy, Hot & Humid, Temp. High 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;J. Wright;T. Rojahn	**Created Date**	8/9/05
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	Joseph Lucas
Client	SOUTHDIV	**Visitors**		**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/9/05	06:58	Terry Rojahn	Arrive at B-3245:
8/9/05	09:07	Terry Rojahn	Attempted to calibrate PID - Problem with battery (shuts down right away)
8/9/05	09:51	Terry Rojahn	Turbidity meter also bad (stuck on 2.31)
8/9/05	10:25	Terry Rojahn	Arrive at Mine FIll B -Measure water levels and staff gauges
8/9/05	12:20	Terry Rojahn	Lunch break
8/9/05	12:56	Terry Rojahn	Return to B-3245
8/[illegible]/05	13:30	Terry Rojahn	Returned to Mine Fill B (all wells measured and 8 staff gauges checked)
[illegible]/05	16:20	Terry Rojahn	Start measuring water levels at SWMU 9.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/10/2005	**Weather/Temp**	Hazy, Hot & Humid, Temp 90s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;J. Wright;T. Rojahn	**Created Date**	8/10/05
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	Joseph Lucas
Client	SOUTHDIV	**Visitors**		**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/10/05	06:55	Terry Rojahn	Arrive at B-3245: Organize office - more space for toughbook entry.
8/10/05	08:40	Terry Rojahn	Arrive @ SWMU 12: Park one car @ bottom of RR Tracks and drive second car to north end of track - collect water levels (WL) on RR tracks. Also
8/10/05	11:05	Terry Rojahn	Arrive at B-3245 to sync toughbooks for changes to surface water/staff gauge data forms.
8/10/05	11:25	Terry Rojahn	Lunch Break
/05	11:50	Terry Rojahn	Return to B-3245: Called U.S. Environmental to order pH probe
8/10/05	13:00	Terry Rojahn	Return to SWMU 12 and 13 Water level and staff gauge measurements.
8/10/05	16:15	Terry Rojahn	Finish water level and staff gauge measurements and return to B-3245.
8/10/05	18:00	Terry Rojahn	Left B-3245 for Fed. Ex.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/11/2005	**Weather/Temp**	Hot, Humid & Partly Sunny ; Temp. High 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC			**Created Date**	8/11/05
TtNUS Project #	112G00041	**TtNUS Personnel**	J. Goerdt;J. Wright;T. Rojahn	**Modified By**	Terry Rojahn
Task/Contract #	0000			**Modified Date**	3/9/06
WBS Code #	0000	**Subcontractor Personnel**		**Printed By**	Joseph Lucas
Client	SOUTHDIV	**Visitors**		**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/11/05	06:55	Terry Rojahn	Arrive at B3245: Fax COC #3261 to Laucks (H. Prentice). Select wells for sampling this date. Calibrate Turbidity meter. Discuss computer generated Groundwater Form with JW. Prep SUV for groundwater sampling. Discuss the shipment of a pH replacement probe w/ US Environmental
8/11/05	11:00	Terry Rojahn	Arrive at SWMU 13 to sample 13MWT17 and 13MWT15. Returned to B-3245 briefly between wells to check on Microseep sample containers (they did arrive) and to fax E. Sedlmyer yesterday's COC.
8/11/05	17:15	Terry Rojahn	Arrive at B-3245: Drop off equipment, gas cylinders and secure samples in frig.
/05	17:30	Terry Rojahn	Leave B-3245 for motel. Sample Summary: completed the sampling of monitoring wells 13MWT11, 5, 17, 34, 37 and 41 (10 of 17 wells completed to date at SWMU 13). Monitoring well 13MWT51 was purged but not sampled - well was purged dry. The initial water level at 13MWT51 has dropped significantly from prior rounds. Well may have been impacted by new water line installed just next to it.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
8/12/05	18:35	Terry Rojahn	Drop off samples on COC #3262 @ Fed. Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/14/2005	**Weather/Temp**	Mostly Cloudy, Temp.90s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;J. Wright;T. Rojahn	**Created Date**	8/14/05
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	Joseph Lucas
Client	SOUTHDIV	**Visitors**		**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/14/05	07:05	Terry Rojahn	Arrive @ B-3245: Prep to sample Ground water @ SWMU 16
8/14/05	08:50	Terry Rojahn	Arrive at SWMU 16
8/14/05	10:55	Terry Rojahn	Start collecting sample 16GWT0406.
8/14/05	14:20	Terry Rojahn	Arrive @ 16MWT15
8/14/05	14:30	Terry Rojahn	Start collecting sample 16GWT1505
8/14/05	14:41	Terry Rojahn	Security check by Crane Security Officer.
8/14/05	16:05	Terry Rojahn	Collect 16GWT1505 & depart @ SWMU 16 for SWMU 13.
8/14/05	16:15	Terry Rojahn	Arrive @ SWMU 13 - set up at 13MWT51.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/15/2005	**Weather/Temp**	Overcast, High 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;J. Wright;T. Rojahn	**Created Date**	8/15/05
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000	**Visitors**		**Printed By**	Joseph Lucas
Client	SOUTHDIV			**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/15/05	07:00	Terry Rojahn	Arrive at B-3245: Sedlmyer and asked him to track the shipment (was to be picked up at Fed. Ex. by Laucks Lab on Saturday).
8/15/05	10:30	Terry Rojahn	Arrive at SWMU13 (13MWT04)
8/15/05	13:53	Terry Rojahn	Finish collecting groundwater sample at monitoring well 13MWT04.
8/15/05	14:00	Terry Rojahn	Arrive at B3245:
05	18:10	Terry Rojahn	Leave B-3245 for Fed. Ex.
8/15/05	18:40	Terry Rojahn	Arrive at Fed. Ex - drop off samples
8/15/05	19:15	Terry Rojahn	Picked up supplies at Home Depo.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
8/16/05	12:55	Terry Rojahn	Return to SWMU 13.
8/16/05	13:05	Terry Rojahn	Check surface water location 13SW11 - DRY.
8/16/05	13:15	Terry Rojahn	Check surface water location 13SW22 - DRY.
8/16/05	13:30	Terry Rojahn	Collect surface water sample at location 13SW20.
8/16/05	13:45	Terry Rojahn	Collect surface water sample at location 13SW19.
8/16/05	14:05	Terry Rojahn	Check on JG at monitoring well 13MWT14 - got JG 's Toughbook to sync at B-3245.
8/16/05	14:15	Terry Rojahn	Arrive at B-3245:
8/16/05	18:30	Terry Rojahn	JW and TR left B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	08/27/2005	**Weather/Temp**	Mostly cloudy, humid & 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;T. Rojahn	**Created Date**	8/27/05
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	Joseph Lucas
Client	SOUTHDIV			**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
8/27/05	16:55	Terry Rojahn	07:05:00 - Arrive at B-3245:
8/27/05	16:56	Terry Rojahn	The above was copied from SWMU 12's (Round 4)Daily Activity Log for this date.
8/27/05	17:50	Terry Rojahn	Arrive at SWMU 13 to check on JG. JG almost done sampling at monitoring well 13MWT09.
8/27/05	18:00	Terry Rojahn	JG finished sampling at 13MWT09.
//05	18:15	Terry Rojahn	Leave base for Bloomington. SAMPLE SUMMARY THIS DATE: Checked all surface water sampling locations at SWMU 16 - all 4 were dry. Also

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 6 Sampling - CRANE NSWC

Project Information

Activity Date	09/29/2005	**Weather/Temp**	Mostly sunny & 60's	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Westerhoff;D. Hickey;J. Wright;T. Rojahn	**Created Date**	9/29/05
TtNUS Project #	112G00041			**Modified By**	
Task/Contract #		**Subcontractor Personnel**	EFS;Jay McFall;Capitol Drilling & Sawing ;David Cribbs	**Modified Date**	
WBS Code #	0000			**Printed By**	Joseph Lucas
Client	SOUTHDIV	**Visitors**		**Printed Date**	5/2/06

Daily Activity

Date	Time	Author	Notes
9/29/05	08:30	Terry Rojahn	Arrive at SWMU 8 with DW - meet with Ted Butler & Pam Hock (Army H&S) receive Safety & Building Availability Permit.
9/29/05	09:50	Terry Rojahn	Fire Inspector arrived on site - DW received Hot Work Permit.
9/29/05	10:10	Terry Rojahn	D. Cribbs began coring concrete.
9/29/05	10:45	Terry Rojahn	Start drilling at 09SB25.
9[illegible]/05	12:40	Terry Rojahn	Finish coring inside B106 and completed 09SB22
9/29/05	13:00	Terry Rojahn	Lunch
9/29/05	13:35	Terry Rojahn	Return to SWMU 8 - start coring inside B107 and continued drilling inside B-106. DW over seeing H& S at B106 and TR over seeing coring activites at B-107. B-107 active - checked w/ Tom Hess for permission to core. OK to core 4 of 5 while workers are in the bldg. Workers are done at 1500Hrs.
9/29/05	15:30	Terry Rojahn	Completed the 4 of 5 corings at B107 and moved back to B-106 - SB30 drilling rig hit refusal only a couple inches below the floor. Believe rig hit an old sump moved SB30 about 5' from the wall.

ROUND 7

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/03/2006	**Weather/Temp**		**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;T. Rojahn	**Created Date**	1/4/06
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000	**Visitors**		**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/3/06	07:35	Terry Rojahn	Due to the cancellation of TR's 0835 Hr flight in Pittsburgh and a 1700 Hr arrival into Indy airport - this date was all travel. JG arrived in Bloomington in time to pick up equipment shipments at Fed. Ex. Station in Bloomington (JG's flight out of Pittsburgh was delayed).
1/3/06	07:40	Terry Rojahn	TR arrived in Bloomington at 18:40 Hrs and JG arrived at 1700 Hrs on 1/3/2006.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
1/4/06	15:25	Terry Rojahn	Complete synoptic water levels for monitoring wells and staff gauges at SWMU 13.
1/4/06	15:30	Terry Rojahn	Return to B-3245:
1/4/06	16:30	Terry Rojahn	Leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
1/5/06	18:20	Terry Rojahn	Leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
1/6/06	16:25	Terry Rojahn	Prep to leave B-3245 for Fed Ex.
1/6/06	17:00	Terry Rojahn	Drop off samples at Fed Ex.
1/6/06	17:32	Terry Rojahn	Picked up supplies at Lowe's.
1/6/06	17:45	Terry Rojahn	SAMPLE SUMMARY FOR THIS DATE:

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
1/7/06	12:58	Terry Rojahn	Return to SWMU 16.
1/7/06	14:20	Terry Rojahn	Begin purging monitoring well 16MWT09.
1/7/06	16:20	Terry Rojahn	Finish purging monitoring well 16MWT09.
1/7/06	16:25	Terry Rojahn	Start collecting ground water sample 16GWT0906.
1/7/06	17:00	Terry Rojahn	Finish clean up at monitoring well 16MWT09.
1/7/06	17:05	Terry Rojahn	Arrive at B3245:
1/7/06	17:30	Terry Rojahn	Leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/09/2006	**Weather/Temp**	Partly cloudy & 30s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;T. Rojahn	**Created Date**	1/9/06
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV	**Visitors**		**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/9/06	07:00	Terry Rojahn	Arrive at B-3245:
1/9/06	08:50	Terry Rojahn	Arrive at SWMU 16 - check in with B-146 supervisor (Pam) - OK to work this date.
1/9/06	09:25	Terry Rojahn	Begin purge at 16MWT10.
1/9/06	10:45	Terry Rojahn	End purge at 16MWT10.
1/9/06	10:50	Terry Rojahn	Begin collecting ground water sample 16GWT1006.
1/9/06	11:35	Terry Rojahn	Finish clean up at 16MWT10.
1/9/06	11:45	Terry Rojahn	Lunch
1/9/06	12:15	Terry Rojahn	Install weep hole in monitoring well 13MWT47.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/10/2006	**Weather/Temp**	Rain & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	R. Basinski;J. Goerdt;T. Rojahn	**Created Date**	1/10/06
TtNUS Project #	112G00041			**Modified By**	Terry Rojahn
Task/Contract #	0000	**Subcontractor Personnel**		**Modified Date**	3/9/06
WBS Code #	0000	**Visitors**	Mr. Tom Brent	**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/10/06	07:00	Terry Rojahn	Arrive @ B-3245
1/10/06	10:00	Terry Rojahn	Lay out soil boring sampling (DPT) locations at SWMU 13.
1/10/06	11:45	Terry Rojahn	Lunch
1/10/06	12:30	Terry Rojahn	Continue laying out DPT boring locations.
1/10/06	17:00	Terry Rojahn	Finish laying out DPT boring locations and return to B-3245.
1/10/06	17:10	Terry Rojahn	Soil borings laid out this date:
1/10/06	17:30	Terry Rojahn	Leave B-3245 for Lowe's
1/10/06	18:15	Terry Rojahn	Purchase wooden grade stakes - need to replace pin flags at SWMU 12 with wooden stakes.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/11/2006	**Weather/Temp**	Partly cloudy & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	1/11/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/11/06	07:15	Terry Rojahn	Arrive @ B-3245:
1/11/06	12:10	Terry Rojahn	Lunch
1/11/06	12:45	Terry Rojahn	Return to B3245 - receive MFA and MFB maps from Mr. Tom Brent to locate and map soil boring locations.
1/11/06	13:35	Terry Rojahn	Arrive at MFB - located all previously staked out boring locations - mapped and photographed said boring locations (13SB48 through 13SB71).
1/11/06	15:05	Terry Rojahn	Arrive at MFA - located previously staked out boring locations - mapped and photographed boring locations (12SB40 through 13SB55 and 12SB57 through 13SB67).
1/11/06	15:40	Terry Rojahn	Returned to B-3245:
1/11/06	18:05	Terry Rojahn	Leave B-3245 for Fed Ex.
1/11/06	18:40	Terry Rojahn	Drop off samples and equipment on above AB #s.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/18/2006	**Weather/Temp**	Partly sunny & 30s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	1/18/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/18/06	06:30	Terry Rojahn	Arrive at PIT airport:
1/18/06	13:15	Terry Rojahn	Arrive at B-3245:
1/18/06	14:15	Terry Rojahn	Check in with Mr. Mike Roach @ MFA - no production at MFB or in the area of B-146 for the duration of this shift.
1/18/06	14:25	Terry Rojahn	Arrive at SWMU 13
1/18/06	14:50	Terry Rojahn	Begin purge at monitoring well 13MWT45.
1/18/06	16:55	Terry Rojahn	End purge at monitoring well 13MWT45 - dry out well - will sample tomorrow.
1/18/06	17:15	Terry Rojahn	Finish clean up at monitoring well 13MWT45.
1/18/06	17:25	Terry Rojahn	Return to B-3245:

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/19/2006	**Weather/Temp**	Partly sunny & 50s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	1/19/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/19/06	07:05	Terry Rojahn	Arrive at B-3245:
1/19/06	08:30	Terry Rojahn	Arrive at monitoring well 13MWT21.
1/19/06	08:55	Terry Rojahn	Begin purge at monitoring well 13MWT21.
1/19/06	09:55	Terry Rojahn	End purge at monitoring well 13MWT21.
1/19/06	10:00	Terry Rojahn	Begin collecting ground water sample 13GWT2107.
1/19/06	10:25	Terry Rojahn	Finish clean up at monitoring well 13MWT21.
1/19/06	10:35	Terry Rojahn	Begin collecting ground water sample 13GWT4506 - purged on 1/18/2006.
1/19/06	11:37	Terry Rojahn	Finish clean up at monitoring well 13MWT45.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/20/2006	**Weather/Temp**	Overcast & 50s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	1/20/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/20/06	07:10	Terry Rojahn	Arrive at B-3245:
1/20/06	09:10	Terry Rojahn	Arrive at Break Bldg #2708 - check in with Pam - OK to work in the area of B-146 (today and this weekend).
1/20/06	09:19	Terry Rojahn	Arrive at monitoring well 16MWT15.
1/20/06	09:40	Terry Rojahn	Start purge at monitoring well 16MWT15.
1/20/06	13:40	Terry Rojahn	End purge at monitoring well 16MWT15 after 4 Hrs. - will allow the well time to recover and sample tomorrow..
1/20/06	14:05	Terry Rojahn	Finish clean up at monitoring well 16MWT15.
1/20/06	14:15	Terry Rojahn	Lunch
1/20/06	14:50	Terry Rojahn	Arrive at monitoring well 13MWT51.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/21/2006	**Weather/Temp**	Overcast & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	1/21/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/21/06	07:05	Terry Rojahn	Arrive at B-3245:
1/21/06	08:50	Terry Rojahn	Arrive at SWMU 16 (16MWT15)
1/21/06	08:51	Terry Rojahn	Begin collecting ground water sample 16GWT1506 (purged 1/20/06).
1/21/06	09:45	Terry Rojahn	Begin purge at 16MWT13.
1/21/06	13:43	Terry Rojahn	End purge at 16MWT13 - dropped water level below the bottom of pump - will sample tomorrow.
1/21/06	14:00	Terry Rojahn	Lunch - Checked in w/R. Basinski.
1/21/06	14:35	Terry Rojahn	Arrive at monitoring well 16MWT11 - water level below the top of the pump - pulled pump and purged well w/ dedicated teflon bailer - saved purge water for sample - well historically has a very slow recharge rate.
1/21/06	15:05	Terry Rojahn	Arrive at monitoring well 16MWT04.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/22/2006	**Weather/Temp**	Overcast & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	1/22/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/22/06	07:44	Terry Rojahn	Arrive at B-3245
1/22/06	08:50	Terry Rojahn	Begin collecting ground water sample 16GWT1306 (purged 1/21/06).
1/22/06	09:22	Terry Rojahn	Finish clean up at monitoring well 16MWT13.
1/22/06	09:30	Terry Rojahn	Begin collecting ground water sample 16GWT1106 (purged 1/21/06).
1/22/06	10:40	Terry Rojahn	Finished clean up at 16MWT11 - replaced bladder pump after collecting sample w/dedicated teflon bailer.
1/22/06	10:50	Terry Rojahn	Start purge at monitoring well 16MWT17.
1/22/06	12:00	Terry Rojahn	End purge at monitoring well 16MWT17.
1/22/06	12:00	Terry Rojahn	Begin collecting ground water sample 16GWT1706 - also, collect 16FD01220601.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/24/2006	**Weather/Temp**	Mostly sunny & 30s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	1/24/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/24/06	07:00	Terry Rojahn	Arrive at B-3245:
1/24/06	08:10	Terry Rojahn	Drop off Digging Permits at Public Works B-56.
1/24/06	08:20	Terry Rojahn	Arrive at monitoring well 13MWT11.
1/24/06	08:40	Terry Rojahn	Begin purge at monitoring well 13MWT11.
1/24/06	09:35	Terry Rojahn	End purge at monitoring well 13MWT11.
1/24/06	09:40	Terry Rojahn	Begin collecting ground water sample 13GWT1107.
1/24/06	10:10	Terry Rojahn	Finish clean up at monitoring well 13MWT11.
1/24/06	10:25	Terry Rojahn	Begin purge at monitoring well 13MWT17.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	05/06/2006	**Weather/Temp**	am-sun upper 40's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D.Hickey	**Created Date**	5/6/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	James Goerdt
Task/Contract #	0000	**Visitors**		**Modified Date**	5/6/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
5/6/06	07:30	James Goerdt	Arrive at Bldg. 3245 from Martinsville. Sync computers and load vehicles for sampling GW at SWMU 16.
5/6/06	08:20	James Goerdt	Arrived at SWMU 16 to begn GW sampling. Setting up on well 16MWT12.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMU 13 and 16 Round 7 Sampling - CRANE NSWC

Project Information

Activity Date	01/23/2006	**Weather/Temp**	Mostly sunny & 40s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	Terry Rojahn	**Created Date**	1/23/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	0000	**Visitors**		**Modified Date**	3/9/06
WBS Code #	0000			**Printed By**	James Goerdt
Client	SOUTHDIV			**Printed Date**	7/11/06

Daily Activity

Date	Time	Author	Notes
1/23/06	07:10	Terry Rojahn	Arrive at B-3245:
1/23/06	08:55	Terry Rojahn	Arrive at monitoring well 13MWT01
1/23/06	09:05	Terry Rojahn	Begin purge at monitoring well 13MWT01.
1/23/06	10:55	Terry Rojahn	End purge at monitoring well 13MWT01.
1/23/06	11:00	Terry Rojahn	Begin collecting ground water sample 13GWT0107.
1/23/06	11:45	Terry Rojahn	Finish clean up at monitoring well 13MWT01.
1/23/06	11:55	Terry Rojahn	Lunch
1/23/06	12:25	Terry Rojahn	Return to B-3245:

ROUND 8

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	5/1/06	**Weather/Temp**		**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/1/06
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	John Wright
Task/Contract #	TP00050125	**Visitors**	NA	**Modified Date**	6/10/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/1/06		James Goerdt	a.m. hours spent traveling from Pgh to Crane.
5/1/06	14:45	James Goerdt	Current time is CST. Checked in at security office and obtained visitors pass, and arrived at Bldg 3245 at 14:55. Spoke additionally with M. Francis.
5/1/06	14:45	James Goerdt	Checked in at hotel in Bloomington. Received Fed Ex shipment sent by J. Wright. Spoke with M. Francis about additional sediment samples at SWMU 17.
5/1/06	15:05	James Goerdt	Began unpacking and checking in GW sampling equipment which included the following:
5/1/06	15:20	James Goerdt	Left hotel for Crane Naval Base.
5/1/06	16:15	James Goerdt	Departed Crane for WalMart to purchase field supplies. 1650-1730.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/04/2006	**Weather/Temp**	am PC low 60's / pm PC low 70's	**Created By**	James Goerdt
Facility Name	CRANE NSWC			**Created Date**	5/4/06
TtNUS Project #	112G00041	**TtNUS Personnel**	J.Goerdt;D. Hickey	**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Subcontractor Personnel**		**Modified Date**	5/15/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/4/06	07:05	James Goerdt	Arrived at Bldg 3245 and attempted to connect to IPASS to sync toughbooks. Checking/responding to numerous e-mails. D. Hickey calibrated equipment.
5/4/06	08:30	James Goerdt	Left Bldg 3245 to to collect remaining SW samples at SWMU 16 and to finish measuring SG locations.
5/4/06	11:30	James Goerdt	Returned to Bldg 3245 and processed SW samples from locations 16SWSD12, 13, and 30. Collected FD and MS/MSD samples at location 16SWSD30.
5/4/06	12:30	James Goerdt	D. Hickey and myself went to Cafe for lunch. Returned to Bldg 3245 at 13:05 and prepared vehicles for GW sampling at SWMU 16.
5/4/06	14:15	James Goerdt	Arrived at SWMU 16 to conduct GW sampling. Stopped at well 16GW02 to help D. Hickey set purge/sample equipment.
5/4/06	15:00	James Goerdt	Setting up on well 16MWT09 to purge and sample.
5/4/06	18:00	James Goerdt	Finished sampling at at 16MWT09 and returned to Bldg 3245 to process samples and unload vehicle.
5/4/06	18:45	James Goerdt	Departed the base.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/06/2006	**Weather/Temp**	am-sun upper 40's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/6/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/7/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/6/06	07:30	James Goerdt	Arrive at Bldg 3245 from Martinsville. Sync computers and prepare vehicles for GW sampling at SWMU 16.
5/6/06	08:20	James Goerdt	Arrived at SWMU 16 to begin GW sampling. Setting up on well 16MWT12 and purged and sampled the well from 8:50-12:10. Stopped at Subway and thne began setting up at well 12MW04. Purged and sampled this well from 12:55-15:35. Moved to well 12MW03 and sampled and purged from 15:45-20:20.
5/6/06	20:30	James Goerdt	Returned to Bldg 3245 and unloaded samples and vehicle. Departed Crane at 20:45 for Martinsville.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/07/2006	**Weather/Temp**	AM-PC 50's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/7/06
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**	NA	**Modified Date**	5/8/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/7/06	08:00	James Goerdt	Arrive at Bldg 3245 from Martinsville. Process sample bottles from previous day. Load vehicles for GW sampling.
5/7/06	09:00	James Goerdt	Arrive at SWMU 12 to conduct GW sampling. Gate to SWMU 12 was open. Ran out of bottleware for MEE so had to switch from SWMU 16 to SWMU 12.
5/7/06	12:30	James Goerdt	Finished sampling at 12MWT36. Stopped by Subway and began setting up at 12MWT28 at 12:50.
5/7/06	12:55	James Goerdt	Purged and sampled well 12MWT28 from 12:55-17:25. Stopped by to check on D. Hickey and then headed back to Bldg 3245 to unload samples and vehicle.
5/7/06	18:00	James Goerdt	Departed the base.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/03/2006	**Weather/Temp**	PM-70's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/8/06
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**	NA	**Modified Date**	5/8/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/3/06		James Goerdt	Morning spent working on SWMU 17.
5/3/06	13:25	James Goerdt	Preparing to measure GW and SG levels.
5/3/06	14:00	James Goerdt	Checked in at SWMU 16. Was told it was OK to be in the area today, however Friday they would be working at Bldg 146 and therefore not accessible to us. Weekend would be OK to sample.
5/3/06	14:20	James Goerdt	From 14:20-16:30 Measured GW levels at SWMU 16 and collected SW sample at 16SWSD10.
5/3/06	16:35	James Goerdt	Returned to Bldg 3245. Left the base at 16:45.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/08/2006	**Weather/Temp**	AM-Sun low 60's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D.Hickey	**Created Date**	5/8/06
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	TP00050125			**Modified Date**	5/8/06
WBS Code #	TP00050125	**Visitors**	NA	**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/8/06	07:10	James Goerdt	Arrived at Bldg 3245. Processed weekend samples for shipping. Called Fed Ex and scheduled pick up today. Rcv'd additional MEE bottleware from Microseeps and the Cyanide sample bottles from Laucks.
5/8/06	09:50	James Goerdt	Checked in at SWMU 16. Spoke with Supervisor Wanda who said it was OK to sample wells in the area.
5/8/06	10:00	James Goerdt	Setting up on well 16MWT17. Purged and sampled 10:00-12:40. Collected MS/MSD.
5/8/06	10:50	James Goerdt	Contacted E. Sedimyer and requested 12 cases of 1 L glass amber bottles, 3 cases of 1 L plastic bottles with H2SO4, and 20 additional coolers for shipping.
5/8/06	12:50	James Goerdt	Stopped by to check on D. Hickey. Stopped by cafe for lunch and fueled vehicle. Returned to SWMU 16 and set up on well 16MWT06.
5/8/06	13:20	James Goerdt	Purged and sampled well 16MWT06 from 13:20-18:30. Water level dropped below pump intake after collecting VOC's, MEE, Nitrates, and 1 L of explosives. Well not recovering. Will complete sampling on 5/9/06.
5/8/06	18:45	James Goerdt	Returned to Bldg 3245 to drop off samples and unload vehicle. Departed base at 19:00.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/09/2006	**Weather/Temp**	AM-sun 50's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/9/06
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**	NA	**Modified Date**	5/15/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/9/06	07:15	James Goerdt	Arrived at Crane Bldg 3245. Calibrated equipment. Went over area map for SWMU 17. Started initial cleaning of field office. Awaiting on conference call from PGH office regarding SWMU 17. Never received the call. Loaded vehicles and headed to SWMU 8 to collect SW samples at the pond.
5/9/06	09:30	James Goerdt	Arrived at SWMU 08 and began collecting SW samples from the pond at locations 08SWSD022, 23, and 24, including field duplicate and MS/MSD. 08-22 collected just inside fence area near access gate (SW corner). 08-23 collected on SE side of pond. 08-24 collected next to concrete basin on west side of pond.
5/9/06	10:35	James Goerdt	Returned to well location 16MWT06 at SWMU 16 to check water level. Water level still below pump intake. No additional sample to be collected at this location this shift.
5/9/06	10:45	James Goerdt	Began purge/sample at location 12MWT20 at SWMU 12. Water level of the well is much lower than last round. Set purge rate very low (50 mL/min) and water level seems to be holding.
5/9/06	12:20	James Goerdt	Began collecting sample at location 12MWT20. Finished sampling ~ 14:00. Returned to Bldg 3245 to process samples and get them ready for shipping via Fed Ex. Cleaned up the field office.
5/9/06	18:15	James Goerdt	Dropped off samples at Fed Ex in Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/02/2006	**Weather/Temp**		**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/15/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/15/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/2/06		James Goerdt	Day spent working at SWMU 17. See Daily Activity at CTO 376.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/05/2006	**Weather/Temp**	AM PC 50's PM PC 60's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J. Goerdt;D. Hickey	**Created Date**	5/15/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	James Goerdt
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/15/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/5/06	07:10	James Goerdt	Arrived at Bldg 3245. Sync computers, completed time sheets for submittal, printed labels for a few of the previous days samples. Processed samples for shipment and called Fed Ex for pick up. Generated COCs for Laucks and Microseeps. Spoke with US Environmental regarding the wrong flow thru cell they sent with one of the Horibas. They will ship a replacement overnight. Spoke with T. Brent regarding collection of cyanide samples at SWMU 8 pond. Faxed COCs to E. Sedimyer.
5/5/06	11:00	James Goerdt	Went to SWMU 12 to measure GW level and staff gauge levels.
5/5/06	17:10	James Goerdt	Returned to Bldg 3245. Prepared vehicles for GW sampling for next day. Left Crane at 18:30

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/15/2006	**Weather/Temp**	Overcast and light rain	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	5/15/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/15/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/15/06	12:00	Terry Rojahn	Arrive at B-3245:
5/15/06	16:00	Terry Rojahn	Leave B-3245 for Sam's Club and Menards to pick up supplies.
5/15/06	16:59	Terry Rojahn	Purchase supplies at Sam's Club.
5/15/06	17:25	Terry Rojahn	Purchase supplies at Menards.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/16/2006	**Weather/Temp**	Partly sunny to rainy and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC			**Created Date**	5/16/06
TtNUS Project #	112G00041	**TtNUS Personnel**	T.Rojahn;D. Hickey	**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Subcontractor Personnel**		**Modified Date**	5/16/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/16/06	07:17	Terry Rojahn	Arrive at B-3245.
5/16/06	09:30	Terry Rojahn	Arrive @ SWMU 12 to sample surface water.
5/16/06	12:30	Terry Rojahn	Lunch
5/16/06	13:00	Terry Rojahn	Return to B-3245:
5/16/06	15:00	Terry Rojahn	Sit in on a conference call regarding soil sampling at SWMUs 9 & 13 w/ Mr Tom Brent, Mr Bill Gates, R. Basinski and R. Clark.
5/16/06	16:00	Terry Rojahn	Return to B-3245:
5/16/06	16:45	Terry Rojahn	D. hickey arrived at B-3245
5/16/06	17:15	Terry Rojahn	Arrive at SWMU 12 w/DH.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/16/06	18:40	Terry Rojahn	Return to B-3245:
5/16/06	19:00	Terry Rojahn	Leave B-3245 for Wal Mart
5/16/06	19:50	Terry Rojahn	Purchase field supplies.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/17/2006	**Weather/Temp**	Partly cloudy and 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	5/17/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/18/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/17/06	07:00	Terry Rojahn	Arive at B-3245:
5/17/06	09:40	Terry Rojahn	Arrive at SWMU 12
5/17/06	10:00	Terry Rojahn	Begin purge at monitoring well 12MWT22.
5/17/06	14:00	Terry Rojahn	Finish purge at monitoring well 12MWT22
5/17/06	14:50	Terry Rojahn	Finish collecting ground water sample 12GWT2206.
5/17/06	15:05	Terry Rojahn	Arrive at B-3245:
5/17/06	17:30	Terry Rojahn	Leave B-3245 for Federal Express.
5/17/06	18:10	Terry Rojahn	Dropped off samples on COC# 112G00041-5172006-7 at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/18/2006	**Weather/Temp**	Mostly cloundy, periods of rain and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC			**Created Date**	5/18/06
TtNUS Project #	112G00041	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Subcontractor Personnel**		**Modified Date**	5/19/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/18/06	07:15	Terry Rojahn	Arrive at B-3245:
5/18/06	08:30	Terry Rojahn	Talked to Ryan Roberts at Public Works regarding dig permits for hand auger holes - he wants both SWMUs (9 & 13) to go through the utility clearance process.
5/18/06	08:45	Terry Rojahn	Talked to R. Basinki regarding Mr Roberts comments - need to send both dig permit requests.
5/18/06	09:00	Terry Rojahn	Arrive at SWMU 12
5/18/06	09:25	Terry Rojahn	Start purge at monitoring well 12MWT03.
5/18/06	13:25	Terry Rojahn	End purge at monitoring well 12MWT03.
5/18/06	13:30	Terry Rojahn	Start collecting groud water sample 12GWT0306.
5/18/06	14:15	Terry Rojahn	Start purge at monitoring well 12MWT42.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/18/06	17:05	Terry Rojahn	End purge at monitoring well 12MWT42.
5/18/06	17:10	Terry Rojahn	Start collecting groud water sample 12GWT4206.
5/18/06	18:11	Terry Rojahn	Finish clean up at SWMU 12
5/18/06	18:20	Terry Rojahn	Arrive at B-3245:
5/18/06	18:35	Terry Rojahn	Leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/20/2006	**Weather/Temp**	Mostly sunny & 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	5/20/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/20/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/20/06	07:10	Terry Rojahn	Arrive at B-3245:
5/20/06	09:15	Terry Rojahn	Arrive at base gas station - fill flat tire on pull cart.
5/20/06	09:35	Terry Rojahn	Arrive at monitoring well 12MWT47.
5/20/06	09:50	Terry Rojahn	Begin purge at monitoring well 12MWT47.
5/20/06	10:50	Terry Rojahn	End purge at monitoring well 12MWT47.
5/20/06	10:55	Terry Rojahn	Start collecting ground water samipe 12GWT4706.
5/20/06	11:20	Terry Rojahn	Finish clean up at monitoring well 12MWT47.
5/20/06	11:55	Terry Rojahn	Arrive at B-3245:

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/20/06	12:55	Terry Rojahn	Arrive at B-2708 and check in for B-146 area (SWMU 16).
5/20/06	13:15	Terry Rojahn	Start collecting ground water samipe 16GWT1107.
5/20/06	14:30	Terry Rojahn	DRIED OUT MONITORING WELL 16MWT11 - SAVED ALL FILLED CONTAINERS FOR SAMPLE IN CASE WELL DOESN'T RECHARGE. ALSO, REPACED BLADDER PUMP WITH DEDICATED TEFLON BAILER - WATER LEVEL WAS BELOW PUMP.
5/20/06	14:40	Terry Rojahn	Return to building B-3245:
5/20/06	15:10	Terry Rojahn	Checked on DH at SWMU 12 - he got out of the utility line corridor OK.
5/20/06	15:25	Terry Rojahn	Arrive at SWMU 9 to collect water levels.
5/20/06	16:25	Terry Rojahn	Finish collecting water levels ay SWMU 9.
5/20/06	16:35	Terry Rojahn	Stop at SWMU 12 to check non DH - DH cleaning up at 12MWT11 - will meet DH back at B-3245.
5/20/06	16:42	Terry Rojahn	Return to B-3245:
5/20/06	17:25	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/19/2006	**Weather/Temp**	Mostly sunny and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	David Hickey;Terry Rojahn	**Created Date**	5/19/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125			**Modified Date**	5/20/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/19/06	07:10	Terry Rojahn	Arrive at B-3245:
5/19/06	09:15	Terry Rojahn	Arrive at SWMU 12
5/19/06	09:40	Terry Rojahn	Begin purge at monitoring well 12MWT31.
5/19/06	13:40	Terry Rojahn	End purge at monitoring well 12MWT22.
5/19/06	13:45	Terry Rojahn	Begin collecting ground water sample 12GWT3106.
5/19/06	14:30	Terry Rojahn	Finish clean up at 12MWT31
5/19/06	14:40	Terry Rojahn	Check monitoring well 12MWT30 - DRY WELL.
5/19/06	14:55	Terry Rojahn	Leave SWMU 12.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/19/06	15:10	Terry Rojahn	Arrive at B-3245:
5/19/06	17:00	Terry Rojahn	Prep to leave B-3245 for Fed. Ex.
5/19/06	17:45	Terry Rojahn	Dropped off samples on COC# 112G00041-5192006-8 at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/21/2006	**Weather/Temp**	Mostly sunny and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	5/21/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/21/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/21/06	07:15	Terry Rojahn	Arrive at B-3245:
5/21/06	08:40	Terry Rojahn	Arrive at SWMU 13 - 13SG12
5/21/06	09:20	Terry Rojahn	Meet DH ongravel road west on SWMU 13 - tree across utility corridor just north of 13MWT36 - showed DH how to access wells from sewer line corridor just north of 13SW/SD16.
5/21/06	11:20	Terry Rojahn	Break for lunch and to address this log.
5/21/06	11:50	Terry Rojahn	Return to SWMU 12 for water level and staff gauge measurements.
5/21/06	14:38	Terry Rojahn	Finished water level & staff gauge measurements - checked table to make sure all wells and SGs were measured.
5/21/06	15:00	Terry Rojahn	Meet w/DH - downed trees blocking access to 13MWT 40 & 41 cluster - DH will go back and get water levels on foot - will finish out the day collecting surface water samples at 13SW/SD19 & 20.
5/21/06	15:25	Terry Rojahn	Return to B-3245 to pick up sample containers for surface water sampling.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/21/06	15:40	Terry Rojahn	Arrive at SWMU 13 south gate to meet with DH.
5/21/06	16:40	Terry Rojahn	Collected surface water sample 13SW2006.
5/21/06	16:53	Terry Rojahn	Collected surface water sample 13SW1906.
5/21/06	17:10	Terry Rojahn	Prepare trip blank TB05210601.
5/21/06	17:20	Terry Rojahn	Begin collecting ground water sample (purged 5/20) 16GWT1107.
5/21/06	18:05	Terry Rojahn	Finish collecting ground water sample 16GWT1107 and clean up.
5/21/06	18:10	Terry Rojahn	Arrive at B-3245:
5/21/06	18:30	Terry Rojahn	Leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/22/2006	**Weather/Temp**	Sunny and 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	5/22/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	5/22/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/22/06	06:55	Terry Rojahn	Arrive at B-3245:
5/22/06	09:00	Terry Rojahn	Meet with Mr Hicks at B-2516 - trees blocking access to monitoring wells should be removed within the week.
5/22/06	09:30	Terry Rojahn	Returned to B-3245:
5/22/06	10:20	Terry Rojahn	Arrive at SWMU 13 to sample surface water - collected samples at 12SWSD11, 14, 15, 16, 22 & 30.
5/22/06	13:30	Terry Rojahn	Return to B-3245:
5/22/06	17:30	Terry Rojahn	Prep to leave B-3245 for Fed. Ex.
5/22/06	18:00	Terry Rojahn	Dropped off samples on COC#s 112G00041-5192206-9 & 10 at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/23/2006	**Weather/Temp**	Sunny and 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T.Rojahn	**Created Date**	5/23/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125			**Modified Date**	5/23/06
WBS Code #	TP00050125	**Visitors**		**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/23/06	06:55	Terry Rojahn	Arrive at B-3245:
5/23/06	08:30	Terry Rojahn	Meet with Mr Larry Hicks - took Mr Hicks to SWMU 13 and showed him fallen trees along the utility corridor.
5/23/06	09:10	Terry Rojahn	Drop off Mr. Hicks @ B-2516.
5/23/06	09:15	Terry Rojahn	Arrive at Public Works office:
5/23/06	10:05	Terry Rojahn	Begin purge at monitoring well 13MWT47.
5/23/06	11:25	Terry Rojahn	End purge at monitoring well 13MWT47.
5/23/06	12:08	Terry Rojahn	Finish clean up at monitoring well 13MWT47.
5/23/06	12:20	Terry Rojahn	Begin purge at monitoring well 13MWT13.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
5/23/06	14:00	Terry Rojahn	End purge at monitoring well 13MWT13.
5/23/06	14:50	Terry Rojahn	Return to B-3245:
5/23/06	17:30	Terry Rojahn	Prep to leave B-3245 for Fed. Ex.
5/23/06	18:00	Terry Rojahn	Dropped off samples on COC#s 112G00041-5192306-11 at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	05/31/2006	**Weather/Temp**		**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/1/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/1/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
5/31/06	15:00	Terry Rojahn	Arrive at Bloomington gate - obtain 10 day pass. Flight in was delayed almost 2Hrs.
5/31/06	15:15	Terry Rojahn	Arrive at B-3245:
5/31/06	16:45	Terry Rojahn	Leave B-3245 for Sam's Club to pick up supplies (paper towels,copy paper & drinking water).
5/31/06	17:44	Terry Rojahn	Check out at Sam's Club.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/02/2006	**Weather/Temp**	lt. rain - overcast & 60s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/2/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/2/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/2/06	07:10	Terry Rojahn	Arrive at B-3245:
6/2/06	09:15	Terry Rojahn	Checked on dig permits @ public works (Mr Ryan Roberts and Mr Steve Reddick) -up dated SWMU 9 - told above that holes would be installed via DPT to ~11' and that two additional holes were added 1 between each cluster of 2.
6/2/06	09:45	Terry Rojahn	Stopped @ Mr Mike Roach and Mr Tom Flynn's office to check on SWMU 13 activity - Mike and Tom were both gone. Checked in office down stairs - got in touch w/ Mr Dave Baker -OK to access MFB this week and next.
6/2/06	10:00	Terry Rojahn	Arrive at monitoring well 13MWT01.
6/2/06	10:15	Terry Rojahn	Start purge at monitoring well 13MWT01.
6/2/06	11:25	Terry Rojahn	Finish purge at monitoring well 13MWT01.
6/2/06	11:30	Terry Rojahn	Start collecting ground water sample 13GWT0108.
6/2/06	11:54	Terry Rojahn	Finish clean up at monitoring well 13MWT01.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/2/06	12:00	Terry Rojahn	Start purge at monitoring well 13MWT11.
6/2/06	13:10	Terry Rojahn	Finish purge at monitoring well 13MWT11.
6/2/06	13:15	Terry Rojahn	Start collecting ground water sample 13GWT1108.
6/2/06	13:38	Terry Rojahn	Finish clean up at monitoring well 13MWT11.
6/2/06	13:50	Terry Rojahn	Start collecting ground water sample 13GWT4507 purged 6-01-06.
6/2/06	15:00	Terry Rojahn	Finish clean up at monitoring well 13MWT45.
6/2/06	15:12	Terry Rojahn	Return to B-3245:
6/2/06	16:55	Terry Rojahn	Prep to leave B-3245 for Fed Ex.
6/2/06	17:30	Terry Rojahn	Drop off samples for shipment at Fed Ex.
6/2/06	17:43	Terry Rojahn	Purchase supplies at Kroger to decon soil core sampler.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/01/2006	**Weather/Temp**	Overcast & 70s.	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/1/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/1/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/1/06	07:15	Terry Rojahn	Arrive at B-3245: Complete 5/31/06 daily log.
6/1/06	08:45	Terry Rojahn	Arrive at monitoring well 13MWT40.
6/1/06	09:00	Terry Rojahn	Start purge at monitoring well 13MWT40.
6/1/06	10:20	Terry Rojahn	Finish purge at monitoring well 13MWT40.
6/1/06	10:25	Terry Rojahn	Start collecting ground water sample 13GWT4007.
6/1/06	11:15	Terry Rojahn	Finish clean up at monitoring well 13MWT40.
6/1/06	11:30	Terry Rojahn	Lunch
6/1/06	11:50	Terry Rojahn	Stopped @ Mr Mike Roach and Mr Tom Flynn's office to check on SWMU 13 activity - Mike and Tom were both gone. Will check again later.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/1/06	12:00	Terry Rojahn	Arrive at monitoring well 13MWT21.
6/1/06	12:15	Terry Rojahn	Start purge at monitoring well 13MWT21.
6/1/06	13:15	Terry Rojahn	End purge at monitoring well 13MWT21.
6/1/06	13:20	Terry Rojahn	Start collecting ground water sample 13GWT2108.
6/1/06	13:58	Terry Rojahn	Finish clean up at monitoring well 13MWT21.
6/1/06	14:10	Terry Rojahn	Start purge at monitoring well 13MWT45.
6/1/06	16:05	Terry Rojahn	End purge at monitoring well 13MWT45.
6/1/06	16:24	Terry Rojahn	Finish clean up at monitoring well 13MWT45.
6/1/06	16:34	Terry Rojahn	Arrive at B-3245:Ret
6/1/06	17:25	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/03/2006	**Weather/Temp**	Mostly sunny & 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/3/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/3/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/3/06	07:15	Terry Rojahn	Arrive at B-3245:
6/3/06	08:20	Terry Rojahn	Arrive at monitoring well 13MWT09.
6/3/06	08:45	Terry Rojahn	Start purge at monitoring well 13MWT09.
6/3/06	09:55	Terry Rojahn	End purge at monitoring well 13MWT09.
6/3/06	10:00	Terry Rojahn	Start collecting ground water sample 13GWT0909 (MS/MSD).
6/3/06	10:55	Terry Rojahn	Start purge at monitoring well 13MWT28.
6/3/06	13:41	Terry Rojahn	End purge at monitoring well 13MWT28 will sample 6/04/06.
6/3/06	14:00	Terry Rojahn	Return to B-32435

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/3/06	14:45	Terry Rojahn	Arrive at monitoring well 13MWT51.
6/3/06	15:05	Terry Rojahn	Start purge at monitoring well 13MWT51.
6/3/06	15:45	Terry Rojahn	End purge at monitoring well 13MWT51.
6/3/06	15:50	Terry Rojahn	Start collecting ground water sample 13GWT5106.
6/3/06	16:47	Terry Rojahn	Finish clean up at monitoring well 13MWT51.
6/3/06	17:00	Terry Rojahn	Start purge at monitoring well 13MWT34.
6/3/06	18:30	Terry Rojahn	End purge at monitoring well 13MWT34.
6/3/06	18:35	Terry Rojahn	Start collecting ground water sample 13GWT3407 & FD06030601.
6/3/06	19:21	Terry Rojahn	Finish clean up at monitoring well 13MWT34.
6/3/06	19:30	Terry Rojahn	Arrive at B-3245:
6/3/06	19:50	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/04/2006	**Weather/Temp**	Mostly sunny and 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	T. Rojahn	**Created Date**	6/4/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/5/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/4/06	07:10	Terry Rojahn	Arrive @ B-3245:
6/4/06	08:10	Terry Rojahn	Arrive at monitoring well 13MWT31.
6/4/06	08:25	Terry Rojahn	Begin purging monitoring well 13MWT31.
6/4/06	09:35	Terry Rojahn	End purging monitoring well 13MWT31.
6/4/06	09:40	Terry Rojahn	Begin collecting ground water sample 13GWT3107.
6/4/06	10:19	Terry Rojahn	Finish clean up at monitoring well 13MWT31.
6/4/06	10:30	Terry Rojahn	Begin collecting ground water sample 13GWT3107 (purged 6/03/06).
6/4/06	11:00	Terry Rojahn	Finish clean up at monitoring well 13MWT28.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/4/06	11:25	Terry Rojahn	Begin purging monitoring well 13MWT17.
6/4/06	12:25	Terry Rojahn	End purging monitoring well 13MWT17.
6/4/06	12:30	Terry Rojahn	Begin collecting ground water sample 13GWT1708.
6/4/06	12:55	Terry Rojahn	Finish clean up at monitoring well 13MWT17.
6/4/06	13:10	Terry Rojahn	Begin purging monitoring well 13MWT15.
6/4/06	15:10	Terry Rojahn	End purging monitoring well 13MWT15.
6/4/06	15:28	Terry Rojahn	Begin collecting ground water sample 13GWT1508.
6/4/06	16:05	Terry Rojahn	Finish clean up at monitoring well 13MWT15.
6/4/06	16:15	Terry Rojahn	Returned to B-3245:
6/4/06	17:30	Terry Rojahn	Prep to leave B-3245 for Bloomington. SAMPLPE SUMMARY FOR THIS DATE - FINISH GROUND WATER SAAMPLING AT SWMU 12 WITH THE COLLECTION OF GROUND WATER SAMPLES AT MONITORING WELLS 13MWT25, 17, 28 & 31.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	06/05/2006	**Weather/Temp**	Mostly sunny & 70s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D. Hickey;T. Rojahn	**Created Date**	6/5/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	Terry Rojahn
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/5/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/5/06	07:00	Terry Rojahn	Arrive @ B-3245:
6/5/06	07:50	Terry Rojahn	Arrive @ Public Works - check on MFB dig permit. Talked to Mr Ryan Roberts - he thinks that all utilities been cleared, but a few signatures are needed on the permit - said to stop back at lunch time and the permit should been ready.
6/5/06	08:20	Terry Rojahn	Return to B-32435:
6/5/06	11:45	Terry Rojahn	Lunch
6/5/06	12:15	Terry Rojahn	Stop at Public Works - no one around - water wasn't signed off on as of yet.
6/5/06	12:35	Terry Rojahn	Return to B-3245:
6/5/06	13:55	Terry Rojahn	Pick up dig permit at Public Works - cancel permit request for SWMU 9.
6/5/06	14:20	Terry Rojahn	Arrive at SWMU 13: Collect sediment samples at locations 13SD46, 48 through 50 and 54. Sediment location 13SD47 was a catch basin/culvert w/ a concrete bottom - voll of any sediment material. Also, collect surface soil sample at location 13SB76 inside inclosed transport corridor w/ concrete floor.

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Daily Activity

Date	Time	Author	Notes
6/5/06	15:45	Terry Rojahn	Return to B-3245:
6/5/06	17:30	Terry Rojahn	Leave B-3245 for Fed Ex.
6/5/06	18:05	Terry Rojahn	Drop off rental equipment and ground water samples for shipment on the above AB#s at Fed Ex.

- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

SWMUs 12 (Round 6) and 13/16 (Round 8) MNA Routine Sampling (May 2006) - CRANE NSWC

Project Information

Activity Date	6/6/06	**Weather/Temp**	Sunny, Humid & 80s	**Created By**	Terry Rojahn
Facility Name	CRANE NSWC	**TtNUS Personnel**	D.Hickey;T.Rojahn	**Created Date**	6/6/06
TtNUS Project #	112G00041	**Subcontractor Personnel**		**Modified By**	John Wright
Task/Contract #	TP00050125	**Visitors**		**Modified Date**	6/10/06
WBS Code #	TP00050125			**Printed By**	James Goerdt
Client	SouthDiv			**Printed Date**	7/19/06

Daily Activity

Date	Time	Author	Notes
6/6/06	07:00	Terry Rojahn	Arrive at B-3245
6/6/06	08:30	Terry Rojahn	Arrive at SWMU 13 - collected sediment samples at 13SD51 through 53 and soil samples at boring locations 13SB73, 75 and 77.
6/6/06	11:55	Terry Rojahn	Return to B-3245:
6/6/06	12:10	Terry Rojahn	Lunch at cafe
6/6/06	12:35	Terry Rojahn	Return to B-3245:
6/6/06	16:10	Terry Rojahn	Return to SWMU 13: Collected soil samples at boring locations 13SB74, and 78 through 84.
6/6/06	18:45	Terry Rojahn	Return to B-3245:
6/6/06	19:45	Terry Rojahn	Prep to leave B-3245 for Bloomington.

- End of Report -

ROUND 9

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/4/07	**Weather/Temp**	NA	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	J Goerdt (JG)	**Created Date**	4/4/07
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Visitors**	NA	**Printed By**	James Goerdt
Client		**Status**	Complete	**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
4/4/07	11:48	James Goerdt	**NOTE: Activities are occurring simultaneously at SWMUs 12, 13, and 16 during the course of these Rounds of MNA sampling. Data gaps in the SWMU 13 daily activity reports indicates activity at a different SWMU. All equipment calibration logs for all field activities at SWMUs 12, 13, and 16 will be located under SWMU 12.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/10/07	**Weather/Temp**	AM: PC upper 20's / PM: PC upper 50's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	JG = Jim Goerdt;WP = Walt Pryor	**Created Date**	4/10/07
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	CTO 0377	**Visitors**	NA	**Modified Date**	5/11/07
WBS Code #	TP0050125	**Status**	Complete	**Printed By**	James Goerdt
Client				**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
4/10/07	06:45	James Goerdt	JG and WP arrived at Building 3245. Calibrated PIDs and checked bottleware. Completed Health & Safety Meeting. Completed Med data sheets and OSHA requirements.
4/10/07	13:20	James Goerdt	JG and WP measured water levels at SWMU 13 GW monitoring wells. Unable to open wells 03, 08, 10, 11, and 21. The pvc had somehow shifted upwards and the well casing lid could not be opened. Plan is to try and cut back the pvc and record new riser height. Finished wells at 15:30.
4/10/07	17:30	James Goerdt	Left Crane.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/16/07	**Weather/Temp**	AM: Sun mid 40's / PM Sun upper 50's	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	James Goerdt	**Created Date**	4/16/07
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	CTO 0377	**Visitors**	NA	**Modified Date**	5/11/07
WBS Code #	TP0050125	**Status**	Complete	**Printed By**	James Goerdt
Client				**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
4/16/07	09:20	James Goerdt	Arrived at SWMU 13 to begin measuring staff gauge locations.
4/16/07	12:17	James Goerdt	Completed staff gauge meaurements at SWMU 13. Heading to cafeteria for quick lunch then on to SWMU 16 for staff gauge measurements.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/17/07	**Weather/Temp**	AM: Sun low 40's /	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	JG = James Goerdt;WP = Walt Pryor;DH = Dave Hickey	**Created Date**	4/17/07
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Subcontractor Personnel**	NA	**Printed By**	James Goerdt
Client		**Visitors**	NA	**Printed Date**	5/14/07
		Status	Complete		

Daily Activity

Date	Time	Author	Notes
4/17/07	11:45	James Goerdt	DH and JG returned to Bldg 3245 to process surface water samples. Indiana oxygen picked up 6 empty air tanks and dropped off 4 full tanks.
4/17/07	14:50	James Goerdt	JG and DH return to Bldg 3245 to process samples. All SW samples were collected from SWMU 13. JG to clean out vehicle and prepare to demob on the following day.
4/17/07	18:15	James Goerdt	Everyone left NSWC Crane.
4/17/07	19:50	James Goerdt	JG arrives at car wash to clean vehicle of mud prior to returning to rental agency on 4/18/07.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/25/07	**Weather/Temp**	OVERCAST WITH PERIODS OF RAIN SHOWERS, SOME HEAVY (60% chance), UPPER 60s TO LOWER 70s	**Created By**	James Goerdt
Facility Name	CRANE NSWC			**Created Date**	4/25/07
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**TtNUS Personnel**	Dave Hickey (DH);Walt Pryor (WP)	**Printed By**	James Goerdt
Client				**Printed Date**	5/14/07
		Subcontractor Personnel			
		Visitors			
		Status	Complete		

Daily Activity

Date	Time	Author	Notes
4/25/07	07:20	James Goerdt	Calibrate instruments, check bottleware & equipment, prepare to resume GW sampling. WP sampling at SWMU 16, DH sampling at SWMU 13.
4/25/07	11:00	James Goerdt	Talked with WP, requested that he be sure to sync his Toughbook daily as would I, per Jim Goerdt's request.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/18/07	**Weather/Temp**	NA	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	JG = James Goerdt;WP = Walt Pryor;DH = Dave Hickey	**Created Date**	4/27/07
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Subcontractor Personnel**	NA	**Printed By**	James Goerdt
Client		**Visitors**	NA	**Printed Date**	5/14/07
		Status	Complete		

Daily Activity

Date	Time	Author	Notes
4/18/07	00:00	James Goerdt	JG and WP demob from NSWC Crane back to respective office locations. DH remains on-site to continue with sampling.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/20/07	**Weather/Temp**	NA	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	DH = Dave Hickey	**Created Date**	4/27/07
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Visitors**	NA	**Printed By**	James Goerdt
Client		**Status**	Complete	**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
4/20/07	00:00	James Goerdt	DH demobs from NSWC Crane.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/23/07	**Weather/Temp**	NA	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	WP = Walt Pryor;DH = Dave Hickey	**Created Date**	4/27/07
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 0377	**Subcontractor Personnel**	NA	**Modified Date**	5/11/07
WBS Code #	TP0050125	**Visitors**	NA	**Printed By**	James Goerdt
Client		**Status**	Complete	**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
4/23/07	00:00	James Goerdt	DH and WP return to NSWC Crane for start of 10-day shift.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	5/3/07	**Weather/Temp**	AM: Cloudy 60	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	JG = James Goerdt	**Created Date**	5/3/07
TtNUS Project #	112G00041	**Subcontractor Personnel**	NA	**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Visitors**	NA	**Printed By**	James Goerdt
Client		**Status**	Complete	**Printed Date**	5/14/07

Daily Activity

Date	Time	Author	Notes
5/3/07	08:00	James Goerdt	JG on-site and began prep of shipping items back to rental companies and enroute to SWMU 8.
5/3/07	10:00	James Goerdt	JG stopped to fuel vehicle on base, and then returned to Bldg 3245 to continue with updating daily activity logs, preparing samples and equipment for shipping.
5/3/07	18:00	James Goerdt	End of shift. All sampling complete for Round 9.

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- End of Report -

Tetra Tech NUS, Inc.

DAILY ACTIVITY LOG

MNA Sampling - SWMU 13 - CRANE NSWC

Project Information

Activity Date	4/30/07	**Weather/Temp**	NA	**Created By**	James Goerdt
Facility Name	CRANE NSWC	**TtNUS Personnel**	JG = James Goerdt;WP = Walt Pryor;DH = Dave Hickey	**Created Date**	5/3/07
TtNUS Project #	112G00041			**Modified By**	James Goerdt
Task/Contract #	CTO 0377			**Modified Date**	5/11/07
WBS Code #	TP0050125	**Subcontractor Personnel**	NA	**Printed By**	James Goerdt
Client		**Visitors**	NA	**Printed Date**	5/14/07
		Status	Complete		

Daily Activity

Date	Time	Author	Notes
4/30/07	13:00	James Goerdt	AM travel to site for JG. JG arrives on-site at Crane. Checked in at Bldg 3245, and doors to field office locked. Headed to SWMU 13 to look for DH and/or WP.
4/30/07	13:45	James Goerdt	JG met up with DH. WP on RR tracks at SWMU 12 sampling well. DH returning to Bldg 3245 to start processing samples for shipment while JG enroute to check on things at SWMU 8.
			JG arrives back at Bldg 3245. WP and DH on-site prepping samples. JG informed that syncing of toughbooks is taking a very long time with no progress. Decision made that DH and WP would generate COCs

4/30/07	16:20	James Goerdt	for each individual toughbook. Having additional trouble getting WP's toughbook to print COC. Running out of time to make the 19:00 cut off time at Fed Ex in Bloomington, so since the samples are already on heavy ice the decision was made to hold samples and contact Fed Ex in the morning and have them pick up the samples.
4/30/07	18:00	James Goerdt	JG, WP, and DH leave Crane.

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- End of Report -

APPENDIX C

SWMU 13

HEALTH AND SAFETY DOCUMENTATION, ROUNDS 1-9

ROUNDS 1, 2, AND 3

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
ROBERT BALKOVEC Robert Balkovec	3/24/03	11/1992	5/24/02	~~5/24/02~~	9/2001
MATT COCHRAN [illegible]	3/24/03	5/1983	10/02	10/02	8/02
Chad Mahaffy Chad Mahaffy	3/24/03	10/02	12/02	12/02	8/29/02
Son Kate [illegible]	3/24/03	6/1992	1/03	—	11/23/02
TONY MAYRER [illegible]	3-24-03	6/2000	12/02 ~~1/03~~	12/02	3/28/02
Dave Schramm Dave Schramm	3-24-03	8/90	1/03	12/02	11/23/02
Tim Bellinger [illegible]	3-24-03	9/87	12/02	12/02	11/20/02
TERRY ROSACHU [illegible]	3-24-03	10/85	1/03	1/03	11/15/02
Jeff S. Akers Jeff S. Akers	3-25-03	9-87	12-02	12-02	11-23-02
DENNIS A. SINK Dennis Sink	4-23-03	1-90	12-02	—	

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets.
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
MATT COOPER Matt Cooper	4/8/03	NA	SURVEYOR	→	→
Corey Allen Corey J. Allen	4/8/03	NA	SURVEYOR	→	→

WORKCARE™
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RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech NUS.

Employee Name: TERRY ROJAHN

Office Location: PITTSBURGH

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134/

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: Anna Jones M.D.

Date: 11/10/02

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040.

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Bob Balkovec

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 24, 2002

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

HEALTH STATUS MEDICAL REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Balkovec, Robert	**COMPANY:**	TT/NUS
SSN:	181-66-7235	**POSITION:**	Geologist
DATE OF EXAM:	07/15/2002	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	07/15/2003	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, MD / Peter H. Wald, MD Date: 07/22/02

Signature: _____

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

HEALTH STATUS MEDICAL REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Cochran, Matt	**COMPANY:**	TT/NUS
SSN:	174-54-3686	**POSITION:**	Project Manager
DATE OF EXAM:	03/17/00	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	03/17/02	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, MD / Peter H. Wald, MD Date: 03/21/00

Signature: [illegible] MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TR

THIS CERTI

Matt

successfully completed an 8-hou on

OSHA

GENERAL SI EFRES ER
D SUPERVISO R TRAINING

prepared and ed by
Tetra Tech c.
Pittsburgh, va a

October 1 2002

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

G. Cochran

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

presented and conducted by the

NUS Corporation, Pittsburgh, Pennsylvania

May 9 thru 13, 1983

Date of Award

Gary J. [illegible]
Manager, Health & Safety

Dennis Escher, P.E.
General Manager

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11/23/02

To: _____

From: _____

Re: David Schrecengost

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON _____ I HAVE REVIEWED THEIR MEDICAL HISTORY, THEIR CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Ken N. Krum
PHYSICIAN SIGNATURE

F:\Forms\BOWSERRECER703-00.doc

Certificate of Training

This Document Certifies That

DAVID SCHRECENGOST

Has Successfully Completed The OSHA Required 40 Hour

HEALTH AND SAFETY TRAINING

Complying with OSHA STANDARD 29CFR 1910.120

INITIAL TRAINING

B. F. Stuart CSP

Course Director

EPT inc.

Environmental Protection Training, Inc.

AUGUST 30, 1990

Date of Completion

001150

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

DAVE SCHRECENGOST

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 003

SCOTT BERNDT, CHMM — DATE 23 Dec 02

OCCUPATIONAL HAZARD MANAGEMENT
14888 DR. 205
FINDLAY, OHIO 45840
419-427-0256

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11/23/02

To: _____

From: _____

Re: Jon Reifer

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON _____. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\Forms\BOWSERRECER703-90.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

JON KEIFER

HAS SUCCESSFULLY COMPLETED

HAZWOPER

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

16TH DAY OF JANUARY 2003

TRAINING CERTIFICATE NO.

16JAN03 D13

SCOTT BERNDT, CHMM

DATE

OCCUPATIONAL HAZARD MANAGEMENT
14695 SR. 235
FINDLAY, OHIO 45840

Medchem Safety Corporation, Inc.
of Cincinnati, Ohio

certifies that

Jon Keifer

Has Completed

the OSHA 1910.120 Hazardous Waste Operations and
Emergency Response Forty (40) Hour Course
This 8th Day of June, 1992.

Carl T. Jones, President
Medchem Safety Corporation, Inc.
P.O. Box 16793
Cincinnati, Ohio 45246

Stephen C. Wilson, Vice President
Medchem Safety Corporation, Inc.
5082 Worley Road
Troy, Ohio 45373

© CACS 480-1/2 LITHO IN U.S.A.

12-27-2001

LAST NAME KEIFER
FIRST NAME JON

FIT TEST REPORT

Fit test information

ID NUMBER 260-52-9158
LAST NAME KEIFER
FIRST NAME JON
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/27/2001
TEST TIME 10:05
DUE DATE 12/27/2002

PORTACOUNT S/N 15251
N95 COMPANION N

RESPIRATOR
MANUFACTURER [illegible]
MODEL 4000 SERIES
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. [illegible]

PROTOCOL DEFAULT 30CFR:010.134
PASS LEVEL [illegible]

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	17400	[illegible]
DEEP BREATHING	60	[illegible]	[illegible]
[illegible]	60	[illegible]	[illegible]
[illegible]	60	34/30	[illegible]
TALKING	60	[illegible]	[illegible]
GRIMACE	30	[illegible]	[illegible]
BEND AND TOUCH TOES	60	[illegible]	[illegible]
NORMAL BREATHING	60	[illegible]	[illegible]

OVERALL FF [illegible]

FIT TEST OPERATOR [signature] DATE 12-27-01
DIANE SNYDER

[signature] DATE 12-27-01
JON KEIFER

MedWork
Occupational Health Care
725 S. Ludlow Street. Dayton. Ohio 45402

Date: 11-23-02

To: _____

From: _____

Re: Jeff Ohers

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON _____. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Kenneth Shuns
PHYSICIAN SIGNATURE

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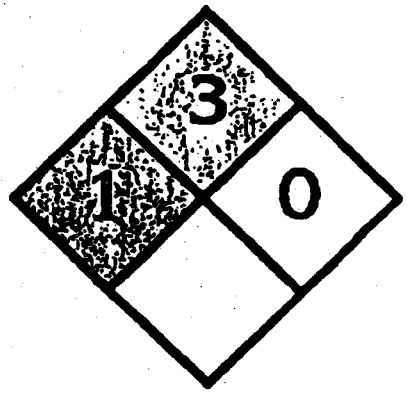


Certificate of Completion

This Certifies That

JEFF AKERS

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course
in accordance with 29CFR1910.120

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

August 31-September 3, 1987
Date

Pete Boldt
Training Director

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES
THAT

JEFF S. AKERS

HAS SUCCESSFULLY COMPLETED

HAZWOPER
SUPERVISOR
&
ANNUAL REFRESHER TRAINING
TRAINING
IN ACCORDANCE WITH
29 CFR 1910.120
ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.
23DEC02 005

SCOTT BERNDT, CHMM — DATE 23 Dec. 02

OCCUPATIONAL HAZARD MANAGEMENT
14555 SR. 203
FINDLAY, OHIO 45840
419-427-0255

[illegible]

[illegible]

[illegible]

[illegible]

ID NUMBER [illegible]
LAST NAME AKERS
FIRST NAME JEFF
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE [illegible]
TEST TIME [illegible]
DUE DATE [illegible]

PORTACOUNT S/N [illegible]
No. OF SP NOW [illegible]

RESPIRATOR
MANUFACTURER [illegible]
MODEL [illegible]
MASK STYLE FULL FACE
MASK SIZE MEDIUM/LARGE
APPROVAL
[illegible]

PROTOCOL [illegible]
FIT LEVEL [illegible]

EXERCISE	SENSITIVITY (MAX)	SITUATION	PASS
NORMAL BREATHING	[illegible]	[illegible]	[illegible]
DEEP BREATHING	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]
TALKING	[illegible]	[illegible]	
GRIMACE	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]
NORMAL BREATHING	[illegible]	[illegible]	

[illegible]

[illegible]

[illegible]

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 8/20/02

To:

From:

Re: Chuck Mehaffy

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 8-20-02. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Kenneth Hruza MD

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

CHAD MAHAFFY

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 021

SCOTT BERNDT, CHMM — DATE: 23 Dec 02

OCCUPATIONAL HAZARD MANAGEMENT
14695 SR. 309
FINDLAY, OHIO 45840
419-427-5326

OCCUPATIONAL HAZARD MANAGEMENT

SCOTT BERNDT, CHMM
14433 COUNTY ROAD 205
FINDLAY, OHIO 45840

CERTIFIES
THAT

CHAD R. MAHAFFY

HAS
SUCCESSFULLY
COMPLETED

40 HOUR SITE WORKER & OPERATIONS TRAINING

IN ACCORDANCE WITH
29CFR1910.120
CERTIFICATE NO: 020CT02 02

ON THE

2ND DAY OF OCTOBER 2002

SCOTT BERNDT, CHMM — DATE

[illegible]

[illegible]
FIRST NAME [illegible]

[illegible]
[illegible]

ID NUMBER	[illegible]		
LAST NAME	MAHAFFY	CUSTOM1	
FIRST NAME	CHAC	CUSTOM2	
COMPANY	BOWSER MORNER	CUSTOM3	
LOCATION	DAYTON	CUSTOM4	
NOTE			

TEST DATE	[illegible]	CONTACOUNT S/N	[illegible]
TEST TIME	11:[illegible]	PFS COMPANION	N
DUE DATE	[illegible]		

RESPIRATOR		PROTOCOL	OSHA [illegible]
MANUFACTURER	SURVIVAIR	PASS LEVEL	[illegible]
MODEL	SIGMA		
MASK STYLE	FULL FACE		
MASK SIZE	MEDIUM/LARGE		
APPROVAL			
EFF. < 25% N			

EXERCISE	QUALITATIVE [illegible]	TO [illegible]	PASS
NORMAL BREATHING	[illegible]	[illegible]	[illegible]
DEEP BREATHING	[illegible]	[illegible]	[illegible]
HEAD SIDE TO SIDE	[illegible]	[illegible]	[illegible]
HEAD UP AND DOWN	[illegible]	[illegible]	[illegible]
TALKING	[illegible]	[illegible]	
GRIMACE	[illegible]	[illegible]	[illegible]
BEND AND TOUCH TOES	[illegible]	[illegible]	[illegible]
NORMAL BREATHING	[illegible]	[illegible]	[illegible]

OVERALL [illegible] [illegible]

FIT TEST OPERATOR [illegible] DATE [illegible]
PRINT NAME

NAME [illegible]
[illegible]

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: _____

To: _____

From: _____

Re: Anthony Mayer

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 3-28-02. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF ~~CHEST X-RAY~~, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

TONY MAYRER

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 001

SCOTT BERNOT, CHMM

23 Dec 02

DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 SR. 235
FINDLAY, OHIO 45840
419-427-0358

Certificate of Completion

presented to

Anthony G. Mayrer

has completed

Hazardous Waste Operations and Emergency Response

40 Hour OSHA 29CFR 1910.120

Sinclair Community College

Presented by Franklin E. Clay
Chair, Safety Risk Management

Given this 16th day of June 2000

Instructor

Certificate No.: SCC-HAZ-250

[illegible] LAST NAME [illegible]
FIRST NAME [illegible]

[illegible]

[illegible]

ID NUMBER	[illegible]		
LAST NAME	[illegible]	CUSTOM1	
FIRST NAME	[illegible]	CUSTOM2	
COMPANY	BOWSER-MORNER	CUSTOM3	
LOCATION	[illegible]	CUSTOM4	
NOTE			

TEST DATE	[illegible]	PORTACOUNT S/N	[illegible]
TEST TIME	[illegible]	506 COMPANION	N
DUE DATE	[illegible]		

RESPIRATOR		PROTOCOL	OSHA [illegible]
MANUFACTURER	[illegible]	PASS LEVEL	1.00
MODEL	[illegible]		
MASK STYLE	FULL FACE		
MASK SIZE	[illegible]		
APPROVAL			
[illegible]	N		

EXERCISE	[illegible]	[illegible]	[illegible]
NORMAL BREATHING	30	[illegible]	[illegible]
DEEP BREATHING	30	[illegible]	[illegible]
HEAD SIDE TO SIDE	30	[illegible]	
HEAD UP AND DOWN	30	[illegible]	[illegible]
TALKING	30	[illegible]	[illegible]
GRIMACE	15	[illegible]	[illegible]
BEND AND TOUCH TOES	30	[illegible]	[illegible]
NORMAL BREATHING	30	[illegible]	

[illegible] [illegible] [illegible]

TESTED BY [illegible]
[illegible] HOPSTMAN

NAME [illegible]
[illegible]

MedWork
Occupational Health Care
725 S. Ludlow Street, Dayton, Ohio 45402

Date: _____

To: _____

From: _____

Re: Tim Boehner

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 11/22/02. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Kenneth Krause
PHYSICIAN SIGNATURE

F:\Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

TIM BOEHMER

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 006

SCOTT BERNDT, CHMM — DATE 23 Dec 02

OCCUPATIONAL HAZARD MANAGEMENT
14555 DR. 508
FINDLAY, OHIO 45840
419-427-0589

Medchem Safety Corporation, Inc.
of Cincinnati, Ohio

certifies that

Tim Boehmer

Has Completed
the OSHA 1910.120 Hazardous Waste Operations and
Emergency Response Eight (8) Hour Supervisors Course
This 5th Day of April, 1991.

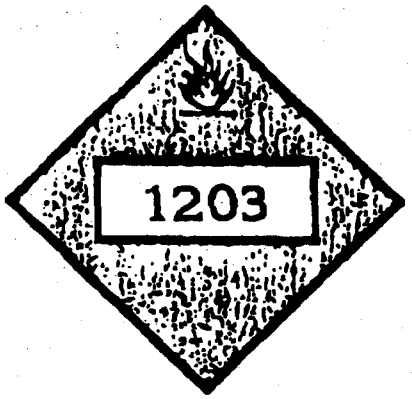
Carl T. Jones

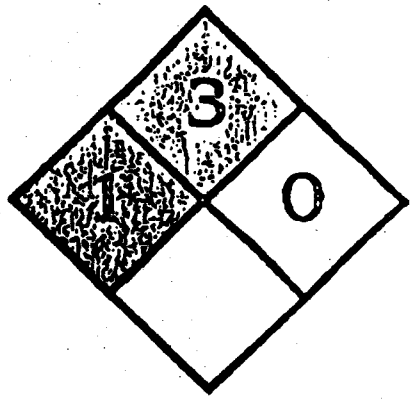
Carl T. Jones, President
Medchem Safety Corporation, Inc.
P.O. Box 46793
Cincinnati, Ohio 45246

S M C INC

Stephen C. Wilson

Stephen C. Wilson, Vice President
Medchem Safety Corporation, Inc.
P.O. Box 46793
Cincinnati, Ohio 45246





Certificate of Completion

This Certifies That

TIM BOEHMER

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course
in accordance with 29CFR1910.120

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

August 31-September 3, 1987
Date

Pete Bolek
Training Director

Certificate of Completion

This is to certify that

TIM BOEHMER

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000002
Certificate Identification Number

Henry M. Butcher, REM, CEA

The State of Ohio
Ohio Bureau of Workers' Compensation
Division of Safety and Hygiene

TIM BOEHMER

has satisfactorily completed 6 hours

Teaching the Safe Operations of Powered Industrial Trucks

of

Sponsored By
BWC - Southwest Regional Office

Superintendent

April 11, 1995
Date

Bob Heater & Mona Weiss
Instructor

BWC-1580 (3/90)
CERT-6

DUPONT

Certificate of Completion

this is to certify that

Tim Boehmer

has successfully completed the

DuPont Corporate Remediation Group
Training Program on

Safety Audit Skills

on this 30th day of November 1998

Lisa S. Edwin

Lisa S. Edwin, CSP

CERTIFICATE OF ACHIEVEMENT

This certificate has been awarded by the Ohio Chamber of Commerce and the Manufacturers' Education Council to

TIM BOEHMER

For a demonstrated commitment to sound safety management practices.

Certified for the successful completion of all requirements in the OSHA Recordkeeping course conducted April 29, 1998 in Columbus, Ohio.

Andrew E. Doehrel

Andrew E. Doehrel, President
Ohio Chamber of Commerce, Columbus

Mark W. Uher

Mark W. Uher, President
Manufacturers' Education Council, Columbus

[illegible] LAST NAME [illegible]
FIRST NAME [illegible]

FIT TEST REPORT

[illegible]

ID NUMBER [illegible]
LAST NAME [illegible] CUSTOM1
FIRST NAME [illegible] CUSTOM2
COMPANY BOWSER MORNER CUSTOM3
LOCATION DAYTON CUSTOM4
NOTE

TEST DATE [illegible] PORTACOUNT S/N [illegible]
TEST TIME [illegible] ABS COMPANION N
DUE DATE 12/03/2003

RESPIRATOR PROTOCOL OSHA [illegible]
MANUFACTURER SUPERVAP PASS LEVEL [illegible]
MODEL SIGMA
MASK STYLE FULL FACE
MASK SIZE MEDIUM/[illegible]
APPROVAL
REF - [illegible] N

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	[illegible]	[illegible]	
DEEP BREATHING	[illegible]	[illegible]	[illegible]
HEAD SIDE TO SIDE	[illegible]	[illegible]	
HEAD UP AND DOWN	[illegible]	[illegible]	
TALKING	[illegible]	[illegible]	[illegible]
GRIMACE	[illegible]	[illegible]	[illegible]
BEND AND TOUCH TOES	[illegible]	[illegible]	
NORMAL BREATHING	[illegible]	[illegible]	[illegible]

OVERALL FF [illegible]

FIT TEST PERFORMED BY [illegible] DATE [illegible]
ERIC HORSTMAN

PASS [illegible] DATE [illegible]
[illegible] [illegible]

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

DENNIS A. SINK

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 002

Scott Bernot 23 Dec 02

SCOTT BERNOT, CHMM DATE

OCCUPATIONAL HAZARD MANAGEMENT
14888 SR. 309
FINDLAY, OHIO 45840
419-427-0388

Certificate of Completion

This Certifies That

DENNIS SINK

has completed the course

"FORTY HOUR PERSONNEL PROTECTION & SAFETY COURSE"

(In compliance with Federal Regulation 29 CFR 1910.120)

Presented by

SPRINGFIELD SAFETY COUNCIL 50 years

Providing you a . . . to cost containment

January 29, 1990
Date

J.C. Schaffner
Director Marketing Training

TETRA TECH NUS, INC.
661 Andersen Drive ▪ Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 ▪ FAX (412) 921-4040 ▪ www.tetratech.com

PITT-03-3-038

March 21, 2003

Project Number 9060

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Number [redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888 The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include DPT; drilling; and surface and subsurface soils, sediments, ground water, and surface water sampling at the NSWC Crane site in Indiana. This is scheduled to be conducted from March 24-May 31, 2003. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Mine Fill A, Mine Fill B, Cast High Explosive Fill/Incinerator, Pyrotechnic Test Area dated October 2002 prepared under CTO 0166. These individuals are as follows:

Bob Balkovec
Matt Cochran
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Wroblewski
M. Perry
K. Henn
R. Basinski
T. Johnston

APPENDIX F.2
SWMU 13
HEALTH AND SAFETY DOCUMENTATION
ROUND 2

Project-Level H&S Recordkeeping

On-site H&S training (topics, participants, dates)...See Section F

Air monitoring instrument calibration...See Section C (C.11.1, C.11.2 & C.11.3)

Monitoring instrument results including background levels, breathing zone readings, personnel exposure records, etc. (air monitoring, noise monitoring, other H&S quantitative measurements)...See Section B (B.1.1, B.1.2 & B.1.3)

H&S training and medical certificates/documents for site personnel... See Section F

Site specific written program documentation (e.g., Hazard communication)...NA

H&S Site clearance letters... See Section F

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
DENNIS A. SINK	10-21-03	1-90?	12-02		3-03
Tim BOEHMER	10-21-03	1-90	12-02	?	11-02
Todd Wollenhaupt	10-21-03	1-90	12-02		12-02
Jon Keifer	10-21-03	3-92	12-02		12-02
FRED CURAMSEK	10-21-03	7-91	5-03	5-03	12-03
FRANK WUORWYCH	10-21-03	5-97	5-03	2-98	5-03
MATT COCHRAN	10-21-03	5-03	10-03		
Terry Rosahn	10-21-03	10-85	1-03	1-03	11-02
Nick Post	10-24-03	4-15-94	12-23-02	12-23-02	10-10-03
Josh Deer	11-3-03	4-02	9-03		8-03

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
JAMES R WALSH	11-3-03	5/87	12/23/02		2/17/03
MAYNARD LAHTI	11-4-03	10/90	12/23/02		10/6/03
SCOTT GEYER	11/17/03	3/8/02	3/21/03		3/7/02
JIM GOERDT	11/17/03	8/96	10/20/03		11/11/03

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech NUS.

Employee Name: TERRY ROJAHN

Office Location: PITTSBURGH

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134/

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: Anna Young M.D.

Date: 11/10/02

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040.

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

HEALTH STATUS MEDICAL REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Wudkwych, Frank	**COMPANY:**	TT/NUS
SSN:	181-64-7566	**POSITION:**	Geologist
DATE OF EXAM:	05/01/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	05/01/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 05/06/03

Signature: Peter P. Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

CERTIFICATE OF TRAINING

CHMR

CELEBRATING 10 YEARS

THIS CERTIFIES THAT

FRANK WODRWYCH

has [illegible] a [illegible] instruction in

OCCUPATIONAL HEALTH AND SAFETY

40 Hour Basic Health and Safety Training

Complying [illegible] 29 CFR [illegible]

[illegible] and conducted by

[illegible]er for Hazardous Materials Research

[illegible]rgh, Pennsylvania

May [illegible]

Date of [illegible]

Edgar Berkey

Edgar Berkey, Ph.D.
President

University of Pittsburgh Applied Research Center

320 William Pitt Way ◆ Pittsburgh, PA 15238

(412) 826-3915 ◆ (412) 826-5320 ◆ (800) 246-8659

http://www.chmr.org

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Frank C. Wudkwych

has successfully completed a course of instruction in

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE MANAGEMENT/SUPERVISOR TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 27, 1998

Date of Award

Clyde Snyder
Senior Instructor
Hazardous Materials Training

Matthew M. Soltis, CIH, CSP
Corporate Health and Safety
Manager

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Frank Wudkwych

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 23, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

HEALTH STATUS MEDICAL REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Cochran, Matthew	**COMPANY:**	TT/NUS
SSN:	174-54-3686	**POSITION:**	Geologist
DATE OF EXAM:	03/01/2002	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	03/01/2004	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, MD / Peter H. Wald, MD Date: 03/07/02

Signature: Peter Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Matt Cochran

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 10, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

[illegible] G. Cochran

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

[illegible] conducted by the

NUS Corporation, Pittsburgh, Pennsylvania

May 9 thru 13, 1983

Date of Award

Gary [illegible]
Manager, Health & Safety

[illegible] Dennis Escher, P.E.
General Manager

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Fred Ramser

Office Location: Tetra Tech

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 12-12-12

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Fred W. Ramser

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 23, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

HALLIBURTON NUS
Environmental Corporation

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

FRED W. RAMSER

has successfully completed a 40 hour course of instruction in
OSHA 29 CFR 1910.120

HAZARDOUS WASTE HEALTH AND SAFETY TRAINING

prepared and conducted by the
HALLIBURTON NUS Environmental Corporation,
Pittsburgh, Pennsylvania

JULY 15 - 19, 1991
Date of Award

Dana R. Irvin
Principal Instructor, Project Manager
Environmental Management Group

James K. Laffey
Director, Hazardous Materials Training
Environmental Management Group

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	481-86-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/07/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy, MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120 Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

TETRA TECH NUS

CERTIFICATE OF TR[illegible]

THIS CERTIFIES

Jim Goe[illegible]

successfully completed an 8-hou[illegible] on in

OSHA 29 CFR [illegible] 20[illegible]

GENE[illegible]KER
REFRE[illegible]NG

prepared and [illegible]ed by
Tetra Tech [illegible]c.
Pittsburgh, P[illegible]va[illegible]a

October 1[illegible], 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

HEALTH STATUS MEDICAL REPORT

Employer Copy

TYPE OF EXAMINATION: **Baseline Examination**

EMPLOYEE:	**Grier, Scott**	**COMPANY:**	**TT/NUS**
SSN:	**209-56-9743**	**POSITION:**	**Earth Scientist**
DATE OF EXAM:	**02/28/2002**	**LOCATION:**	**TT/NUS-King Of Prussia**
EXPIRATION DATE:	**02/28/2004**	**SITE:**	**King Of Prussia**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, MD / Peter H. Wald, MD Date: 03/07/02

Signature: Peter Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

Compliance Solutions

"Today's Training...Tomorrow's Solution"

10516 E 40th Ave, Suite 116, Denver Colorado 80239 800-711-2706

Student Affiliation:
Tetra Tech NUS, Inc.
14838

Certificate of Completion

This is to certify that

Scott Grier

has successfully completed the classroom requirements for

40 Hour HAZWOPER

29 CFR 1910.120(e)

Presented

Friday, March 08, 2002

Compliance Solutions Occupational Trainers, Inc.

Certificate Number: *40409*

Neval Gupta
Vice President

Paul Hewes
Instructor

Compliance Solutions

"Today's Training... Tomorrow's Solution"

10515 E 40th Ave, Suite 116, Denver Colorado 80239 800-711-2706

Student Affiliation:
Tetra Tech NUS, Inc.
14818

Certificate of Completion

This is to certify that

Scott Grier

has successfully completed the classroom requirements for

8 Hour HAZWOPER Refresher

29 CFR 1910.120(e)

Presented

Friday, March 21, 2003

Compliance Solutions Occupational Trainers, Inc.

Certificate Number: 47837

Neval Gupta
Vice President

Jeffrey Kline
President/CEO

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: _____

To: _____

From: _____

Re: Tim Boehner

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 11/22/02. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Kenneth Kruse
PHYSICIAN SIGNATURE

F:\Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

TIM BOEHMER

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 006

Scott Berndt 23 Dec 02

SCOTT BERNDT, CHMM — DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 CR. 306
FINDLAY, OHIO 45840
419-427-0256

Medchem Safety Corporation, Inc.
of Cincinnati, Ohio

certifies that

Tim Boehmer

Has Completed
the OSHA 1910.120 Hazardous Waste Operations and
Emergency Response Eight (8) Hour Supervisors Course
This 5th Day of April, 1991.

Carl T. Jones

Carl T. Jones, President
Medchem Safety Corporation, Inc.
P.O. Box 46793
Cincinnati, Ohio 45246

S
M C
INC

Stephen C. Wilson

Stephen C. Wilson, Vice President
Medchem Safety Corporation, Inc.
P.O. Box 46793
Cincinnati, Ohio 45246

1203

3

1

0

Certificate of Completion

This Certifies That

TIM BOEHMER

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course
in accordance with 29CFR1910.120

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

August 31-September 3, 1987

Date

Pete Boldt

Training Director

Certificate of Completion

This is to certify that

TIM BOEHMER

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000002
Certificate Identification Number

Henry M. Butcher, REM, CEA

The State of Ohio
Ohio Bureau of Workers' Compensation
Division of Safety and Hygiene

TIM BOEHMER

has satisfactorily completed 6 hours

Teaching the Safe Operations of Powered Industrial Trucks

of

Sponsored By
BWC - Southwest Regional Office

Superintendent

April 11, 1995
Date

Bob Heater & Mona Weiss
Instructor

BWC-1580 (3/90)
CERT-6

DUPONT

Certificate of Completion

this is to certify that

Tim Boehmer

has successfully completed the

DuPont Corporate Remediation Group

Training Program on

Safety Audit Skills

on this 30th day of November 1998

Lisa S. Edwin, CSP

CERTIFICATE OF ACHIEVEMENT

This certificate has been awarded by the Ohio Chamber of Commerce and the Manufacturers' Education Council to

TIM BOEHMER

For a demonstrated commitment to sound safety management practices.

Certified for the successful completion of all requirements in the OSHA Recordkeeping course conducted April 29, 1998 in Columbus, Ohio.

Andrew E. Doehrel

Andrew E. Doehrel, President
Ohio Chamber of Commerce, Columbus

Mark W. Uher

Mark W. Uher, President
Manufacturers' Education Council, Columbus

12/23/2002

LAST NAME GOEHNER
FIRST NAME TIMOTHY

FIT TEST REPORT

FIT TEST INFORMATION

ID NUMBER 377-52-1862
LAST NAME GOEHNER
FIRST NAME TIMOTHY
COMPANY DOWNER MOHNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/23/2002
TEST TIME 08:54
DUE DATE 12/23/2003

PORTACOUNT S/N 12243
X86 COMPANION N

RESPIRATOR
MANUFACTURER SURGWAP
MODEL SIGMA
MASK STYLE FULL FACE
MASK SIZE MEDIUM/LARGE
APPROVAL
EFF. - 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	3000	Y
DEEP BREATHING	60	10000	Y
HEAD SIDE TO SIDE	60	5000	Y
HEAD UP AND DOWN	60	10000	Y
TALKING	60	6667	Y
GRIMACE	15	5000	Y
BEND AND TOUCH TOES	60	2500	Y
NORMAL BREATHING	60	1250	Y

OVERALL FF 1270 Y

FIT TEST OPERATOR ERIC HORSTMAN DATE

NAME TIMOTHY GOEHNER DATE 12/23/02

MedWork
Occupational Health Care
725 S. Ludlow Street, Dayton, Ohio 45402

Date: 10-06-03

To: Bowser Morner

From: MedWork

Re: Maynard Lahti

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON OCT. 6, 2003. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

ALL WRITTEN OR PRINTED INFORMATION MUST BE LEGIBLE

Published by J. J. KELLER & ASSOCIATES, INC., Neenah, WI • USA
(800) 327-6868 • www.jjkeller.com • Printed in the United States

651-FS-L2

MEDICAL EXAMINER'S CERTIFICATE

I certify that I have examined SULO MAYWARD LAHTI in accordance with the Federal Motor Carrier Safety Regulations (49 CFR 391.41-391.49) and with knowledge of the driving duties, I find the person is qualified; and, if applicable, only when:

- ☑ wearing corrective lenses
- ☐ wearing hearing aid
- ☐ accompanied by a _____ waiver/exemption
- ☐ driving within an exempt intracity zone (49 CFR 391.62)
- ☐ accompanied by a Skill Performance Evaluation Certificate (SPEC)
- ☐ qualified by operation of 49 CFR 391.64

The information I have provided regarding this physical examination is true and complete. A complete examination form with any attachment embodies my findings completely and correctly, and is on file in my office.

SIGNATURE OF MEDICAL EXAMINER	TELEPHONE	DATE
		10-6-05

MEDICAL EXAMINER'S NAME (PRINT)	
A ALMAZAN MD	☑ MD ☐ DO ☐ Chiropractor ☐ Physician Assistant ☐ Advanced Practice Nurse

MEDICAL EXAMINER'S LICENSE OR CERTIFICATE NO. / ISSUING STATE	
35076247 A	OH

SIGNATURE OF DRIVER	DRIVER'S LICENSE NO.	STATE
Sulo Mayward Lahti	RL367640	OH

ADDRESS OF DRIVER
8936 STAN-KELL RD - KINSMAN, OH. 44428

MEDICAL CERTIFICATE EXPIRATION DATE
10-6-05

DISTRIBUTION: 1 COPY TO THE DRIVER, 1 COPY TO THE MOTOR CARRIER

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

MAYNARD S. LAHTI

HAS SUCCESSFULLY COMPLETED

HAZWOPER

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

16TH DAY OF JANUARY 2003

TRAINING CERTIFICATE NO.

16JAN03 006

Bud Berndt 15 Jan 03

SCOTT BERNDT, CHMM DATE

OCCUPATIONAL HAZARD MANAGEMENT
14656 CR. 305
FINDLAY, OHIO 45840

HAZMAT TRAINING ▲ INFORMATION ▲ SERVICES INC.

CERTIFICATE OF COMPLETION

This is to certify that

MAYNARD LAHTI

has successfully completed

THE 40-HOUR HAZARDOUS MATERIALS SITE WORKER COURSE

at

HAZMAT T.I.S.I., COLUMBIA, MARYLAND

Manager, Training Services Department

President

OCTOBER, 1990

Date

12/29/2003

LAST NAME LAHTI
FIRST NAME MAYNARD

FIT TEST REPORT

Fit test information

ID NUMBER 273-52-3403
LAST NAME LAHTI
FIRST NAME MAYNARD
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 09:30
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SURVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	1310	Y
DEEP BREATHING	60	843	N
HEAD SIDE TO SIDE	60	1460	Y
HEAD UP AND DOWN	60	1230	Y
TALKING	60	1170	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	2060	Y
NORMAL BREATHING	60	1330	Y
OVERALL FF		1270	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Maynard Lahti DATE 12-29-03
MAYNARD LAHTI

OCCUPATIONAL CARE CONSULTANTS

OCC - East • 3028 Navarre Ave • Oregon, OH 43616
(419) 697-6850 • Fax (419) 697-6861

RESPIRATOR QUESTIONNAIRE

NAME: Joshua Dean **COMPANY:** Bowser Morner

A new questionnaire should be completed annually or sooner if a medical condition intervenes. OCC recommends that a pre-placement medical evaluation be done on all employees using a respirator.

PHYSICAL EXAMINATION REQUIRED: (YES) **NO**

(If examination is required, it must be completed within 30 days of questionnaire.)

Questionnaire Reviewed by: C Van Kruyfant Date: 8/14/03
Nurse Signature

A. ____ No limitations regarding respirator use.

B. ____ Restrictions are placed on this employee for respirator use related to a medical condition or to the workplace conditions in which the respirator will be used. Restrictions are as follows:

C. ____ Follow-up medical evaluation is recommended as per NIOSH guidelines.
Every 5 years for persons under age 35
Every 2 years for persons aged 35 to 45
Every year for persons over the age of 45

Evaluations for persons performing strenuous work with SCBA:
Every 3 years for those under age 35
Every 18 months for those aged 35 to 45
Annually for those over the age of 45

D. ____ Your employee has been provided a copy of this Licensed Health Care Professional's written recommendation.

T.E. Lieser, MD; P.J. Eby, MD; G. J. Jabaly, MD; B.C. Russell, PA-C, G. Myak, RN, CNP

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

JOSH DEAN

HAS SUCCESSFULLY COMPLETED

HAZWOPER

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

2ND OF SEPTEMBER 2003

TRAINING CERTIFICATE NO.

02SEP03 001

SCOTT BERNDT, CHMM

2 Sept 03

DATE

OCCUPATIONAL HAZARD MANAGEMENT
5001 BATHERWOOD STREET
FINDLAY, OHIO 45840

FINDLAY

THE UNIVERSITY OF FINDLAY

Certificate of Achievement

awarded by

THE NATIONAL CENTER OF EXCELLENCE FOR ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL RESOURCE TRAINING CENTER

to

JOSHUA DEAN

for Successful Completion of

OSHA 40-HOUR SAFETY TRAINING WORKSHOP
(FULFILLS THE REQUIREMENTS OF 29 CFR 1910.120 COVERING HAZARDOUS WASTE OPERATIONS)
4.0 CEU'S
APRIL 27, 2002

EXECUTIVE DIRECTOR

INSTRUCTOR

OCCUPATIONAL CARE CONSULTANTS

OCC - East • 3028 Navarre Ave • Oregon, OH 43616
(419) 697-6850 • Fax (419) 697-6861

RESPIRATOR QUESTIONNAIRE

NAME: James Walsh **COMPANY:** Bowser-Morner

A new questionnaire should be completed annually or sooner if a medical condition intervenes. OCC recommends that a pre-placement medical evaluation be done on all employees using a respirator.

PHYSICAL EXAMINATION REQUIRED: (YES) NO

(If examination is required, it must be completed within 30 days of questionnaire.)

Questionnaire Reviewed by: C Van Koughnett Date: 2/17/2003
Nurse Signature

A. ✓ No limitations regarding respirator use.

B. ____ Restrictions are placed on this employee for respirator use related to a medical condition or to the workplace conditions in which the respirator will be used. Restrictions are as follows:

C. ✓ Follow-up medical evaluation is recommended as per NIOSH guidelines.
Every 5 years for persons under age 35
Every 2 years for persons aged 35 to 45
Every year for persons over the age of 45

Evaluations for persons performing strenuous work with SCBA:
Every 3 years for those under age 35
Every 18 months for those aged 35 to 45
Annually for those over the age of 45

D. ✓ Your employee has been provided a copy of this Licensed Health Care Professional's written recommendation.

B.C. Russell PAC

T.E. Lieser, MD; P.J. Eby, MD; G. J. Jabaly, MD; B.C. Russell, PA-C, G. Myak, RN, CNP

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

JAMES R. WALSH

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 014

Brad S Berndt 23Dec02

SCOTT BERNDT, CHMM DATE

OCCUPATIONAL HAZARD MANAGEMENT
14455 CR. 209
FINDLAY, OHIO 45840
419-427-0266

1203

0

Certificate Of Completion

This Certifies That

James R. Walsh

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

May 8-11, 1987
Date

Training Director

[illegible]

LAST NAME [illegible]
FIRST NAME JAMES

[illegible]

ID NUMBER [illegible]
LAST NAME [illegible]
FIRST NAME JAMES
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE [illegible]
TEST TIME [illegible]
SUB DATE [illegible]

PORTACOUNT S/N [illegible]
USE COMPARISON N

RESPIRATOR
MANUFACTURER SURVIVAIR
MODEL SIGMA
MASK STYLE FULL FACE
MASK SIZE [illegible]
APPROVAL
[illegible]

PROTOCOL OSHA [illegible]
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	[illegible]	[illegible]	[illegible]
DEEP BREATHING	[illegible]	[illegible]	[illegible]
TURN HEAD FROM SIDE TO SIDE	[illegible]	[illegible]	[illegible]
NOD UP AND DOWN	[illegible]	[illegible]	[illegible]
TALKING	[illegible]	[illegible]	[illegible]
GRIMACE	[illegible]	[illegible]	[illegible]
BEND AND TOUCH TOES	[illegible]	[illegible]	[illegible]
NORMAL BREATHING	[illegible]	[illegible]	[illegible]

OVERALL [illegible] [illegible]

[illegible]
ERIC HOFFMAN

NAME [illegible] DATE [illegible]
[illegible]

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11/23/02

To: _____

From: _____

Re: Jon Keifer

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON _____. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

Ken W Greene

PHYSICIAN SIGNATURE

F:\Forms\BOWSERRECERT03-20.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

JON KEIFER

HAS SUCCESSFULLY COMPLETED

HAZWOPER

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

16TH DAY OF JANUARY 2003

TRAINING CERTIFICATE NO.

16JAN03 013

SCOTT BERNDT, CHMM

16 Jan. 03

DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 CR. 205
FINDLAY, OHIO 45840

Medchem Safety Corporation, Inc.
of Cincinnati, Ohio

certifies that

Jon Keifer

Has Completed

the OSHA 1910.120 Hazardous Waste Operations and
Emergency Response Forty (40) Hour Course
This 8th Day of June, 1992.

S M C INC.

Carl T. Jones, President
Medchem Safety Corporation, Inc.
P.O. Box 46793
Cincinnati, Ohio 45246

Stephen C. Wilson, Vice President
Medchem Safety Corporation, Inc.
5082 Worley Road
Troy, Ohio 45373

© GOES 460-1/2

LITHO IN U.S.A.

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 5/23/05

To: _____

From: _____

Re: DENNIS SINK

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 5/23/05. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

DENNIS A. SINK

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 002

SCOTT BERNDT, CHMM

23 Dec. 02

DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 CR. 205
FINDLAY, OHIO 45840
419-427-0354

Certificate of Completion

This Certifies That

DENNIS SINK

has completed the course

"FORTY HOUR PERSONNEL PROTECTION & SAFETY COURSE"

(In compliance with Federal Regulation 29 CFR 1910.120)

Presented by

SPRINGFIELD SAFETY COUNCIL 50 years

Providing you a . . . to cost containment

January 29, 1990

Date

J.C. Schaffner

Director Marketing - Training

Certificate of Completion

This is to certify that

DENNIS SINK

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000013
Certificate Identification Number

Henry M. Butcher, REM, CEA

12/23/2002

LAST NAME SINK
FIRST NAME DENNIS

FIT TEST REPORT

Fit Test Information

ID NUMBER	[illegible]		
LAST NAME	SINK	CUSTOM1	
FIRST NAME	DENNIS	CUSTOM2	
COMPANY	SOWSER WORNER	CUSTOM3	
LOCATION	DAYTON	CUSTOM4	
NOTE			

TEST DATE	12/23/2002	PORTACOUNT S/N	[illegible]
TEST TIME	08:15	X91 COMPANION	N
DUE DATE	12/23/2003		

RESPIRATOR		PROTOCOL	OSHA 1910.134
MANUFACTURER	SUPERNAR	PASS LEVEL	100
MODEL	SR3WA		
MASK STYLE	FULL FACE		
MASK SIZE	MEDIUM/LARGE		
APPROVAL			
SPECIAL	N		

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	[illegible]	Y
DEEP BREATHING	60	[illegible]	Y
HEAD SIDE TO SIDE	60	[illegible]	
HEAD UP AND DOWN	30	[illegible]	Y
TALKING	60	[illegible]	Y
GRIMACE	30	[illegible]	Y
BEND AND TOUCH TOES	30	[illegible]	Y
NORMAL BREATHING	60	[illegible]	Y

OVERALL FF [illegible] Y

FIT TEST OPERATOR [signature] DATE [illegible]
ERIC NORSTRAM

NAME [signature] DATE 12-23-02
DENNIS SINK

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11-6-02

To: _____

From: _____

Re: Todd Wollenhaupt

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 11-6-02. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

_____
PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

OCCUPATIONAL HAZARD MANAGEMENT

SCOTT BERNDT, CHMM
14655 COUNTY ROAD 305
FINDLAY, OHIO 45840

CERTIFIES
THAT

TODD WOLLENHAUPT

HAS
SUCCESSFULLY
COMPLETED

40 HOUR SITE WORKER & OPERATIONS TRAINING

IN ACCORDANCE WITH
29CFR1910.120
CERTIFICATE NO: 27NOV.02 001

ON THE

27TH OF NOVEMBER 2002

SCOTT BERNDT, CHMM — DATE 27NOV.02

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

TODD WOLLENHAUPT

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 007

SCOTT BERNDT, CHMM

23 Dec. 02

DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 CR. 205
FINDLAY, OHIO 45840
419-427-0356

OCCUPATIONAL HAZARD MANAGEMENT

14655 CR 205
FINDLAY, OHIO 45840
419-427-0356

Qualitative
Respirator Fit Test Log

Date: 27 Nov. 02
Time: 0900

Personal Information

Name: Todd Wallenhaupt
SS#: 283-64-6069
Company: Bowser-Morner, inc

Respirator Information

Type: Full Face [X] Half Face [ ] PAPR [ ]

Manufacturer: ~~MSA~~ Scott Model: ~~3200~~ 3200 SCBA Sec 4000

Fit Test Media: Irritant Smoke: [ ] Banana Oil: [X]

Positive - Negative Self Test:	Pass	BW	Fail	
Looking Forward:	Pass		Fail	
Head Right:	Pass		Fail	
Head Left:	Pass		Fail	
Head Up:	Pass		Fail	
Head Down:	Pass		Fail	
After Jumping Jacks:	Pass		Fail	
After Bending Down:	Pass		Fail	
After Walking:	Pass		Fail	
Rainbow Passage:	Pass	BW	Fail	

Student Signature: Todd Wallenhaupt Date: 11-27-02

Instructor Signature: [illegible] Date: 27 Nov. 02

12/22/2002

LAST NAME WOLLENHAUPT
FIRST NAME TODD

FIT TEST REPORT

Fit test information

ID NUMBER [illegible]
LAST NAME WOLLENHAUPT
FIRST NAME TODD
COMPANY BOWSER-MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/22/2002
TEST TIME 14:03
DUE DATE 12/22/2003

PORTACOUNT S/N 4240
USE COMPANION N

RESPIRATOR
MANUFACTURER DURAMASK
MODEL SIGMA
MASK STYLE FULL FACE
MASK SIZE [illegible]
APPROVAL
EXPIRATION N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	1080	Y
DEEP BREATHING	60	3500	Y
HEAD SIDE TO SIDE	60	7500	Y
HEAD UP AND DOWN	60	[illegible]	Y
TALKING	60	1200	Y
GRIMACE	15	EXCL	X
BEND AND TOUCH TOES	60	3010	Y
NORMAL BREATHING	60	3700	Y

OVERALL FF [illegible] Y

FIT TEST OPERATOR ERIC HORSTMAN DATE [illegible]

NAME TODD WOLLENHAUPT DATE [illegible]

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 10/10/03

To: _____

From: MEDWORK

Re: NICHOLAS BOST

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON OCT. 10, 2003. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

94041540E-01

CERTIFICATE

ENVIROGENICS

HEALTH AND SAFETY TRAINING INSTITUTE
65 South Main Street, Building C, Pennington, NJ 08534

THIS IS TO CERTIFY THAT

NICHOLAS C. POST

HAS SUCCESSFULLY COMPLETED THE TRAINING REQUIREMENTS
FOR

OSHA 1910.120(e)(9) 40-HOUR EQUIVALENT HAZARDOUS WASTE OPERATIONS HEALTH AND SAFETY TRAINING

INSTRUCTOR

April 15, 1994
DATE

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

NICK POST

HAS SUCCESSFULLY COMPLETED

HAZWOPER

SUPERVISOR

&

ANNUAL REFRESHER TRAINING

TRAINING

IN ACCORDANCE WITH

29 CFR 1910.120

ON THE

23RD DAY OF DECEMBER 2002

TRAINING CERTIFICATE NO.

23DEC02 025

Scott Berndt 23 Dec. 02

SCOTT BERNDT, CHMM — DATE

OCCUPATIONAL HAZARD MANAGEMENT
14655 CR. 209
FINDLAY, OHIO 45840
419-427-0256

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-10-3-045

October 17, 2003

Project Numbers 9060 and 0845

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Number[redacted]and 0315

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include DPT; drilling; and surface and subsurface soils, sediments, ground water, and surface water sampling at the NSWC Crane site in Indiana. This is scheduled to be conducted from October 20 through December 19, 2003. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Mine Fill A, Mine Fill B, Cast High Explosive Fill/Incinerator, Pyrotechnic Test Area, Revision 1, dated October 2003, prepared under CTO 0166; and the Health and Safety Plan for Corrective Measures Study Field Work at Mustard Gas Burial Ground (SWMU 01) dated October 2003 prepared under CTO 0315. These individuals are as follows:

Bob Balkovec
Matt Cochran
Fred Ramser
Terry Rojahn
Frank Wudkwych

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Wroblewski
M. Perry
K. Henn
R. Basinski
T. Johnston

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-11-3-029

November 14, 2003

Project Numbers 9060 and 0845

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers [redacted] and 0315

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to add personnel conducting the field activities at the NSWC Crane site from November 17 through December 19, 2003. Mr. Jim Goerdt and Mr. Scott Grier have been added to the field crew performing this work. All other information in our letter dated October 17, 2003 remains the same.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld

c: B. Gorman (Code ES 34)
D. Wroblewski
M. Perry
K. Henn
R. Basinski
T. Johnston

APPENDIX F.3
SWMU 13
HEALTH AND SAFETY DOCUMENTATION
ROUND 3

Project-Level H&S Recordkeeping

On-site H&S training (topics, participants, dates)...See Section F

Air monitoring instrument calibration...See Section C (C.11.1, C.11.2 & C.11.3)

Monitoring instrument results including background levels, breathing zone readings, personnel exposure records, etc. (air monitoring, noise monitoring, other H&S quantitative measurements)...See Section B (B.1.1, B.1.2 & B.1.3)

H&S training and medical certificates/documents for site personnel... See Section F

Site specific written program documentation (e.g., Hazard communication)...NA

H&S Site clearance letters... See Section F

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing remedial investigation activities at CRANE and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present at the sites
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Initial response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Safe Work Permits

I have been given the opportunity to ask questions and all of my questions have been answered to my satisfaction. I further state, that the dates of my training (introductory, refresher, and supervisory, as applicable) and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
Josh Dean	7-8-04	8-02	12-'03	NA	8-'03
Jim WALSH	7-8-04	may 87	12-2003	2001	2-1-04
BRUCE KIRKPATRICK	7-8-04	1986	1-2004	NA	11-03
DONALD NULL	7-8-04	1998	12-03	NA	11-03
Charles C. Laney III	7-8-04	4/30/92	9/5/02	1998	3-04
Jim Goerdt	7-8-04	12/91	10/03	NA	11/03
SJ CONTI	7-8-04	8/83	5/14/04	"84"	12/02
TERRY ROHAN	7-8-04	9/85	1/07	1/04	11/02
Chad Mahaffy	7-23-04	2002	12-2003	12-2003	12/03
JOSH DUTTON	8/9/04	12/01	10/17/03	NA	1/16/04

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
KEN BOEHMER	8/24/04	9/87	12-27-03		FED MARCH 04
JOHN DAVES	8/24/04	11/02	12-27-03		12/03
Todd Weitenhaupt	8/24/04	11/02	12-27-03		11/03

Railway Access Plan Pre-Task Briefing
Attestment

By my signature below, I attest that I have participated in a pre-task briefing which included a review of the TtNUS Railway Access Plan for NSWC Crane Hill 600 activities. This briefing addressed supervision and communication of on-track safety methods prior to commencing work in this area, in accordance with Federal Railroad Administration regulation 49 CFR 214.315.

My signature also indicates that I was provided an opportunity to ask questions during this briefing, and that any questions raised were addressed to my satisfaction.

Name (Printed)	Signature	Date	Initials
JAMES R. WALSH		10-25-04	TR
Stan Conti		10-25-04	TR
TERRY ROJAHN		10-25-04	TR
Todd Wilkenhauf		10-25-04	TR
Josh Dean		10-25-04	TR

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech NUS.

Employee Name: TERRY ROJAHN

Office Location: PITTSBURGH

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134/

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: Anna Young M.D.

Date: 11/10/02

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040.

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

WorkCare™

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Terry Rojhan

Office Location: Buenosfit

Yes	No	
☒	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☒	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134/

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 11-5-04

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 • FAX (412) 921-4040 • www.tetratech.com

March 11, 2003

Mr. Stanley Conti
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Whom It May Concern:

This letter is to certify that Mr. Stanley Conti successfully completed a course of instruction in Hazardous Materials Handling for Hazardous Waste Site Workers which meets the criteria established in 29 CFR 1910.120(e)(3)(i). This course was prepared and conducted by Tetra Tech NUS (formerly Brown and Root Environmental, a division of HALLIBURTON NUS Corporation) in September 1983. If you have any questions, please feel free to contact me.

Very truly yours,

James K. Laffey
Manager, Training Resources

JKL:lld

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Stan Conti

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 14, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. [illegible]
Manager
Training Services

WORKCARE™

A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Stanley Conti

Office Location: Tetra Tech

Yes	No	
☒	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☒	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 12/13/08

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

TECHNICAL ENVIRONMENTAL SERVICE TRAINING INSTITUTE

certifies that

CHARLES C. LANEY III

has successfully met the 29 CFR 1910.120 certificate requirements for the course entitled

40 HOUR HEALTH & SAFETY TRAINING - GENERAL SITE WORKER (E-3-1) -

and in evidence thereof is awarded this

CERTIFICATE OF COMPLETION

on the 30 TH day of APRIL , 1992

APRIL 30, 1992

Passed Exam

ESW-00780

Certificate Number

TEST institute

Anthony L. Egitto, Director

1110 Navaho Dr. • Suite 602 • Raleigh, North Carolina 27609 • 919-876-8440

© 8012 461

LITHO IN U.S.A.

TETRA TECH NUS

CERTIFICATE OF TR[illegible]

THIS CERTI[illegible]

Charles C. L[illegible]

[illegible] successfully completed an 8-hou[illegible] on [illegible]

OSHA [illegible]

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and [illegible]ed by
Tetra Tech [illegible]c.
Pittsburgh, P[illegible]vania

September [illegible], 2002

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WorkCare™

Release to Duty

NAME OF EXAMINEE: Charles Laney III

DATE: 7-18-02

CLINIC NAME: SECURE MEDICAL CARE
803 Russell Avenue
Gaithersburg, MD 20879-3584

COMPANY NAME: TT NUS

Based on the limited information WorkCare™ has requested me to review, as stipulated in the WorkCare Clinical Operations Manual, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare, may detect health conditions not apparent to me. It is further agreed that such health conditions may necessitate the need for workplace restrictions.

MARTIN T. LISS, M.D.

Signed: _____ M.D.
Examining Physician

Dated: 7-18-2002

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TR[illegible]

THIS CERTIF[illegible]

Mark [illegible]

has successfully completed an 8-hou[illegible] on th[illegible]

OSHA 29 CFR [illegible]

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and [illegible]ed by
Tetra Tech [illegible]c.
Pittsburgh, Pennsylvania

January 2[illegible], 2004

Date of Award

Matthew M. Soltis, CIH, CSP
Manager
Health and Safety

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120 Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and presented by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 10, 2003

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: **Periodic Examination**

EMPLOYEE:	**Goerdt, James**	**COMPANY:**	**TT/NUS**
SSN:	**481-86-2691**	**POSITION:**	**Environmental Scientist**
DATE OF EXAM:	**11/07/2003**	**LOCATION:**	**TT/NUS-Pittsburgh**
EXPIRATION DATE:	**11/07/2005**	**SITE:**	**Pittsburgh**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

[redacted]

OCCUPATIONAL HEALTH & SAFETY SOLUTIONS

This certificate is confirmation that

Joshua Dutton

has successfully completed the course and examination for

40 HOUR HAZWOPER TRAINING

December, 2001

Indianapolis, Indiana

Certificate No. 010471

Christopher A. Schlieb MS
Course Director

TRAINING CERTIFICATE

Presented to:

Joshua Dutton

Has successfully completed the:

8-Hour HAZWOPER Refresher Course

Presented By: Scott Defenbaugh

Presented this 17th day of October, 2003

Workplace

Workplace Safety & Health Company, Inc.

Scott W. Defenbaugh – Trainer

MEDICAL APPROVAL FORM

For Employees of Environmental Field Services, Inc.

Participant Name : Joshua Dutton Date & Time of Examination: January 16th @ 8:00a.m.

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA 29 CFR 1910.120, and found to be medically
   (✓) qualified to perform work at hazardous work sites.
   ( ) not qualified to perform work at hazardous work sites.

- and -

2. Undergone a physical examination as per OSHA 29 CFR 1910.134, and found to be medically
   (✓) qualified to wear respiratory protection.
   ( ) not qualified to wear respirator protection.

My evaluation has been based on the following, as provided to me by the employer.

(✓) A Copy of OSHA Standards 29 CFR 1910.120 and appendices.
(✓) A description of the employee's duties as they relate to the employee's exposure.
( ) A list of known/suspected contaminants and their concentrations (if known)
(✓) A description of any personal protective equipment used or to be used.
(✓) Information from previous medical examinations of the employee which is used not readily available to the examining physician.

I, Jodi T Perri, have examined Josh Dutton

Physician's Name (Print) Participant's Name (Print)

and have determined the following information:

1 Results of medical examination and test (excluding finding or diagnoses unrelated to occupational exposure):

none

2. Any detected medical conditions which place the employee at increase risk of material impairment of the employee's health :

none

3. Recommended limitations upon the employee's assigned work :

none

I have informed this participant of the results of this medical examination and any medical conditions which require further examination of treatment.

Based on this information provided to me, and in view of the activities and hazardous potentials involved at hazardous work sites, his participant

(✓) may
( ) may not

perform his/her assigned tasks.

Physician's Signature : [signature]

Address: 14828 Cragmont Ct 46032

Phone Number: 5829210

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Kenneth A. Boehmer

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 348
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature: Kenneth A Boehmer

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Donald B. Kirkpatrick

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 344
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature: Donald B Kirkpatrick

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

David W. Schrecengost

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 1236
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature:

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Dennis A. Sink

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 1270
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature: Dennis A Sink

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

John E. Filbrun

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 1006
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature: John Filbrun

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Timothy L. Boehmer

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 349
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature:

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Jon T. Keifer

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 2012
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature: Jon T Keifer

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

James Nidzgorski

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 350
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature:

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

Joseph C. McCloud

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 2013
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature:

To be placed on the certificate

INDIANA WATER WELL DRILLING LICENSE
Department of Natural Resources
Issued by the Division of Water

James R. Walsh

is entitled to operate water well drilling equipment and engage in the drilling of water wells, pursuant to Indiana Code 25-39.

License Number: 852
Expiration Date: December 31, 2004
DNR Receipt Number: 1010563
Signature:

CHAD R MAHAFFY
001731-224
2/16/1981
295-76-2583
BOWSER MORNER

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 10-10-03

To: _____

From: _____

Re: Chad Mehaffy

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 10-10-03. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF ~~CHEST X-RAY~~, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

Occupational Hazard Management

Certifies
that

CHAD MAHAFFY

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

29th of December 2003

Training Certificate No.
29DEC03 017

Scott Brandt, CHM

29 Dec. 03
Date

Occupational Hazard Management
2001 Tallmadge Road
Findlay, Ohio 45840

Occupational Hazard Management

Certifies
that

CHAD MAHAFFY

Has successfully completed
PROCESS SAFETY MANAGEMENT
Training
In Accordance with
29 CFR 1910.119
on the

29 December 2003

Training Certificate No.
PSM 29DEC03 016

Scott Berndt, CHMM

29 Dec. 03
Date

Occupational Hazard Management
2001 Cottonwood Street
Findlay, Ohio 45840

OCCUPATIONAL HAZARD MANAGEMENT

SCOTT BERNDT, CHMM
14455 COUNTY ROAD 205
FINDLAY, OHIO 45840

CERTIFIES
THAT

CHAD R. MAHAFFY

HAS
SUCCESSFULLY
COMPLETED

40 HOUR SITE WORKER & OPERATIONS TRAINING

IN ACCORDANCE WITH
29CFR1910.120
CERTIFICATE NO: 020CT02 02

ON THE

2ND DAY OF OCTOBER 2002

SCOTT BERNDT, CHMM — DATE

12/29/2003

LAST NAME MAHAFFY
FIRST NAME CHAD

FIT TEST REPORT

Fit test information

ID NUMBER 295-76-2583
LAST NAME MAHAFFY
FIRST NAME CHAD
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 09:47
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	11400	Y
DEEP BREATHING	60	4230	Y
HEAD SIDE TO SIDE	60	46300	Y
HEAD UP AND DOWN	60	78900	Y
TALKING	60	4560	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	7380	Y
NORMAL BREATHING	60	26700	Y
OVERALL FF		9330	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Chad Mahaffy DATE 12-29-03
CHAD MAHAFFY

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 2-27-04

To: Bowser Morner

From: MedWork

Re: Kenneth Barkmer

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 2-27-04. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

D. Altmeyer MD

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

Occupational Hazard Management

Certifies
that

KEN BOEHMER

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

29th of December 2003

Training Certificate No:
29DEC03 007

29 Dec. 03

Lt. J. Brandt, CHMM

Date

Occupational Hazard Management
2001 Cottonwood Street
Findlay, Ohio 45840

Occupational Hazard Management

Certifies
that

KEN BOEHMER

Has successfully completed
PROCESS SAFETY MANAGEMENT
Training
In Accordance with
29 CFR 1910.119
on the

29 December 2003

Training Certificate No.
PSM 29DEC03 007

Scott Berndt, CSHM

29 Dec. 03
Date

Occupational Hazard Management
[illegible] Cottonwood Street
Dudley, Ohio [illegible]

1203

3

1

0

Certificate of Completion

This Certifies That

KEN BOEHMER

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course
in accordance with 29CFR1910.120

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

August 31-September 3, 1987
Date

Pete Bolds
Training Director

Certificate of Completion

This is to certify that

KEN BOEHMER

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000001
Certificate Identification Number

Henry M. Butcher, REM, CEA

12/29/2003

LAST NAME BOEHMER
FIRST NAME KENNETH

FIT TEST REPORT

Fit test information

ID NUMBER	277521850		
LAST NAME	BOEHMER	CUSTOM1	
FIRST NAME	KENNETH	CUSTOM2	
COMPANY	BOWSER MORNER	CUSTOM3	
LOCATION	DAYTON	CUSTOM4	
NOTE			
TEST DATE	12/29/2003	PORTACOUNT S/N	44721
TEST TIME	08:26	N95 COMPANION	N
DUE DATE	12/29/2004		
RESPIRATOR		PROTOCOL	OSHA 29CFR1910.134
MANUFACTURER	SUVIVAIR	PASS LEVEL	1000
MODEL	20/20		
MASK STYLE	FULL FACE		
MASK SIZE	MED/LARGE		
APPROVAL			
EFF. < 99%	N		

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	12200	Y
DEEP BREATHING	60	15000	Y
HEAD SIDE TO SIDE	60	30800	Y
HEAD UP AND DOWN	60	34300	Y
TALKING	60	3750	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	7340	Y
NORMAL BREATHING	60	8990	Y
OVERALL FF		9670	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Kenneth Boehmer DATE 12-29-03
KENNETH BOEHMER

OCCUPATIONAL CARE CONSULTANTS

OCC - East • 3028 Navarre Ave • Oregon, OH 43616
(419) 697-6850 • Fax (419) 697-6861

RESPIRATOR QUESTIONNAIRE

NAME: Joshua Dean **COMPANY:** Bowser Morner

A new questionnaire should be completed annually or sooner if a medical condition intervenes. OCC recommends that a pre-placement medical evaluation be done on all employees using a respirator.

PHYSICAL EXAMINATION REQUIRED: (YES) **NO**

(If examination is required, it must be completed within 30 days of questionnaire.)

Questionnaire Reviewed by: C Van Kouffmt Date: 8/14/03
Nurse Signature

A. ____ No limitations regarding respirator use.

B. ____ Restrictions are placed on this employee for respirator use related to a medical condition or to the workplace conditions in which the respirator will be used. Restrictions are as follows:

C. ____ Follow-up medical evaluation is recommended as per NIOSH guidelines.
Every 5 years for persons under age 35
Every 2 years for persons aged 35 to 45
Every year for persons over the age of 45

Evaluations for persons performing strenuous work with SCBA:
Every 3 years for those under age 35
Every 18 months for those aged 35 to 45
Annually for those over the age of 45

D. ____ Your employee has been provided a copy of this Licensed Health Care Professional's written recommendation.

T.E. Lieser, MD; P.J. Eby, MD; G. J. Jabaly, MD; B.C. Russell, PA-C, G. Myak, RN, CNP

Occupational Hazard Management

Certifies
that

JOSH DEAN

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

18th of December 2003

Training Certificate No.
18Dec03 001

Scott Berndt, CHMM — 18Dec.03

Date

Occupational Hazard Management
2001 Tallmadge Street
Findlay, Ohio 45840

FINDLAY

THE UNIVERSITY OF FINDLAY

Certificate of Achievement

awarded by

THE NATIONAL CENTER OF EXCELLENCE FOR ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL RESOURCE TRAINING CENTER

to

JOSHUA DEAN

for Successful Completion of

OSHA 40-HOUR SAFETY TRAINING WORKSHOP
(FULFILLS THE REQUIREMENTS OF 29 CFR 1910.120 COVERING HAZARDOUS WASTE OPERATIONS)
4.0 CEU'S
APRIL 27, 2002

EXECUTIVE DIRECTOR

INSTRUCTOR

12/29/2003

LAST NAME DEAN
FIRST NAME JOSHUA

FIT TEST REPORT

Fit test information

ID NUMBER 270869191
LAST NAME DEAN
FIRST NAME JOSHUA
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 10:24
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	44200	Y
DEEP BREATHING	60	18600	Y
HEAD SIDE TO SIDE	60	22300	Y
HEAD UP AND DOWN	60	18900	Y
TALKING	60	10400	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	11900	Y
NORMAL BREATHING	60	46800	Y
OVERALL FF		18700	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Josh D DATE 12-29-03
JOSHUA DEAN

OCCUPATIONAL CARE CONSULTANTS

OCC - Earl • 3028 Navarre Ave • Oregon, OH 43616
(419) 697-6880 • Fax (419) 697-6861

RESPIRATOR QUESTIONNAIRE

NAME: James R Walsh **COMPANY:** Bowser Morner

A new questionnaire should be completed annually or sooner if a medical condition intervenes. OCC recommends that a pre-placement medical evaluation be done on all employees using a respirator.

PHYSICAL EXAMINATION REQUIRED: **YES** **NO**

(If examination is required, it must be completed within 30 days of questionnaire.)

Questionnaire Reviewed by: _____ Date: 3/2/04
Nurse Signature

A. ✓ No limitations regarding respirator use.

B. ____ Restrictions are placed on this employee for respirator use related to a medical condition or to the workplace conditions in which the respirator will be used. Restrictions are as follows:

_____

_____

C. ____ Follow-up medical evaluation is recommended as per NIOSH guidelines.
Every 5 years for persons under age 35
Every 2 years for persons aged 35 to 45
Every year for persons over the age of 45

Evaluations for persons performing strenuous work with SCBA:
Every 3 years for those under age 35
Every 18 months for those aged 35 to 45
✓ Annually for those over the age of 45

D. ____ Your employee has been provided a copy of this Licensed Health Care Professional's written recommendation.

_____

T.E. Lieser, MD; P.J. Eby, MD; G. J. Jabaly, MD; B.C. Russell, PA-C, G. Myak, RN, CNP

Occupational Hazard Management

Certifies
that

JAMES WALSH

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

18th of December 2003

Training Certificate No.
18Dec03 002

Rick Berardi, CSHM

18 Dec. 03
Date

Occupational Hazard Management
[illegible]
[illegible]

1203

0

Certificate Of Completion

This Certifies That

James R. Walsh

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

May 8-11, 1987
Date

Training Director

12/29/2003

LAST NAME WALSH
FIRST NAME JAMES

FIT TEST REPORT

Fit test information

ID NUMBER 6166
LAST NAME WALSH
FIRST NAME JAMES
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 10:36
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	2990	Y
DEEP BREATHING	60	2760	Y
HEAD SIDE TO SIDE	60	3060	Y
HEAD UP AND DOWN	60	31300	Y
TALKING	60	374	N
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	1330	Y
NORMAL BREATHING	60	22900	Y
OVERALL FF		1550	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME James A Walsh DATE 12-29-03
JAMES WALSH

FAX TRANSMISSION

BOWSER-MORNER

4518 Taylorsville Road • P.O. Box 51 • Dayton, Ohio 45401-0051
Phone (937) 236-8805 Fax (937) 233-2016

With other offices in:

	Toledo, Ohio	Lexington, Ky.
Phone:	(419) 691-4800	(606) 233-0250
Fax:	(419) 691-4806	(606) 253-0183

To: Terry Rajaha

From: Penny L. Keifer, Administrative Manager

Company: Tetra Tech

Phone No:

Date: July 28, 2004

Fax No.: 812-854-3981

No. of Pages (including cover): 5

Re:

Message:

If you have any problems with, or do not receive all the pages in this transmission, please call our office.

BOWSER-MORNER *is an accredited independent testing laboratory and engineering consultant providing services in geotechnical engineering, environmental consulting, construction monitoring and testing, analytical sciences, and subsurface exploration and sampling.*

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MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11-15-03

To: Bowser-Morner

From: MedWork

Re: Todd Wollenhaupt

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON Todd Wollenhaupt I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

Occupational Hazard Management

Certifies
that

TODD WOLLENHAUPT

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

29th of December 2003

Training Certificate No.
29DeC03 030

29 Dec 03
Date

Occupational Hazard Management
[illegible]
[illegible]

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES
THAT

TODD WALLENHAUPT

HAS SUCCESSFULLY COMPLETED

PROCESS SAFETY MANAGEMENT
TRAINING

IN ACCORDANCE WITH
29 CFR 1910.119
ON THE

28TH OF NOVEMBER 2003

TRAINING CERTIFICATE NO.
28NOV03 002

Scott Berndt 28 Nov. 03.

SCOTT BERNDT, CHMM — DATE

OCCUPATIONAL HAZARD MANAGEMENT
3031 SOTTINGHAM STREET
FAIRLAY, OHIO 45840

OCCUPATIONAL HAZARD MANAGEMENT

SCOTT BERNDT, CHMM
14666 COUNTY ROAD 326
FINDLAY, OHIO 45840

CERTIFIES
THAT

TODD WOLLENHAUPT

HAS
SUCCESSFULLY
COMPLETED

40 HOUR SITE WORKER & OPERATIONS TRAINING

IN ACCORDANCE WITH
29CFR1910.120
CERTIFICATE NO: 27NOV.02 001

ON THE

27TH OF NOVEMBER 2002

SCOTT BERNDT, CHMM — DATE 27NOV02

12/29/2003

LAST NAME WOLLENHAUPT
FIRST NAME TODD

FIT TEST REPORT

Fit test information

ID NUMBER 283-61-6669
LAST NAME WOLLENHAUPT
FIRST NAME TODD
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 13:42
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	10900	Y
DEEP BREATHING	60	28300	Y
HEAD SIDE TO SIDE	60	83200	Y
HEAD UP AND DOWN	60	26600	Y
TALKING	60	12100	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	10400	Y
NORMAL BREATHING	60	56200	Y
OVERALL FF		18600	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Todd Wollenhaupt DATE 12-29-03
TODD WOLLENHAUPT

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 12-5-03

To: _____

From: _____

Re: John Davis
1-26-83

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 12-5-03. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF ~~CHEST X-RAY~~, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

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Occupational Hazard Management

Certifies
that

JOHN DAVIS

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

29th of December 2003

Training Certificate No.
[illegible] 003 009

[illegible] 29 Dec 03
Date

Occupational Hazard Management
[illegible]
[illegible]

OCCUPATIONAL HAZARD MANAGEMENT

SCOTT BERNDT, OHMM
14656 County Road 209
Findlay, Ohio 45840

CERTIFIES
THAT

JOHN DAVIS

HAS
SUCCESSFULLY
COMPLETED

40 HOUR SITE WORKER & OPERATIONS TRAINING

IN ACCORDANCE WITH
29CFR1910.120
CERTIFICATE No: 27NOV.02 003

ON THE

27TH OF NOVEMBER 2002

SCOTT BERNDT, OHMM — DATE 27 Nov 02

Occupational Hazard Management

Certifies
that

JOHN DAVIS

Has successfully completed
PROCESS SAFETY MANAGEMENT
Training
In Accordance with
29 CFR 1910.119
on the

29 December 2003

Training Certificate No.
PSM 29DEC03 009

Rick Renault, CHMM — 29 Dec. 03
Date

Occupational Hazard Management
[illegible]
[illegible]

12/29/2003

LAST NAME DAVIS
FIRST NAME JOHN

FIT TEST REPORT

Fit test information

ID NUMBER 292599871
LAST NAME DAVIS
FIRST NAME JOHN
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 08:52
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	67300	Y
DEEP BREATHING	60	25100	Y
HEAD SIDE TO SIDE	60	54200	Y
HEAD UP AND DOWN	60	15200	Y
TALKING	60	10600	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	14300	Y
NORMAL BREATHING	60	44200	Y
OVERALL FF		21200	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME John H. Davis DATE 12/29/03
JOHN DAVIS

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 2-27-04

To: Bowser Morner

From: MedWork

Re: Kenneth Barlow

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON 2-27-04. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

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Occupational Hazard Management

Certifies
that

KEN BOEHMER

has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

19th of December 2003

Training Certificate No:
29D&C03 007

19 Dec. 03
Date

Occupational Hazard Management
[illegible]
[illegible]

Occupational Hazard Management

Certifies
that

KEN BOEHMER

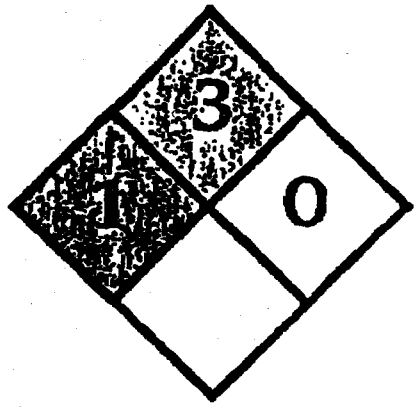
Has successfully completed
PROCESS SAFETY MANAGEMENT
Training
In Accordance with
29 CFR 1910.119
on the

29 December 2003

Training Certificate No.
PSM 29DEC03 007

Rick Brandt, CSHM — 29 Dec. 03
Date

Occupational Hazard Management
[illegible]
[illegible]



Certificate of Completion

This Certifies That

KEN BOEHMER

has completed the 40 hour course:

OSHA 40 Hour Personnel Protection & Safety Course
in accordance with 29CFR1910.120

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

August 31-September 3, 1987
Date

Pete Boldt
Training Director

Certificate of Completion

This is to certify that

KEN BOEHMER

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000001
Certificate Identification Number

Henry M. Butcher, REM, CEA

12/29/2003

LAST NAME BOEHMER
FIRST NAME KENNETH

FIT TEST REPORT

Fit test information

ID NUMBER 277521850
LAST NAME BOEHMER
FIRST NAME KENNETH
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 08:26
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE MED/LARGE
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	12200	Y
DEEP BREATHING	60	15000	Y
HEAD SIDE TO SIDE	60	30800	Y
HEAD UP AND DOWN	60	34300	Y
TALKING	60	3750	Y
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	7340	Y
NORMAL BREATHING	60	8990	Y
OVERALL FF		9670	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Kenneth Boehmer DATE 12-29-03
KENNETH BOEHMER

MedWork

Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11/15/2003

To: Bowser Morner

From: Medwork

Re: Donald Kirkpatrick

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON Donald Kirkpatrick. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

Occupational Hazard Management

Certifies

that

Bruce Kirkpatrick

has successfully completed

HAZWOPER

Annual Refresher training

Training

In accordance with

29 CFR 1910.120

on the

29th of January 2004

Training Certificate No.

29JAN04 002

Scott Berndt, CHMM

29 Jan 04

Date

Occupational Hazard Management
3001 Cottonwood Street
Findlay, Ohio 45840

OCCUPATIONAL HAZARD MANAGEMENT

CERTIFIES

THAT

BRUCE KIRKPATRICK

HAS SUCCESSFULLY COMPLETED

PROCESS SAFETY MANAGEMENT TRAINING

IN ACCORDANCE WITH

29 CFR 1910.119

ON THE

29 JANUARY 2004

TRAINING CERTIFICATE NO.

PSM 29JAN04 001

SCOTT BERNDT, CHMM

21 Jan. 04

DATE

OCCUPATIONAL HAZARD MANAGEMENT
2001 COTTONWOOD STREET
FINDLAY, OHIO 45840

Certificate of Completion

This is to certify that

BRUCE KIRKPATRICK

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

January 18, 2001

118010001
Certificate Identification Number

Henry M. Butcher, REM, CEA

1203

3

0

Certificate of Completion

This Certifies That

Bruce Kirkpatrick

has completed the 40 hour course:

OSHA 29CFR1910.120 Personnel Safety & Health Course

Presented by

HAZCO

Spanning the Hazardous Materials
Health and Safety Horizons

March 12-15, 1987

Date

Training Director

Respirator Fit-Test Record

Employee: Bruce Kirkitatrick **Date:** 2/5/00

Person Fitting Respirator: Scott Pennington

All respirator fit tests will be conducted per the protocol of Appendix A to 1910.134: Fit-testing Procedures. Any deviation from this protocol will be noted in the "Remarks" section below.

Respirator Information

Manufacturer: Sunnuban

Model: 9000

Size: Med

Optional Equipment

Spectacle Kit: N/A

Nose Cup: Yes

Communication: N/A

Testing

Pass: ✓ **Fail:** _____

Remarks

Standard Chlorid. — To small

MedWork
Occupational Health Care

725 S. Ludlow Street, Dayton, Ohio 45402

Date: 11/15/03

To: Bowser Morner

From: MEDWORK

Re: Donald Null

THE ABOVE EMPLOYEE HAS BEEN EXAMINED AT MEDWORK, INC. ON Donald Null. I HAVE REVIEWED THEIR MEDICAL HISTORY, THERIF CHEST X-RAY, PULMONARY FUNCTION AND LABORTORY STUDIES (BLOOD AND URINE TESTS) AND FOUND THEM IN GOOD HEALTH, EXCEPT FOR THOSE COMMENTS NOTED ON THE PHYSICAL EXAMINATION. THIS PHYSICAL EXAMINATION MEETS THE MEDICAL SURVEILLANCE REQUIREMENTS FOR THE HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARDS 1910.120. IT IS MY OPINION THEY ARE ABLE TO WORK IN THIS TYPE OF ENVIRONMENT USING PROPER SAFETY MEASURES AND WEARING A RESPIRATOR.

IF YOU HAVE ANY FURTHER QUESTIONS, PLEASE CONTACT OUR OFFICE.

PHYSICIAN SIGNATURE

F:\2Forms\BOWSERRECERT03-00.doc

Occupational Hazard Management

Certifies
that

DONALD NULL

Has successfully completed

HAZWOPER

Annual Refresher training
Training
In Accordance with
29 CFR 1910.120
on the

29th of December 2003

Training Certificate No:
29DEC03 020

Joel Berndt, CHMM

29 Dec 03
Date

Occupational Hazard Management
2001 Cottonwood Street
Findlay, Ohio 45840

Occupational Hazard Management

Certifies
that

DONALD NULL

Has successfully completed
PROCESS SAFETY MANAGEMENT
Training
In Accordance with
29 CFR 1910.119
on the

29 December 2003

Training Certificate No.
PSM 29DEC03 019

Scott Berndt, CXHM

29 Dec 03.
Date

Occupational Hazard Management
2001 Cottonwood Street
Findlay, Ohio 45840

RESPONSE
UNLIMITED

CERTIFIES THAT

DONALD NULL

HAS ATTENDED THE COURSE AND SUCCESSFULLY COMPLETED STUDIES IN

OSHA 40 HOUR SAFETY TRAINING FOR WASTE SITE WORKERS
(FULFILLS OSHA'S TRAINING REQUIREMENTS OF 29 CFR 1910.120)
(COVERING HAZARDOUS WASTE SITE OPERATIONS)

Brian P. Fogue
INSTRUCTOR

April 18, 1999
CERTIFICATE EXPIRATION DATE

April 18, 1998
DATE

Certificate of Completion

This is to certify that

DONALD NULL

has successfully completed the
MSHA 30 CFR Part 46.8
8-Hour Annual Refresher Training
given at
Bowser-Morner, Inc.
4518 Taylorsville Road, Dayton, Ohio

December 28, 2000

1228000010
Certificate Identification Number

Henry M. Butcher, REM, CEA

12/29/2003

LAST NAME NULL
FIRST NAME DONALD

FIT TEST REPORT

Fit test information

ID NUMBER 297-68-4998
LAST NAME NULL
FIRST NAME DONALD
COMPANY BOWSER MORNER
LOCATION DAYTON
NOTE

CUSTOM1
CUSTOM2
CUSTOM3
CUSTOM4

TEST DATE 12/29/2003
TEST TIME 09:59
DUE DATE 12/29/2004

PORTACOUNT S/N 44721
N95 COMPANION N

RESPIRATOR
MANUFACTURER SUVIVAIR
MODEL 20/20
MASK STYLE FULL FACE
MASK SIZE STANDARD
APPROVAL
EFF. < 99% N

PROTOCOL OSHA 29CFR1910.134
PASS LEVEL 1000

EXERCISE	DURATION (SEC)	FIT FACTOR	PASS
NORMAL BREATHING	60	21100	Y
DEEP BREATHING	60	9370	Y
HEAD SIDE TO SIDE	60	25300	Y
HEAD UP AND DOWN	60	29000	Y
TALKING	60	664	N
GRIMACE	15	Excl.	X
BEND AND TOUCH TOES	60	8970	Y
NORMAL BREATHING	60	16000	Y
OVERALL FF		3670	Y

FIT TEST OPERATOR Eric Horstman DATE 12/29/03
ERIC HORSTMAN

NAME Donald Null DATE 12-29-03
DONALD NULL

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-06-4-023

June 8, 2004

Project Number 7448

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 324)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Number [redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by a Tetra Tech NUS, Inc. employee under the CLEAN contract, and to attest that the individual identified herein is in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include locating and staking locations for proposed groundwater monitoring and soil boring locations in and around the following SWMUs at NSWC Crane site in Indiana:

- SWMU 12, Mine Fill A
- SWMU 13, Mine Fill B
- SWMU 16, Cast High Explosive Fill/ Building 146

This is scheduled to be conducted from June 10 through June 15, 2004. These activities will be performed by Mr. Stan Conti, a Tetra Tech NUS, Inc. employee. After an evaluation of available historical information, it has been determined that Mr. Conti's planned activities will not involve a reasonable potential for any exposures to hazardous waste site safety or health hazards, and as such, the requirements of OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations are not considered to be applicable for the purposes of this visit. Nonetheless, Mr. Conti is current in both HAZWOPER training and medical surveillance program requirements.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld

c: Mr. B. Gorman (Code ES34)
Mrs. D. Humbert
Mr. M. Perry
Mr. K. Henn
Mr. R. Basinski
Dr. T. Johnston

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PITT-07-4-017

July 7, 2004

Project Numbers 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers [redacted] and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT at the NSWC Crane site in Indiana. This is scheduled to be conducted from July 8 through August 6, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator dated June 2004, prepared under CTO 0343 and the Health and Safety Plan for Mine Fill A (SWMU 12) prepared under CTO 0357. These individuals are as follows:

Stan Conti	Chip Laney
Jim Goerdt	Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Humbert
M. Perry
K. Henn
R. Basinski

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PITT-07-4-052

July 27, 2004

Project Numbers 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 324)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers [redacted] and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by a Tetra Tech NUS, Inc. employee under the CLEAN contract, and to attest that the individual identified herein is in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include oversite of field activities being conducted at NSWC Crane site in Indiana. This is scheduled to be conducted from July 28-29, 2004. These activities will be performed by Mr. Mark Peterson, a Tetra Tech NUS, Inc. employee.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: Mr. B. Gorman (Code ES34)
Mrs. D. Humbert
Mr. M. Perry
Mr. K. Henn
Mr. R. Basinski

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PITT-08-4-019

August 6, 2004

Project Numbers 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbe[redacted]d 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT at the NSWC Crane site in Indiana. This is scheduled to be conducted from August 9 through September 6, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator dated June 2004, prepared under CTO 0343 and the Health and Safety Plan for Mine Fill A (SWMU 12) prepared under CTO 0357. These individuals are as follows:

Stan Conti	Chip Laney
Jim Goerdt	Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Humbert
M. Perry
K. Henn
R. Basinski

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PITT-08-4-031

August 13, 2004

Project Numbers 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers [redacted] and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to add personnel conducting the field activities at the NSWC Crane site from August 15-18, 2004. Mr. Tom Dickson has been added to the field crew performing this work. All other information in our letter dated August 6, 2004 remains the same.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld

c: B. Gorman (Code ES 42)
D. Humbert
M. Perry
K. Henn
R. Basinski

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PITT-09-4-006

September 3, 2004

Project Numbers 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 32)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers [redacted] and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; and surface water, seep and sediment sampling at the NSWC Crane site in Indiana. This is scheduled to be conducted from September 7 -30, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator dated June 2004, prepared under CTO 0343 and the Health and Safety Plan for Mine Fill A (SWMU 12) Revision 1, dated August 2004, prepared under CTO 0357. These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Humbert
M. Perry
K. Henn
R. Basinski

TETRA TECH NUS, INC.
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PITT-10-4-057

October 25, 2004

Project Number 7448 and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Bill Gates (Code ES 324)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0343 and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by a Tetra Tech NUS, Inc. employee under the CLEAN contract, and to attest that the individual identified herein is in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT at the NSWC Crane site in Indiana. This is scheduled to be conducted from October 25 through November 22, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator dated August 2004, prepared under CTO 0343 and the Health and Safety Plan for Mine Fill A (SWMU 12) dated August 2004, prepared under CTO 0357. These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/mlg

c: Mr. B. Gorman (Code ES34)
Mrs. D. Humbert
Mr. M. Perry
Mr. K. Henn
Mr. R. Basinski
File copy CTO 0343 and CTO 0357

TETRA TECH NUS, INC.
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PITT-11-4-003

November 3, 2004

Project Numbers N0039, N0989, and N8925

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Mark Davidson (Code ES33)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Number 0078, 0328, and [redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Davidson:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. personnel under the CLEAN contract, and to attest that the personnel identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include collecting groundwater samples at Site 8, Sites 36 and 37, and Site 59; and collecting a soil sample at Site 37 at the NAS Cecil Field site in Jacksonville, Florida. This is scheduled to be conducted November 4 and November 30, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow the Health and Safety Plan for National Attenuation Groundwater Monitoring Sites, Revision 4 dated May 2004, and the Health and Safety Plan for Operable Unit 9, Site 59 - Buildings 324/1845 Area Remedial Investigation dated September 2004. These individuals are as follows:

Scott McGuire	Dave Siefken
Chris Gleaton	Shina Ballard
Gus Nelson	Mervin Dale

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

[redacted]
CLEAN Health and Safety Manager

MMS:lld
c: B. Gorman (Code ES34)
D. Humbert
M. Perry
K. Henn
M. Speranza
File

TETRA TECH NUS, INC.
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PITT-12-4-003

December 3, 2004

Project Number N6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, and 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from December 6, 2004 through December 17, 2004. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Jim Goerdt
Terry Rojahn
Donald Westerhoff

TETRA TECH NUS, INC.

PITT-12-4-003

Mr. William Gates
Naval Facilities Engineering Command
December 3, 2004 – Page 2

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/mlg

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0160, 0331, 0343, and 0357

TETRA TECH NUS, INC.
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PITT-12-4-053

December 30, 2004

Project Numbers 3961, 1245, 7448, and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, an[redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from January 4-28, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Colin Doolan
Jim Goerdt
Terry Rojahn

TETRA TECH NUS, INC.

PITT-12-4-053

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/lld

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0160, 0331, 0343, and 0357

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Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-2-5-050

February 25, 2005

Project Numbers N1245, N6878, and 00042

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0331, 0357, and 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from February 28 through March 16, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- Health and Safety Plan for Risk Assessment and CMS at Solid Waste Management Unit (SWMU) 9, dated February 2005, prepared under CTO 0376.

These individuals are as follows:

Jim Goerdt
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/lld

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Roger Clark, Ph.D., TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.
File copy CTO 0331, 0357, and 0376

APPENDIX F.4
SWMU 13
HEALTH AND SAFETY DOCUMENTATION
EXTERNAL SUMP/DRAINAGE INVESTIGATION
AND
PCB DELINEATION INVESTIGATIONS

TETRA TECH NUS

CERTIFICATE OF TR[illegible]

THIS CERTIF[illegible]

Terry R. Ro[illegible]

[illegible]successfully completed an 8-hou[illegible] on th[illegible]

OSHA [illegible]

GENERAL SI[illegible]EFRESHER
[illegible]D SUPERVISOR [illegible]R TRAINING

prepared and [illegible]ed by
Tetra Tech [illegible]c.
Pittsburgh, [illegible]ania

February 9, 2006

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

October 28, 2005

TETRA TECH NUS

CERTIFICATE OF TR[illegible]

THIS CERTIF[illegible]

James G[illegible]

[illegible]successfully completed an 8-hou[illegible]on in

OSHA [illegible]

GENE[illegible]KER
REFRESH[illegible]NG

prepared and [illegible]ed by
Tetra Tech [illegible]c.
Pittsburgh, P[illegible]va[illegible]a

December 29, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

SAFE WORK PERMIT FOR
MULTI MEDIA SAMPLING
NSWC, CRANE INDIANA

Permit No. 1 Date: 2/14/06 Time: From 7:00 to 18:00

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): Multi media sampling including soils, surface water, groundwater and sediment sampling. If railway access is required, follow Railway Access Plan (HASP Att. VI)

II. Required Monitoring Instrument(s): FID or a PID with at least a 11.7 eV lamp

III. Field Crew:

IV. On-site Inspection conducted ☒ Yes ☐ No Initials of Inspector TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. Protective equipment required
Level D ☒ Level B ☐
Level C ☐ Level A ☐
Detailed on Reverse

Respiratory equipment required
Full face APR ☐ Escape Pack ☐
Half face APR ☐ None ☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves

VI. Chemicals of Concern	Action Level(s)	Response Measures
VOCs/energetics	Any sustained readings(> 1minute >10 ppm above background in the workers breathing zone	Suspend site activities, report to an unaffected area
Metals/PAHs	>2 mg/m3	Employ area wetting dust suppression

VII. Additional Safety Equipment/Procedures

Hard-hat	☐ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☐ No
Safety Glasses	☒ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio	☐ Yes	☒ No
Splash Shield	☐ Yes	☒ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☒ No	Gloves (Type - Nitrile)	☒ Yes	☐ No
Steel toe Work shoes or boots	☒ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work clothes and PVC or PE coated Tyvek if saturation or work clothes may occur. Hard hat and hearing protection when working near operating equipment or other elevated noise sources. Reflective work vests when working near equipment or traffic or within wooded areas during hunting season.

VIII. Procedure review with permit acceptors	Yes	NA		Yes	NA
Safety shower/eyewash (Location & Use)	☐	☐	Emergency alarms	☐	☐
Procedure for safe job completion	☐	☐	Evacuation routes	☐	☐
Contractor tools/equipment/PPE inspected	☐	☐	Assembly points	☐	☐

IX. Site Preparation	Yes	NA
Utility Locating and Excavation Clearance completed	☐	☐
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐
Physical Hazards Barricaded and Isolated	☐	☐
Emergency Equipment Staged	☐	☐

X. Additional Permits required (Hot work, confined space entry, excavation etc.). ☐ Yes ☐ No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special instructions, precautions Contaminants may be bound to particulates, avoid generation of dusts and situation sampling operations in an upwind/unaffected area. If necessary use area wetting methods. Suspicious materials or items shall be avoided and reported to the site UXO is not anticipated to be a significant hazard at these sites. If suspicious material is located, contact NWSC Crane personnel. Use safe lifting practices when performing sampling activities and when carrying sample coolers. Pack glassware in hard sided containers for transport over uneven ground. Employ the Geoprobe Acetate tube retention kit for cutting acetate liners to avoid cuts and lacerations.

Permit Issued by: Permit Accepted by:

SAFE WORK PERMIT
SOIL BORING OPERATIONS
NSWC, CRANE INDIANA

Permit No. 2 Date: 2/14/06 Time: From 7:00 to 18:00

SECTION I: General Job Scope

I. Work limited to the following (description, area, equipment used): Soil boring using direct push technology hollow stem auger, or air rotary drilling. If railway access is required, follow Railway Access Plan (HASP Att. VI)

II. Required Monitoring Instrument(s): FID or PID with at least a 11.7 eV lamp

III. Field Crew:

IV. On-site Inspection conducted ☒ Yes ☐ No Initials of Inspector TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. Protective equipment required
Level D ☒ Level B ☐
Level C ☐ Level A ☐
Detailed on Reverse

Respiratory equipment required
Full face APR ☐ Escape Pack ☐
Half face APR ☐ None ☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves

VI.

Chemicals of Concern	Action Level(s)	Response Measures
VOCs/energetics	Any sustained readings(> 1minute >10 ppm above background in the workers breathing zone	Suspend site activities, report to an unaffected area
Metals/PAHs	>2 mg/m3	Employ area wetting dust suppression

VII. Additional Safety Equipment/Procedures

Hard-hat	☒ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☒ Yes	☐ No
Safety Glasses	☒ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio	☐ Yes	☒ No
Splash Shield	☐ Yes	☒ No	Barricades	☒ Yes	☐ No
Splash suits/coveralls	☐ Yes	☐ No	Gloves (Type - Nitrile)	☒ Yes	☐ No
Steel toe Work shoes or boots	☒ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work cloths and PVC or PE coated Tyvek if saturation or work cloths may occur. Hard hats and hearing protection if sampling/working near the DPT/drilling vehicle. Reflective vests for working along in within traffic patterns or in wooded areas during hunting season.

VIII. Procedure review with permit acceptors

	Yes	NA		Yes	NA
Safety shower/eyewash (Location & Use)	☐	☐	Emergency alarms	☐	☐
Procedure for safe job completion	☐	☐	Evacuation routes	☐	☐
Contractor tools/equipment/PPE inspected	☐	☐	Assembly points	☐	☐

IX. Site Preparation

	Yes	NA
Utility Locating and Excavation Clearance completed	☒	☐
Vehicle and Foot Traffic Routes Cleared and Established	☐	☐
Physical Hazards Barricaded and Isolated	☐	☐
Emergency Equipment Staged	☒	☐

X. Additional Permits required (Hot work, confined space entry, excavation etc.). ☐ Yes ☐ No
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

XI. Special instructions, precautions: Contaminants may be bound to particulates, avoid generation of dusts. Position sampling operations in an upwind/unaffected area. If necessary use area wetting methods. UXO is not anticipated to be a significant hazard at these sites. Equipment (drill rigs and DPT) shall be inspected using Attachment IV of the HASP. Emergency stop devices must be present and in good working condition. Do not modify site equipment. Stand clear of operating equipment. The drill rig operator will be responsible for visually inspecting the area and verbally alerting personnel prior to starting/engaging the equipment. Employ the Geoprobe Acetate tube retention kit for cutting acetate liners to avoid cuts and lacerations. Never place items to be cut on your knee or within your other hand. Where possible wear cut resistant protection at least on your non-knife hand.

Permit Issued by: Permit Accepted by:

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
Jay McFall	2-14-06	2-19-04	2-3-06		2-6-06
[illegible]	2-14-06	12/91	12/05		11/05
David Hickey	2-14-06	1/91	1/06	01/01	11/05
TERRY ROLAND	2-14-06	10/85	2/06	03/88	11/04
JOSH DUTTON	2/20/06	12/01	10/05		1/06

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-02-6-020

February 10, 2006

Project No. N6878

Mr. William Gates (Code ES31)
Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29119-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0357

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. (TtNUS) employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include DPT sampling; groundwater, surface water, sump, and sediment sampling at the NSWC Crane site in Indiana. This is scheduled to be conducted from February 13 through March 10, 2006. The individuals that will perform these tasks are employees of TtNUS. They will follow these listed health and safety plans.

- HASP for Mine Fill B (SWMU 13) Cast High Explosives Fill and B-146 Incinerator (SWMU 16) Revision 3, dated January 2006, prepared under CTO 0357.
- HASP for Mine Fill A (SWMU 12), Revision 2, dated January 2006, prepared under CTO 0357.

These individuals will participate in the planned activities described above:

Jim Goerdt
David Hickey
Terry Rojahn

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/lld
c: Mr. B. Gorman (Code ES42)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Mr. Ralph Basinski, TtNUS, Inc.

CERTIFICATE OF COMPLETION

LET IT BE KNOWN THAT

JOSH DUTTON

HAS SATISFACTORILY COMPLETED
ALL REQUIRED COURSEWORK FOR

8 HOUR HAZWOPER REFRESHER

OCTOBER 11, 2005
FOR ENVIRONMENTAL FIELD SERVICES, INC.

FRANCES BURROWS MED, RN, COHN-S
OSHA AUTHORIZED INSTRUCTOR
PROJECT T.E.A.C.H., INC.

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	481-86-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/07/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P. Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

ROUND 4

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-12-4-053

December 30, 2004

Project Numbers 3961, 1245, 7448, and 6878

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: William Gates (Code ES31)
P.O. Box 190010
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Numbers 0160, 0331, 0343, an[redacted]

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from January 4-28, 2005. The individuals that will perform these tasks are employees of Tetra Tech NUS. They will follow these listed health and safety plans.

- Health and Safety Plan for Solid Waste Management Unit 7, dated December 2004, prepared under CTO 0160.
- Health and Safety Plan for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Environmental Indicator Investigation for SWMUs 18, 19, 20, and the Old Gun Tub Storage Lot, dated November 2004, prepared under CTO 0331.
- Health and Safety Plan for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- Health and Safety Plan for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.

These individuals are as follows:

Stan Conti
Colin Doolan
Jim Goerdt
Terry Rojahn

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Colin A. Doolan

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

December 23, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Lafferty
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Baseline Examination **UPDATE**

EMPLOYEE:	Doolan, Colin	COMPANY:	TT/NUS
SSN:	XXX-XX-8351	POSITION:	Earth Scientist
DATE OF EXAM:	12/02/2004	LOCATION:	TT/NUS-Pittsburgh
EXPIRATION DATE:	12/02/2006	SITE:	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Status changed to Biennial.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/07/04

Signature: Peter P Greaney MD

WorkCare
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(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120
Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 22, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	481-86-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/07/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

TETRA TECH NUS, INC.
661 Andersen Drive ▪ Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 ▪ FAX (412) 921-4040 ▪ www.tetratech.com

March 11, 2003

Mr. Stanley Conti
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Whom It May Concern:

This letter is to certify that Mr. Stanley Conti successfully completed a course of instruction in Hazardous Materials Handling for Hazardous Waste Site Workers which meets the criteria established in 29 CFR 1910.120(e)(3)(i). This course was prepared and conducted by Tetra Tech NUS (formerly Brown and Root Environmental, a division of HALLIBURTON NUS Corporation) in September 1983. If you have any questions, please feel free to contact me.

Very truly yours,

James K. Laffey
Manager, Training Resources

JKL:lld

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Stan Conti

has successfully completed an 8-hour course of instruction in OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

May 14, 2004
Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: Stanley J. Conti

Office Location: PIT

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 12-6-04

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 30, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	COMPANY:	TT/NUS
SSN:	XXX-XX-8670	POSITION:	Environmental Sampling
DATE OF EXAM:	11/05/2004	LOCATION:	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	SITE:	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
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(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

	Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam	
1245	Jay McFall Jay McFall	12/7/04	2/19/04	N/A	N/A	7/30/04	
SWMU 9	DOU WOBSTOLHOFF [illegible]	"	1/93	8/04	8/04	2/12/03	
	TERRY RUHAHN [illegible]	"	10/85	1/04	1/04	11/10/04	ALSO SWMU 9
1245 6875 1448	[illegible] [illegible]	12/8/04	12/91	10/04	NA	11/7/04	
	Stan Conti S Conti	12/8/04	8/83	5/04	8/84	12/6/04	
	Colin Doolan Colin Doolan	1/6/05	5/99	12/04	NA	12/04	

ROUNDS 5, 6, AND 7

TETRA TECH NUS, INC.
661 Andersen Drive • Pittsburgh, PA 15220
Tel 412.921.7090 • Fax 412.921.4040 • www.tetratech.com

PITT-04-5-067

April 29, 2005

Project Nos. 1245, 7448, 6878, 00042

Mr. William Gates (Code ES31)
Commander, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29119-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Nos. 0331, 0343, 0357, 0376

Subject: Personnel Clearance for Site Visit

Dear Mr. Gates:

The purpose of this letter is to inform you of upcoming site activities to be performed by Tetra Tech NUS, Inc. (TtNUS) employees under the CLEAN contract, and to attest that the individuals identified herein are in compliance with applicable OSHA regulations. This information is being submitted as specified in Section H.14 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The specific OSHA regulations involved for this project pertain to employee health and safety training and medical surveillance requirements, as identified in OSHA 29 CFR 1910.120.

The subject project and planned activities include staking locations of intrusive sampling; installation/development and sampling of monitoring wells; surface water, seep and sediment sampling; and soil sampling using DPT and hand augering techniques at the NSWC Crane site in Indiana. This is scheduled to be conducted from May 2, 2005 through June 8, 2005. The individuals that will perform these tasks are employees of TtNUS. In performing these activities, the field team will adhere to the following Health and Safety Plans (HASPs):

- HASP for RCRA Facility Investigation at Building 106 Pond (SWMU 8) and Roads and Grounds Area (SWMU 15), dated November 2004, prepared under CTO 0331.
- HASP for Cast High Explosives Fill and B-146 Incinerator, dated August 2004, prepared under CTO 0343.
- HASP for Mine Fill A (SWMU 12), Revision 1, dated August 2004, prepared under CTO 0357.
- HASP for Risk Assessment and Corrective Measures Study (SWMU 9), dated February 2005, prepared under CTO 0376.

The following individuals will participate in the planned activities described above:

Jim Goerdt
Terry Rojahn
John Wright
Jeff Schubert

TETRA TECH NUS, INC.

In addition, Roger Clark will also visit Tetra Tech NUS, Inc. work sites at NWSC Crane during this period. However, he will be not participating in any intrusive activities (e.g., drilling, sampling, etc.) and will be restricted from approaching work areas while any intrusive activities are performed.

If you have any questions, concerns, or if I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

Matthew M. Soltis, CIH, CSP
CLEAN Health and Safety Manager

MMS/mlg

cc: Mr. B. Gorman (Code ES34)
Ms. Debra Humbert, TtNUS, Inc.
Mr. Mark Perry, TtNUS, Inc.
Mr. Keith Henn, TtNUS, Inc.
Mr. Terry Rojahn, TtNUS, Inc.
Mr. Roger Clark, TtNUS, Inc.
File copy CTO 0331, 0343, 0357, 0376

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

Basinski, Ralph

From: Soltis, Matthew

Sent: Tuesday, August 31, 2004 3:18 PM

To: Basinski, Ralph

Cc: Rojahn, Terry; Diano, Linda

Subject: Training Certificate

Ralph:

As I mentioned earlier, one of the action items from my recent H&S audit at NSWC Crane was to follow up on the matter of an 8-hour training certificate for Management/Supervisor H&S training for our FOL on this field effort (Terry Rojahn). This was the only mandatory training element that I could not find documentation for during my audit.

In checking our corporate training database, I have confirmed that Terry did satisfactorily complete this training with us on March 31, 1988. We do not maintain copies of every training certificate that we issue. Please have Terry use this message as interim confirmation of his satisfying this training requirement. The next time that we prepare training certificates, Linda Diano will prepare a replacement certificate for Terry and provide it to him for his records/use.

If there are any questions, let me know.

Matt

Matthew M. Soltis, CIH, CSP.
Corporate Health and Safety Manager
Tetra Tech NUS, Inc.
Foster Plaza 7, 661 Andersen Drive
Pittsburgh, PA 15220-2745
Telephone: (412) 921-8912
FAX: (412) 921-4040
soltism@ttnus.com
http://www.ttnus.com
http://www.tetratech.com

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WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

APPLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120 Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

October 22, 2004

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	481-86-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/07/2003	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/07/2005	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.
2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:
3. ☐ **NOT QUALIFIED**
4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Scott Hardy, M.D. Date: 11/11/03

Signature: Scott Hardy MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

CERTIFICATE OF TRAINING

CHMR

Center for Hazardous Materials Research

University of Pittsburgh Applied Research Center
320 William Pitt Way • Pittsburgh, PA 15238

(412) 826-5320 or 1-800-334-CHMR

THIS CERTIFIES THAT

JOHN S. WRIGHT

has successfully completed a course of instruction in

OCCUPATIONAL HEALTH AND SAFETY

40-Hour Basic Health and Safety Training Complying with 29 CFR 1910.120(e)(3)(i)

prepared and conducted by the

Center for Hazardous Materials Research

A Subsidiary of the University of Pittsburgh Trust.
Pittsburgh, Pennsylvania

July 19, 1991

Date of Award

Edgar Berkey

Edgar Berkey, Ph.D.
President

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

John S. Wright

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORKCARE™
A Trademark of WorkCare, Inc.

RELEASE TO DUTY

CLINIC INSTRUCTIONS: Complete and give to employee before they leave the facility. This is a requirement of Tetra-Tech.

Employee Name: John Wright

Office Location: _____

Yes	No	
☑	☐	To work with hazardous materials in accordance with 29 CFR 1910.120.
☑	☐	To use respiratory protective equipment in accordance with 29 CFR 1910.134.

Based on the limited information available to me at this time, I find no necessity for immediate restrictions and I release this employee for duty. It is understood and agreed upon by the employer or potential employer of this examinee that subsequent comprehensive review of all laboratory and other test data by WorkCare may detect health conditions not apparent to me. It is further agreed and understood that such health conditions may necessitate the need for workplace restrictions. Examination has been performed in compliance with 1910.120 and 1910.134.

Signed: [illegible] M.D.

Date: 4/29/05

Employee

Bring this form back to the office and fax it to:
Matt Soltis, Corporate Health & Safety (412) 921-4040

333 S. Anita Drive, Suite 630, Orange, CA 92868 • (714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154
E-mail: info@workcare.com • Website: www.workcare.com

RD 7

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojahn

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 25, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

NUS CORPORATION

Certificate of Training

THIS CERTIFIES THAT

TERRY ROJAHN

has successfully completed a course of instruction on

SUPERFUND TRAINING CLASS

prepared and conducted by the
NUS Corporation, Pittsburgh, Pennsylvania

SEPT. 30 - OCT. 4, 1985
Date of Award

Gary F. Smith, C.S.P.
Director; Health, Safety Training

E. Dennis Escher, P.E.
Vice President

Basinski, Ralph

From: Soltis, Matthew
Sent: Tuesday, August 31, 2004 3:18 PM
To: Basinski, Ralph
Cc: Rojahn, Terry; Diano, Linda
Subject: Training Certificate

Ralph:

As I mentioned earlier, one of the action items from my recent H&S audit at NSWC Crane was to follow up on the matter of an 8-hour training certificate for Management/Supervisor H&S training for our FOL on this field effort (Terry Rojahn). This was the only mandatory training element that I could not find documentation for during my audit.

In checking our corporate training database, I have confirmed that Terry did satisfactorily complete this training with us on March 31, 1988. We do not maintain copies of every training certificate that we issue. Please have Terry use this message as interim confirmation of his satisfying this training requirement. The next time that we prepare training certificates, Linda Diano will prepare a replacement certificate for Terry and provide it to him for his records/use.

If there are any questions, let me know.

Matt

Matthew M. Soltis, CIH, CSP.
Corporate Health and Safety Manager
Tetra Tech NUS, Inc.
Foster Plaza 7, 661 Andersen Drive
Pittsburgh, PA 15220-2745
Telephone: (412) 921-8912
FAX: (412) 921-4040
soltism@ttnus.com
http://www.ttnus.com
http://www.tetratech.com

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WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Rojahn, Terry	**COMPANY:**	TT/NUS
SSN:	XXX-XX-8670	**POSITION:**	Environmental Sampling
DATE OF EXAM:	11/05/2004	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/05/2006	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☑	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☑	☐

STATUS

1. ☑ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/10/04

Signature: Peter P Greaney MD

WorkCare
333 S. Anita Drive, Suite 630, Orange, CA 92868
(714) 978-7488 - (800) 455-6155 - FAX (714) 456-2154

October 28, 2005

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

James Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

December 29, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

A PLIED EDUCATIONAL SERIES

James D. Goerdt

APPLIED ASSOCIATES INTERNATIONAL INC.

CERTIFICATE

OSHA, 1910.120
Hazardous Waste Operations and Emergency Response 40 Hour Course

ISSUE DATE: December 13, 1991

EXPIRATION: December 13, 1992

CERTIFICATE: HAZ9112001058

STEVEN L. WILLIAMS
President

THOMAS O. MURRAY
Certified Industrial Hygenist

P. O. Box 300068
Fern Park, Florida 32730-0068

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	XXX-XX-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/22/2005	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/22/2007	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/29/05

Signature: Peter P. Greaney MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

ROUND 8

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Terry R. Rojas

has successfully completed an 8-hour [illegible] on the

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER
AND SUPERVISOR REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 9, 2006

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

Basinski, Ralph

From: Soltis, Matthew
Sent: Tuesday, August 31, 2004 3:18 PM
To: Basinski, Ralph
Cc: Rojahn, Terry; Diano, Linda
Subject: Training Certificate

Ralph:

As I mentioned earlier, one of the action items from my recent H&S audit at NSWC Crane was to follow up on the matter of an 8-hour training certificate for Management/Supervisor H&S training for our FOL on this field effort (Terry Rojahn). This was the only mandatory training element that I could not find documentation for during my audit.

In checking our corporate training database, I have confirmed that Terry did satisfactorily complete this training with us on March 31, 1988. We do not maintain copies of every training certificate that we issue. Please have Terry use this message as interim confirmation of his satisfying this training requirement. The next time that we prepare training certificates, Linda Diano will prepare a replacement certificate for Terry and provide it to him for his records/use.

If there are any questions, let me know.

Matt

Matthew M. Soltis, CIH, CSP.
Corporate Health and Safety Manager
Tetra Tech NUS, Inc.
Foster Plaza 7, 661 Andersen Drive
Pittsburgh, PA 15220-2745
Telephone: (412) 921-8912
FAX: (412) 921-4040
soltism@ttnus.com
http://www.ttnus.com
http://www.tetratech.com

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October 28, 2005

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

James Goe[illegible]

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

December 29, 2005

Date of Award

Clyde Snyder
Senior Instructor
Training Services

James K. Laffey
Manager
Training Services

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Goerdt, James	**COMPANY:**	TT/NUS
SSN:	XXX-XX-2691	**POSITION:**	Environmental Scientist
DATE OF EXAM:	11/22/2005	**LOCATION:**	TT/NUS-Pittsburgh
EXPIRATION DATE:	11/22/2007	**SITE:**	Pittsburgh

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/29/05

Signature: Peter P. Greaney MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

Chairman, American Red Cross

Instructor's Signature

Chapter

Appalachian Chapter

(865) 483-5641

Holder's Signature

Cert. 653998 (Rev. Oct. 2001)

Chairman, American Red Cross

Instructor's Signature

Chapter

Appalachian Chapter

(865) 483-5641

Holder's Signature

Cert. 653999 (Rev. Oct. 2001)

Chairman, American Red Cross

Instructor's Signature

Chapter

Appalachian Chapter

(865) 483-5641

Holder's Signature

Cert. 655998 (Rev. Oct. 2001)

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: Periodic Examination

EMPLOYEE:	Hickey, David	**COMPANY:**	TT/NUS
SSN:	XXX-XX-9715	**POSITION:**	Geologist
DATE OF EXAM:	11/22/2005	**LOCATION:**	TT/NUS-Oak Ridge
EXPIRATION DATE:	11/22/2006	**SITE:**	Oak Ridge

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/29/05

Signature: Peter P. Greaney, MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

ROUND 9

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Walter Pryor III

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

January 23, 2007

Date of Award

Matthew M. Soltis, CIH, CSP
Manager
Health and Safety

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: **Periodic Examination**

EMPLOYEE:	**Pryor, Walter III E**	**COMPANY:**	**TT/NUS**
SSN:	**XXX-XX-7288**	**POSITION:**	**Ground Water Sampling**
DATE OF EXAM:	**12/22/2006**	**LOCATION:**	**TT/NUS-Germantown**
EXPIRATION DATE:	**12/22/2008**	**SITE:**	**Germantown**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Pending completion of pulmonary function test.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 12/29/06

Signature: Peter P Greaney MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

TETRA TECH NUS

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Jim Goerdt

has successfully completed an 8-hour course of instruction in

OSHA 29 CFR 1910.120

GENERAL SITE WORKER
REFRESHER TRAINING

prepared and instructed by
Tetra Tech NUS, Inc.
Pittsburgh, Pennsylvania

February 2, 2007

Date of Award

Matthew M. Soltis, CIH, CSP
Manager
Health and Safety

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: **Periodic Examination**

EMPLOYEE:	**Goerdt, James**	**COMPANY:**	**TT/NUS**
SSN:	**XXX-XX-2691**	**POSITION:**	**Environmental Scientist**
DATE OF EXAM:	**11/22/2005**	**LOCATION:**	**TT/NUS-Pittsburgh**
EXPIRATION DATE:	**11/22/2007**	**SITE:**	**Pittsburgh**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS:

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/29/05

Signature: for P Greaney MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

GERAGHTY & MILLER, INC.
Environmental Services

Certificate of Completion

Presented To

David A. Hickey Jr.

In Recognition of Having Successfully Completed
the Prescribed Course of Study for

Hazardous Waste Site Activities
40-Hour Initial Health and Safety Training

Orlando, Florida **January 7-11, 1991**

Richard M. Miller
President
American Ecology Services, Inc.

Course Director
Geraghty & Miller, Inc

WORK STATUS REPORT

Employer Copy

TYPE OF EXAMINATION: **Periodic Examination** **UPDATE**

EMPLOYEE:	**Hickey, David**	**COMPANY:**	**TT/NUS**
SSN:	**XXX-XX-9715**	**POSITION:**	**Geologist**
DATE OF EXAM:	**11/22/2005**	**LOCATION:**	**TT/NUS-Oak Ridge**
EXPIRATION DATE:	**11/22/2007**	**SITE:**	**Oak Ridge**

The following recommendations are based on a review of one or all of the following: a base history questionnaire, supporting diagnostic tests, physical examination, and the essential functions of the position applied for or occupied by the individual named above.

	Yes	No	Undecided
Has the employee any detected medical conditions that would increase his/her risk of material health impairment from occupational exposure in accordance with 29 CFR §1910.120?	☐	☒	☐
Does the employee have any limitations in the use of respirators in accordance with 29 CFR §1910.134?	☐	☒	☐

STATUS

1. ☒ **QUALIFIED** The examination indicates no significant medical condition. Employee can be assigned any work consistent with skills and training.

2. ☐ **QUALIFIED - WITH LIMITATIONS** The examination indicates that a medical condition currently exists that limits work assignments on the following basis:

3. ☐ **NOT QUALIFIED**

4. ☐ **DEFERRED** The examination indicated that additional information is necessary. The employee has been given the following instructions.

COMMENTS: ***Approved for biennial status.***

I have reviewed the medical data of the above named employee, and informed the employee of the results of the medical examination and any medical conditions that require follow-up examination or treatment.

Name of Physician: Peter P. Greaney, M.D. Date: 11/13/06

Signature: Peter P Greaney MD

WorkCare
300 S. Harbor Blvd., Suite 600, Anaheim, CA 92805
(714) 978-7488 • (800) 455-6155 • FAX (714) 456-2154

Date Completed:

1/20/2006

[redacted]

Receipt # 97780

International Union of Operating Engineers
Hazmat Training Program

Local DOE

This is to certify that

David Hickey, Jr

has successfully completed the required annual 8-hour refresher class specifically designed for workers in accordance with OSHA at 29 CFR 1910.120.

Jeff Henderson
Certified Instructor

FIGURE 8-2

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing investigation activities at NSWC Crane, and that I have received site-specific training that included the elements presented below:

- Names of personnel and alternates responsible for site safety and health
- Safety, health and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan including Table 5-1 and 6-1
- Emergency response procedures (evacuation and assembly points)
- Review contents of relevant Material Safety Data Sheets
- Review of Safe Work Permits

I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements are accurate and correct to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
Jim Goerdt Jim Goerdt	4/10/07	12/91	1/07	NA	11/05
Walter Payne Walt	4/10/07	9/97	1/07	9/97	12/07

APPENDIX D

SWMU 13

ANALYTICAL DATA, ROUNDS 1-9

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	03	03	01	01	01	01	01	01	01
LOCATION	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD02	13SW/SD02	13SW/SD03	13SW/SD03	13SW/SD04	13SW/SD04	13SW/SD05
SAMPLE NUMBER	13SW0101	13SW0101-F	13SW0102	13SW0102-F	13SW0201	13SW0201-F	13SW0301	13SW0301-F	13SW0401	13SW0401-F	13SW0501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/7/2004	10/7/2004	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE									1 U		1 U
1,2,4-TRICHLOROBENZENE									1 U		1 U
1,2-DICHLOROBENZENE									1 U		1 U
1,3-DICHLOROBENZENE									1 U		1 U
1,4-DICHLOROBENZENE									1 U		1 U
1,4-NAPHTHOQUINONE									1 U		1 U
1,4-PHENYLENEDIAMINE									1 UJ		1 UJ
1-NAPHTHYLAMINE									1 U		1 U
2,2'-OXYBIS(1-CHLOROPROPANE)									1 U		1 U
2,3,4,6-TETRACHLOROPHENOL									1 U		1 U
2,4,5-TRICHLOROPHENOL									1 U		1 U
2,4,6-TRICHLOROPHENOL									1 U		1 U
2,4-DICHLOROPHENOL									1 U		1 U
2,4-DIMETHYLPHENOL									1 U		1 U
2,4-DINITROPHENOL									1 U		1 U
2,6-DICHLOROPHENOL									1 U		1 U
2-ACETYLAMINOFLUORENE									1 U		1 U
2-CHLORONAPHTHALENE									1 UJ		1 UJ
2-CHLOROPHENOL									1 U		1 U
2-METHYLNAPHTHALENE									0.05 U		0.05 U
2-METHYLPHENOL									1 U		1 U
2-NAPHTHYLAMINE									1 U		1 U
2-NITROANILINE									1 U		1 U
2-NITROPHENOL									1 U		1 U
2-PICOLINE									1 U		1 U
3&4-METHYLPHENOL									1 U		1 U
3,3'-DICHLOROBENZIDINE									1 U		1 U
3,3'-DIMETHYLBENZIDINE									1 U		1 U
3-METHYLCHOLANTHRENE									1 U		1 U
3-NITROANILINE									1 U		1 U
4,6-DINITRO-2-METHYLPHENOL									1 U		1 U
4-AMINOBIPHENYL									1 U		1 U
4-BROMOPHENYL PHENYL ETHER									1 U		1 U
4-CHLORO-3-METHYLPHENOL									1 U		1 U
4-CHLOROANILINE									1 U		1 U
4-CHLOROPHENYL PHENYL ETHER									1 U		1 U
4-NITROANILINE									1 U		1 U
4-NITROPHENOL									1 U		1 U
4-NITROQUINOLINE-1-OXIDE									1 UR		1 UR
5-NITRO-O-TOLUIDINE									1 U		1 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	03	03	01	01	01	01	01	01	01
LOCATION	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD02	13SW/SD02	13SW/SD03	13SW/SD03	13SW/SD04	13SW/SD04	13SW/SD05
SAMPLE NUMBER	13SW0101	13SW0101-F	13SW0102	13SW0102-F	13SW0201	13SW0201-F	13SW0301	13SW0301-F	13SW0401	13SW0401-F	13SW0501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/7/2004	10/7/2004	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE									1 U		1 U
A,A-DIMETHYLPHENETHYLAMINE									1 UJ		1 UJ
ACENAPHTHENE									0.05 U		0.05 U
ACENAPHTHYLENE									0.05 U		0.05 U
ACETOPHENONE									1 U		1 U
ANILINE									1 U		1 U
ANTHRACENE									0.05 U		0.05 U
ARAMITE									1 UR		1 UR
BENZO(A)ANTHRACENE									0.05 U		0.05 U
BENZO(A)PYRENE									0.05 U		0.05 U
BENZO(B)FLUORANTHENE									0.05 U		0.05 U
BENZO(G,H,I)PERYLENE									0.05 U		0.05 U
BENZO(K)FLUORANTHENE									0.05 U		0.05 U
BENZYL ALCOHOL									1 U		1 U
BIS(2-CHLOROETHOXY)METHANE									1 U		1 U
BIS(2-CHLOROETHYL)ETHER									1 U		1 U
BIS(2-ETHYLHEXYL)PHTHALATE									2 BU		14 BU
BUTYL BENZYL PHTHALATE									1 U		1 U
CHLOROBENZILATE									1 U		1 U
CHRYSENE									0.05 U		0.05 U
DI-N-BUTYL PHTHALATE									1 U		1 U
DI-N-OCTYL PHTHALATE									1 U		1 U
DIALLATE									1 U		1 U
DIBENZO(A,H)ANTHRACENE									0.05 U		0.05 U
DIBENZOFURAN									1 U		1 U
DIETHYL PHTHALATE									1 U		1 U
DIMETHYL PHTHALATE									1 U		1 U
DIPHENYLAMINE									1 U		1 U
ETHYL METHANE SULFONATE									1 U		1 U
FLUORANTHENE									0.05 U		0.05 U
FLUORENE									0.05 U		0.05 U
HEXACHLOROBENZENE									1 U		1 U
HEXACHLOROBUTADIENE									1 U		1 U
HEXACHLOROCYCLOPENTADIENE									1 UR		1 UR
HEXACHLOROETHANE									1 U		1 U
HEXACHLOROPROPENE									1 U		1 U
INDENO(1,2,3-CD)PYRENE									0.05 U		0.05 U
ISODRIN									1 U		1 U
ISOPHORONE									1 U		1 U
ISOSAFROLE									1 U		1 U
KEPONE									1 UJ		1 UJ

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	03	03	01	01	01	01	01	01	01
LOCATION	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD02	13SW/SD02	13SW/SD03	13SW/SD03	13SW/SD04	13SW/SD04	13SW/SD05
SAMPLE NUMBER	13SW0101	13SW0101-F	13SW0102	13SW0102-F	13SW0201	13SW0201-F	13SW0301	13SW0301-F	13SW0401	13SW0401-F	13SW0501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/7/2004	10/7/2004	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003
METHAPYRILENE									1 UJ		1 UJ
METHYL METHANE SULFONATE									1 U		1 U
N-NITROSO-DI-N-BUTYLAMINE									1 U		1 U
N-NITROSO-DI-N-PROPYLAMINE									1 U		1 U
N-NITROSODIETHYLAMINE									1 U		1 U
N-NITROSODIMETHYLAMINE									1 U		1 U
N-NITROSOMETHYLETHYLAMINE									1 U		1 U
N-NITROSOMORPHOLINE									1 U		1 U
N-NITROSOPIPERIDINE									1 U		1 U
N-NITROSOPYRROLIDINE									1 U		1 U
NAPHTHALENE									0.05 U		0.05 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE									1 U		1 U
O-TOLUIDINE									1 U		1 U
P-(DIMETHYLAMINO)AZOBENZENE									1 U		1 U
PENTACHLOROBENZENE									1 U		1 U
PENTACHLOROETHANE									1 U		1 U
PENTACHLORONITROBENZENE									1 U		1 U
PHENACETIN									1 U		1 U
PHENANTHRENE									0.05 U		0.05 U
PHENOL									1 U		1 U
PRONAMIDE									1 U		1 U
PYRENE									0.05 U		0.05 U
PYRIDINE									1 U		1 U
SAFROLE									1 U		1 U
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
1,3-DINITROBENZENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE											
2,4,6-TRINITROTOLUENE	2.3				0.53 J		0.265 U		0.5 U		0.475 U
2,4-DIAMINO-6-NITROTOLUENE											
2,4-DINITROTOLUENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
2,6-DIAMINO-4-NITROTOLUENE											
2,6-DINITROTOLUENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
2-AMINO-4,6-DINITROTOLUENE	0.53 J				0.435 U		0.265 U		0.5 U		0.475 U
2-NITROTOLUENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
3,5-DINITROANILINE											
3-NITROTOLUENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE	1.4				0.52 J		0.265 U		0.5 U		0.475 U
4-NITROTOLUENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
DNX											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	03	03	01	01	01	01	01	01	01
LOCATION	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD02	13SW/SD02	13SW/SD03	13SW/SD03	13SW/SD04	13SW/SD04	13SW/SD05
SAMPLE NUMBER	13SW0101	13SW0101-F	13SW0102	13SW0102-F	13SW0201	13SW0201-F	13SW0301	13SW0301-F	13SW0401	13SW0401-F	13SW0501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/7/2004	10/7/2004	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003
HMX	0.5 U				2.2		0.265 U		0.5 U		3.5
MNX											
NITROBENZENE	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
RDX	1.5				14		0.25 U		0.47 U		5.3
TETRYL	0.5 U				0.435 U		0.265 U		0.5 U		0.475 U
TNX											
Herbicides (ug/L)											
HEXACHLOROPHENE									0.025 U		0.025 U
PENTACHLOROPHENOL									0.091		0.013 U
Total Metals (ug/L)											
ALUMINUM	575 J		3080 J		4280 J		904 J		10600 J		3460 J
ANTIMONY	0.73 U		1.4 U		0.62 U		0.13 U		0.2 U		0.12 U
ARSENIC	0.51 U		1.6 J		1.5 J		0.67 U		3.4 J		1.3 J
BARIUM	112 J		184 J		71.8 J		57 J		94.5 J		56.3 J
BERYLLIUM	0.13 U		0.15 U		0.35 U		0.03 U		0.4 U		0.11 U
CADMIUM	0.3 U		1.3 J		0.32 U		0.08 U		0.37 U		0.11 U
CALCIUM	47200 J		56800 J		39000 J		32800 J		30100 J		28900 J
CHROMIUM	1.2 J		16.8 J		4.6 J		1 U		15.6 J		3.5 J
COBALT	0.16 U		2.1		1.6 J		0.69 U		3.2 J		2.6 J
COPPER	5.2 J		22.8		6.1 J		3.3 J		12.2 J		3.4 J
IRON	467 J		3690		3180 J		700 J		8940 J		3060 J
LEAD	3.5 J		137 J		3.6 J		0.94 U		7.4 J		1.5 J
LITHIUM	1.3 U				4.4 J		2.2 U		9.1 J		5.9 J
MAGNESIUM	6820 J		7430 J		7180 J		7210 J		6190 J		7500 J
MANGANESE	8.2 J		63		104 J		71.7 J		66.8 J		114 J
MERCURY	0.02 U		0.04 U		0.02 U		0.02 U		0.02 U		0.02 U
NICKEL	0.89 J		5.7		3.6 J		3.9 J		7.6 J		5.4 J
POTASSIUM	855 J		3580 J		1630 J		2670 J		3760 J		1220 J
SELENIUM	0.21 U		0.36 U		0.29 U		0.15 U		0.28 U		0.24 U
SILVER	1 U		0.03 U		0.46 U		0.09 U		0.25 U		0.08 U
SODIUM	2960 J		3860 J		18400 J		66800 J		16500 J		5420 J
STRONTIUM	105 J				103 J		83.7 J		74.2 J		94.7 J
THALLIUM	0.15 U		0.05 U		0.35 U		0.09 U		0.16 U		0.06 U
TIN	0.26 U		0.77 U		0.36 U		0.03 U		0.25 U		0.55 U
TITANIUM	11.1 J				67.5 J		18.4 J		122 J		63.2 J
VANADIUM	1.3 J		6.3		7.5 J		1.8 J		18.8 J		6.6 J
ZINC	21.9 J		269 J		30.5 J		12.7 J		43.7 J		14.1 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED		52.7 J		194 J		119		82.6		138	
ANTIMONY, FILTERED		0.82 U		1.3 U		0.65 U		0.21 U		0.25 U	
ARSENIC, FILTERED		0.35 U		0.33 U		0.36 U		0.45 U		0.47 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	03	03	01	01	01	01	01	01	01
LOCATION	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD01	13SW/SD02	13SW/SD02	13SW/SD03	13SW/SD03	13SW/SD04	13SW/SD04	13SW/SD05
SAMPLE NUMBER	13SW0101	13SW0101-F	13SW0102	13SW0102-F	13SW0201	13SW0201-F	13SW0301	13SW0301-F	13SW0401	13SW0401-F	13SW0501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/7/2004	10/7/2004	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003
BARIUM, FILTERED		107 J		142 J		47.9 J		50.8 J		40.9 J	
BERYLLIUM, FILTERED		0.12 U		0.02 U		0.09 U		0.03 U		0.03 U	
CADMIUM, FILTERED		0.23 U		0.08 U		0.07 U		0.05 U		0.05 U	
CALCIUM, FILTERED		46000 J		54200 J		38500 J		33100 J		28100 J	
CHROMIUM, FILTERED		0.4 U		0.67 U		0.57 U		0.4 U		0.48 U	
COBALT, FILTERED		0.26 U		0.088 U		0.59 U		0.55 U		0.61 U	
COPPER, FILTERED		3.2 J		2.2		2 J		2.5 J		3.8 J	
IRON, FILTERED		35.7 J		6.15 U		119 J		97 J		176 J	
LEAD, FILTERED		0.38 U		1.1 J		0.21 U		0.12 U		0.16 U	
LITHIUM, FILTERED		0.77 U				0.88 U		1.3 U		1.3 U	
MAGNESIUM, FILTERED		6590 J		6850		6690 J		7210 J		4970 J	
MANGANESE, FILTERED		2.9 J		3.8 J		14.4 J		28 J		5.3 J	
MERCURY, FILTERED		0.02 U		0.039 U		0.02 U		0.02 U		0.02 U	
NICKEL, FILTERED		0.59 U		0.58 J		0.85 U		3.3 J		1.9 J	
POTASSIUM, FILTERED		769 J		2760 J		1100 J		2560 J		1460 J	
SELENIUM, FILTERED		0.28 U		0.26 U		0.32 U		0.15 U		0.15 U	
SILVER, FILTERED		0.28 U		0.028 U		0.2 U		0.04 U		0.19 U	
SODIUM, FILTERED		2950 J		4370 J		18000 J		70600 J		16300 J	
STRONTIUM, FILTERED		103 J				101 J		83.5 J		64.3 J	
THALLIUM, FILTERED		0.13 U		0.043 U		0.15 U		0.04 U		0.04 U	
TIN, FILTERED		0.15 U		0.048 U		0.15 U		0.03 U		0.03 U	
TITANIUM, FILTERED		1.6 J				3.5 J		3.5 J		5.1 J	
VANADIUM, FILTERED		0.3 U		1.14 U		0.47 U		0.37 U		0.42 U	
ZINC, FILTERED		12.2 J		21.2 J		9.2 J		8.6 J		5.7 U	
Field Parameters (mg/L)											
DISSOLVED OXYGEN			2.83								
DISSOLVED OXYGEN - METER	11.7				9.28		9.12		10.41		10.8
OXIDATION REDUCTION POTENTIAL (MV)	95		271.200000		113		131		174		109
PH (S.U.)	7.49		6.97		7.24		7.39		7.75		7.58
SPECIFIC CONDUCTANCE (MS/CM)	0.262		829		0.28		0.496		0.181		0.203
TEMPERATURE (C)	9.29		16.27		9.29		11		10.65		10.49
TURBIDITY (NTU)	11		9.4		59		16		298		36
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01 U				0.01 U		0.04 J		0.02 J		0.02 J
NITRITE/NITRATE-N	0.15 J				0.33 J		0.02 U		0.02 U		0.02 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	01	01	01	02	02	01	01	02	02
LOCATION	13SW/SD05	13SW/SD06	13SW/SD06	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD08	13SW/SD08	13SW/SD08	13SW/SD08
SAMPLE NUMBER	13SW0501-F	13SW0601	13SW0601-F	13SW0701	13SW0701-F	13SW0702	13SW0702-F	13SW0801	13SW0801-F	13SW0802	13SW0802-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/27/2003	10/27/2003	5/8/2003	5/8/2003	10/23/2003	10/23/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE		1 U									
1,2,4-TRICHLOROBENZENE		1 U									
1,2-DICHLOROBENZENE		1 U									
1,3-DICHLOROBENZENE		1 U									
1,4-DICHLOROBENZENE		1 U									
1,4-NAPHTHOQUINONE		1 U									
1,4-PHENYLENEDIAMINE		1 UJ									
1-NAPHTHYLAMINE		1 U									
2,2'-OXYBIS(1-CHLOROPROPANE)		1 U									
2,3,4,6-TETRACHLOROPHENOL		1 U									
2,4,5-TRICHLOROPHENOL		1 U									
2,4,6-TRICHLOROPHENOL		1 U									
2,4-DICHLOROPHENOL		1 U									
2,4-DIMETHYLPHENOL		1 U									
2,4-DINITROPHENOL		1 U									
2,6-DICHLOROPHENOL		1 U									
2-ACETYLAMINOFLUORENE		1 U									
2-CHLORONAPHTHALENE		1 UJ									
2-CHLOROPHENOL		1 U									
2-METHYLNAPHTHALENE		0.05 U									
2-METHYLPHENOL		1 U									
2-NAPHTHYLAMINE		1 U									
2-NITROANILINE		1 U									
2-NITROPHENOL		1 U									
2-PICOLINE		1 U									
3&4-METHYLPHENOL		1 U									
3,3'-DICHLOROBENZIDINE		1 U									
3,3'-DIMETHYLBENZIDINE		1 U									
3-METHYLCHOLANTHRENE		1 U									
3-NITROANILINE		1 U									
4,6-DINITRO-2-METHYLPHENOL		1 U									
4-AMINOBIPHENYL		1 U									
4-BROMOPHENYL PHENYL ETHER		1 U									
4-CHLORO-3-METHYLPHENOL		1 U									
4-CHLOROANILINE		1 U									
4-CHLOROPHENYL PHENYL ETHER		1 U									
4-NITROANILINE		1 U									
4-NITROPHENOL		1 U									
4-NITROQUINOLINE-1-OXIDE		1 UR									
5-NITRO-O-TOLUIDINE		1 U									

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	01	01	01	02	02	01	01	02	02
LOCATION	13SW/SD05	13SW/SD06	13SW/SD06	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD08	13SW/SD08	13SW/SD08	13SW/SD08
SAMPLE NUMBER	13SW0501-F	13SW0601	13SW0601-F	13SW0701	13SW0701-F	13SW0702	13SW0702-F	13SW0801	13SW0801-F	13SW0802	13SW0802-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/27/2003	10/27/2003	5/8/2003	5/8/2003	10/23/2003	10/23/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE		1 U									
A,A-DIMETHYLPHENETHYLAMINE		1 UJ									
ACENAPHTHENE		0.05 U									
ACENAPHTHYLENE		0.05 U									
ACETOPHENONE		1 U									
ANILINE		1 U									
ANTHRACENE		0.05 U									
ARAMITE		1 UR									
BENZO(A)ANTHRACENE		0.22									
BENZO(A)PYRENE		0.26									
BENZO(B)FLUORANTHENE		0.38									
BENZO(G,H,I)PERYLENE		0.23									
BENZO(K)FLUORANTHENE		0.2									
BENZYL ALCOHOL		1 U									
BIS(2-CHLOROETHOXY)METHANE		1 U									
BIS(2-CHLOROETHYL)ETHER		1 U									
BIS(2-ETHYLHEXYL)PHTHALATE		1 U									
BUTYL BENZYL PHTHALATE		1 U									
CHLOROBENZILATE		1 U									
CHRYSENE		0.35									
DI-N-BUTYL PHTHALATE		1 U									
DI-N-OCTYL PHTHALATE		1 U									
DIALLATE		1 U									
DIBENZO(A,H)ANTHRACENE		0.05 U									
DIBENZOFURAN		1 U									
DIETHYL PHTHALATE		1 U									
DIMETHYL PHTHALATE		1 U									
DIPHENYLAMINE		1 U									
ETHYL METHANE SULFONATE		1 U									
FLUORANTHENE		0.96									
FLUORENE		0.05 U									
HEXACHLOROBENZENE		1 U									
HEXACHLOROBUTADIENE		1 U									
HEXACHLOROCYCLOPENTADIENE		1 UR									
HEXACHLOROETHANE		1 U									
HEXACHLOROPROPENE		1 U									
INDENO(1,2,3-CD)PYRENE		0.2									
ISODRIN		1 U									
ISOPHORONE		1 U									
ISOSAFROLE		1 U									
KEPONE		1 UJ									

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	01	01	01	02	02	01	01	02	02
LOCATION	13SW/SD05	13SW/SD06	13SW/SD06	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD08	13SW/SD08	13SW/SD08	13SW/SD08
SAMPLE NUMBER	13SW0501-F	13SW0601	13SW0601-F	13SW0701	13SW0701-F	13SW0702	13SW0702-F	13SW0801	13SW0801-F	13SW0802	13SW0802-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/27/2003	10/27/2003	5/8/2003	5/8/2003	10/23/2003	10/23/2003
METHAPYRILENE		1 UJ									
METHYL METHANE SULFONATE		1 U									
N-NITROSO-DI-N-BUTYLAMINE		1 U									
N-NITROSO-DI-N-PROPYLAMINE		1 U									
N-NITROSODIETHYLAMINE		1 U									
N-NITROSODIMETHYLAMINE		1 U									
N-NITROSOMETHYLETHYLAMINE		1 U									
N-NITROSOMORPHOLINE		1 U									
N-NITROSOPIPERIDINE		1 U									
N-NITROSOPYRROLIDINE		1 U									
NAPHTHALENE		0.05 U									
O,O,O-TRIETHYL PHOSPHOROTHIOATE		1 U									
O-TOLUIDINE		1 U									
P-(DIMETHYLAMINO)AZOBENZENE		1 U									
PENTACHLOROBENZENE		1 U									
PENTACHLOROETHANE		1 U									
PENTACHLORONITROBENZENE		1 U									
PHENACETIN		1 U									
PHENANTHRENE		0.51									
PHENOL		1 U									
PRONAMIDE		1 U									
PYRENE		0.65									
PYRIDINE		1 U									
SAFROLE		1 U									
Energetics (ug/L)											
1,3,5-TRINITROBENZENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
1,3-DINITROBENZENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE						0.47 U				0.49 U	
2,4,6-TRINITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
2,4-DIAMINO-6-NITROTOLUENE						0.24 U				0.25 U	
2,4-DINITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
2,6-DIAMINO-4-NITROTOLUENE						0.24 U				0.25 U	
2,6-DINITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
2-AMINO-4,6-DINITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
2-NITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
3,5-DINITROANILINE						0.24 U				0.25 U	
3-NITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
4-NITROTOLUENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
DNX						0.24 U				0.25 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	01	01	01	02	02	01	01	02	02
LOCATION	13SW/SD05	13SW/SD06	13SW/SD06	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD08	13SW/SD08	13SW/SD08	13SW/SD08
SAMPLE NUMBER	13SW0501-F	13SW0601	13SW0601-F	13SW0701	13SW0701-F	13SW0702	13SW0702-F	13SW0801	13SW0801-F	13SW0802	13SW0802-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/27/2003	10/27/2003	5/8/2003	5/8/2003	10/23/2003	10/23/2003
HMX		2.8		0.265 U		0.67		1.2		1.2 J	
MNX						0.24 U				0.25 U	
NITROBENZENE		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
RDX		3.6		0.29 J		0.35 J		2.8		1.4	
TETRYL		0.5 U		0.265 U		0.24 U		0.29 U		0.25 U	
TNX						0.24 U				0.25 U	
Herbicides (ug/L)											
HEXACHLOROPHENE		0.025 U									
PENTACHLOROPHENOL		0.025 J									
Total Metals (ug/L)											
ALUMINUM		1740 J		19100 J		200 J		1650 J		53.4 U	
ANTIMONY		0.95 U		0.5 U		0.11 U		0.09 U		0.04 U	
ARSENIC		0.97 U		5.8 J		0.32 U		1.2 J		1.5 J	
BARIUM		84.7 J		247 J		57.8 J		88.4 J		92 J	
BERYLLIUM		0.04 U		0.49 U		0.03 U		0.08 U		0.03 U	
CADMIUM		0.08 U		0.56 U		0.13 U		0.06 U		0.04 U	
CALCIUM		58800 J		133000 J		64400 J		59900 J		76400 J	
CHROMIUM		2 J		20.5 J		0.43 U		1.9 J		0.44 U	
COBALT		1.2 J		5.2 J		0.21 U		0.72 U		3.2 J	
COPPER		4.6 J		17.6 J		2.3 J		1.9 J		0.38 U	
IRON		1380 J		16200 J		198 J		1140 J		2750 J	
LEAD		1.9 J		29.9 J		1.6 U		1.2 U		0.09 U	
LITHIUM		2.8 J		14.3 J				1.6 U			
MAGNESIUM		10900 J		18100 J		4700 J		10500 J		14200 U	
MANGANESE		89.6 J		195 J		34.2 J		118 J		3190 J	
MERCURY		0.02 U		0.02 U		0.02 U		0.2 U		0.02 U	
NICKEL		2.4 J		12.3 J		0.67 J		2 J		1.2	
POTASSIUM		1330 J		4380 J		621 J		1430 J		2180 J	
SELENIUM		0.55 U		0.51 U		0.09 U		0.19 U		0.16 U	
SILVER		0.04 U		0.2 U		0.03 U		0.04 U		0.03 U	
SODIUM		55500 J		325000 J		88300 J		33100 J		19900 J	
STRONTIUM		149 J		245 J				143 J			
THALLIUM		0.08 U		0.29 U		0.04 U		0.05 U		0.04 U	
TIN		0.07 U		0.62 U		0.1 U		0.09 U		0.1 U	
TITANIUM		33 J		356 J		4.7 J		24.2 J		1.3 J	
VANADIUM		3.1 J		38.1 J		0.61 U		3.2 J		0.27 U	
ZINC		9.8 J		79.3 J		10.8 J		7.8 J		17.7 J	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	108		57.1		56		52.8 U		24.8 U		7.6 U
ANTIMONY, FILTERED	0.19 U		0.92 U		0.24 U		0.19 U		0.38 U		0.11 U
ARSENIC, FILTERED	0.19 U		0.42 U		0.15 U		0.25 U		0.73 U		1 J

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	01	01	01	02	02	01	01	02	02
LOCATION	13SW/SD05	13SW/SD06	13SW/SD06	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD07	13SW/SD08	13SW/SD08	13SW/SD08	13SW/SD08
SAMPLE NUMBER	13SW0501-F	13SW0601	13SW0601-F	13SW0701	13SW0701-F	13SW0702	13SW0702-F	13SW0801	13SW0801-F	13SW0802	13SW0802-F
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/27/2003	10/27/2003	5/8/2003	5/8/2003	10/23/2003	10/23/2003
BARIUM, FILTERED	40 J		75.7 J		149 J		58.8 J		78.1 J		95.3 J
BERYLLIUM, FILTERED	0.03 U		0.03 U		0.03 U		0.03 U		0.25 U		0.03 U
CADMIUM, FILTERED	0.05 U		0.05 U		0.05 U		0.11 U		0.19 U		0.04 U
CALCIUM, FILTERED	28800 J		56900 J		121000 J		63400 J		5660 J		75300 J
CHROMIUM, FILTERED	0.21 U		0.38 U		0.39 U		0.22 U		0.33 U		0.26 U
COBALT, FILTERED	1.3 J		0.7 U		0.43 U		0.6 J		0.32 U		3.2 J
COPPER, FILTERED	3.5 J		2.3 J		2.2 J		1.4 J		1 U		0.3 U
IRON, FILTERED	120 J		43.4 J		26.9 U		41.6 U		14.9 U		1120 J
LEAD, FILTERED	0.28 U		0.14 U		0.18 U		0.13 U		0.2 U		0.27 U
LITHIUM, FILTERED	3.1 J		1.5 U		0.37 U				0.96 U		
MAGNESIUM, FILTERED	7210 J		11000 J		14400 J		5300 J		9870 J		13700 U
MANGANESE, FILTERED	64.9 J		63.3 J		20.4 J		28.7 J		84.4 J		3110 J
MERCURY, FILTERED	0.02 U		0.02 U		0.02 U		0.02 U		0.2 U		0.02 U
NICKEL, FILTERED	2.9 J		1.5 J		0.61 U		0.55 U		1.1 J		0.84 J
POTASSIUM, FILTERED	735 J		1080 J		1080 J		651 J		1100 J		2200 J
SELENIUM, FILTERED	0.21 U		0.59 U		0.17 U		0.09 U		0.36 U		0.14 U
SILVER, FILTERED	0.04 U		0.04 U		0.05 U		0.03 U		0.49 U		0.03 U
SODIUM, FILTERED	5350 J		55800 J		311000 J		106000 J		3190 J		18800 J
STRONTIUM, FILTERED	88 J		142 J		219 J				140 J		
THALLIUM, FILTERED	0.04 U		0.04 U		0.04 U		0.04 U		0.25 U		0.04 U
TIN, FILTERED	0.05 U		0.03 U		0.04 U		0.14 U		0.21 U		0.24 U
TITANIUM, FILTERED	3.2 J		1.4 J		1.1 U		1 U		1.1 U		0.59 J
VANADIUM, FILTERED	0.27 U		0.23 U		0.34 U		0.35 U		0.38 U		0.1 U
ZINC, FILTERED	19.8 J		5.3 U		3.8 U		17.4 J		3.4 J		16 U
Field Parameters (mg/L)											
DISSOLVED OXYGEN											
DISSOLVED OXYGEN - METER		9.62		8.13		5.19		6.91		6.03	
OXIDATION REDUCTION POTENTIAL (MV)		640		177		270		150.600000		-23.7	
PH (S.U.)		7.41		7.32		7.25		6.13		7.09	
SPECIFIC CONDUCTANCE (MS/CM)		0.543		1.394		0.55		0.462		0.46	
TEMPERATURE (C)		10.44		9.8		13.27		15.18		14.71	
TURBIDITY (NTU)				352		9.12		31		19.3	
Miscellaneous Parameters (mg/L)											
AMMONIA-N		0.01 U		0.03 J		0.01 U		0.07		0.4 J	
NITRITE/NITRATE-N		0.54 J		0.18 J		0.15		0.64		0.62 J	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	02	02	01	01	01	01	02	02	01
LOCATION	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD12
SAMPLE NUMBER	13SW0901	13SW0901-F	13SW0902	13SW0902-F	13SW1001	13SW1001-D	13SW1001-F	13SW1001-F-D	13SW1002	13SW1002-F	13SW1201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/27/2003	10/27/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/23/2003	10/23/2003	3/30/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	02	02	01	01	01	01	02	02	01
LOCATION	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD12
SAMPLE NUMBER	13SW0901	13SW0901-F	13SW0902	13SW0902-F	13SW1001	13SW1001-D	13SW1001-F	13SW1001-F-D	13SW1002	13SW1002-F	13SW1201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/27/2003	10/27/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/23/2003	10/23/2003	3/30/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	02	02	01	01	01	01	02	02	01
LOCATION	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD12
SAMPLE NUMBER	13SW0901	13SW0901-F	13SW0902	13SW0902-F	13SW1001	13SW1001-D	13SW1001-F	13SW1001-F-D	13SW1002	13SW1002-F	13SW1201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/27/2003	10/27/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/23/2003	10/23/2003	3/30/2003
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
1,3-DINITROBENZENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.5 U						0.53 U		
2,4,6-TRINITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		1.9 J
2,4-DIAMINO-6-NITROTOLUENE			0.25 U						0.27 U		
2,4-DINITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
2,6-DIAMINO-4-NITROTOLUENE			0.25 U						0.27 U		
2,6-DINITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
2-AMINO-4,6-DINITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.84 J
2-NITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
3,5-DINITROANILINE			0.25 U						0.27 U		
3-NITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE	0.65 U		0.25 U		0.55 U	0.4 J			0.27 U		2 J
4-NITROTOLUENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
DNX			0.25 U						0.59 J		

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	02	02	01	01	01	01	02	02	01
LOCATION	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD12
SAMPLE NUMBER	13SW0901	13SW0901-F	13SW0902	13SW0902-F	13SW1001	13SW1001-D	13SW1001-F	13SW1001-F-D	13SW1002	13SW1002-F	13SW1201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/27/2003	10/27/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/23/2003	10/23/2003	3/30/2003
HMX	0.65 U		0.25 U		15 J	13			10		26
MNX			0.25 U						0.27 U		
NITROBENZENE	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
RDX	0.6 U		0.42 J		18	16			0.27 U		100
TETRYL	0.65 U		0.25 U		0.55 U	0.21 U			0.27 U		0.28 U
TNX			0.25 U						0.27 U		
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	2700 J		139 J		2080 J	3260 J			106 U		1330 J
ANTIMONY	0.04 U		0.07 U		0.05 U	0.06 U			0.04 U		0.52 U
ARSENIC	0.91 U		0.33 U		0.8 U	0.98 U			0.35 U		4.2 J
BARIUM	38 J		61.1 J		44.1 J	50.3 J			49.6 J		80.7 J
BERYLLIUM	0.06 U		0.03 U		0.09 U	0.12 U			0.05 U		0.03 U
CADMIUM	0.08 U		0.05 U		0.1 U	0.1 U			0.19 U		0.16 U
CALCIUM	18900 J		82600 J		23500 J	23400 J			44600 J		55000 J
CHROMIUM	2.5 J		0.59 U		1.9 J	3 J			0.42 U		1.8 J
COBALT	0.65 U		0.18 U		2.6 J	2.7 J			5.1 J		1.2 J
COPPER	3.6 J		3 J		2.2 J	2.6 J			1.3 J		7.2 J
IRON	2350 J		152 J		1740 J	2280 J			406 J		1090 J
LEAD	1.5 J		0.41 U		1.3 J	1.5 J			0.27 U		0.92 U
LITHIUM	1.8 U				6.6 J	8.1 J					2 U
MAGNESIUM	3600 J		11400 J		6660 J	7050 J			8220 J		18600 J
MANGANESE	25 J		10.6 J		231 J	220 J			1900 J		69.9 J
MERCURY	0.02 U		0.02 U		0.02 U	0.02 U			0.02 U		0.02 U
NICKEL	2.1 J		1.1 J		4.5 J	5.2 J			4.7		4.5 J
POTASSIUM	1130 J		1320 J		7750 J	7850 J			730 J		97700 J
SELENIUM	0.1 U		0.09 U		0.1 U	0.1 U			0.06 U		0.5 U
SILVER	0.04 U		0.03 U		0.04 U	0.04 U			0.03 U		0.04 U
SODIUM	3020 J		9120 J		7780 J	8020 J			9750 J		28300 J
STRONTIUM	48 J				59 J	57.7 J					120 J
THALLIUM	0.04 U		0.04 U		0.04 U	0.04 U			0.04 U		0.06 U
TIN	0.13 U		0.1 U		0.04 U	0.08 U			0.1 U		0.1 U
TITANIUM	51 J		6.4 J		36.4 J	59.4 J			1.9 J		26.3 J
VANADIUM	4.9 J		0.57 U		3.6 J	5.5 J			0.3 U		5.2 J
ZINC	27 J		68.9 J		13.9 J	17 J			7.8 U		16.1 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED		822		16.5 U			303	286		9.2 U	
ANTIMONY, FILTERED		0.13 U		0.17 U			0.21 U	0.17 U		0.23 U	
ARSENIC, FILTERED		0.47 U		0.26 U			0.37 U	0.29 U		0.25 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	01	02	02	01	01	01	01	02	02	01
LOCATION	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD09	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD10	13SW/SD12
SAMPLE NUMBER	13SW0901	13SW0901-F	13SW0902	13SW0902-F	13SW1001	13SW1001-D	13SW1001-F	13SW1001-F-D	13SW1002	13SW1002-F	13SW1201
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	3/29/2003	3/29/2003	10/27/2003	10/27/2003	3/29/2003	3/29/2003	3/29/2003	3/29/2003	10/23/2003	10/23/2003	3/30/2003
BARIUM, FILTERED		28.4 J		62.3 J			33.7 J	34 J		46.2 J	
BERYLLIUM, FILTERED		0.03 U		0.03 U			0.03 U	0.03 U		0.03 U	
CADMIUM, FILTERED		0.05 U		0.07 U			0.05 U	0.05 U		0.09 U	
CALCIUM, FILTERED		18600 J		81400 J			24300 J	23300 J		43000 J	
CHROMIUM, FILTERED		0.89 U		0.2 U			0.55 U	0.46 U		0.31 U	
COBALT, FILTERED		0.65 U		0.63 J			1.6 J	1.6 J		6.5 J	
COPPER, FILTERED		2.1 J		1.9 J			1.2 U	1.3 U		0.73 J	
IRON, FILTERED		750 J		22.4 U			343 J	256 J		47.3 U	
LEAD, FILTERED		0.38 U		0.02 U			0.18 U	0.3 U		0.05 U	
LITHIUM, FILTERED		0.66 U					5.5 J	5.5 J			
MAGNESIUM, FILTERED		3440 J		11900 J			6610 J	6780 J		7970 J	
MANGANESE, FILTERED		9.2 J		5 J			160 J	155 J		1670 J	
MERCURY, FILTERED		0.02 U		0.02 U			0.02 U	0.02 U		0.02 U	
NICKEL, FILTERED		1.1 J		0.7 J			3.3 J	3.3 J		4.1	
POTASSIUM, FILTERED		846 J		1370 J			7430 J	7320 J		600 J	
SELENIUM, FILTERED		0.08 U		0.15 U			0.13 U	0.09 U		0.08 U	
SILVER, FILTERED		0.04 U		0.03 U			0.12 U	0.04 U		0.03 U	
SODIUM, FILTERED		2920 J		9550 J			7840 J	7980 J		9570 J	
STRONTIUM, FILTERED		45.5 J					56.3 J	54.3 J			
THALLIUM, FILTERED		0.04 U		0.04 U			0.04 U	0.04 U		0.04 U	
TIN, FILTERED		0.03 U		0.1 U			0.03 U	0.05 U		0.1 U	
TITANIUM, FILTERED		19.5 J		0.74 U			8 J	7 J		0.11 J	
VANADIUM, FILTERED		1.6 J		0.34 U			0.73 U	0.65 U		0.06 U	
ZINC, FILTERED		10.1 J		54.5 J			8.6 J	10.4 J		7.8 U	
Field Parameters (mg/L)											
DISSOLVED OXYGEN											
DISSOLVED OXYGEN - METER	9.81		8.55		9.95				3.65		11.98
OXIDATION REDUCTION POTENTIAL (MV)	120		324.400000		145				178.700000		162
PH (S.U.)	8.48		7.8		7.74				6.17		7.92
SPECIFIC CONDUCTANCE (MS/CM)	0.138		0.436		0.199				0.27		0.64
TEMPERATURE (C)	11		11.8		9.3				12.77		6.85
TURBIDITY (NTU)	45		5.13		150				1.98		17
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01 J		0.01		0.08 J	0.02 J			0.03 J		0.88 J
NITRITE/NITRATE-N	0.02 U		0.18		0.46 J	0.47 J			0.025 U		5.8 J

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	02	02	01	01	02	02	02	02	02	02
LOCATION	13SW/SD12	13SW/SD12	13SW/SD12	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD14	13SW/SD14
SAMPLE NUMBER	13SW1201-F	13SW1202	13SW1202-F	13SW1301	13SW1301-F	13SW1302	13SW1302-D	13SW1302-F	13SW1302-F-D	13SW1401	13SW1401-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP
SAMPLE DATE	3/30/2003	10/22/2003	10/22/2003	3/30/2003	3/30/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	02	02	01	01	02	02	02	02	02	02
LOCATION	13SW/SD12	13SW/SD12	13SW/SD12	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD14	13SW/SD14
SAMPLE NUMBER	13SW1201-F	13SW1202	13SW1202-F	13SW1301	13SW1301-F	13SW1302	13SW1302-D	13SW1302-F	13SW1302-F-D	13SW1401	13SW1401-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP
SAMPLE DATE	3/30/2003	10/22/2003	10/22/2003	3/30/2003	3/30/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	02	02	01	01	02	02	02	02	02	02
LOCATION	13SW/SD12	13SW/SD12	13SW/SD12	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD14	13SW/SD14
SAMPLE NUMBER	13SW1201-F	13SW1202	13SW1202-F	13SW1301	13SW1301-F	13SW1302	13SW1302-D	13SW1302-F	13SW1302-F-D	13SW1401	13SW1401-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP
SAMPLE DATE	3/30/2003	10/22/2003	10/22/2003	3/30/2003	3/30/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
1,3-DINITROBENZENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.48 U				0.48 U	0.48 U			0.47 U	0.47 U
2,4,6-TRINITROTOLUENE		0.24 U		6.8		0.24 U	0.24 U			0.24 U	0.24 U
2,4-DIAMINO-6-NITROTOLUENE		0.24 U				0.24 U	0.24 U			0.24 U	0.24 U
2,4-DINITROTOLUENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
2,6-DIAMINO-4-NITROTOLUENE		0.24 U				0.44 J	0.62 J			0.24 U	0.24 U
2,6-DINITROTOLUENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
2-AMINO-4,6-DINITROTOLUENE		0.52 J		1.6 J		8.3 J	9.8 J			1.3	1.4 J
2-NITROTOLUENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
3,5-DINITROANILINE		0.24 U				0.24 UJ	0.24 U			0.24 U	0.24 U
3-NITROTOLUENE		0.24 U		0.6 U		0.31 J	0.24 U			0.24 U	0.24 U
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE		0.98 J		3.8 J		21 J	25			2.9	3
4-NITROTOLUENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
DNX		3.5 J				4.2 J	3.6 J			2.7 J	3.5 J

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	02	02	01	01	02	02	02	02	02	02
LOCATION	13SW/SD12	13SW/SD12	13SW/SD12	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD14	13SW/SD14
SAMPLE NUMBER	13SW1201-F	13SW1202	13SW1202-F	13SW1301	13SW1301-F	13SW1302	13SW1302-D	13SW1302-F	13SW1302-F-D	13SW1401	13SW1401-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP
SAMPLE DATE	3/30/2003	10/22/2003	10/22/2003	3/30/2003	3/30/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
HMX		19		14		33 J	36			20	24
MNX		3.1				5.2 J	5.5			3.8 J	5.3 J
NITROBENZENE		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
RDX		57		84		180 J	210			77	97
TETRYL		0.24 U		0.6 U		0.24 U	0.24 U			0.24 U	0.24 U
TNX		0.81				1.1 J	1.3			0.62 J	1.1 J
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM		1740 J		714 J		167 J	161 J			202 J	312 J
ANTIMONY		0.41 U		0.09 U		0.2 U	0.21 U			0.15 U	0.17 U
ARSENIC		2.2 J		0.95 U		1.3 J	1.4 J			0.85 J	0.88 J
BARIUM		68.5 J		58.8 J		94.3 J	93.4 J			78.6 J	76.3 J
BERYLLIUM		0.2 U		0.07 U		0.05 U	0.06 U			0.03 U	0.03 U
CADMIUM		0.19 U		0.11 U		0.12 U	0.12 U			0.04 U	0.04 U
CALCIUM		54700 J		38700 J		74800 J	73500 J			36700 J	40600 J
CHROMIUM		3.2 J		0.98 U		0.69 U	0.75 U			1 U	1.1 U
COBALT		2.4 J		1.9 J		1.2 J	1.3 J			0.19 U	0.25 U
COPPER		4.2 J		2.4 J		3.8 J	3.8 J			2.8 J	2.7 J
IRON		1920 J		673 J		337 J	357 J			147 U	285 J
LEAD		2 J		0.77 U		0.24 U	0.27 U			0.15 U	0.21 U
LITHIUM				3.9 J							
MAGNESIUM		13000 J		7480 J		12600 J	12300 J			10100 J	10800 J
MANGANESE		292 J		107 J		170 J	192 J			26.1 J	19.2 J
MERCURY		0.02 U		0.02 U		0.02 U	0.02 U			0.02 U	0.02 U
NICKEL		5.7		3.8 J		6.3	6.2			1.9	2
POTASSIUM		31800 J		15100 J		42400 J	42400 J			36000 J	40000 J
SELENIUM		0.41 U		0.15 U		0.36 U	0.37 U			0.21 U	0.2 U
SILVER		0.03 U		0.04 U		0.03 U	0.03 U			0.03 U	0.03 U
SODIUM		16700 J		8900 J		16700 J	16300 J			10600 J	11400 J
STRONTIUM				94.3 J							
THALLIUM		0.16 U		0.04 U		0.04 U	0.04 U			0.04 U	0.04 U
TIN		0.26 U		0.03 U		0.1 U	0.13 U			0.1 U	0.1 U
TITANIUM		31.8		11.6 J		3.6 J	3.5 J			4.5 J	5.1 J
VANADIUM		5.1 J		1.8 J		1.1 J	1 J			0.92 J	1.1 J
ZINC		18.1 J		21.2 J		18.3 J	20.7 J			2.5 U	2.7 U
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	137		43.2 U		103			35.3 U	35.7 U		
ANTIMONY, FILTERED	0.49 U		0.5 U		0.16 U			0.21 U	0.39 U		
ARSENIC, FILTERED	3.6 J		1.4 J		0.66 U			1.2 J	1.2 J		

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	01	02	02	01	01	02	02	02	02	02	02
LOCATION	13SW/SD12	13SW/SD12	13SW/SD12	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD13	13SW/SD14	13SW/SD14
SAMPLE NUMBER	13SW1201-F	13SW1202	13SW1202-F	13SW1301	13SW1301-F	13SW1302	13SW1302-D	13SW1302-F	13SW1302-F-D	13SW1401	13SW1401-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP
SAMPLE DATE	3/30/2003	10/22/2003	10/22/2003	3/30/2003	3/30/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
BARIUM, FILTERED	74.6 J		51.7 J		53.7 J			94.5 J	92.9 J		
BERYLLIUM, FILTERED	0.03 U		0.09 U		0.03 U			0.03 U	0.04 U		
CADMIUM, FILTERED	0.06 U		0.05 U		0.05 U			0.06 U	0.07 U		
CALCIUM, FILTERED	51400 J		54500 J		37900 J			73100 J	73600 J		
CHROMIUM, FILTERED	0.67 U		0.72 U		0.27 U			0.63 U	0.56 U		
COBALT, FILTERED	1.3 J		2.9 J		1.7 J			1 J	1.3 J		
COPPER, FILTERED	6.6 J		2.5 J		1.9 J			3.5 J	3.3 J		
IRON, FILTERED	193 J		44.2 U		82.5 J			122 U	87.5 U		
LEAD, FILTERED	0.22 U		0.13 U		0.08 U			0.09 U	0.08 U		
LITHIUM, FILTERED	1.2 U				3.5 J						
MAGNESIUM, FILTERED	18000 J		12900 J		7630 J			12300 J	12400 J		
MANGANESE, FILTERED	52.2 J		119 J		88.3 J			141 J	156 J		
MERCURY, FILTERED	0.02 U		0.02 U		0.02 U			0.02 U	0.02 U		
NICKEL, FILTERED	3.8 J		3.2		3.2 J			6.2	6.1		
POTASSIUM, FILTERED	97700 J		31100 J		15100 J			42100 J	42500 J		
SELENIUM, FILTERED	0.44 U		0.28 U		0.18 U			0.36 U	0.37 U		
SILVER, FILTERED	0.04 U		0.03 U		0.04 U			0.03 U	0.03 U		
SODIUM, FILTERED	27500 J		16500 J		9160 J			16400 J	16500 J		
STRONTIUM, FILTERED	117 J				91.8 J						
THALLIUM, FILTERED	0.04 U		0.08 U		0.04 U			0.04 U	0.04 U		
TIN, FILTERED	0.03 U		0.22 U		0.03 U			0.1 U	0.1 U		
TITANIUM, FILTERED	7.7 J		1.5 J		3 J			0.55 J	0.62 J		
VANADIUM, FILTERED	3.4 J		1.2 J		0.67 U			0.75 J	0.79 J		
ZINC, FILTERED	8.1 J		4.1 U		13.1 J			15.4 U	15.5 U		
Field Parameters (mg/L)											
DISSOLVED OXYGEN											
DISSOLVED OXYGEN - METER		9.5		12.32		2.19				5.93	
OXIDATION REDUCTION POTENTIAL (MV)		233.600000		157		255.600000				224.700000	
PH (S.U.)		7.51		8.07		7.42				7.33	
SPECIFIC CONDUCTANCE (MS/CM)		0.427		0.26		0.531				0.365	
TEMPERATURE (C)		12.25		6.52		13.33				12.14	
TURBIDITY (NTU)		6		12.6		3				4.4	
Miscellaneous Parameters (mg/L)											
AMMONIA-N		0.005 UJ		0.14 J		0.04 J	0.01 J			0.005 UJ	0.005 UJ
NITRITE/NITRATE-N		0.13 U		1.6 J		3.6 J	3.7 J			0.54 J	0.55 J

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	03	02	02	03	02	02	03	02	02
LOCATION	13SW/SD14	13SW/SD14	13SW/SD14	13SW/SD15	13SW/SD15	13SW/SD15	13SW/SD16	13SW/SD16	13SW/SD16	13SW/SD18	13SW/SD18
SAMPLE NUMBER	13SW1401-F	13SW1401-F-D	13SW1402	13SW1501	13SW1501-F	13SW1502	13SW1601	13SW1601-F	13SW1602	13SW1801	13SW1801-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/22/2003	10/22/2003	10/27/2004	10/27/2003	10/27/2003	10/27/2004	10/22/2003	10/22/2003	10/27/2004	10/23/2003	10/23/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	03	02	02	03	02	02	03	02	02
LOCATION	13SW/SD14	13SW/SD14	13SW/SD14	13SW/SD15	13SW/SD15	13SW/SD15	13SW/SD16	13SW/SD16	13SW/SD16	13SW/SD18	13SW/SD18
SAMPLE NUMBER	13SW1401-F	13SW1401-F-D	13SW1402	13SW1501	13SW1501-F	13SW1502	13SW1601	13SW1601-F	13SW1602	13SW1801	13SW1801-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/22/2003	10/22/2003	10/27/2004	10/27/2003	10/27/2003	10/27/2004	10/22/2003	10/22/2003	10/27/2004	10/23/2003	10/23/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	03	02	02	03	02	02	03	02	02
LOCATION	13SW/SD14	13SW/SD14	13SW/SD14	13SW/SD15	13SW/SD15	13SW/SD15	13SW/SD16	13SW/SD16	13SW/SD16	13SW/SD18	13SW/SD18
SAMPLE NUMBER	13SW1401-F	13SW1401-F-D	13SW1402	13SW1501	13SW1501-F	13SW1502	13SW1601	13SW1601-F	13SW1602	13SW1801	13SW1801-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/22/2003	10/22/2003	10/27/2004	10/27/2003	10/27/2003	10/27/2004	10/22/2003	10/22/2003	10/27/2004	10/23/2003	10/23/2003
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
1,3-DINITROBENZENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE				0.49 U			0.5 U			0.51 U	
2,4,6-TRINITROTOLUENE			0.42 J	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2,4-DIAMINO-6-NITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2,4-DINITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2,6-DIAMINO-4-NITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2,6-DINITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
2-AMINO-4,6-DINITROTOLUENE			1 J	0.24 U		0.26 J	0.8 J		0.35 J	0.25 U	
2-NITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
3,5-DINITROANILINE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
3-NITROTOLUENE			0.248 U	0.24 U		0.25 U	0.29 J		0.24 U	0.25 U	
4,4'-TN-AZOXY			0.495 U			0.5 U			0.48 U		
4-AMINO-2,6-DINITROTOLUENE			2.5	0.24 U		0.62	1.6		0.83	0.25 U	
4-NITROTOLUENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
DNX			1	23 J		1.8 J	3.6 J		0.24 U	0.25 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	03	02	02	03	02	02	03	02	02
LOCATION	13SW/SD14	13SW/SD14	13SW/SD14	13SW/SD15	13SW/SD15	13SW/SD15	13SW/SD16	13SW/SD16	13SW/SD16	13SW/SD18	13SW/SD18
SAMPLE NUMBER	13SW1401-F	13SW1401-F-D	13SW1402	13SW1501	13SW1501-F	13SW1502	13SW1601	13SW1601-F	13SW1602	13SW1801	13SW1801-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/22/2003	10/22/2003	10/27/2004	10/27/2003	10/27/2003	10/27/2004	10/22/2003	10/22/2003	10/27/2004	10/23/2003	10/23/2003
HMX			18	210		160	21		15	0.25 U	
MNX			1.9	47		22	3		1.2	0.25 U	
NITROBENZENE			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
RDX			97	1500		1000	50		43	0.25 U	
TETRYL			0.248 U	0.24 U		0.25 U	0.25 U		0.24 U	0.25 U	
TNX			0.248 U	4		0.74 J	0.48 J		0.24 U	0.25 U	
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM				3760 J			5690 J			68.2 U	
ANTIMONY				0.13 U			0.09 U			0.03 U	
ARSENIC				4 J			1.4 J			0.14 U	
BARIUM				91.3 J			101 J			57 J	
BERYLLIUM				0.72 U			0.21 U			0.03 U	
CADMIUM				0.3 U			0.06 U			0.04 U	
CALCIUM				21900 J			29000 J			43800 J	
CHROMIUM				8.1 J			8.2 J			0.39 U	
COBALT				9 J			1.1 J			0.07 U	
COPPER				18 J			3.1 J			0.56 U	
IRON				6220 J			3600 J			47.8 U	
LEAD				9.7 J			1.8 J			0.07 U	
LITHIUM											
MAGNESIUM				9300 J			7980 J			8940 J	
MANGANESE				516 J			61.4 J			19.5 J	
MERCURY				0.047 J			0.02 U			0.02 U	
NICKEL				22 J			5.2			0.86 J	
POTASSIUM				30000 J			17500 J			1800 J	
SELENIUM				0.31 U			0.13 U			0.12 U	
SILVER				0.03 U			0.13 U			0.03 U	
SODIUM				6640 J			8500 J			28900 J	
STRONTIUM											
THALLIUM				0.07 U			0.11 U			0.04 U	
TIN				0.1 U			0.2 U			0.2 U	
TITANIUM				56.7 J			69.3			1.9 J	
VANADIUM				8.4 J			12 J			0.19 U	
ZINC				54.1 J			20.3 J			2.1 U	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	36.8 U	41 U			255 J			134 J			33.1 U
ANTIMONY, FILTERED	0.18 U	0.3 U			0.29 U			0.22 U			0.19 U
ARSENIC, FILTERED	0.8 J	0.85 J			0.64 J			0.26 U			0.09 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	03	02	02	03	02	02	03	02	02
LOCATION	13SW/SD14	13SW/SD14	13SW/SD14	13SW/SD15	13SW/SD15	13SW/SD15	13SW/SD16	13SW/SD16	13SW/SD16	13SW/SD18	13SW/SD18
SAMPLE NUMBER	13SW1401-F	13SW1401-F-D	13SW1402	13SW1501	13SW1501-F	13SW1502	13SW1601	13SW1601-F	13SW1602	13SW1801	13SW1801-F
SAMPLE CODE	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/22/2003	10/22/2003	10/27/2004	10/27/2003	10/27/2003	10/27/2004	10/22/2003	10/22/2003	10/27/2004	10/23/2003	10/23/2003
BARIUM, FILTERED	75.9 J	77.3 J			40.5 J			70.1 J			58 J
BERYLLIUM, FILTERED	0.03 U	0.03 U			0.12 U			0.03 U			0.03 U
CADMIUM, FILTERED	0.04 U	0.04 U			0.12 U			0.04 U			0.04 U
CALCIUM, FILTERED	39800 J	39800 J			20400 J			28900 J			43600 J
CHROMIUM, FILTERED	0.5 U	0.71 U			0.59 U			0.63 U			0.36 U
COBALT, FILTERED	0.21 U	3.5 J			0.97 J			3.3 J			2.7 J
COPPER, FILTERED	2.7 J	2.5 J			3.8 J			1.5 J			0.57 J
IRON, FILTERED	46 U	31.9 U			211 J			114 U			13.8 U
LEAD, FILTERED	0.08 U	0.06 U			0.17 U			0.11 U			0.04 U
LITHIUM, FILTERED											
MAGNESIUM, FILTERED	10700 J	10800 J			8560 J			8100 J			8610 J
MANGANESE, FILTERED	10 J	14.8 J			4 J			25.9 J			17.8 J
MERCURY, FILTERED	0.02 U	0.02 U			0.02 U			0.02 U			0.02 U
NICKEL, FILTERED	1.8	2			3.8 J			1.2			0.96 J
POTASSIUM, FILTERED	39900 J	39200 J			28600 J			16200 J			1780 J
SELENIUM, FILTERED	0.24 U	0.25 U			0.26 U			0.12 U			0.13 U
SILVER, FILTERED	0.03 U	0.03 U			0.07 U			0.03 U			0.03 U
SODIUM, FILTERED	11400 J	11400 J			7110 J			9450 J			28200 J
STRONTIUM, FILTERED											
THALLIUM, FILTERED	0.04 U	0.04 U			0.04 U			0.04 U			0.04 U
TIN, FILTERED	0.1 U	0.1 U			0.1 U			0.1 U			0.1 U
TITANIUM, FILTERED	1 J	0.57 J			6.5 J			3.7 J			1.2 J
VANADIUM, FILTERED	0.6 J	0.65 J			0.69 J			0.44 J			0.12 U
ZINC, FILTERED	2.3 U	2.8 U			14.1 J			8.9 U			2.4 U
Field Parameters (mg/L)											
DISSOLVED OXYGEN			10.3			11.97			11.63		
DISSOLVED OXYGEN - METER				10.59			8.48			7.19	
OXIDATION REDUCTION POTENTIAL (MV)			81.7	290.5		101.4	213.700000		71.5	175.600000	
PH (S.U.)			7.45	7.43		7.41	7.17		7.61	7.12	
SPECIFIC CONDUCTANCE (MS/CM)			0.702	0.251		0.361	0.254		0.297	0.347	
TEMPERATURE (C)			14.69	8.93		14.22	12.18		14.56	12.11	
TURBIDITY (NTU)			12.8	10.4		23.8	6.5		12.7	1.03	
Miscellaneous Parameters (mg/L)											
AMMONIA-N				0.01			0.005 UJ			0.005 UJ	
NITRITE/NITRATE-N			7.4	0.14		3.4	0.66 J		1.3	0.025 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	03	03	02	02	02
LOCATION	13SW/SD19	13SW/SD19	13SW/SD20	13SW/SD20	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD24	13SW/SD24	13SW/SD25
SAMPLE NUMBER	13SW1901	13SW1901-F	13SW2001	13SW2001-F	13SW2201	13SW2201-F	13SW2202	13SW2202-F	13SW2401	13SW2401-F	13SW2501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/22/2003	10/22/2003	10/27/2004	10/27/2004	10/27/2003	10/27/2003	10/27/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											0.049 U
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	03	03	02	02	02
LOCATION	13SW/SD19	13SW/SD19	13SW/SD20	13SW/SD20	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD24	13SW/SD24	13SW/SD25
SAMPLE NUMBER	13SW1901	13SW1901-F	13SW2001	13SW2001-F	13SW2201	13SW2201-F	13SW2202	13SW2202-F	13SW2401	13SW2401-F	13SW2501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/22/2003	10/22/2003	10/27/2004	10/27/2004	10/27/2003	10/27/2003	10/27/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											0.049 U
ACENAPHTHYLENE											0.049 U
ACETOPHENONE											
ANILINE											
ANTHRACENE											0.049 U
ARAMITE											
BENZO(A)ANTHRACENE											0.049 U
BENZO(A)PYRENE											0.049 UJ
BENZO(B)FLUORANTHENE											0.049 U
BENZO(G,H,I)PERYLENE											0.049 U
BENZO(K)FLUORANTHENE											0.049 U
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											0.049 U
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											0.049 U
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											0.049 U
FLUORENE											0.049 U
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											0.049 U
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	03	03	02	02	02
LOCATION	13SW/SD19	13SW/SD19	13SW/SD20	13SW/SD20	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD24	13SW/SD24	13SW/SD25
SAMPLE NUMBER	13SW1901	13SW1901-F	13SW2001	13SW2001-F	13SW2201	13SW2201-F	13SW2202	13SW2202-F	13SW2401	13SW2401-F	13SW2501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/22/2003	10/22/2003	10/27/2004	10/27/2004	10/27/2003	10/27/2003	10/27/2003
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											0.049 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											0.049 U
PHENOL											
PRONAMIDE											
PYRENE											0.049 U
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
1,3-DINITROBENZENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.49 U		0.54 U		0.52 U				0.51 U		0.5 U
2,4,6-TRINITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2,4-DIAMINO-6-NITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2,4-DINITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2,6-DIAMINO-4-NITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2,6-DINITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
2-NITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
3,5-DINITROANILINE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
3-NITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
4-NITROTOLUENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
DNX	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	03	03	02	02	02
LOCATION	13SW/SD19	13SW/SD19	13SW/SD20	13SW/SD20	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD24	13SW/SD24	13SW/SD25
SAMPLE NUMBER	13SW1901	13SW1901-F	13SW2001	13SW2001-F	13SW2201	13SW2201-F	13SW2202	13SW2202-F	13SW2401	13SW2401-F	13SW2501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/22/2003	10/22/2003	10/27/2004	10/27/2004	10/27/2003	10/27/2003	10/27/2003
HMX	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
MNX	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
NITROBENZENE	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
RDX	0.24 U		0.46 J		1.6				0.26 U		0.25 U
TETRYL	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
TNX	0.24 U		0.27 U		0.26 U				0.26 U		0.25 U
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	95.4 U		437 J		392 J		680 J		482 J		41.9 U
ANTIMONY	0.03 U		0.04 U		0.11 U		0.26 U		0.02 U		0.02 U
ARSENIC	0.19 U		0.24 U		0.26 U		0.45 U		0.38 U		0.11 U
BARIUM	50.1 J		55.6 J		77.7 J		42.5 J		47.3 J		50.7 J
BERYLLIUM	0.03 U		0.04 U		0.16 U		0.08 U		0.26 U		0.03 U
CADMIUM	0.04 U		0.04 U		0.04 U		0.039 U		0.04 U		0.04 U
CALCIUM	72500 J		3040 J		62300 J		33000 J		17200 J		28100 J
CHROMIUM	0.58 U		0.95 U		0.45 U		1 J		0.62 U		0.19 U
COBALT	0.39 U		0.33 U		0.47 J		0.26 U		0.52 U		0.07 U
COPPER	0.89 J		1.3 J		1.3 J		3 J		3.4 J		0.89 U
IRON	74.8 U		455 J		116 U		767 J		432 J		34.7 U
LEAD	0.13 U		0.35 U		0.31 U		0.6 U		0.78 U		0.07 U
LITHIUM											
MAGNESIUM	15600 J		836 J		8520 J		5530 J		4770 J		7540 J
MANGANESE	26 J		41.4 J		136 J		9.4 U		111 J		7.5 J
MERCURY	0.02 U		0.02 U		0.02 U		0.03 U		0.02 U		0.02 U
NICKEL	1.5		1.2		1.6		2 U		1.8 J		0.76 J
POTASSIUM	2960 J		1980 J		2190 J		2130 J		3310 J		1700 J
SELENIUM	0.09 U		0.08 U		0.13 U		0.2 U		0.12 U		0.04 U
SILVER	0.03 U		0.03 U		0.03 U		0.028 U		0.03 U		0.03 U
SODIUM	41500 J		2260 J		29200 J		8920 J		17200 J		13900 J
STRONTIUM											
THALLIUM	0.04 U		0.04 U		0.04 U		0.043 U		0.04 U		0.04 U
TIN	0.1 U		0.1 U		0.1 U		0.048 UJ		0.1 U		0.1 U
TITANIUM	1.7 J		6.4		1.9 J				6.7 J		0.73 U
VANADIUM	0.22 U		1.1 J		0.42 J		1.3 J		0.88 J		0.11 U
ZINC	13.1 U		7.9 U		9.7 U		6.3 U		9.4 J		6.8 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED		8.9 U		19.4 U		7.6 U		26.4 U		217 J	
ANTIMONY, FILTERED		0.17 U		0.18 U		0.25 U		0.29 U		0.09 U	
ARSENIC, FILTERED		0.11 U		0.13 U		0.2 U		0.23 U		0.18 U	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	03	03	02	02	02
LOCATION	13SW/SD19	13SW/SD19	13SW/SD20	13SW/SD20	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD22	13SW/SD24	13SW/SD24	13SW/SD25
SAMPLE NUMBER	13SW1901	13SW1901-F	13SW2001	13SW2001-F	13SW2201	13SW2201-F	13SW2202	13SW2202-F	13SW2401	13SW2401-F	13SW2501
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/22/2003	10/22/2003	10/27/2004	10/27/2004	10/27/2003	10/27/2003	10/27/2003
BARIUM, FILTERED		50 J		55.2 J		57.8 J		39.8 J		44.5 J	
BERYLLIUM, FILTERED		0.03 U		0.03 U		0.03 U		0.06 U		0.22 U	
CADMIUM, FILTERED		0.04 U		0.04 U		0.04 U		0.04 U		0.13 U	
CALCIUM, FILTERED		73800 J		30500 J		61300 J		33100 J		17500 J	
CHROMIUM, FILTERED		0.41 U		0.32 U		0.3 U		0.46 U		0.46 U	
COBALT, FILTERED		0.26 U		2.8 J		1.3 J		0.088 U		0.77 J	
COPPER, FILTERED		0.46 U		0.73 J		0.95 J		2.5 J		1.9 J	
IRON, FILTERED		7 U		11.6 U		9 U		43 U		137 J	
LEAD, FILTERED		0.04 U		0.06 U		0.07 U		0.23 U		0.09 U	
LITHIUM, FILTERED											
MAGNESIUM, FILTERED		15400 J		8290 J		8250 J		5410 J		4860 J	
MANGANESE, FILTERED		5.9 J		30.5 J		25.3 J		3.5 U		59.3 J	
MERCURY, FILTERED		0.02 U		0.02 U		0.02 U		0.03 U		0.02 U	
NICKEL, FILTERED		0.85 J		0.96 J		0.97 J		1.5 U		1.4 J	
POTASSIUM, FILTERED		2920 J		2000 J		2100 J		2080 J		3310 J	
SELENIUM, FILTERED		0.08 U		0.07 U		0.09 U		0.23 U		0.04 U	
SILVER, FILTERED		0.03 U		0.03 U		0.03 U		0.03 U		0.03 U	
SODIUM, FILTERED		41300 J		22100 J		29400 J		8840 J		18000 J	
STRONTIUM, FILTERED											
THALLIUM, FILTERED		0.04 U		0.04 U		0.04 U		0.043 U		0.04 U	
TIN, FILTERED		0.1 U		0.1 U		0.1 U		0.05 U		0.1 U	
TITANIUM, FILTERED		0.76 J		0.27 J		0.2 J				4.8 J	
VANADIUM, FILTERED		0.07 U		0.1 U		0.2 U		1.14 U		0.39 U	
ZINC, FILTERED		2.2 U		9.5 U		4.4 U		3 U		11.4 J	
Field Parameters (mg/L)											
DISSOLVED OXYGEN							10.84				
DISSOLVED OXYGEN - METER	6.03		4.39		3.71				8.29		8.64
OXIDATION REDUCTION POTENTIAL (MV)	203.5		158.3		264.700000		74.1		261.700000		288
PH (S.U.)	7.25		7.75		7.02		7.7		7.65		7.63
SPECIFIC CONDUCTANCE (MS/CM)	0.566		0.3		0.434		0.205		0.207		0.262
TEMPERATURE (C)	11.69		13.22		13.65		15.14		10.52		10.95
TURBIDITY (NTU)	1.93		6.25		1.5		21.3		22.7		0
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.04 J		0.005 UJ		0.005 UJ				0.04		0.01 U
NITRITE/NITRATE-N	0.13 U		0.11 U		0.025 U				200		0.05 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	02	02	02	01	01
LOCATION	13SW/SD25	13SW/SD25	13SW/SD25	13SW/SD26	13SW/SD26	13SW/SD27	13SW/SD27	13SW/SD29	13SW/SD32	13SW11	13SW11
SAMPLE NUMBER	13SW2501-D	13SW2501-F	13SW2501-F-D	13SW2601	13SW2601-F	13SW2701	13SW2701-F	13SW2901	13SW3201	13SW1101	13SW1101-F
SAMPLE CODE	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	DRY	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/23/2003	10/23/2003	10/27/2004	10/24/2003	5/8/2003	5/8/2003
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE	0.05 UJ								0.048 UJ		
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	02	02	02	01	01
LOCATION	13SW/SD25	13SW/SD25	13SW/SD25	13SW/SD26	13SW/SD26	13SW/SD27	13SW/SD27	13SW/SD29	13SW/SD32	13SW11	13SW11
SAMPLE NUMBER	13SW2501-D	13SW2501-F	13SW2501-F-D	13SW2601	13SW2601-F	13SW2701	13SW2701-F	13SW2901	13SW3201	13SW1101	13SW1101-F
SAMPLE CODE	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	DRY	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/23/2003	10/23/2003	10/27/2004	10/24/2003	5/8/2003	5/8/2003
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE	0.05 UJ								0.048 UJ		
ACENAPHTHYLENE	0.05 UJ								0.048 UJ		
ACETOPHENONE											
ANILINE											
ANTHRACENE	0.05 UJ								0.048 UJ		
ARAMITE											
BENZO(A)ANTHRACENE	0.05 UJ								0.2 J		
BENZO(A)PYRENE	0.05 UJ								0.27 J		
BENZO(B)FLUORANTHENE	0.05 UJ								0.4 J		
BENZO(G,H,I)PERYLENE	0.05 UJ								0.22 J		
BENZO(K)FLUORANTHENE	0.05 UJ								0.19 J		
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE	0.05 UJ								0.33 J		
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE	0.05 UJ								0.048 UJ		
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE	0.05 UJ								0.77 J		
FLUORENE	0.05 UJ								0.048 UJ		
HEXACHLOROBENZENE											
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE	0.05 UJ								0.21 J		
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	02	02	02	01	01
LOCATION	13SW/SD25	13SW/SD25	13SW/SD25	13SW/SD26	13SW/SD26	13SW/SD27	13SW/SD27	13SW/SD29	13SW/SD32	13SW11	13SW11
SAMPLE NUMBER	13SW2501-D	13SW2501-F	13SW2501-F-D	13SW2601	13SW2601-F	13SW2701	13SW2701-F	13SW2901	13SW3201	13SW1101	13SW1101-F
SAMPLE CODE	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	DRY	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/23/2003	10/23/2003	10/27/2004	10/24/2003	5/8/2003	5/8/2003
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE	0.05 UJ								0.048 UJ		
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE	0.05 UJ								0.32 J		
PHENOL											
PRONAMIDE											
PYRENE	0.05 UJ								0.58 J		
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.25 U			0.25 U		0.26 U				0.21 U	
1,3-DINITROBENZENE	0.25 U			0.25 U		0.26 U				0.21 U	
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.49 U			0.5 U		0.52 U					
2,4,6-TRINITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
2,4-DIAMINO-6-NITROTOLUENE	0.25 U			0.25 U		0.26 U					
2,4-DINITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
2,6-DIAMINO-4-NITROTOLUENE	0.25 U			0.25 U		0.26 U					
2,6-DINITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
2-AMINO-4,6-DINITROTOLUENE	0.25 U			0.25 U		0.26 U				0.25 R	
2-NITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
3,5-DINITROANILINE	0.25 U			0.25 U		0.26 U					
3-NITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
4,4'-TN-AZOXY											
4-AMINO-2,6-DINITROTOLUENE	0.25 U			0.25 U		0.46 J				1 J	
4-NITROTOLUENE	0.25 U			0.25 U		0.26 U				0.21 U	
DNX	0.25 U			0.25 U		0.86					

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	02	02	02	01	01
LOCATION	13SW/SD25	13SW/SD25	13SW/SD25	13SW/SD26	13SW/SD26	13SW/SD27	13SW/SD27	13SW/SD29	13SW/SD32	13SW11	13SW11
SAMPLE NUMBER	13SW2501-D	13SW2501-F	13SW2501-F-D	13SW2601	13SW2601-F	13SW2701	13SW2701-F	13SW2901	13SW3201	13SW1101	13SW1101-F
SAMPLE CODE	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	DRY	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/23/2003	10/23/2003	10/27/2004	10/24/2003	5/8/2003	5/8/2003
HMX	0.25 U			0.25 U		8.2				93	
MNX	0.25 U			0.25 U		1.2 J					
NITROBENZENE	0.25 U			0.25 U		0.26 U				0.21 U	
RDX	0.25 U			0.25 U		22				610	
TETRYL	0.25 U			0.25 U		0.26 U				0.21 U	
TNX	0.25 U			0.25 U		0.26 U					
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	36.8 U			108 J		139 J				3080 J	
ANTIMONY	0.03 U			0.02 U		0.1 U				1.5 U	
ARSENIC	0.13 U			0.15 U		0.48 U				35.7 J	
BARIUM	59.5 J			62.5 J		54.6 J				25.3 J	
BERYLLIUM	0.03 U			0.03 U		0.03 U				0.16 U	
CADMIUM	0.04 U			0.04 U		0.04 U				0.29 U	
CALCIUM	31800 J			27900 J		26400 J				95400 J	
CHROMIUM	0.13 U			0.6 U		0.6 U				4.5 J	
COBALT	0.05 U			0.11 U		0.18 U				9.4 J	
COPPER	0.94 U			1.3 J		2.2 J				27.1 J	
IRON	28.1 U			75.4 U		162 U				2340 J	
LEAD	0.3 U			0.76 U		0.22 U				2.3 J	
LITHIUM										2.9 J	
MAGNESIUM	8290 J			6930 J		8260 J				92200 J	
MANGANESE	5.1 J			14.2 J		28.1 J				126 J	
MERCURY	1.1			0.02 U		0.02 U				0.2 U	
NICKEL	0.94 J			2.5 J		1.3				20.4 J	
POTASSIUM	1860 J			1750 J		20400 J				690000 J	
SELENIUM	0.07 U			0.09 U		0.11 U				2 J	
SILVER	0.03 U			0.03 U		0.03 U				0.1 U	
SODIUM	15500 J			16200 J		9470 J				72500 J	
STRONTIUM										82.4 J	
THALLIUM	0.04 U			0.04 U		0.04 U				0.17 U	
TIN	0.1 U			0.29 U		0.1 U				0.11 U	
TITANIUM	0.72 U			2.2 J		2 J				64.6 J	
VANADIUM	0.11 U			0.27 U		0.55 J				43.5 J	
ZINC	8.1 J			12.3 J		2.7 U				67.9 J	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED		9.9 U	56.1 U		156 J		11 U				212 J
ANTIMONY, FILTERED		0.06 U	0.04 U		0.15 U		0.27 U				1.7 U
ARSENIC, FILTERED		0.11 U	0.12 U		0.17 U		0.42 U				35.3 J

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY
SAMPLING ROUND	02	02	02	02	02	02	02	02	02	01	01
LOCATION	13SW/SD25	13SW/SD25	13SW/SD25	13SW/SD26	13SW/SD26	13SW/SD27	13SW/SD27	13SW/SD29	13SW/SD32	13SW11	13SW11
SAMPLE NUMBER	13SW2501-D	13SW2501-F	13SW2501-F-D	13SW2601	13SW2601-F	13SW2701	13SW2701-F	13SW2901	13SW3201	13SW1101	13SW1101-F
SAMPLE CODE	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	DRY	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/23/2003	10/23/2003	10/27/2004	10/24/2003	5/8/2003	5/8/2003
BARIUM, FILTERED		55.1 J	54 J		65.2 J		54.8 J				10.1 J
BERYLLIUM, FILTERED		0.03 U	0.03 U		0.04 U		0.03 U				0.08 U
CADMIUM, FILTERED		0.04 U	0.04 U		0.07 U		0.04 U				0.18 U
CALCIUM, FILTERED		28200 J	27900 J		28800 J		26300 J				94400 J
CHROMIUM, FILTERED		0.13 U	0.21 U		0.46 U		0.38 U				2 J
COBALT, FILTERED		0.52 U	0.06 U		0.64 J		3.1 J				8.8 J
COPPER, FILTERED		0.81 U	0.62 U		1.9 J		1.9 J				26.4 J
IRON, FILTERED		6.2 U	31.1 U		75.9 U		15.8 U				337 J
LEAD, FILTERED		0.02 U	0.02 U		0.19 U		0.09 U				0.26 U
LITHIUM, FILTERED											1.3 U
MAGNESIUM, FILTERED		7720 J	7440 J		7130 J		8050 J				92900 J
MANGANESE, FILTERED		2.1 U	1.5 U		11.7 J		13.3 J				72.5 J
MERCURY, FILTERED		0.02 U	0.02 U		0.02 U		0.02 U				0.2 U
NICKEL, FILTERED		0.89 J	0.78 J		2.4 J		1.4				18.6 J
POTASSIUM, FILTERED		1760 J	1720 J		1810 J		20700 J				700000 J
SELENIUM, FILTERED		0.04 U	0.11 U		0.1 U		0.11 U				2.2 J
SILVER, FILTERED		0.03 U	0.03 U		0.03 U		0.03 U				0.17 U
SODIUM, FILTERED		14600 J	14200 J		16800 J		9250 J				73200 J
STRONTIUM, FILTERED											79.9 J
THALLIUM, FILTERED		0.04 U	0.04 U		0.04 U		0.04 U				0.19 U
TIN, FILTERED		0.1 U	0.1 U		0.1 U		0.1 U				0.05 U
TITANIUM, FILTERED		0.34 U	1.5 J		2.8 J		0.1 J				18.6 J
VANADIUM, FILTERED		0.06 U	0.13 U		0.37 U		0.24 U				38.5 J
ZINC, FILTERED		6.9 J	3.2 J		6.6 J		2.1 U				30.6 J
Field Parameters (mg/L)											
DISSOLVED OXYGEN											
DISSOLVED OXYGEN - METER				6.7		8.2			9.15	4.35	
OXIDATION REDUCTION POTENTIAL (MV)				341.3		257.1			201.5	152.9	
PH (S.U.)				6.87		7.58			6.99	7.67	
SPECIFIC CONDUCTANCE (MS/CM)				0.26		0.264			0.578	2.743	
TEMPERATURE (C)				12.25		13.43			10.33	16.45	
TURBIDITY (NTU)				8.04		4			44	85	
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01 U			0.01 U		0.005 UJ				3.4	
NITRITE/NITRATE-N	0.06			0.39		0.26 J				23	

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	02	02	03	03	03	03	03	03
LOCATION	13SW11	13SW11	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD33	13SW/SD34	13SW/SD35	13SW/SD35
SAMPLE NUMBER	13SW1102	13SW1102-F	13SW3001	13SW3001-F	13SW3002	13SW3002-F	13SW3301	13SW3401	13SW3501	13SW3501-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
SAMPLE DATE	11/18/2003	11/18/2003	10/22/2003	10/22/2003	10/26/2004	10/26/2004	10/26/2004	10/6/2004	10/6/2004	10/6/2004
Semivolatile Organics (ug/L)										
1,2,4,5-TETRACHLOROBENZENE										
1,2,4-TRICHLOROBENZENE										
1,2-DICHLOROBENZENE										
1,3-DICHLOROBENZENE										
1,4-DICHLOROBENZENE										
1,4-NAPHTHOQUINONE										
1,4-PHENYLENEDIAMINE										
1-NAPHTHYLAMINE										
2,2'-OXYBIS(1-CHLOROPROPANE)										
2,3,4,6-TETRACHLOROPHENOL										
2,4,5-TRICHLOROPHENOL										
2,4,6-TRICHLOROPHENOL										
2,4-DICHLOROPHENOL										
2,4-DIMETHYLPHENOL										
2,4-DINITROPHENOL										
2,6-DICHLOROPHENOL										
2-ACETYLAMINOFLUORENE										
2-CHLORONAPHTHALENE										
2-CHLOROPHENOL										
2-METHYLNAPHTHALENE										
2-METHYLPHENOL										
2-NAPHTHYLAMINE										
2-NITROANILINE										
2-NITROPHENOL										
2-PICOLINE										
3&4-METHYLPHENOL										
3,3'-DICHLOROBENZIDINE										
3,3'-DIMETHYLBENZIDINE										
3-METHYLCHOLANTHRENE										
3-NITROANILINE										
4,6-DINITRO-2-METHYLPHENOL										
4-AMINOBIPHENYL										
4-BROMOPHENYL PHENYL ETHER										
4-CHLORO-3-METHYLPHENOL										
4-CHLOROANILINE										
4-CHLOROPHENYL PHENYL ETHER										
4-NITROANILINE										
4-NITROPHENOL										
4-NITROQUINOLINE-1-OXIDE										
5-NITRO-O-TOLUIDINE										

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	02	02	03	03	03	03	03	03
LOCATION	13SW11	13SW11	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD33	13SW/SD34	13SW/SD35	13SW/SD35
SAMPLE NUMBER	13SW1102	13SW1102-F	13SW3001	13SW3001-F	13SW3002	13SW3002-F	13SW3301	13SW3401	13SW3501	13SW3501-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
SAMPLE DATE	11/18/2003	11/18/2003	10/22/2003	10/22/2003	10/26/2004	10/26/2004	10/26/2004	10/6/2004	10/6/2004	10/6/2004
7,12-DIMETHYLBENZ(A)ANTHRACENE										
A,A-DIMETHYLPHENETHYLAMINE										
ACENAPHTHENE										
ACENAPHTHYLENE										
ACETOPHENONE										
ANILINE										
ANTHRACENE										
ARAMITE										
BENZO(A)ANTHRACENE										
BENZO(A)PYRENE										
BENZO(B)FLUORANTHENE										
BENZO(G,H,I)PERYLENE										
BENZO(K)FLUORANTHENE										
BENZYL ALCOHOL										
BIS(2-CHLOROETHOXY)METHANE										
BIS(2-CHLOROETHYL)ETHER										
BIS(2-ETHYLHEXYL)PHTHALATE										
BUTYL BENZYL PHTHALATE										
CHLOROBENZILATE										
CHRYSENE										
DI-N-BUTYL PHTHALATE										
DI-N-OCTYL PHTHALATE										
DIALLATE										
DIBENZO(A,H)ANTHRACENE										
DIBENZOFURAN										
DIETHYL PHTHALATE										
DIMETHYL PHTHALATE										
DIPHENYLAMINE										
ETHYL METHANE SULFONATE										
FLUORANTHENE										
FLUORENE										
HEXACHLOROBENZENE										
HEXACHLOROBUTADIENE										
HEXACHLOROCYCLOPENTADIENE										
HEXACHLOROETHANE										
HEXACHLOROPROPENE										
INDENO(1,2,3-CD)PYRENE										
ISODRIN										
ISOPHORONE										
ISOSAFROLE										
KEPONE										

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	02	02	03	03	03	03	03	03
LOCATION	13SW11	13SW11	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD33	13SW/SD34	13SW/SD35	13SW/SD35
SAMPLE NUMBER	13SW1102	13SW1102-F	13SW3001	13SW3001-F	13SW3002	13SW3002-F	13SW3301	13SW3401	13SW3501	13SW3501-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
SAMPLE DATE	11/18/2003	11/18/2003	10/22/2003	10/22/2003	10/26/2004	10/26/2004	10/26/2004	10/6/2004	10/6/2004	10/6/2004
METHAPYRILENE										
METHYL METHANE SULFONATE										
N-NITROSO-DI-N-BUTYLAMINE										
N-NITROSO-DI-N-PROPYLAMINE										
N-NITROSODIETHYLAMINE										
N-NITROSODIMETHYLAMINE										
N-NITROSOMETHYLETHYLAMINE										
N-NITROSOMORPHOLINE										
N-NITROSOPIPERIDINE										
N-NITROSOPYRROLIDINE										
NAPHTHALENE										
O,O,O-TRIETHYL PHOSPHOROTHIOATE										
O-TOLUIDINE										
P-(DIMETHYLAMINO)AZOBENZENE										
PENTACHLOROBENZENE										
PENTACHLOROETHANE										
PENTACHLORONITROBENZENE										
PHENACETIN										
PHENANTHRENE										
PHENOL										
PRONAMIDE										
PYRENE										
PYRIDINE										
SAFROLE										
Energetics (ug/L)										
1,3,5-TRINITROBENZENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
1,3-DINITROBENZENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.575 U		0.5 U							
2,4,6-TRINITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2,4-DIAMINO-6-NITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2,4-DINITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2,6-DIAMINO-4-NITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2,6-DINITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2-AMINO-4,6-DINITROTOLUENE	0.9 J		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
2-NITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
3,5-DINITROANILINE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
3-NITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
4,4'-TN-AZOXY					0.48 U		0.515 U	0.5 U	0.528 U	0.528 U
4-AMINO-2,6-DINITROTOLUENE	4.5 J		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
4-NITROTOLUENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
DNX	35		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	02	02	03	03	03	03	03	03
LOCATION	13SW11	13SW11	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD33	13SW/SD34	13SW/SD35	13SW/SD35
SAMPLE NUMBER	13SW1102	13SW1102-F	13SW3001	13SW3001-F	13SW3002	13SW3002-F	13SW3301	13SW3401	13SW3501	13SW3501-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
SAMPLE DATE	11/18/2003	11/18/2003	10/22/2003	10/22/2003	10/26/2004	10/26/2004	10/26/2004	10/6/2004	10/6/2004	10/6/2004
HMX	730		3.2 J		2.9		2.4	1.4	0.264 U	0.264 U
MNX	72		0.28 J		0.31 J		0.258 U	0.25 U	0.264 U	0.264 U
NITROBENZENE	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
RDX	5500		6.2		9.9		8.6	1.3	0.264 U	0.264 U
TETRYL	0.287 U		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
TNX	4		0.25 U		0.24 U		0.258 U	0.25 U	0.264 U	0.264 U
Herbicides (ug/L)										
HEXACHLOROPHENE										
PENTACHLOROPHENOL										
Total Metals (ug/L)										
ALUMINUM	7250 J		40.9 U		68.7 U					
ANTIMONY	0.47 U		0.49 U		0.35 U					
ARSENIC	8.4 J		0.3 U		0.31 U					
BARIUM	53.3 J		54.1 J		57.8 J					
BERYLLIUM	0.25 U		0.03 U		0.02 U					
CADMIUM	0.24 U		0.24 U		0.19 U					
CALCIUM	45800 J		54800 J		50000 J					
CHROMIUM	8 J		0.84 U		0.68 J					
COBALT	3.2 J		0.07 U		0.16 U					
COPPER	13.9 J		1.4 J		1.3 J					
IRON	6180 J		175 J		70.1 U					
LEAD	3.5 J		0.12 U		0.11 U					
LITHIUM										
MAGNESIUM	15200 J		9770 J		8780 J					
MANGANESE	64 J		7.9 J		5.3 U					
MERCURY	0.007 U		0.02 U		0.03 U					
NICKEL	8.1 J		0.45 J		0.93 U					
POTASSIUM	126000 J		4850 J		6690 J					
SELENIUM	0.62 U		0.1 U		0.16 U					
SILVER	0.03 U		0.03 U		0.028 U					
SODIUM	17000 J		25600 J		18400 J					
STRONTIUM										
THALLIUM	0.11 U		0.04 U		0.043 U					
TIN	0.2 U		0.1 U		0.048 UJ					
TITANIUM	96.9 J		2.3 J							
VANADIUM	16.6 J		0.22 U		1.14 U					
ZINC	47.4 J		2.1 U		2.9 U					
Dissolved Metals (ug/L)										
ALUMINUM, FILTERED		283 J		20.9 U		29.2 U				
ANTIMONY, FILTERED		0.71 U		0.3 U		0.34 U				
ARSENIC, FILTERED		6.7 J		0.19 U		0.26 U				

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD	DOWNGRAD
STREAM ORDER	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	02	02	03	03	03	03	03	03
LOCATION	13SW11	13SW11	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD30	13SW/SD33	13SW/SD34	13SW/SD35	13SW/SD35
SAMPLE NUMBER	13SW1102	13SW1102-F	13SW3001	13SW3001-F	13SW3002	13SW3002-F	13SW3301	13SW3401	13SW3501	13SW3501-D
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
SAMPLE DATE	11/18/2003	11/18/2003	10/22/2003	10/22/2003	10/26/2004	10/26/2004	10/26/2004	10/6/2004	10/6/2004	10/6/2004
BARIUM, FILTERED		22 J		81.6 J		280 J				
BERYLLIUM, FILTERED		0.03 U		0.04 U		0.02 U				
CADMIUM, FILTERED		0.09 U		0.04 U		0.15 U				
CALCIUM, FILTERED		43300 J		29000 J		52400 J				
CHROMIUM, FILTERED		1.5 U		0.3 U		0.6 J				
COBALT, FILTERED		4.9 J		2.8 J		0.088 U				
COPPER, FILTERED		8.3 J		1.5 J		1.2 J				
IRON, FILTERED		356 J		29.1 U		6.3 U				
LEAD, FILTERED		0.32 U		0.11 U		0.22 U				
LITHIUM, FILTERED										
MAGNESIUM, FILTERED		15000 J		9090 J		8840 J				
MANGANESE, FILTERED		10.7 U		23 J		3 U				
MERCURY, FILTERED		0.007 U		0.02 U		0.03 U				
NICKEL, FILTERED		4 J		1.4		0.84 U				
POTASSIUM, FILTERED		125000 J		15100 J		6780 J				
SELENIUM, FILTERED		0.46 U		0.09 U		0.12 U				
SILVER, FILTERED		0.03 U		0.03 U		0.028 U				
SODIUM, FILTERED		17600 J		9830 J		18700 J				
STRONTIUM, FILTERED										
THALLIUM, FILTERED		0.04 U		0.05 U		0.043 U				
TIN, FILTERED		0.1 U		0.59 U		0.048 U				
TITANIUM, FILTERED		8.7 J		0.6 J						
VANADIUM, FILTERED		6 J		0.18 U		1.14 U				
ZINC, FILTERED		9.3 J		7.6 U		2.1 U				
Field Parameters (mg/L)										
DISSOLVED OXYGEN					9.44		11.45	10.05	8.72	
DISSOLVED OXYGEN - METER	4.99		9.63							
OXIDATION REDUCTION POTENTIAL (MV)	216		222.100000		39.6		39.3	166.5	151	
PH (S.U.)	6.9		7.84		7.52		7.74	7.12	7.39	
SPECIFIC CONDUCTANCE (MS/CM)	1.024		0.395		0.359		0.347	373	512	
TEMPERATURE (C)	15.2		13.09		14.39		14.28	10.79	14.5	
TURBIDITY (NTU)	242		2.6		5.69		5.92	1.3	3.8	
Miscellaneous Parameters (mg/L)										
AMMONIA-N	0.26 J		0.005 UJ							
NITRITE/NITRATE-N	8.5 J		0.025 U		0.26		0.28	0.025 U	0.025 U	0.025 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	03	03	03	03	02	02	03	03
LOCATION	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD31	13SW/SD31	13SW/SD31	13SW/SD31
SAMPLE NUMBER	13SW2801	13SW2801-F	13SW2802	13SW2802-D	13SW2802-F	13SW2802-F-D	13SW3101	13SW3101-F	13SW3102	13SW3102-F
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/26/2004	10/26/2004	10/26/2004	10/26/2004	10/22/2003	10/22/2003	10/6/2004	10/6/2004
Semivolatile Organics (ug/L)										
1,2,4,5-TETRACHLOROBENZENE										
1,2,4-TRICHLOROBENZENE										
1,2-DICHLOROBENZENE										
1,3-DICHLOROBENZENE										
1,4-DICHLOROBENZENE										
1,4-NAPHTHOQUINONE										
1,4-PHENYLENEDIAMINE										
1-NAPHTHYLAMINE										
2,2'-OXYBIS(1-CHLOROPROPANE)										
2,3,4,6-TETRACHLOROPHENOL										
2,4,5-TRICHLOROPHENOL										
2,4,6-TRICHLOROPHENOL										
2,4-DICHLOROPHENOL										
2,4-DIMETHYLPHENOL										
2,4-DINITROPHENOL										
2,6-DICHLOROPHENOL										
2-ACETYLAMINOFLUORENE										
2-CHLORONAPHTHALENE										
2-CHLOROPHENOL										
2-METHYLNAPHTHALENE										
2-METHYLPHENOL										
2-NAPHTHYLAMINE										
2-NITROANILINE										
2-NITROPHENOL										
2-PICOLINE										
3&4-METHYLPHENOL										
3,3'-DICHLOROBENZIDINE										
3,3'-DIMETHYLBENZIDINE										
3-METHYLCHOLANTHRENE										
3-NITROANILINE										
4,6-DINITRO-2-METHYLPHENOL										
4-AMINOBIPHENYL										
4-BROMOPHENYL PHENYL ETHER										
4-CHLORO-3-METHYLPHENOL										
4-CHLOROANILINE										
4-CHLOROPHENYL PHENYL ETHER										
4-NITROANILINE										
4-NITROPHENOL										
4-NITROQUINOLINE-1-OXIDE										
5-NITRO-O-TOLUIDINE										

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	03	03	03	03	02	02	03	03
LOCATION	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD31	13SW/SD31	13SW/SD31	13SW/SD31
SAMPLE NUMBER	13SW2801	13SW2801-F	13SW2802	13SW2802-D	13SW2802-F	13SW2802-F-D	13SW3101	13SW3101-F	13SW3102	13SW3102-F
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/26/2004	10/26/2004	10/26/2004	10/26/2004	10/22/2003	10/22/2003	10/6/2004	10/6/2004
7,12-DIMETHYLBENZ(A)ANTHRACENE										
A,A-DIMETHYLPHENETHYLAMINE										
ACENAPHTHENE										
ACENAPHTHYLENE										
ACETOPHENONE										
ANILINE										
ANTHRACENE										
ARAMITE										
BENZO(A)ANTHRACENE										
BENZO(A)PYRENE										
BENZO(B)FLUORANTHENE										
BENZO(G,H,I)PERYLENE										
BENZO(K)FLUORANTHENE										
BENZYL ALCOHOL										
BIS(2-CHLOROETHOXY)METHANE										
BIS(2-CHLOROETHYL)ETHER										
BIS(2-ETHYLHEXYL)PHTHALATE										
BUTYL BENZYL PHTHALATE										
CHLOROBENZILATE										
CHRYSENE										
DI-N-BUTYL PHTHALATE										
DI-N-OCTYL PHTHALATE										
DIALLATE										
DIBENZO(A,H)ANTHRACENE										
DIBENZOFURAN										
DIETHYL PHTHALATE										
DIMETHYL PHTHALATE										
DIPHENYLAMINE										
ETHYL METHANE SULFONATE										
FLUORANTHENE										
FLUORENE										
HEXACHLOROBENZENE										
HEXACHLOROBUTADIENE										
HEXACHLOROCYCLOPENTADIENE										
HEXACHLOROETHANE										
HEXACHLOROPROPENE										
INDENO(1,2,3-CD)PYRENE										
ISODRIN										
ISOPHORONE										
ISOSAFROLE										
KEPONE										

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	03	03	03	03	02	02	03	03
LOCATION	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD31	13SW/SD31	13SW/SD31	13SW/SD31
SAMPLE NUMBER	13SW2801	13SW2801-F	13SW2802	13SW2802-D	13SW2802-F	13SW2802-F-D	13SW3101	13SW3101-F	13SW3102	13SW3102-F
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/26/2004	10/26/2004	10/26/2004	10/26/2004	10/22/2003	10/22/2003	10/6/2004	10/6/2004
METHAPYRILENE										
METHYL METHANE SULFONATE										
N-NITROSO-DI-N-BUTYLAMINE										
N-NITROSO-DI-N-PROPYLAMINE										
N-NITROSODIETHYLAMINE										
N-NITROSODIMETHYLAMINE										
N-NITROSOMETHYLETHYLAMINE										
N-NITROSOMORPHOLINE										
N-NITROSOPIPERIDINE										
N-NITROSOPYRROLIDINE										
NAPHTHALENE										
O,O,O-TRIETHYL PHOSPHOROTHIOATE										
O-TOLUIDINE										
P-(DIMETHYLAMINO)AZOBENZENE										
PENTACHLOROBENZENE										
PENTACHLOROETHANE										
PENTACHLORONITROBENZENE										
PHENACETIN										
PHENANTHRENE										
PHENOL										
PRONAMIDE										
PYRENE										
PYRIDINE										
SAFROLE										
Energetics (ug/L)										
1,3,5-TRINITROBENZENE	0.24 U						0.27 U			
1,3-DINITROBENZENE	0.24 U						0.27 U			
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.49 U						0.53 U			
2,4,6-TRINITROTOLUENE	0.24 U						0.27 U			
2,4-DIAMINO-6-NITROTOLUENE	0.24 U						0.27 U			
2,4-DINITROTOLUENE	0.24 U						0.27 U			
2,6-DIAMINO-4-NITROTOLUENE	0.24 U						0.27 U			
2,6-DINITROTOLUENE	0.24 U						0.27 U			
2-AMINO-4,6-DINITROTOLUENE	0.24 U						0.27 U			
2-NITROTOLUENE	0.24 U						0.27 U			
3,5-DINITROANILINE	0.24 U						0.27 U			
3-NITROTOLUENE	0.24 U						0.27 U			
4,4'-TN-AZOXY										
4-AMINO-2,6-DINITROTOLUENE	0.24 U						0.27 U			
4-NITROTOLUENE	0.24 U						0.27 U			
DNX	0.24 U						0.27 U			

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	03	03	03	03	02	02	03	03
LOCATION	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD31	13SW/SD31	13SW/SD31	13SW/SD31
SAMPLE NUMBER	13SW2801	13SW2801-F	13SW2802	13SW2802-D	13SW2802-F	13SW2802-F-D	13SW3101	13SW3101-F	13SW3102	13SW3102-F
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/26/2004	10/26/2004	10/26/2004	10/26/2004	10/22/2003	10/22/2003	10/6/2004	10/6/2004
HMX	0.24 U						0.27 U			
MNX	0.24 U						0.27 U			
NITROBENZENE	0.24 U						0.27 U			
RDX	0.24 U						0.27 U			
TETRYL	0.24 U						0.27 U			
TNX	0.24 U						0.27 U			
Herbicides (ug/L)										
HEXACHLOROPHENE										
PENTACHLOROPHENOL										
Total Metals (ug/L)										
ALUMINUM	486 J		1770 J	1560 J			30.6 U		1910 J	
ANTIMONY	0.02 U		0.085 UJ	0.23 U			0.36 U		0.21 U	
ARSENIC	0.35 U		0.8 J	0.74 J			0.23 U		1.7 J	
BARIUM	58.1 J		58.2 J	58.8 J			53.7 J		62.7 J	
BERYLLIUM	0.07 U		0.37 U	0.34 U			0.03 U		0.15 U	
CADMIUM	0.06 U		0.04 U	0.05 U			0.13 U		0.29 U	
CALCIUM	6550 J		5060 J	4930 J			55700 J		65300 J	
CHROMIUM	0.82 J		2.2 J	2 J			0.85 U		3.8 J	
COBALT	0.26 U		0.67 U	0.51 U			0.34 U		1.3	
COPPER	1.3 J		2.2 J	1.9 J			1.1 J		5.5	
IRON	415 J		1600 J	1360 J			24.5 U		2460	
LEAD	0.45 U		1.1 U	0.85 U			0.09 U		1.3 J	
LITHIUM										
MAGNESIUM	3600 J		2830 J	2740 J			9090 J		14500 J	
MANGANESE	122 J		60.1 J	50.9 J			2 U		23	
MERCURY	0.02 U		0.03 U	0.03 U			0.02 U		0.042 U	
NICKEL	2.3 J		4.3 U	3.9 U			0.77 J		6.9	
POTASSIUM	1800 J		2920 J	2760 J			2560 J		3860 J	
SELENIUM	0.06 U		0.094 U	0.1 U			0.11 U		0.14 U	
SILVER	0.03 U		0.028 U	0.06 U			0.03 U		0.03 U	
SODIUM	1540 J		1380 U	1360 U			34300 J		29900 J	
STRONTIUM										
THALLIUM	0.04 U		0.043 U	0.043 U			0.04 U		0.08 U	
TIN	0.1 U		0.048 UJ	0.08 U			0.1 U		0.24 U	
TITANIUM	10.1 J						0.31 J			
VANADIUM	0.89 J		2.9	2.5			0.16 U		3.6	
ZINC	8.8 J		8.2 U	6.3 U			6.8 U		29.5 J	
Dissolved Metals (ug/L)										
ALUMINUM, FILTERED		254 J			938 J	657 J		7.6 U		101 J
ANTIMONY, FILTERED		0.08 U			0.085 U	0.21 U		0.59 U		0.22 U
ARSENIC, FILTERED		0.16 U			0.44 U	0.32 U		0.27 U		0.39 U

SUMMARY OF ANALYTIC RESULTS
SURFACE WATER SAMPLES ROUNDS 1 THROUGH 3
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

CLASSIFICATION	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD	UPGRAD
STREAM ORDER	GULLY	GULLY	GULLY	GULLY	GULLY	GULLY	MAINSTREAM	MAINSTREAM	MAINSTREAM	MAINSTREAM
SAMPLING ROUND	02	02	03	03	03	03	02	02	03	03
LOCATION	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD28	13SW/SD31	13SW/SD31	13SW/SD31	13SW/SD31
SAMPLE NUMBER	13SW2801	13SW2801-F	13SW2802	13SW2802-D	13SW2802-F	13SW2802-F-D	13SW3101	13SW3101-F	13SW3102	13SW3102-F
SAMPLE CODE	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	10/27/2003	10/27/2003	10/26/2004	10/26/2004	10/26/2004	10/26/2004	10/22/2003	10/22/2003	10/6/2004	10/6/2004
BARIUM, FILTERED		54.1 J			51.7 J	45.3 J		52.7 J		56 J
BERYLLIUM, FILTERED		0.05 U			0.33 U	0.31 U		0.03 U		0.02 U
CADMIUM, FILTERED		0.22 U			0.039 U	0.04 U		0.09 U		0.1 U
CALCIUM, FILTERED		6680 J			5120 J	5020 J		54900 J		75800 J
CHROMIUM, FILTERED		0.44 U			1 J	0.67 J		0.73 U		0.49 U
COBALT, FILTERED		0.79 J			0.3 U	0.2 U		3.2 J		0.16 J
COPPER, FILTERED		0.93 U			1.5 J	1.2 J		1 J		1.6 J
IRON, FILTERED		155 J			645 J	335 J		5.7 U		101
LEAD, FILTERED		0.16 U			0.48 U	0.25 U		0.04 U		0.08 U
LITHIUM, FILTERED										
MAGNESIUM, FILTERED		3770 J			2740 J	2730 J		9630 J		15700
MANGANESE, FILTERED		112 J			39.4 U	34 U		6.1 J		4.9 J
MERCURY, FILTERED		0.02 U			0.03 U	0.03 U		0.02 U		0.095 U
NICKEL, FILTERED		1.8 J			3.1 U	2.8 U		0.87 J		1.8
POTASSIUM, FILTERED		1850 J			2700 J	2670 J		2470 J		3550 J
SELENIUM, FILTERED		0.04 U			0.094 U	0.094 U		0.13 U		0.1 U
SILVER, FILTERED		0.03 U			0.028 U	0.06 U		0.03 U		0.028 U
SODIUM, FILTERED		1660 J			1450 U	1440 U		33800 J		35700 J
STRONTIUM, FILTERED										
THALLIUM, FILTERED		0.04 U			0.043 U	0.043 U		0.04 U		0.043 U
TIN, FILTERED		0.1 U			0.048 U	0.06 U		0.1 U		0.048 U
TITANIUM, FILTERED		5.3 J						0.22 J		
VANADIUM, FILTERED		0.4 U			1.14 U	1.14 U		0.12 U		1.14 U
ZINC, FILTERED		18.6 J			5.1 U	4 U		1.7 U		3.1 U
Field Parameters (mg/L)										
DISSOLVED OXYGEN			8.05						9.34	
DISSOLVED OXYGEN - METER	7.97						9.4			
OXIDATION REDUCTION POTENTIAL (MV)	330.8		49				226.200000		130	
PH (S.U.)	6.37		7.99				7.88		7.63	
SPECIFIC CONDUCTANCE (MS/CM)	0.073		0.059				0.448		457	
TEMPERATURE (C)	8.84		13.75				14.25		12.5	
TURBIDITY (NTU)	221		56.4				1.1		119	
Miscellaneous Parameters (mg/L)										
AMMONIA-N	0.01 U						0.005 UJ			
NITRITE/NITRATE-N	4						0.025 U			

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
1,3-DINITROBENZENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.526 U			0.556 U				0.51 U		
2,4,6-TRINITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
2,4-DIAMINO-6-NITROTOLUENE		0.263 U			0.278 U				0.255 U		
2,4-DINITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
2,6-DIAMINO-4-NITROTOLUENE		0.263 U			0.278 U				0.255 U		
2,6-DINITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
2-AMINO-4,6-DINITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
2-NITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
3,5-DINITROANILINE		0.263 U			0.278 U				0.255 U		
3-NITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
4-AMINO-2,6-DINITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
4-NITROTOLUENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
DNX		0.263 U			0.278 U				0.255 U		
HMX	1	1	1.3	0.495 U	0.278 U	0.26 U	0.29 J		0.51 J		0.38 J
MNX		0.263 U			0.278 U				0.255 U		
NITROBENZENE	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
PICRAMIC ACID											
PICRIC ACID											
RDX	0.44 U	0.35 J	0.3 J	0.465 U	0.278 U	0.26 U	0.25 U		0.3 J		0.33 J
TETRYL	0.47 U	0.263 U	0.25 U	0.495 U	0.278 U	0.26 U	0.265 U		0.255 U		0.26 U
TNX		0.263 U			0.278 U				0.255 U		
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	598 J	699 J		659 J	244 J		3990 J		627 J		
ANTIMONY	0.24 U	0.02 U		0.06 U	0.06 U		0.13 U		0.02 U		
ARSENIC	0.23 U	0.17 U		0.65 J	0.87 U		1 J		0.31 U		
BARIUM	55.4 J	46.8 J		27.5 J	18.1 J		74.5 J		62.1 J		
BERYLLIUM	1.2 U	1.2 U		0.63 U	0.3 U		1.2 U		1.8 U		
CADMIUM	0.18 U	0.06 U		0.38 U	0.34 U		0.82 U		0.37 U		
CALCIUM	9720 J	7190 J		94100 J	113000 J		34800 J		26100 J		
CHROMIUM	0.2 U	0.73 U		1.1 J	0.71 U		7.1 J		1.4 U		
COBALT	36 J	29.9 J		119 J	71 J		48.8 J		25 J		
COPPER	2.9 J	1.4 U		2.7 J	2 J		5.6 J		3.2 J		
IRON	135 J	61.7 U		10500 J	15200 J		1910 J		344 U		
LEAD	1.4 U	1.2 U		0.53 U	0.36 U		2 U		0.67 U		
LITHIUM	21.1 J			208 J			74 J				
MAGNESIUM	6790 J	5850 J		60200 J	69800 J		17000 J		15800 J		
MANGANESE	689 J	566 U		4580 J	5100 J		302 J		211 J		
MERCURY	0.16 J	0.39		0.02 U	0.007 U		0.02 U		0.02 U		
NICKEL	26.6 J	21.1 J		289 J	170 J		99.7 J		76.3 J		
POTASSIUM	494 J	403 J		6910 J	7090 J		2860 J		1040 J		
SELENIUM	0.17 U	0.05 U		0.91 U	0.27 U		0.32 U		0.04 U		
SILVER	0.18 U	0.03 U		0.12 U	0.03 U		0.43 U		0.03 U		
SODIUM	24300 J	26100 J		102000 J	129000 J		37400 J		40700 J		
STRONTIUM	53.3 J			396 J			97.8 J				
THALLIUM	0.11 U	0.08 U		0.13 U	0.15 U		0.23 U		0.04 U		
TIN	0.1 U	0.1 U		0.33 U	0.14 U		0.34 U		0.1 U		
TITANIUM	4 J	0.21 U		5.8 J	2.2 U		32 J		8.5 J		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
VANADIUM	0.08 U	0.06 U		0.68 J	0.39 U		5.8 J		0.76 U		
ZINC	29.7 J	29.9 J		140 J	96.7 J		161 J		97.7 J		
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED								226 J		790 J	
ANTIMONY, FILTERED								0.36 U		0.08 U	
ARSENIC, FILTERED								0.5 U		0.5 U	
BARIUM, FILTERED								71.1 J		55.8 J	
BERYLLIUM, FILTERED								1.1 U		2.5 J	
CADMIUM, FILTERED								0.97 U		0.76 U	
CALCIUM, FILTERED								30900 J		27100 J	
CHROMIUM, FILTERED								0.48 U		0.24 U	
COBALT, FILTERED								55.7 J		43.4 J	
COPPER, FILTERED								4.5 J		6.2 J	
IRON, FILTERED								344 J		219 U	
LEAD, FILTERED								0.25 U		0.82 U	
LITHIUM, FILTERED								78.5 J			
MAGNESIUM, FILTERED								16800 J		16000 J	
MANGANESE, FILTERED								300 J		278 J	
MERCURY, FILTERED								0.02 U		0.02 U	
NICKEL, FILTERED								107 J		107 J	
POTASSIUM, FILTERED								1890 J		1440 J	
SELENIUM, FILTERED								0.33 U		0.07 U	
SILVER, FILTERED								0.25 U		0.03 U	
SODIUM, FILTERED								35000 J		40600 J	
STRONTIUM, FILTERED								97.1 J			
THALLIUM, FILTERED								0.25 U		0.07 U	
TIN, FILTERED								0.19 U		0.1 U	
TITANIUM, FILTERED								2.6 J		3.8 U	
VANADIUM, FILTERED								0.31 U		0.1 U	
ZINC, FILTERED								178		158 J	
Field Parameters (mg/L)											
ALKALINITY					10 U				10 U		
CARBON DIOXIDE					40				50		
DISSOLVED OXYGEN			4.2		4	2.19			6		3.66
DISSOLVED OXYGEN - METER	1.28	1.4		1.98	5.75		4.5		4.45		
HYDROGEN SULFIDE (H2S)					0				0		
IRON(+2)					2.05				0.03		
MANGANESE(+2)					5.4				0.1		
NITRITE-N					0.003				0.006		
OXIDATION REDUCTION POTENTIAL (MV)	220	385.4	461.2	191	157.9	616.2	152.7		345		107.4
PH (S.U.)	4.68	4.17	3.57	4.61	5.25	3.39	5.56		5.32		5.52
SPECIFIC CONDUCTANCE (MS/CM)	0.229	0.233	0.255	1.244	1.23	1.501	0.445		0.487		0.528
SULFIDE					0				0.06		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT01	13MWT01	13MWT01	13MWT02	13MWT02	13MWT02	13MWT03	13MWT03	13MWT03	13MWT03	13MWT03
SAMPLING ROUND	01	02	03	01	02	03	01	01	02	02	03
SAMPLE NUMBER	13GWT0101	13GWT0102	13GWT0103	13GWT0201	13GWT0202	13GWT0203	13GWT0301	13GWT0301-F	13GWT0302	13GWT0302-F	13GWT0303
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/26/2003	11/23/2003	8/1/2004	4/26/2003	12/7/2003	7/24/2004	4/26/2003	4/26/2003	11/11/2003	11/11/2003	7/24/2004
TEMPERATURE (C)	12.59	17.04	18.75	15.28	10.43	19.59	13.14		18		19.98
TURBIDITY (NTU)	3.8	4.39	9.5	6.8	6.62	2.3	38		328 >		9.2
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01 U	0.005 UJ		0.13	0.24 J		0.12		0.07		
NITRITE/NITRATE-N	0.07	0.15 J		0.02 U	0.05 UJ		0.07		0.09		
TOTAL ORGANIC CARBON									0.5 U		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
1,3-DINITROBENZENE	0.26 U	0.281 U	0.27 U	0.3 J		0.263 U		0.26 U		0.19 U	
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.562 U				0.526 U					
2,4,6-TRINITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
2,4-DIAMINO-6-NITROTOLUENE		0.281 U				0.263 U					
2,4-DINITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
2,6-DIAMINO-4-NITROTOLUENE		0.281 U				0.263 U					
2,6-DINITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
2-AMINO-4,6-DINITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
2-NITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
3,5-DINITROANILINE		0.281 U				0.263 U					
3-NITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
4-AMINO-2,6-DINITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 U		0.26 U		0.19 U	
4-NITROTOLUENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 UJ		0.26 U		0.19 U	
DNX		0.281 U				0.31 J					
HMX	3.3	4.1	4.7	13		10		12		0.97	
MNX		0.281 U				0.263 U					
NITROBENZENE	0.26 U	0.281 U	0.27 U	0.155 U		0.263 U		0.26 U		0.19 U	
PICRAMIC ACID											
PICRIC ACID											
RDX	4.1	3.4	3.1	0.77 J		1.4		0.85		2	
TETRYL	0.26 U	0.281 U	0.27 U	0.155 U		0.263 U		0.26 U		0.19 U	
TNX		0.281 U				0.263 U					
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	8050 J	1530 J		21700 J		139000 J		510 J		12300 J	
ANTIMONY	0.19 U	0.02 U		0.09 U		0.32 U		0.57 U		0.19 U	
ARSENIC	1.8 J	0.5 U		4.7 J		24.1 J		0.8 U		4 J	
BARIUM	154 J	91.8 J		126 J		727 J		31.9 J		178 J	
BERYLLIUM	3.5 J	1.2 U		1.2 U		5.9 J		1.4 U		0.58 U	
CADMIUM	1.9 U	0.52 U		0.39 U		0.69 U		0.6 U		0.56 U	
CALCIUM	34800 J	19000 J		40200 J		35300 J		30900 J		36700 J	
CHROMIUM	1.5 J	0.49 U		36.4 J		145 J		2 U		18.7 J	
COBALT	111 J	38.8 J		34.2 J		48.6 J		43.2 J		3.6 J	
COPPER	3.8 J	2.1 J		10.1 J		48.3 J		4.1 U		7.3 J	
IRON	5400 J	1530 J		9860 J		68900 J		485 J		12000 J	
LEAD	3.2 J	0.94 U		8.1 J		46.5 J		1.5 U		7.1 J	
LITHIUM	126 J			40 J						15.7 J	
MAGNESIUM	16700 J	8720 J		35700 J		35400 J		24200 J		17700 J	
MANGANESE	1330 J	441 U		172 J		209 J		135 J		505 J	
MERCURY	0.02 U	0.007 U		0.02 U		0.097 J		0.03 U		0.02 U	
NICKEL	314 J	107 J		96.2 J		153 J		99.4 J		11.7 J	
POTASSIUM	7760 J	3920 J		8390 J		27500 J		1750 J		10300 J	
SELENIUM	0.61 U	0.23 U		0.42 U		1.3 U		0.3 U		0.69 U	
SILVER	0.24 U	0.03 U		0.05 U		0.2 U		0.55 U		0.49 U	
SODIUM	22800 J	19000 J		57900 J		49600 J		50800 J		58000 J	
STRONTIUM	101 J			189 J						203 J	
THALLIUM	0.6 U	0.16 U		0.2 U		1.2 U		0.35 U		0.11 U	
TIN	0.22 U	0.1 U		0.67 U		1.6 U		0.41 U		1.3 U	
TITANIUM	7.8 J	4.7 J		180 J		659 J				85 J	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
VANADIUM	0.79 J	0.32 U		34.3 J		135 J		1.1 J		15.8 J	
ZINC	358 J	97.3 J		114 J		334 J		183 J		30.3 J	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED					254 J		164 U		124 J		826 J
ANTIMONY, FILTERED					0.1 U		0.28 U		0.23 U		0.17 U
ARSENIC, FILTERED					0.8 J		0.32 U		0.44 U		0.51 U
BARIUM, FILTERED					22.8 J		26.2 J		27.9 J		41.6 J
BERYLLIUM, FILTERED					0.46 U		0.5 U		0.93 U		0.05 U
CADMIUM, FILTERED					0.26 U		0.47 U		0.26 U		0.17 U
CALCIUM, FILTERED					39800 J		33900 J		26100 J		34900 J
CHROMIUM, FILTERED					2.6 J		0.39 U		1.2 U		1.3 J
COBALT, FILTERED					35 J		39.3 J		38.2 J		1.3 J
COPPER, FILTERED					3.4 J		2.5 J		5.2 U		0.63 U
IRON, FILTERED					93.8 J		184 U		55.3 U		772 J
LEAD, FILTERED					0.21 U		0.37 U		0.53 U		0.3 U
LITHIUM, FILTERED					27.4 J						9.7 J
MAGNESIUM, FILTERED					32200 J		26000 J		20000 J		16700 J
MANGANESE, FILTERED					133 J		141 J		111 J		543 J
MERCURY, FILTERED					0.02 U		0.02 U		0.03 U		0.2 U
NICKEL, FILTERED					90.5 J		93.8 J		87.6 J		3.2 J
POTASSIUM, FILTERED					4540 J		2050 J		1540 J		7110 J
SELENIUM, FILTERED					0.28 U		0.17 U		0.1 U		0.29 U
SILVER, FILTERED					0.53 U		0.03 U		0.06 U		0.04 U
SODIUM, FILTERED					55000 J		50500 J		40500 J		49700 J
STRONTIUM, FILTERED					188 J						159 J
THALLIUM, FILTERED					0.06 U		0.04 U		0.04 U		0.05 U
TIN, FILTERED					0.11 U		0.1 U		0.07 U		0.34 U
TITANIUM, FILTERED					4.5 J		3.3 U				9.3 J
VANADIUM, FILTERED					0.46 U		0.11 U		0.15 U		1.1 J
ZINC, FILTERED					111 J		190 J		168 J		3.6 J
Field Parameters (mg/L)											
ALKALINITY						10 U					
CARBON DIOXIDE						33					
DISSOLVED OXYGEN			1.62			4		0.87			
DISSOLVED OXYGEN - METER	4.3	4.14		0.6		3.96				3.15	
HYDROGEN SULFIDE (H2S)						0					
IRON(+2)						0.11					
MANGANESE(+2)						1.3					
NITRITE-N						0.012					
OXIDATION REDUCTION POTENTIAL (MV)	216.1	243.6	455.2	76		432		97		88	
PH (S.U.)	4.77	5.24	5.03	5.83		5.4		6.6		6.63	
SPECIFIC CONDUCTANCE (MS/CM)	0.316	0.228	0.201	0.632		0.558		0.468		0.495	
SULFIDE						0.09					

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT04	13MWT04	13MWT04	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT05	13MWT06	13MWT06
SAMPLING ROUND	01	02	03	01	01	02	02	03	03	01	01
SAMPLE NUMBER	13GWT0401	13GWT0402	13GWT0403	13GWT0501	13GWT0501-F	13GWT0502	13GWT0502-F	13GWT0503	13GWT0503-F	13GWT0601	13GWT0601-F
SUBMATRIX	GW	GW	GW	GW	GF	GW	GF	GW	GF	GW	GF
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	4/27/2003	11/23/2003	7/24/2004	4/27/2003	4/27/2003	11/6/2003	11/6/2003	7/24/2004	7/24/2004	4/27/2003	4/27/2003
TEMPERATURE (C)	13.73	16.45	18.86	15.18		15.42		20.05		12.46	
TURBIDITY (NTU)	6	6.85	7.9	8.8		18.6		75		650	
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.39	0.08 J		0.05		0.65				0.02	
NITRITE/NITRATE-N	0.24	0.27 J		0.03		0.09				0.03	
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.272 U		0.26 UJ	0.6 U	0.255 U	0.255 U	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.543 U				0.51 U	0.51 U				0.5 U	0.5 U
2,4,6-TRINITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
2,4-DIAMINO-6-NITROTOLUENE	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
2,4-DINITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
2,6-DIAMINO-4-NITROTOLUENE	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
2,6-DINITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
2-NITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
3,5-DINITROANILINE	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
3-NITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 U	0.255 U	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
4-NITROTOLUENE	0.272 U		0.26 UJ	0.6 U	0.255 UJ	0.255 UJ	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
DNX	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
HMX	1.2		1.9 J	0.6 U	0.51	0.6	0.26 U	0.25 U	0.345 U	0.3 J	0.36 J
MNX	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
NITROBENZENE	0.272 U		0.26 UJ	0.6 U	0.255 U	0.255 U	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
PICRAMIC ACID											
PICRIC ACID											
RDX	1.7		1.9 J	7.2	7.9	8.5	9.3	9.2	0.325 U	0.61 J	0.76 J
TETRYL	0.272 U		0.26 UJ	0.6 U	0.255 U	0.255 U	0.26 U	0.25 U	0.345 U	0.25 U	0.25 U
TNX	0.272 U				0.255 U	0.255 U				0.25 U	0.25 U
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	1960 J			4320 J	4630 J	4660 J			907 J	5280 J	7660 J
ANTIMONY	0.13 U			0.03 U	0.02 U	0.02 U			0.03 U	0.09 U	0.06 U
ARSENIC	0.61 U			1.6 J	1.6 J	1.7 J			0.2 U	0.79 U	1.4 U
BARIUM	47.3 J			10.4 J	11.3 J	10.3 J			24.5 J	40 J	51.7 J
BERYLLIUM	0.11 U			8.4 J	9.3 J	9.4 J			0.14 U	0.26 U	0.36 U
CADMIUM	0.15 U			0.64 U	0.46 U	0.55 U			0.05 UJ	0.07 U	0.04 U
CALCIUM	27600 J			69400 J	76700 J	78800 J			2580 U	2030 J	2110 J
CHROMIUM	3.7 J			0.71 U	0.71 U	0.85 U			0.99 J	5.7 J	8.9 J
COBALT	0.48 U			140 J	121 J	123 J			2.2 J	2.4 J	3.2 J
COPPER	1.3 U			5 J	5.1 J	5.1 J			1 J	2.9 J	4.2 J
IRON	1520 J			128 J	683 J	737 J			600 J	3520 J	6090 J
LEAD	1.1 U			8.4 J	9.2 J	9.5 J			0.34 U	1.7 U	2.7 J
LITHIUM				154 J					6.6 J		
MAGNESIUM	13000 J			54300 J	56300 J	58100 J			2230 J	2540 J	2750 J
MANGANESE	33.6 J			1800 J	1810 J	1840 J			57.6 U	38.3 J	57.3 J
MERCURY	0.007 U			0.16 J	0.19 J	0.23			0.02 U	0.007 U	0.007 U
NICKEL	2.9 J			299 J	315 J	314 J			4.2 J	6.1 J	7.6 J
POTASSIUM	4010 J			4380 J	4660 J	4790 J			240 J	718 J	1080 J
SELENIUM	0.16 U			0.13 U	0.12 U	0.18 U			0.08 U	0.08 U	0.07 U
SILVER	0.16 U			0.04 U	0.03 U	0.03 U			0.14 U	0.09 U	0.03 U
SODIUM	44500 J			82300 J	92000 J	95300 J			8360 J	8580 J	8530 J
STRONTIUM				163 J					14.5 J		
THALLIUM	0.08 U			0.21 U	0.19 U	0.23 U			0.04 U	0.12 U	0.11 U
TIN	0.32 U			0.13 U	0.1 U	0.1 U			0.04 U	0.25 U	0.24 U
TITANIUM	22.2 J			4.4 J	2 U	3.9 U			16.8 J	87.5 J	127 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
VANADIUM	2.7 J			0.14 U	0.2 U	0.28 U			1.4 J	8.3 J	12.5 J
ZINC	4.8 J			382 J	408 J	437 J			7.4 J	10.9 J	13.9 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED		18.3 U									
ANTIMONY, FILTERED		0.34 U									
ARSENIC, FILTERED		0.36 U									
BARIUM, FILTERED		31.5 J									
BERYLLIUM, FILTERED		0.03 U									
CADMIUM, FILTERED		0.06 U									
CALCIUM, FILTERED		26900 J									
CHROMIUM, FILTERED		0.53 U									
COBALT, FILTERED		0.11 U									
COPPER, FILTERED		0.87 U									
IRON, FILTERED		27.1 U									
LEAD, FILTERED		0.04 U									
LITHIUM, FILTERED											
MAGNESIUM, FILTERED		12600 J									
MANGANESE, FILTERED		20.9 J									
MERCURY, FILTERED		0.007 U									
NICKEL, FILTERED		1.6 U									
POTASSIUM, FILTERED		3760 J									
SELENIUM, FILTERED		0.15 U									
SILVER, FILTERED		0.03 U									
SODIUM, FILTERED		45800 J									
STRONTIUM, FILTERED											
THALLIUM, FILTERED		0.04 U									
TIN, FILTERED		0.24 U									
TITANIUM, FILTERED		0.47 U									
VANADIUM, FILTERED		0.41 U									
ZINC, FILTERED		2.1 J									
Field Parameters (mg/L)											
ALKALINITY										10 U	
CARBON DIOXIDE										45	
DISSOLVED OXYGEN			6.73				2.28			5	
DISSOLVED OXYGEN - METER	7.35			0.34	1.32				2.45	6.44	
HYDROGEN SULFIDE (H2S)										0	
IRON(+2)										0.21	
MANGANESE(+2)										0	
NITRITE-N										0.001	
OXIDATION REDUCTION POTENTIAL (MV)	180.4		441.2	278	383.6		159		206	266.7	
PH (S.U.)	6.45		6.08	3.98	3.9		4.12		5.06	5	
SPECIFIC CONDUCTANCE (MS/CM)	0.363		0.399	1.03	1.054		1.078		0.74	0.076	
SULFIDE										0	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT06	13MWT06	13MWT06	13MWT07	13MWT07	13MWT07	13MWT07	13MWT07	13MWT08	13MWT08	13MWT08
SAMPLING ROUND	02	02	03	01	02	02	03	03	01	02	02
SAMPLE NUMBER	13GWT0602	13GWT0602-F	13GWT0603	13GWT0701	13GWT0702	13GWT0702-D	13GWT0703	13GWT0703-D	13GWT0801	13GWT0802	13GWT0802-D
SUBMATRIX	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	DUP	NORMAL	ORIG	DUP
SAMPLE DATE	12/7/2003	12/10/2003	7/25/2004	4/27/2003	11/10/2003	11/10/2003	7/25/2004	7/25/2004	4/26/2003	11/23/2003	11/23/2003
TEMPERATURE (C)	12.5		18.85	15.6	18.45		19.8		14.65	15.18	
TURBIDITY (NTU)	22		26	6.8	3.01		1.5		10	36	
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.14			0.03	0.005 U	0.005 U			0.01 U	0.005 UJ	0.005 UJ
NITRITE/NITRATE-N	0.7			0.07	0.025 U	0.025 U			0.02 U	0.025 U	0.05 J
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE				0.3 U	0.3 U						
1,1,1-TRICHLOROETHANE				0.3 U	0.3 U						
1,1,2,2-TETRACHLOROETHANE				0.3 U	0.3 U						
1,1,2-TRICHLOROETHANE				0.3 U	0.3 U						
1,1-DICHLOROETHANE				0.3 U	0.3 U						
1,1-DICHLOROETHENE				0.3 U	0.3 U						
1,2,3-TRICHLOROPROPANE				0.3 U	0.3 U						
1,2-DIBROMO-3-CHLOROPROPANE				0.3 U	0.3 U						
1,2-DIBROMOETHANE				0.3 U	0.3 U						
1,2-DICHLOROETHANE				0.3 U	0.3 U						
1,2-DICHLOROPROPANE				0.3 U	0.3 U						
1,4-DIOXANE				50 U	50 U						
2-BUTANONE				0.5 U	0.5 U						
2-HEXANONE				0.5 UJ	0.5 UJ						
3-CHLOROPROPENE				0.5 U	0.5 U						
4-METHYL-2-PENTANONE				0.5 U	0.5 U						
ACETONE				0.5 UJ	0.5 UJ						
ACETONITRILE				20 U	20 U						
ACROLEIN				0.5 UR	0.5 UR						
ACRYLONITRILE				0.5 U	0.5 U						
BENZENE				0.3 U	0.3 U						
BROMODICHLOROMETHANE				0.3 U	0.3 U						
BROMOFORM				0.3 U	0.3 U						
BROMOMETHANE				0.3 UJ	0.3 UJ						
CARBON DISULFIDE				0.3 U	0.3 U						
CARBON TETRACHLORIDE				0.3 U	0.3 U						
CHLOROBENZENE				0.3 U	0.3 U						
CHLORODIBROMOMETHANE				0.3 U	0.3 U						
CHLOROETHANE				0.5 U	0.5 U						
CHLOROFORM				0.3 U	0.3 U						
CHLOROMETHANE				0.3 U	0.3 U						
CHLOROPRENE				0.5 U	0.5 U						
CIS-1,2-DICHLOROETHENE				0.3 U	0.3 U						
CIS-1,3-DICHLOROPROPENE				0.3 U	0.3 U						
DIBROMOMETHANE				0.3 U	0.3 U						
DICHLORODIFLUOROMETHANE				0.3 U	0.3 U						
ETHYL METHACRYLATE				0.5 U	0.5 U						
ETHYLBENZENE				0.3 U	0.3 U						
ISOBUTANOL				20 U	20 U						
METHACRYLONITRILE				0.3 U	0.3 U						
METHYL IODIDE				0.5 U	0.5 U						
METHYL METHACRYLATE				0.5 U	0.5 U						

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
METHYLENE CHLORIDE				0.3 U	0.3 U						
PROPIONITRILE				20 U	20 U						
STYRENE				0.3 U	0.3 U						
TETRACHLOROETHENE				0.3 U	0.3 U						
TOLUENE				0.3 U	0.3 U						
TOTAL XYLENES				0.3 U	0.3 U						
TRANS-1,2-DICHLOROETHENE				0.3 U	0.3 U						
TRANS-1,3-DICHLOROPROPENE				0.3 U	0.3 U						
TRANS-1,4-DICHLORO-2-BUTENE				0.5 U	0.5 U						
TRICHLOROETHENE				0.3 U	0.3 U						
TRICHLOROFLUOROMETHANE				0.3 U	0.3 U						
VINYL ACETATE				0.5 U	0.5 U						
VINYL CHLORIDE				0.3 U	0.3 U						
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE				1 U	1 U	1 U	1 U				
1,2,4-TRICHLOROBENZENE				1 U	1 U	1 U	1 U				
1,2-DICHLOROBENZENE				1 U	1 U	1 U	1 U				
1,3-DICHLOROBENZENE				1 U	1 U	1 U	1 U				
1,4-DICHLOROBENZENE				1 U	1 U	1 U	1 U				
1,4-NAPHTHOQUINONE				1 UJ	1 UJ	1 U	1 U				
1,4-PHENYLENEDIAMINE				1 UJ	1 UJ	1 UJ	1 UJ				
1-NAPHTHYLAMINE				1 U	1 U	1 U	1 U				
2,2'-OXYBIS(1-CHLOROPROPANE)				1 U	1 U	1 U	1 U				
2,3,4,6-TETRACHLOROPHENOL				1 UR	1 U	1 U	1 U				
2,4,5-TRICHLOROPHENOL				1 UR	1 U	1 U	1 U				
2,4,6-TRICHLOROPHENOL				1 UR	1 U	1 U	1 U				
2,4-DICHLOROPHENOL				1 UR	1 U	1 U	1 U				
2,4-DIMETHYLPHENOL				1 UR	1 U	1 U	1 U				
2,4-DINITROPHENOL				1 UR	1 UR	1 UJ	1 UJ				
2,6-DICHLOROPHENOL				1 UR	1 U	1 U	1 U				
2-ACETYLAMINOFLUORENE				1 U	1 U	1 U	1 U				
2-CHLORONAPHTHALENE				1 UJ	1 UJ	1 U	1 U				
2-CHLOROPHENOL				1 UR	1 U	1 U	1 U				
2-METHYLNAPHTHALENE				0.05 U	0.05 U						
2-METHYLPHENOL				1 UR	1 U	1 U	1 U				
2-NAPHTHYLAMINE				1 U	1 U	1 U	1 U				
2-NITROANILINE				1 U	1 U	1 U	1 U				
2-NITROPHENOL				1 UR	1 U	1 U	1 U				
2-PICOLINE				1 U	1 U	1 U	1 U				
3&4-METHYLPHENOL				1 UR	1 U	1 U	1 U				
3,3'-DICHLOROBENZIDINE				1 U	1 U	1 U	1 U				
3,3'-DIMETHYLBENZIDINE				1 U	1 U	1 U	1 U				
3-METHYLCHOLANTHRENE				1 U	1 U	1 U	1 U				

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
3-NITROANILINE				1 U	1 U	1 U	1 U				
4,6-DINITRO-2-METHYLPHENOL				1 UR	1 UJ	1 U	1 U				
4-AMINOBIPHENYL				1 U	1 U	1 U	1 U				
4-BROMOPHENYL PHENYL ETHER				1 U	1 U	1 U	1 U				
4-CHLORO-3-METHYLPHENOL				1 UR	1 U	1 U	1 U				
4-CHLOROANILINE				1 U	1 U	1 U	1 U				
4-CHLOROPHENYL PHENYL ETHER				1 U	1 U	1 U	1 U				
4-NITROANILINE				1 U	1 U	1 U	1 U				
4-NITROPHENOL				1 UR	1 UR	1 U	1 U				
4-NITROQUINOLINE-1-OXIDE				1 UR	1 UR	1 UR	1 UR				
5-NITRO-O-TOLUIDINE				1 U	1 U	1 U	1 U				
7,12-DIMETHYLBENZ(A)ANTHRACENE				1 U	1 U	1 U	1 U				
A,A-DIMETHYLPHENETHYLAMINE				1 U	1 U	1 U	1 U				
ACENAPHTHENE				0.05 U	0.05 U						
ACENAPHTHYLENE				0.05 U	0.05 U						
ACETOPHENONE				1 U	1 U	1 U	1 U				
ANILINE				1 U	1 U	1 UJ	1 UJ				
ANTHRACENE				0.05 U	0.05 U						
ARAMITE				1 UR	1 UR	1 UR	1 UR				
BENZO(A)ANTHRACENE				0.05 U	0.05 U						
BENZO(A)PYRENE				0.05 U	0.05 U						
BENZO(B)FLUORANTHENE				0.05 U	0.05 U						
BENZO(G,H,I)PERYLENE				0.05 U	0.05 U						
BENZO(K)FLUORANTHENE				0.05 U	0.05 U						
BENZYL ALCOHOL				1 U	1 U	1 U	1 U				
BIS(2-CHLOROETHOXY)METHANE				1 U	1 U	1 U	1 U				
BIS(2-CHLOROETHYL)ETHER				1 U	1 U	1 U	1 U				
BIS(2-ETHYLHEXYL)PHTHALATE				1 U	1 U	1 U	1 U				
BUTYL BENZYL PHTHALATE				1 U	1 U	1 U	1 U				
CHLOROBENZILATE				1 U	1 U	1 U	1 U				
CHRYSENE				0.05 U	0.05 U						
DI-N-BUTYL PHTHALATE				1 U	1 U	1 U	1 U				
DI-N-OCTYL PHTHALATE				1 U	1 U	1 U	1 U				
DIALLATE				1 U	1 U	1 U	1 U				
DIBENZO(A,H)ANTHRACENE				0.05 U	0.05 U						
DIBENZOFURAN				1 U	1 U	1 U	1 U				
DIETHYL PHTHALATE				1 U	1 U	1 U	1 U				
DIMETHYL PHTHALATE				1 U	1 U	1 U	1 U				
DIPHENYLAMINE				1 U	1 U	1 U	1 U				
ETHYL METHANE SULFONATE				1 U	1 U	1 U	1 U				
FLUORANTHENE				0.05 U	0.05 U						
FLUORENE				0.05 U	0.05 U						
HEXACHLOROBENZENE				1 U	1 U	1 U	1 U				

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
HEXACHLOROBUTADIENE				1 U	1 U	1 U	1 U				
HEXACHLOROCYCLOPENTADIENE				1 UR	1 UR	1 UR	1 UR				
HEXACHLOROETHANE				1 U	1 U	1 U	1 U				
HEXACHLOROPROPENE				1 U	1 U	1 U	1 U				
INDENO(1,2,3-CD)PYRENE				0.05 U	0.05 U						
ISODRIN				1 U	1 U	1 U	1 U				
ISOPHORONE				1 U	1 U	1 U	1 U				
ISOSAFROLE				1 U	1 U	1 U	1 U				
KEPONE				1 UJ	1 UJ	1 UR	1 UR				
METHAPYRILENE				1 U	1 U	1 U	1 U				
METHYL METHANE SULFONATE				1 U	1 U	1 U	1 U				
N-NITROSO-DI-N-BUTYLAMINE				1 U	1 U	1 U	1 U				
N-NITROSO-DI-N-PROPYLAMINE				1 U	1 U	1 U	1 U				
N-NITROSODIETHYLAMINE				1 U	1 U	1 U	1 U				
N-NITROSODIMETHYLAMINE				1 U	1 U	1 UJ	1 UJ				
N-NITROSOMETHYLETHYLAMINE				1 U	1 U	1 U	1 U				
N-NITROSOMORPHOLINE				1 U	1 U	1 U	1 U				
N-NITROSOPIPERIDINE				1 U	1 U	1 U	1 U				
N-NITROSOPYRROLIDINE				1 U	1 U	1 U	1 U				
NAPHTHALENE				0.05 U	0.05 U						
O,O,O-TRIETHYL PHOSPHOROTHIOATE				1 U	1 U	1 U	1 U				
O-TOLUIDINE				1 U	1 U	1 U	1 U				
P-(DIMETHYLAMINO)AZOBENZENE				1 U	1 U	1 U	1 U				
PENTACHLOROBENZENE				1 U	1 U	1 U	1 U				
PENTACHLOROETHANE				1 U	1 U	1 U	1 U				
PENTACHLORONITROBENZENE				1 U	1 U	1 U	1 U				
PHENACETIN				1 U	1 U	1 U	1 U				
PHENANTHRENE				0.05 U	0.05 U						
PHENOL				1 UR	1 U	1 U	1 U				
PRONAMIDE				1 U	1 U	1 U	1 U				
PYRENE				0.05 U	0.05 U						
PYRIDINE				1 U	1 U	1 U	1 U				
SAFROLE				1 U	1 U	1 U	1 U				
Energetics (ug/L)											
1,3,5-TRINITROBENZENE			0.25 U	0.215 U	0.385 U			1.3	1.4 J	1.1	0.265 U
1,3-DINITROBENZENE			0.25 U	1.4 J	1.5 J			2.4	2.2	2.1	0.265 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE								0.505 U	0.633 U		
2,4,6-TRINITROTOLUENE			0.25 U	19	20 J			25	20	24	0.265 U
2,4-DIAMINO-6-NITROTOLUENE								3.9	3.8 J		
2,4-DINITROTOLUENE			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	1.4 J	0.265 U
2,6-DIAMINO-4-NITROTOLUENE								0.253 U	0.316 U		
2,6-DINITROTOLUENE			0.25 U	0.215 U	0.385 U			9.9	8.2	8.8 J	0.265 U
2-AMINO-4,6-DINITROTOLUENE			0.25 U	8.6 J	8.6 J			13	18	15 J	0.265 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
2-NITROTOLUENE			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	0.24 U	0.265 U
3,5-DINITROANILINE								0.253 U	0.316 U		
3-NITROTOLUENE			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	0.24 U	0.265 U
4-AMINO-2,6-DINITROTOLUENE			0.25 U	18	18			18	15 J	19	0.265 U
4-NITROTOLUENE			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	0.24 U	0.265 U
DNX								4 J	2.6 J		
HMX			0.3 J	84	66			130	92	140	0.265 U
MNX								7.1 J	5.5 J		
NITROBENZENE			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	0.24 U	0.265 U
PICRAMIC ACID											
PICRIC ACID											
RDX			0.25 U	1100	1100			1700	1300	1500	0.25 U
TETRYL			0.25 U	0.215 U	0.385 U			0.253 U	0.316 U	0.24 U	0.265 U
TNX								1.5 J	0.58 J		
Herbicides (ug/L)											
HEXACHLOROPHENE				0.025 U	0.025 U						
PENTACHLOROPHENOL				0.013 U	0.013 U						
Total Metals (ug/L)											
ALUMINUM				297 J	278 J			62.3 U	56.4 U		1430 J
ANTIMONY				0.03 U	0.03 U			0.02 U	0.04 U		0.03 U
ARSENIC				0.09 U	0.07 U			0.07 U	0.1 U		1.1 J
BARIUM				155 J	159 J			137 J	138 J		18.3 J
BERYLLIUM				0.41 U	0.42 U			0.14 U	0.16 U		4.3 J
CADMIUM				0.05 UJ	0.05 U			0.04 U	0.04 U		0.94 U
CALCIUM				48600 J	50100 J			48500 J	47500 J		26700 J
CHROMIUM				0.02 U	0.02 U			0.28 U	0.21 U		1 J
COBALT				17.2 J	17.6 J			14.3 J	14.6 J		246 J
COPPER				1.2 J	1.4 J			0.65 U	0.56 U		4.3 J
IRON				25 U	24.7 U			38.2 U	28.6 U		3560 J
LEAD				0.44 U	0.46 U			0.29 U	0.22 U		7.7 J
LITHIUM				31.1 J	31.8 J						158 J
MAGNESIUM				38700 J	39900 J			36500 J	35200 J		22200 J
MANGANESE				608 J	624 J			510 J	515 J		1580 J
MERCURY				0.034 J	0.026 J			0.091 J	0.1 J		0.02 U
NICKEL				23.7 J	25.3 J			18.5 J	19.2 J		371 J
POTASSIUM				983 J	1010 J			848 J	905 J		2570 J
SELENIUM				0.05 U	0.07 U			0.1 U	0.06 U		0.07 U
SILVER				0.04 U	0.06 U			0.03 U	0.03 U		0.04 U
SODIUM				35000 J	36700 J			33900 J	34800 J		25500 J
STRONTIUM				229 J	236 J						86.9 J
THALLIUM				0.34 U	0.35 U			0.36 U	0.35 U		0.25 U
TIN				0.03 U	0.04 U			0.12 U	0.14 U		0.13 U
TITANIUM				2.5 J	2.4 J			0.65 U	1 U		5.9 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
VANADIUM				0.05 U	0.05 U			0.07 U	0.06 U		0.58 U
ZINC				22 J	22.9 J			14.5 J	15.4 J		208 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	92.7 U	91.2 U									
ANTIMONY, FILTERED	0.02 U	0.44 U									
ARSENIC, FILTERED	0.12 U	0.36 U									
BARIUM, FILTERED	21.1 J	19.6 J									
BERYLLIUM, FILTERED	0.12 U	0.37 U									
CADMIUM, FILTERED	0.04 U	0.22 U									
CALCIUM, FILTERED	2250 J	2000 J									
CHROMIUM, FILTERED	0.13 U	0.39 U									
COBALT, FILTERED	1.9 J	3.1 J									
COPPER, FILTERED	0.35 U	0.64 U									
IRON, FILTERED	122 U	167 U									
LEAD, FILTERED	0.07 U	0.37 U									
LITHIUM, FILTERED											
MAGNESIUM, FILTERED	2190 J	2090 J									
MANGANESE, FILTERED	45.4 J	47.9 J									
MERCURY, FILTERED	0.007 U	0.007 U									
NICKEL, FILTERED	3.6 J	3.6 J									
POTASSIUM, FILTERED	151 U	149 U									
SELENIUM, FILTERED	0.04 U	0.22 U									
SILVER, FILTERED	0.03 U	0.26 U									
SODIUM, FILTERED	8900 J	8970 J									
STRONTIUM, FILTERED											
THALLIUM, FILTERED	0.04 U	0.29 U									
TIN, FILTERED	0.1 U	0.49 U									
TITANIUM, FILTERED	1.1 U	1.9 U									
VANADIUM, FILTERED	0.14 U	0.34 U									
ZINC, FILTERED	3.3 J	3.5 J									
Field Parameters (mg/L)											
ALKALINITY								0			
CARBON DIOXIDE								48			
DISSOLVED OXYGEN			3.48					1.5		0.2	
DISSOLVED OXYGEN - METER				1.69		1.21		1.14			1.4
HYDROGEN SULFIDE (H2S)								0			
IRON(+2)								0			
MANGANESE(+2)								0.4			
NITRITE-N								0.023			
OXIDATION REDUCTION POTENTIAL (MV)			121	205.6		148		251		88.1	364
PH (S.U.)			6.11	5.36		5.38		5.32		6.27	3.01
SPECIFIC CONDUCTANCE (MS/CM)			0.085	0.829		0.725		0.64		0.773	0.582
SULFIDE								0.01			

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT08	13MWT08	13MWT08	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT09	13MWT10
SAMPLING ROUND	02	02	03	01	01	01	01	02	02	03	01
SAMPLE NUMBER	13GWT0802-F	13GWT0802-F-D	13GWT0803	13GWT0901	13GWT0901-D	13GWT0902	13GWT0902-D	13GWT0903	13GWT0903-D	13GWT0904	13GWT1001
SUBMATRIX	GF	GF	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	ORIG	DUP	NORMAL	ORIG	DUP	ORIG	DUP	ORIG	DUP	NORMAL	NORMAL
SAMPLE DATE	11/23/2003	11/23/2003	7/23/2004	4/28/2003	4/28/2003	5/9/2003	5/9/2003	12/4/2003	12/4/2003	7/31/2004	4/27/2003
TEMPERATURE (C)			20.69	13.33		14.36		12.82		18.15	15.6
TURBIDITY (NTU)			16	3		0.1		4.07		3.8	10
Miscellaneous Parameters (mg/L)											
AMMONIA-N				3.3	3.2			3.4	3.5		0.98
NITRITE/NITRATE-N				92	94			54 J	74 J		0.02 U
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
Volatile Organics (ug/L)												
1,1,1,2-TETRACHLOROETHANE												
1,1,1-TRICHLOROETHANE												
1,1,2,2-TETRACHLOROETHANE												
1,1,2-TRICHLOROETHANE												
1,1-DICHLOROETHANE												
1,1-DICHLOROETHENE												
1,2,3-TRICHLOROPROPANE												
1,2-DIBROMO-3-CHLOROPROPANE												
1,2-DIBROMOETHANE												
1,2-DICHLOROETHANE												
1,2-DICHLOROPROPANE												
1,4-DIOXANE												
2-BUTANONE												
2-HEXANONE												
3-CHLOROPROPENE												
4-METHYL-2-PENTANONE												
ACETONE												
ACETONITRILE												
ACROLEIN												
ACRYLONITRILE												
BENZENE												
BROMODICHLOROMETHANE												
BROMOFORM												
BROMOMETHANE												
CARBON DISULFIDE												
CARBON TETRACHLORIDE												
CHLOROBENZENE												
CHLORODIBROMOMETHANE												
CHLOROETHANE												
CHLOROFORM												
CHLOROMETHANE												
CHLOROPRENE												
CIS-1,2-DICHLOROETHENE												
CIS-1,3-DICHLOROPROPENE												
DIBROMOMETHANE												
DICHLORODIFLUOROMETHANE												
ETHYL METHACRYLATE												
ETHYLBENZENE												
ISOBUTANOL												
METHACRYLONITRILE												
METHYL IODIDE												
METHYL METHACRYLATE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
METHYLENE CHLORIDE												
PROPIONITRILE												
STYRENE												
TETRACHLOROETHENE												
TOLUENE												
TOTAL XYLENES												
TRANS-1,2-DICHLOROETHENE												
TRANS-1,3-DICHLOROPROPENE												
TRANS-1,4-DICHLORO-2-BUTENE												
TRICHLOROETHENE												
TRICHLOROFLUOROMETHANE												
VINYL ACETATE												
VINYL CHLORIDE												
Semivolatile Organics (ug/L)												
1,2,4,5-TETRACHLOROBENZENE												
1,2,4-TRICHLOROBENZENE												
1,2-DICHLOROBENZENE												
1,3-DICHLOROBENZENE												
1,4-DICHLOROBENZENE												
1,4-NAPHTHOQUINONE												
1,4-PHENYLENEDIAMINE												
1-NAPHTHYLAMINE												
2,2'-OXYBIS(1-CHLOROPROPANE)												
2,3,4,6-TETRACHLOROPHENOL												
2,4,5-TRICHLOROPHENOL												
2,4,6-TRICHLOROPHENOL												
2,4-DICHLOROPHENOL												
2,4-DIMETHYLPHENOL												
2,4-DINITROPHENOL												
2,6-DICHLOROPHENOL												
2-ACETYLAMINOFLUORENE												
2-CHLORONAPHTHALENE												
2-CHLOROPHENOL												
2-METHYLNAPHTHALENE												
2-METHYLPHENOL												
2-NAPHTHYLAMINE												
2-NITROANILINE												
2-NITROPHENOL												
2-PICOLINE												
3&4-METHYLPHENOL												
3,3'-DICHLOROBENZIDINE												
3,3'-DIMETHYLBENZIDINE												
3-METHYLCHOLANTHRENE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
3-NITROANILINE												
4,6-DINITRO-2-METHYLPHENOL												
4-AMINOBIPHENYL												
4-BROMOPHENYL PHENYL ETHER												
4-CHLORO-3-METHYLPHENOL												
4-CHLOROANILINE												
4-CHLOROPHENYL PHENYL ETHER												
4-NITROANILINE												
4-NITROPHENOL												
4-NITROQUINOLINE-1-OXIDE												
5-NITRO-O-TOLUIDINE												
7,12-DIMETHYLBENZ(A)ANTHRACENE												
A,A-DIMETHYLPHENETHYLAMINE												
ACENAPHTHENE												
ACENAPHTHYLENE												
ACETOPHENONE												
ANILINE												
ANTHRACENE												
ARAMITE												
BENZO(A)ANTHRACENE												
BENZO(A)PYRENE												
BENZO(B)FLUORANTHENE												
BENZO(G,H,I)PERYLENE												
BENZO(K)FLUORANTHENE												
BENZYL ALCOHOL												
BIS(2-CHLOROETHOXY)METHANE												
BIS(2-CHLOROETHYL)ETHER												
BIS(2-ETHYLHEXYL)PHTHALATE												
BUTYL BENZYL PHTHALATE												
CHLOROBENZILATE												
CHRYSENE												
DI-N-BUTYL PHTHALATE												
DI-N-OCTYL PHTHALATE												
DIALLATE												
DIBENZO(A,H)ANTHRACENE												
DIBENZOFURAN												
DIETHYL PHTHALATE												
DIMETHYL PHTHALATE												
DIPHENYLAMINE												
ETHYL METHANE SULFONATE												
FLUORANTHENE												
FLUORENE												
HEXACHLOROBENZENE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
HEXACHLOROBUTADIENE												
HEXACHLOROCYCLOPENTADIENE												
HEXACHLOROETHANE												
HEXACHLOROPROPENE												
INDENO(1,2,3-CD)PYRENE												
ISODRIN												
ISOPHORONE												
ISOSAFROLE												
KEPONE												
METHAPYRILENE												
METHYL METHANE SULFONATE												
N-NITROSO-DI-N-BUTYLAMINE												
N-NITROSO-DI-N-PROPYLAMINE												
N-NITROSODIETHYLAMINE												
N-NITROSODIMETHYLAMINE												
N-NITROSOMETHYLETHYLAMINE												
N-NITROSOMORPHOLINE												
N-NITROSOPIPERIDINE												
N-NITROSOPYRROLIDINE												
NAPHTHALENE												
O,O,O-TRIETHYL PHOSPHOROTHIOATE												
O-TOLUIDINE												
P-(DIMETHYLAMINO)AZOBENZENE												
PENTACHLOROBENZENE												
PENTACHLOROETHANE												
PENTACHLORONITROBENZENE												
PHENACETIN												
PHENANTHRENE												
PHENOL												
PRONAMIDE												
PYRENE												
PYRIDINE												
SAFROLE												
Energetics (ug/L)												
1,3,5-TRINITROBENZENE	0.266 U	0.27 U	0.43 U	0.258 U	0.27 U	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
1,3-DINITROBENZENE	0.266 U	0.27 U	0.83 J	0.258 U	0.46 J	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.532 U			0.515 U				0.521 U				0.515 U
2,4,6-TRINITROTOLUENE	0.266 U	0.27 U	31	9.5	11	1.8		1.6	2.2	0.37 U	0.18 U	0.258 U
2,4-DIAMINO-6-NITROTOLUENE	0.266 U			1.4 J				0.89 J				0.258 U
2,4-DINITROTOLUENE	0.266 U	0.27 U	0.43 U	1.2	1.6	0.6 U		0.48 J	0.61 J	0.37 U	0.18 U	0.258 U
2,6-DIAMINO-4-NITROTOLUENE	0.266 U			1.8 J				0.26 U				0.258 U
2,6-DINITROTOLUENE	0.266 U	0.27 U	0.43 U	1.2 J	2.1 J	0.6 U		0.26 U	1 J	0.37 U	0.18 U	0.258 U
2-AMINO-4,6-DINITROTOLUENE	0.266 U	0.27 U	6 J	4.4 J	6.6 J	3.7 J		3.1 J	4.4 J	0.37 U	0.18 U	0.258 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
2-NITROTOLUENE	0.266 U	0.27 U	0.43 U	0.258 U	0.27 U	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
3,5-DINITROANILINE	0.266 U			0.258 U				0.26 U				0.258 U
3-NITROTOLUENE	0.266 U	0.27 U	0.43 U	0.258 U	0.58 J	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
4-AMINO-2,6-DINITROTOLUENE	0.266 U	0.27 U	19	9.8	14	5.8 J		4.8	6.7	0.37 U	0.18 U	0.258 U
4-NITROTOLUENE	0.266 U	0.27 U	0.43 U	0.258 U	0.27 U	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
DNX	0.266 U			0.258 U				0.5 J				0.258 U
HMX	0.45 J	0.27 U	34	44	45	50		41	54	9.5	8.4	12
MNX	0.266 U			1.2				0.68				0.258 U
NITROBENZENE	0.266 U	0.27 U	0.43 U	0.258 U	0.27 U	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
PICRAMIC ACID												
PICRIC ACID												
RDX	0.266 U	0.27 U	560	520	490	150		140	160	12	10	20
TETRYL	0.266 U	0.27 U	0.43 U	0.258 U	0.27 U	0.6 U		0.26 U	0.27 U	0.37 U	0.18 U	0.258 U
TNX	0.266 U			0.258 U				0.26 U				0.258 U
Herbicides (ug/L)												
HEXACHLOROPHENE												
PENTACHLOROPHENOL												
Total Metals (ug/L)												
ALUMINUM	768 J		719 J	696 J		2170 J		67 U		1080 J	1060 J	1000 J
ANTIMONY	0.02 U		0.03 U	0.02 U		0.03 U		0.02 U		0.03 U	0.04 U	0.02 U
ARSENIC	1 U		0.22 U	0.23 U		1.3 J		0.13 U		0.39 U	0.41 U	0.16 U
BARIUM	18.8 J		27.4 J	27.6 J		36.5 J		21.1 J		43.8 J	43.3 J	52.9 J
BERYLLIUM	3.1 J		1.6 U	1.4 U		0.27 U		0.24 U		2.1 J	2.1 J	2.1 U
CADMIUM	1.2 U		0.12 U	0.13 U		0.1 U		0.04 U		0.09 U	0.12 U	0.04 U
CALCIUM	30600 J		5760 J	6320 J		2800 J		1720 J		3740 J	3700 J	3030 J
CHROMIUM	0.61 U		0.35 U	0.25 U		4.1 J		0.17 U		0.29 U	0.33 U	0.29 U
COBALT	210 J		26.3 J	24 J		8.1 J		6.5 J		30.1 J	30.2 J	25.3 J
COPPER	1.3 U		3 J	1.6 U		2.2 J		0.7 U		5 J	4.9 J	3.6 J
IRON	22900 J		4250 J	4340 J		2020 J		129 U		860 J	846 J	162 J
LEAD	3.5 J		1.5 U	1.4 U		1.9 U		0.08 U		1 U	0.99 U	0.63 U
LITHIUM			66.8 J			15.3 J				29.3 J	28.7 J	
MAGNESIUM	25500 J		4770 J	4660 J		2560 J		2370 J		3660 J	3680 J	3420 J
MANGANESE	1720 J		250 J	251 U		216 J		312 U		600 J	584 J	451 J
MERCURY	0.007 U		0.032 J	0.007 U		0.02 U		0.035 J		0.2 U	0.2 U	0.007 U
NICKEL	357 J		66.5 J	61 J		16.4 J		15.3 J		25.3 J	24.8 J	20.4 J
POTASSIUM	3220 J		668 J	687 J		724 J		358 J		649 J	641 J	459 J
SELENIUM	0.04 U		0.05 U	0.04 U		0.25 U		0.14 U		0.1 U	0.12 U	0.06 U
SILVER	0.03 U		0.04 U	0.03 U		0.11 U		0.03 U		0.04 U	0.13 U	0.05 U
SODIUM	31500 J		24000 J	26000 J		21900 J		20600 J		6030 J	6330 J	6800 J
STRONTIUM			31 J			14.6 J				18.5 J	18.3 J	
THALLIUM	0.23 U		0.1 U	0.14 U		0.04 U		0.04 U		0.05 U	0.1 U	0.1 U
TIN	0.1 U		0.03 U	0.1 U		0.11 U		0.1 U		0.09 U	0.07 U	0.1 U
TITANIUM	1.8 U		6.7 J	1 U		34.6 J		1 U		3.7 J	3.7 J	0.73 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
VANADIUM	0.17 U		0.29 U	0.06 U		4.2 J		0.07 U		0.07 U	0.1 U	0.06 U
ZINC	245 J		82.7 J	85.3 J		14.6 J		10.8 J		35.1 J	34.4 J	25.3
Dissolved Metals (ug/L)												
ALUMINUM, FILTERED							257 J					
ANTIMONY, FILTERED							0.03 U					
ARSENIC, FILTERED							0.37 U					
BARIUM, FILTERED							26.2 J					
BERYLLIUM, FILTERED							0.17 U					
CADMIUM, FILTERED							0.13 U					
CALCIUM, FILTERED							2980 J					
CHROMIUM, FILTERED							0.63 U					
COBALT, FILTERED							9 J					
COPPER, FILTERED							3.4 J					
IRON, FILTERED							203 J					
LEAD, FILTERED							0.31 U					
LITHIUM, FILTERED							14.6 J					
MAGNESIUM, FILTERED							2500 J					
MANGANESE, FILTERED							224 J					
MERCURY, FILTERED							0.02 U					
NICKEL, FILTERED							18.3 J					
POTASSIUM, FILTERED							366 J					
SELENIUM, FILTERED							0.26 U					
SILVER, FILTERED							0.16 U					
SODIUM, FILTERED							21800 J					
STRONTIUM, FILTERED							13.6 J					
THALLIUM, FILTERED							0.04 U					
TIN, FILTERED							0.06 U					
TITANIUM, FILTERED							8.1 J					
VANADIUM, FILTERED							0.46 U					
ZINC, FILTERED							13.5 J					
Field Parameters (mg/L)												
ALKALINITY	10 U			10 U				10 U				10 U
CARBON DIOXIDE	154			165				135				120
DISSOLVED OXYGEN	3.5	7.8		1.5	4.95			2	3.86			11
DISSOLVED OXYGEN - METER	4.83		0.85	3.49		2.35		2.02		3.37		3.26
HYDROGEN SULFIDE (H2S)	0			0				0				0
IRON(+2)	3.3 >			3.3 >				0.1				0.03
MANGANESE(+2)	1.8			0.3				0.4				0.5
NITRITE-N	0.003			0.009				0				0
OXIDATION REDUCTION POTENTIAL (MV)	230.3	402.8	265	355	127	242		305.9	444.5	268.2		385.1
PH (S.U.)	4.74	4.23	3.64	3.93	3.85	4.83		4.87	4.66	4.2		3.56
SPECIFIC CONDUCTANCE (MS/CM)	0.52	0.629	0.251	0.238	0.262	0.135		0.131	0.132	0.106		0.113
SULFIDE	0.05			0.01				0.01				0

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT10	13MWT10	13MWT11	13MWT11	13MWT11	13MWT12	13MWT12	13MWT12	13MWT12	13MWT13	13MWT13	13MWT13
SAMPLING ROUND	02	03	01	02	03	01	01	02	03	01	01	02
SAMPLE NUMBER	13GWT1002	13GWT1003	13GWT1101	13GWT1102	13GWT1103	13GWT1201	13GWT1201-F	13GWT1202	13GWT1203	13GWT1301	13GWT1301-D	13GWT1302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL
SAMPLE DATE	11/20/2003	7/29/2004	4/27/2003	11/20/2003	7/23/2004	4/27/2003	4/27/2003	11/18/2003	7/25/2004	5/7/2003	5/7/2003	11/25/2003
TEMPERATURE (C)	19.73	21.36	15.73	16.35	21.2	14.46		16.37	16.7	13.82		12.33
TURBIDITY (NTU)	5.79	9	10	4.52	2.5	60		29.1	9.8	5.8		0.38
Miscellaneous Parameters (mg/L)												
AMMONIA-N	0.84 J		0.1	0.1 J		0.06		0.005 UJ		0.03	0.03	0.01
NITRITE/NITRATE-N	0.025 U		0.02 U	0.19 J		1.3		0.3 J		1.1	1.1	1 J
TOTAL ORGANIC CARBON	1											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
Volatile Organics (ug/L)												
1,1,1,2-TETRACHLOROETHANE												
1,1,1-TRICHLOROETHANE												
1,1,2,2-TETRACHLOROETHANE												
1,1,2-TRICHLOROETHANE												
1,1-DICHLOROETHANE												
1,1-DICHLOROETHENE												
1,2,3-TRICHLOROPROPANE												
1,2-DIBROMO-3-CHLOROPROPANE												
1,2-DIBROMOETHANE												
1,2-DICHLOROETHANE												
1,2-DICHLOROPROPANE												
1,4-DIOXANE												
2-BUTANONE												
2-HEXANONE												
3-CHLOROPROPENE												
4-METHYL-2-PENTANONE												
ACETONE												
ACETONITRILE												
ACROLEIN												
ACRYLONITRILE												
BENZENE												
BROMODICHLOROMETHANE												
BROMOFORM												
BROMOMETHANE												
CARBON DISULFIDE												
CARBON TETRACHLORIDE												
CHLOROBENZENE												
CHLORODIBROMOMETHANE												
CHLOROETHANE												
CHLOROFORM												
CHLOROMETHANE												
CHLOROPRENE												
CIS-1,2-DICHLOROETHENE												
CIS-1,3-DICHLOROPROPENE												
DIBROMOMETHANE												
DICHLORODIFLUOROMETHANE												
ETHYL METHACRYLATE												
ETHYLBENZENE												
ISOBUTANOL												
METHACRYLONITRILE												
METHYL IODIDE												
METHYL METHACRYLATE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
METHYLENE CHLORIDE												
PROPIONITRILE												
STYRENE												
TETRACHLOROETHENE												
TOLUENE												
TOTAL XYLENES												
TRANS-1,2-DICHLOROETHENE												
TRANS-1,3-DICHLOROPROPENE												
TRANS-1,4-DICHLORO-2-BUTENE												
TRICHLOROETHENE												
TRICHLOROFLUOROMETHANE												
VINYL ACETATE												
VINYL CHLORIDE												
Semivolatile Organics (ug/L)												
1,2,4,5-TETRACHLOROBENZENE												
1,2,4-TRICHLOROBENZENE												
1,2-DICHLOROBENZENE												
1,3-DICHLOROBENZENE												
1,4-DICHLOROBENZENE												
1,4-NAPHTHOQUINONE												
1,4-PHENYLENEDIAMINE												
1-NAPHTHYLAMINE												
2,2'-OXYBIS(1-CHLOROPROPANE)												
2,3,4,6-TETRACHLOROPHENOL												
2,4,5-TRICHLOROPHENOL												
2,4,6-TRICHLOROPHENOL												
2,4-DICHLOROPHENOL												
2,4-DIMETHYLPHENOL												
2,4-DINITROPHENOL												
2,6-DICHLOROPHENOL												
2-ACETYLAMINOFLUORENE												
2-CHLORONAPHTHALENE												
2-CHLOROPHENOL												
2-METHYLNAPHTHALENE												
2-METHYLPHENOL												
2-NAPHTHYLAMINE												
2-NITROANILINE												
2-NITROPHENOL												
2-PICOLINE												
3&4-METHYLPHENOL												
3,3'-DICHLOROBENZIDINE												
3,3'-DIMETHYLBENZIDINE												
3-METHYLCHOLANTHRENE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
3-NITROANILINE												
4,6-DINITRO-2-METHYLPHENOL												
4-AMINOBIPHENYL												
4-BROMOPHENYL PHENYL ETHER												
4-CHLORO-3-METHYLPHENOL												
4-CHLOROANILINE												
4-CHLOROPHENYL PHENYL ETHER												
4-NITROANILINE												
4-NITROPHENOL												
4-NITROQUINOLINE-1-OXIDE												
5-NITRO-O-TOLUIDINE												
7,12-DIMETHYLBENZ(A)ANTHRACENE												
A,A-DIMETHYLPHENETHYLAMINE												
ACENAPHTHENE												
ACENAPHTHYLENE												
ACETOPHENONE												
ANILINE												
ANTHRACENE												
ARAMITE												
BENZO(A)ANTHRACENE												
BENZO(A)PYRENE												
BENZO(B)FLUORANTHENE												
BENZO(G,H,I)PERYLENE												
BENZO(K)FLUORANTHENE												
BENZYL ALCOHOL												
BIS(2-CHLOROETHOXY)METHANE												
BIS(2-CHLOROETHYL)ETHER												
BIS(2-ETHYLHEXYL)PHTHALATE												
BUTYL BENZYL PHTHALATE												
CHLOROBENZILATE												
CHRYSENE												
DI-N-BUTYL PHTHALATE												
DI-N-OCTYL PHTHALATE												
DIALLATE												
DIBENZO(A,H)ANTHRACENE												
DIBENZOFURAN												
DIETHYL PHTHALATE												
DIMETHYL PHTHALATE												
DIPHENYLAMINE												
ETHYL METHANE SULFONATE												
FLUORANTHENE												
FLUORENE												
HEXACHLOROBENZENE												

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
HEXACHLOROBUTADIENE												
HEXACHLOROCYCLOPENTADIENE												
HEXACHLOROETHANE												
HEXACHLOROPROPENE												
INDENO(1,2,3-CD)PYRENE												
ISODRIN												
ISOPHORONE												
ISOSAFROLE												
KEPONE												
METHAPYRILENE												
METHYL METHANE SULFONATE												
N-NITROSO-DI-N-BUTYLAMINE												
N-NITROSO-DI-N-PROPYLAMINE												
N-NITROSODIETHYLAMINE												
N-NITROSODIMETHYLAMINE												
N-NITROSOMETHYLETHYLAMINE												
N-NITROSOMORPHOLINE												
N-NITROSOPIPERIDINE												
N-NITROSOPYRROLIDINE												
NAPHTHALENE												
O,O,O-TRIETHYL PHOSPHOROTHIOATE												
O-TOLUIDINE												
P-(DIMETHYLAMINO)AZOBENZENE												
PENTACHLOROBENZENE												
PENTACHLOROETHANE												
PENTACHLORONITROBENZENE												
PHENACETIN												
PHENANTHRENE												
PHENOL												
PRONAMIDE												
PYRENE												
PYRIDINE												
SAFROLE												
Energetics (ug/L)												
1,3,5-TRINITROBENZENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
1,3-DINITROBENZENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE			0.5 U			0.515 U					0.575 U	
2,4,6-TRINITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
2,4-DIAMINO-6-NITROTOLUENE			0.25 U			0.258 U					0.287 U	
2,4-DINITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
2,6-DIAMINO-4-NITROTOLUENE			0.25 U			0.258 U					0.287 U	
2,6-DINITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
2-AMINO-4,6-DINITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
2-NITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
3,5-DINITROANILINE			0.25 U			0.258 U					0.287 U	
3-NITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
4-AMINO-2,6-DINITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.12 J	0.144 U	0.27 U
4-NITROTOLUENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
DNX			0.25 U			0.258 U					5.8 J	
HMX	12	0.345 U	0.89 J	0.34 J	0.485 U	0.258 U			0.25 U	22 J	120	32
MNX			0.25 U			0.258 U					3.6 J	
NITROBENZENE	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
PICRAMIC ACID												
PICRIC ACID												
RDX	17	1.6	4.7	2	0.46 U	0.258 U			0.25 U	10	16	18
TETRYL	0.24 U	0.345 U	0.25 U	0.25 U	0.485 U	0.258 U			0.25 U	0.11 U	0.144 U	0.27 U
TNX			0.25 U			0.258 U					0.31 J	
Herbicides (ug/L)												
HEXACHLOROPHENE												
PENTACHLOROPHENOL												
Total Metals (ug/L)												
ALUMINUM		57.1 U	47.5 U		1440 J	4310 J				123 J	116 U	
ANTIMONY		0.03 U	0.02 U		0.03 U	0.09 U				0.33 U	0.02 U	
ARSENIC		5.8 J	3.1 J		7 J	9.2 J				0.66 U	0.35 U	
BARIUM		31.1 J	19.1 J		43.3 J	39 J				72.9 J	69.3 J	
BERYLLIUM		0.06 U	0.05 U		4.2 J	5.2 J				0.13 U	0.03 U	
CADMIUM		0.35 U	0.04 U		1 U	0.63 U				0.14 U	0.04 U	
CALCIUM		29700 J	34100 J		14600 J	10700 J				27200 J	46000 J	
CHROMIUM		0.18 U	0.53 U		0.82 U	4.5 J				0.29 U	0.33 U	
COBALT		14.2 J	9.5 J		106 J	82.7 J				5.4 J	0.95 U	
COPPER		0.28 U	0.3 U		3 J	0.87 U				0.59 U	1.2 U	
IRON		10500 J	9740 J		9260 J	17500 J				2570 J	159 U	
LEAD		0.2 U	0.04 U		23.8 J	35.9 J				0.14 U	0.09 U	
LITHIUM		33.9 J			133 J					2.3 J		
MAGNESIUM		26100 J	29500 J		14300 J	13200 J				11600 J	14400 J	
MANGANESE		1910 J	1880 J		1300 J	821 J				712 J	330 U	
MERCURY		0.02 U	0.007 U		0.2 U	0.007 U				0.2 U	0.007 U	
NICKEL		24.7 J	20 J		222 J	182 J				7.1 J	5.3 J	
POTASSIUM		2080 J	2010 J		2230 J	2550 J				576 J	500 J	
SELENIUM		0.41 U	0.04 U		1.1 U	0.1 U				0.26 U	0.1 U	
SILVER		0.04 U	0.03 U		0.04 U	0.07 U				0.74 U	0.03 U	
SODIUM		48300 J	57400 J		16000 J	16300 J				15000 J	25400 J	
STRONTIUM		71.7 J			65.5 J					129 J		
THALLIUM		0.04 U	0.04 U		0.4 U	0.65 U				0.14 U	0.04 U	
TIN		0.3 U	0.1 U		0.09 U	0.17 U				0.12 U	0.1 U	
TITANIUM		1.9 U	0.7 U		4.6 J	26 J				3.2 J	3.3 J	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
VANADIUM		0.08 U	0.08 U		0.32 U	4.3 J				0.27 U	0.22 U	
ZINC		17.8 J	16.9 J		266 J	240				3.9 J	2.8 U	
Dissolved Metals (ug/L)												
ALUMINUM, FILTERED								1990 J				
ANTIMONY, FILTERED								0.27 U				
ARSENIC, FILTERED								8.6 J				
BARIUM, FILTERED								30.5 J				
BERYLLIUM, FILTERED								5.2 J				
CADMIUM, FILTERED								0.78 U				
CALCIUM, FILTERED								10700 J				
CHROMIUM, FILTERED								0.98 U				
COBALT, FILTERED								82.8 J				
COPPER, FILTERED								1.4 U				
IRON, FILTERED								16000 J				
LEAD, FILTERED								35.7 J				
LITHIUM, FILTERED												
MAGNESIUM, FILTERED								13000 J				
MANGANESE, FILTERED								812 J				
MERCURY, FILTERED								0.007 U				
NICKEL, FILTERED								180 J				
POTASSIUM, FILTERED								2040 J				
SELENIUM, FILTERED								0.19 U				
SILVER, FILTERED								0.25 U				
SODIUM, FILTERED								16400 J				
STRONTIUM, FILTERED												
THALLIUM, FILTERED								0.84 U				
TIN, FILTERED								0.26 U				
TITANIUM, FILTERED								0.42 U				
VANADIUM, FILTERED								0.63 U				
ZINC, FILTERED								222 J				
Field Parameters (mg/L)												
ALKALINITY						10 U						
CARBON DIOXIDE						137						
DISSOLVED OXYGEN	0.73			6.74		0.07			0.53			3.85
DISSOLVED OXYGEN - METER		1.2	0.52		0.53	7.79				0.81	3.87	
HYDROGEN SULFIDE (H2S)						0						
IRON(+2)						3.3 >						
MANGANESE(+2)						0.9						
NITRITE-N						0.001						
OXIDATION REDUCTION POTENTIAL (MV)	132	23.2	100.5	71	286.8	322			6.85	-30.4	237.8	386.4
PH (S.U.)	4.31	5.5	5.48	6.86	3.74	3.98			3.26	6.16	6.13	6.05
SPECIFIC CONDUCTANCE (MS/CM)	0.131	0.885	0.623	0.714	0.391	0.34			0.352	0.356	0.402	0.29
SULFIDE						0.14						

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT13	13MWT14	13MWT14	13MWT14	13MWT15	13MWT15	13MWT15	13MWT15	13MWT15	13MWT16	13MWT16	13MWT16
SAMPLING ROUND	03	01	02	03	01	02	02	02	03	01	02	03
SAMPLE NUMBER	13GWT1303	13GWT1401	13GWT1402	13GWT1403	13GWT1501	13GWT1502	13GWT1502-D	13GWT1502-F	13GWT1503	13GWT1601	13GWT1602	13GWT1603
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GF	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	4/29/2003	11/24/2003	7/27/2004	5/6/2003	11/25/2003	11/25/2003	11/25/2003	7/29/2004	5/6/2003	11/20/2003	7/25/2004
TEMPERATURE (C)	20.61	14.34	10.77	17.41	15.89	12.28			15.66	14.27	18.83	18.21
TURBIDITY (NTU)	0.7	1.6	0	3	7.3	45.4			10	2.7	8.49	1.2
Miscellaneous Parameters (mg/L)												
AMMONIA-N		0.08	0.06 J		1	1.3				0.4	0.03 J	
NITRITE/NITRATE-N		0.13	0.05 J		0.02 U	0.05 U				0.02 U	0.84 J	
TOTAL ORGANIC CARBON						1.1	1.2					

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
1,3-DINITROBENZENE	0.43 U	0.25 U	0.25 U	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.5 U	0.5 U				0.602 U				0.52 U
2,4,6-TRINITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
2,4-DIAMINO-6-NITROTOLUENE		0.25 U	0.25 U				0.301 U				0.26 U
2,4-DINITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
2,6-DIAMINO-4-NITROTOLUENE		0.25 U	0.25 U				0.301 U				0.26 U
2,6-DINITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
2-AMINO-4,6-DINITROTOLUENE	0.43 U	0.28 J	0.37 J	0.37 J	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
2-NITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
3,5-DINITROANILINE		0.25 U	0.25 U				0.301 U				0.26 U
3-NITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
4-AMINO-2,6-DINITROTOLUENE	0.6 J	0.71	0.79	0.84	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
4-NITROTOLUENE	0.43 U	0.25 UJ	0.25 UJ	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
DNX		2.2 J	2.2 J				0.301 U				0.26 U
HMX	92 J	140	130	120	8.6		14		22	6.4	6.2
MNX		11	11				2.9				0.26 U
NITROBENZENE	0.43 U	0.25 U	0.25 U	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
PICRAMIC ACID											
PICRIC ACID											
RDX	430	580	540	490	150		240		390	5.9	5.4
TETRYL	0.43 U	0.25 U	0.25 U	0.25 U	0.08 U		0.301 U		0.27 U	0.55 U	0.26 U
TNX		1.2	1.2				0.301 U				0.26 U
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	418 J	419 J	339 J		19000 J		2080 J			195 J	193 J
ANTIMONY	0.03 U	0.56 U	0.09 U		0.12 U		0.02 U			0.31 U	0.02 U
ARSENIC	0.5 U	0.74 U	0.47 U		4.2 J		0.52 U			0.43 U	0.81 U
BARIUM	19.3 J	19.6 J	18.6 J		118 J		20.7 J			401 J	314 J
BERYLLIUM	0.04 U	0.5 U	0.05 U		3 J		1.5 U			0.77 U	0.56 U
CADMIUM	0.05 U	0.43 U	0.04 U		0.33 U		0.04 U			0.72 U	0.43 U
CALCIUM	12100 J	11400 J	11200 J		19300 J		16000 J			32500 J	25700 J
CHROMIUM	0.63 U	0.82 U	0.53 U		25.6 J		2.6 J			0.59 U	1 U
COBALT	1.5 J	1.5 U	1.3 U		52.8 J		27.1 J			44.1 J	14.8 J
COPPER	0.26 U	0.73 U	0.57 U		14 J		1.4 U			1.1 U	1.3 U
IRON	357 J	440 U	361 U		15800 J		2440 J			117 U	325 U
LEAD	0.35 U	0.82 U	0.32 U		9.5 J		2 U			0.89 U	0.46 U
LITHIUM	5.7 J				181 J					40.8 J	
MAGNESIUM	9470 J	8900 J	8930 J		25600 J		16500 J			37800 J	27300 J
MANGANESE	56.3 U	48.3 U	43.1 U		2170 J		1360 J			1450 J	730 J
MERCURY	0.2 U	0.02 U	0.02 U		0.2 U		0.007 U			0.2 U	0.02 U
NICKEL	2.9 J	3.3 J	2.9 J		140 J		76.8 J			79.4 J	61.5 J
POTASSIUM	481 J	605 J	560 J		6390 J		2970 J			1290 J	1010 J
SELENIUM	0.1 U	0.51 U	0.16 U		0.42 U		0.24 U			0.29 U	0.04 U
SILVER	0.04 U	0.49 U	0.03 U		0.61 U		0.08 U			0.39 U	0.03 U
SODIUM	8450 J	8550 J	8550 J		35200 J		37500 J			160000 J	123000 J
STRONTIUM	27.4 J				39.8 J					173 J	
THALLIUM	0.04 U	0.5 U	0.05 U		0.27 U		0.07 U			0.36 U	0.05 U
TIN	0.04 U	0.46 U	0.1 U		0.46 U		0.2 U			0.42 U	0.43 U
TITANIUM	7.2 J	10.9 J	8.7 J		166 J		35.4 J			5.1 J	3.7 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
VANADIUM	0.72 U	0.9 U	0.6 U		26.6 J		2.4 J			0.31 U	0.2 U
ZINC	3 J	2.7 J	2.3 U		175 J		75.7 J			57 J	48.3 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED						382 J		434 J			
ANTIMONY, FILTERED						0.08 U		0.26 U			
ARSENIC, FILTERED						1.4 J		0.33 U			
BARIUM, FILTERED						20.9 J		14.3 J			
BERYLLIUM, FILTERED						2 J		1.5 U			
CADMIUM, FILTERED						0.2 U		0.17 U			
CALCIUM, FILTERED						20300 J		17900 J			
CHROMIUM, FILTERED						0.2 U		0.51 U			
COBALT, FILTERED						49.5 J		31.7 J			
COPPER, FILTERED						6.4 J		3.1 J			
IRON, FILTERED						1980 J		1940 J			
LEAD, FILTERED						0.91 U		1 U			
LITHIUM, FILTERED						154 J					
MAGNESIUM, FILTERED						22700 J		19600 J			
MANGANESE, FILTERED						2090 J		1660 J			
MERCURY, FILTERED						0.2 U		0.007 U			
NICKEL, FILTERED						123 J		86.2 J			
POTASSIUM, FILTERED						2590 J		2860 J			
SELENIUM, FILTERED						0.29 U		0.18 U			
SILVER, FILTERED						0.04 U		0.15 U			
SODIUM, FILTERED						34400 J		38800 J			
STRONTIUM, FILTERED						32.8 J					
THALLIUM, FILTERED						0.08 U		0.18 U			
TIN, FILTERED						0.03 U		0.16 U			
TITANIUM, FILTERED						2.8 U		1.1 U			
VANADIUM, FILTERED						0.05 U		0.22 U			
ZINC, FILTERED						138 J		84.2 J			
Field Parameters (mg/L)											
ALKALINITY		10 U	10 U				10 U				
CARBON DIOXIDE		170	180				45				
DISSOLVED OXYGEN		0.9	0.9	2.01			5.5		5.67		
DISSOLVED OXYGEN - METER	0.53	0.84			2.17		4.61			3.51	34.37
HYDROGEN SULFIDE (H2S)		0	0				0				
IRON(+2)		0.06	0.07				0.33				
MANGANESE(+2)		0	0				1.4				
NITRITE-N		0.006	0.006				0				
OXIDATION REDUCTION POTENTIAL (MV)	112	338		129.4	324.1		422.2		361.6	224.1	209.6
PH (S.U.)	5.35	5.38		5.28	3.88		4.26		4.44	5.12	4.87
SPECIFIC CONDUCTANCE (MS/CM)	0.17	0.153		0.159	0.514		0.351		0.293	1.241	1.21
SULFIDE		0.02	0				0.07				

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT17	13MWT17	13MWT17	13MWT17	13MWT18	13MWT18	13MWT18	13MWT18	13MWT18	13MWT19	13MWT19
SAMPLING ROUND	01	02	02	03	01	01	02	02	03	01	02
SAMPLE NUMBER	13GWT1701	13GWT1702	13GWT1702-D	13GWT1703	13GWT1801	13GWT1801-F	13GWT1802	13GWT1802-F	13GWT1803	13GWT1901	13GWT1902
SUBMATRIX	GW	GW	GW	GW	GW	GF	GW	GF	GW	GW	GW
SAMPLE CODE	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	5/7/2003	11/5/2003	11/5/2003	7/29/2004	5/6/2003	5/6/2003	12/7/2003	12/7/2003	7/29/2004	5/7/2003	10/28/2003
TEMPERATURE (C)	15.7	15.97		18.57	16.75		9.78		16.27	13.81	14.98
TURBIDITY (NTU)	10	3.74		4.1	450		40.2		6.6	5	5.5
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01	0.005 U	0.005 U		0.02		0.02 J			0.01 U	0.01 U
NITRITE/NITRATE-N	0.86	0.65	0.66		0.09		0.12 J			0.02 U	0.16
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE		0.3 U									
1,1,1-TRICHLOROETHANE		0.3 U									
1,1,2,2-TETRACHLOROETHANE		0.3 U									
1,1,2-TRICHLOROETHANE		0.3 U									
1,1-DICHLOROETHANE		0.3 U									
1,1-DICHLOROETHENE		0.3 U									
1,2,3-TRICHLOROPROPANE		0.3 U									
1,2-DIBROMO-3-CHLOROPROPANE		0.3 U									
1,2-DIBROMOETHANE		0.3 U									
1,2-DICHLOROETHANE		0.3 U									
1,2-DICHLOROPROPANE		0.3 U									
1,4-DIOXANE		50 UJ									
2-BUTANONE		0.5 UJ									
2-HEXANONE		0.5 UJ									
3-CHLOROPROPENE		0.5 U									
4-METHYL-2-PENTANONE		0.5 U									
ACETONE		0.5 UJ									
ACETONITRILE		20 U									
ACROLEIN		0.5 UR									
ACRYLONITRILE		0.5 U									
BENZENE		0.3 U									
BROMODICHLOROMETHANE		0.3 U									
BROMOFORM		0.3 U									
BROMOMETHANE		0.3 U									
CARBON DISULFIDE		0.3 U									
CARBON TETRACHLORIDE		0.3 UJ									
CHLOROBENZENE		0.3 U									
CHLORODIBROMOMETHANE		0.3 U									
CHLOROETHANE		0.5 U									
CHLOROFORM		0.3 U									
CHLOROMETHANE		0.3 U									
CHLOROPRENE		0.5 U									
CIS-1,2-DICHLOROETHENE		0.3 U									
CIS-1,3-DICHLOROPROPENE		0.3 U									
DIBROMOMETHANE		0.3 U									
DICHLORODIFLUOROMETHANE		0.3 U									
ETHYL METHACRYLATE		0.5 U									
ETHYLBENZENE		0.3 U									
ISOBUTANOL		20 U									
METHACRYLONITRILE		0.3 U									
METHYL IODIDE		0.5 U									
METHYL METHACRYLATE		0.5 U									

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
METHYLENE CHLORIDE		0.3 U									
PROPIONITRILE		20 U									
STYRENE		0.3 U									
TETRACHLOROETHENE		0.3 U									
TOLUENE		0.3 U									
TOTAL XYLENES		0.3 U									
TRANS-1,2-DICHLOROETHENE		0.3 U									
TRANS-1,3-DICHLOROPROPENE		0.3 U									
TRANS-1,4-DICHLORO-2-BUTENE		0.5 U									
TRICHLOROETHENE		1 J									
TRICHLOROFLUOROMETHANE		0.3 U									
VINYL ACETATE		0.5 U									
VINYL CHLORIDE		0.3 U									
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE		1 U		1 U							
1,2,4-TRICHLOROBENZENE		1 U		1 U							
1,2-DICHLOROBENZENE		1 U		1 U							
1,3-DICHLOROBENZENE		1 U		1 U							
1,4-DICHLOROBENZENE		1 U		1 U							
1,4-NAPHTHOQUINONE		1 UJ		1 U							
1,4-PHENYLENEDIAMINE		1 UJ		1 UJ							
1-NAPHTHYLAMINE		1 U		1 U							
2,2'-OXYBIS(1-CHLOROPROPANE)		1 U		1 U							
2,3,4,6-TETRACHLOROPHENOL		1 UR		1 U							
2,4,5-TRICHLOROPHENOL		1 UR		1 U							
2,4,6-TRICHLOROPHENOL		1 UR		1 U							
2,4-DICHLOROPHENOL		1 UR		1 U							
2,4-DIMETHYLPHENOL		1 UR		1 U							
2,4-DINITROPHENOL		1 UR		1 UJ							
2,6-DICHLOROPHENOL		1 UR		1 U							
2-ACETYLAMINOFLUORENE		1 U		1 U							
2-CHLORONAPHTHALENE		1 UJ		1 U							
2-CHLOROPHENOL		1 UR		1 U							
2-METHYLNAPHTHALENE		0.05 U									
2-METHYLPHENOL		1 UR		1 U							
2-NAPHTHYLAMINE		1 U		1 U							
2-NITROANILINE		1 U		1 U							
2-NITROPHENOL		1 UR		1 U							
2-PICOLINE		1 U		1 U							
3&4-METHYLPHENOL		1 UR		1 U							
3,3'-DICHLOROBENZIDINE		1 U		1 U							
3,3'-DIMETHYLBENZIDINE		1 U		1 U							
3-METHYLCHOLANTHRENE		1 U		1 U							

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
3-NITROANILINE		1 U		1 U							
4,6-DINITRO-2-METHYLPHENOL		1 UR		1 U							
4-AMINOBIPHENYL		1 U		1 U							
4-BROMOPHENYL PHENYL ETHER		1 U		1 U							
4-CHLORO-3-METHYLPHENOL		1 UR		1 U							
4-CHLOROANILINE		1 U		1 U							
4-CHLOROPHENYL PHENYL ETHER		1 U		1 U							
4-NITROANILINE		1 U		1 U							
4-NITROPHENOL		1 UR		1 U							
4-NITROQUINOLINE-1-OXIDE		1 UR		1 UR							
5-NITRO-O-TOLUIDINE		1 U		1 U							
7,12-DIMETHYLBENZ(A)ANTHRACENE		1 U		1 U							
A,A-DIMETHYLPHENETHYLAMINE		1 U		1 U							
ACENAPHTHENE		0.05 U									
ACENAPHTHYLENE		0.05 U									
ACETOPHENONE		1 U		1 U							
ANILINE		1 U		1 UJ							
ANTHRACENE		0.05 U									
ARAMITE		1 UR		1 UR							
BENZO(A)ANTHRACENE		0.05 U									
BENZO(A)PYRENE		0.05 U									
BENZO(B)FLUORANTHENE		0.05 U									
BENZO(G,H,I)PERYLENE		0.05 U									
BENZO(K)FLUORANTHENE		0.05 U									
BENZYL ALCOHOL		1 U		1 U							
BIS(2-CHLOROETHOXY)METHANE		1 U		1 U							
BIS(2-CHLOROETHYL)ETHER		1 U		1 U							
BIS(2-ETHYLHEXYL)PHTHALATE		1 U		1 U							
BUTYL BENZYL PHTHALATE		1 U		1 U							
CHLOROBENZILATE		1 U		1 U							
CHRYSENE		0.05 U									
DI-N-BUTYL PHTHALATE		1 U		1 U							
DI-N-OCTYL PHTHALATE		1 U		1 U							
DIALLATE		1 U		1 U							
DIBENZO(A,H)ANTHRACENE		0.05 U									
DIBENZOFURAN		1 U		1 U							
DIETHYL PHTHALATE		1 U		1 U							
DIMETHYL PHTHALATE		1 U		1 U							
DIPHENYLAMINE		1 U		1 U							
ETHYL METHANE SULFONATE		1 U		1 U							
FLUORANTHENE		0.05 U									
FLUORENE		0.05 U									
HEXACHLOROBENZENE		1 U		1 U							

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
HEXACHLOROBUTADIENE		1 U		1 U							
HEXACHLOROCYCLOPENTADIENE		1 UR		1 UR							
HEXACHLOROETHANE		1 U		1 U							
HEXACHLOROPROPENE		1 U		1 U							
INDENO(1,2,3-CD)PYRENE		0.05 U									
ISODRIN		1 U		1 U							
ISOPHORONE		1 U		1 U							
ISOSAFROLE		1 U		1 U							
KEPONE		1 UJ		1 UR							
METHAPYRILENE		1 U		1 U							
METHYL METHANE SULFONATE		1 U		1 U							
N-NITROSO-DI-N-BUTYLAMINE		1 U		1 U							
N-NITROSO-DI-N-PROPYLAMINE		1 U		1 U							
N-NITROSODIETHYLAMINE		1 U		1 U							
N-NITROSODIMETHYLAMINE		1 U		1 UJ							
N-NITROSOMETHYLETHYLAMINE		1 U		1 U							
N-NITROSOMORPHOLINE		1 U		1 U							
N-NITROSOPIPERIDINE		1 U		1 U							
N-NITROSOPYRROLIDINE		1 U		1 U							
NAPHTHALENE		0.05 U									
O,O,O-TRIETHYL PHOSPHOROTHIOATE		1 U		1 U							
O-TOLUIDINE		1 U		1 U							
P-(DIMETHYLAMINO)AZOBENZENE		1 U		1 U							
PENTACHLOROBENZENE		1 U		1 U							
PENTACHLOROETHANE		1 U		1 U							
PENTACHLORONITROBENZENE		1 U		1 U							
PHENACETIN		1 U		1 U							
PHENANTHRENE		0.05 U									
PHENOL		1 UR		1 U							
PRONAMIDE		1 U		1 U							
PYRENE		0.05 U									
PYRIDINE		1 U		1 U							
SAFROLE		1 U		1 U							
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	1.3 J	0.4 J	0.395 U
1,3-DINITROBENZENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	1.8 J	0.8	0.395 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE					0.532 U				0.481 U		
2,4,6-TRINITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	26 J	33 J	69 J	26	0.395 U
2,4-DIAMINO-6-NITROTOLUENE					0.266 U				0.77 J		
2,4-DINITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	1.4 J	0.65 J	0.395 U
2,6-DIAMINO-4-NITROTOLUENE					0.266 U				0.24 U		
2,6-DINITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	5.8 J	2.8	0.395 U
2-AMINO-4,6-DINITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 UJ	3.8 J	0.395 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
2-NITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 UJ	0.24 U	0.395 U
3,5-DINITROANILINE					0.266 U				0.24 U		
3-NITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 UJ	0.24 U	0.395 U
4-AMINO-2,6-DINITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 U	2.9 J	0.395 U
4-NITROTOLUENE	0.26 U	0.37 U			0.266 U	0.26 U	0.5 J	0.345 U	0.24 UJ	0.24 U	0.395 U
DNX					0.266 U				50 J		
HMX	7.3	0.37 U			0.266 U	0.26 U	390	350	640	460	19
MNX					0.266 U				9.3 J		
NITROBENZENE	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 U	0.24 U	0.395 U
PICRAMIC ACID		0.39 U									
PICRIC ACID		0.39 U									
RDX	5.9	0.35 U			0.266 U	0.26 U	2700	3100	7700	4000	20
TETRYL	0.26 U	0.37 U			0.266 U	0.26 U	0.28 U	0.345 U	0.24 U	0.24 U	0.395 U
TNX					0.266 U				1.4 J		
Herbicides (ug/L)											
HEXACHLOROPHENE		0.025 U									
PENTACHLOROPHENOL		0.013 U									
Total Metals (ug/L)											
ALUMINUM		12900 J			7940 J	8860 J	354	349	332 U		709 J
ANTIMONY		0.12 U			0.02 U	0.04 U	0.04 U	0.03 U	0.1 U		0.03 U
ARSENIC		1.8 J			1.1 U	0.69 U	0.18 U	0.16 U	0.32 U		0.3 U
BARIUM		16.7 J			13.3 J	12.6 J	41.7 J	40.5 J	42 J		25 J
BERYLLIUM		5.8 J			5.2 J	5.2 J	0.97 U	1 U	1.7 U		3.7 J
CADMIUM		1 U			0.76 U	0.63 U	0.14 U	0.11 U	0.08 U		0.4 U
CALCIUM		72200 J			65100 J	49200 J	12000 J	11600 J	10600 J		13100 J
CHROMIUM		3.3 J			1.1 U	1.6 U	0.9 J	0.43 U	0.46 U		0.44 U
COBALT		234 J			169 J	200 J	16.4 J	16.7 J	15.9 J		80.5 J
COPPER		10.5 J			3.1 J	4.5 U	0.83 J	0.92 J	1.1 U		4.8 J
IRON		143000 J			120000 J	124000 J	127 J	109 U	193 U		434 J
LEAD		12.5 J			8.5 J	7.7 J	1.1 J	1.1 J	0.93 U		2.4 J
LITHIUM		340 J					45.8 J	49.2 J			208 J
MAGNESIUM		70300 J			61400 J	52200 J	8150 J	8100 J	7300 J		11300 J
MANGANESE		11600 J			9770 J	8390 J	612 J	628 J	590 J		381 J
MERCURY		0.02 U			0.007 U	0.03 U	0.02 U	0.02 U	0.02 U		0.2 U
NICKEL		477 J			397 J	427 J	35.7 J	35.4 J	32.8 J		153 J
POTASSIUM		6660 J			5750 J	4950 J	845 J	848 J	1130 J		705 J
SELENIUM		0.13 U			0.06 U	0.07 U	0.05 U	0.08 U	0.13 U		0.05 U
SILVER		0.04 U			0.03 U	0.04 U	0.04 U	0.04 U	0.15 U		0.04 U
SODIUM		53500 J			56600 J	51200 J	16000 J	16000 J	16800 J		15400 J
STRONTIUM		72 J					45.6 J	44.1 J			64.9 J
THALLIUM		1.3 U			1.2 U	1 U	0.06 U	0.07 U	0.13 U		0.09 U
TIN		0.09 U			0.11 U	0.05 U	0.1 U	0.05 U	0.1 U		0.04 U
TITANIUM		5.5 J			0.72 U		4.4 J	4.3 J	0.47 U		5.1 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
VANADIUM		0.63 J			0.45 U	0.27 U	0.2 U	0.16 U	0.22 U		0.18 U
ZINC		661 J			566 J	616 J	21.9 J	23 J	30 J		278 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED			11800 J								
ANTIMONY, FILTERED			0.03 U								
ARSENIC, FILTERED			1.7 J								
BARIUM, FILTERED			15.6 J								
BERYLLIUM, FILTERED			5.6 J								
CADMIUM, FILTERED			1 U								
CALCIUM, FILTERED			70900 J								
CHROMIUM, FILTERED			2.7 J								
COBALT, FILTERED			230 J								
COPPER, FILTERED			10.6 J								
IRON, FILTERED			142000 J								
LEAD, FILTERED			11.5 J								
LITHIUM, FILTERED			322 J								
MAGNESIUM, FILTERED			67900 J								
MANGANESE, FILTERED			11500 J								
MERCURY, FILTERED			0.02 U								
NICKEL, FILTERED			470 J								
POTASSIUM, FILTERED			6520 J								
SELENIUM, FILTERED			0.19 U								
SILVER, FILTERED			0.04 U								
SODIUM, FILTERED			52100 J								
STRONTIUM, FILTERED			68.9 J								
THALLIUM, FILTERED			1.2 U								
TIN, FILTERED			0.03 U								
TITANIUM, FILTERED			4.2 J								
VANADIUM, FILTERED			0.45 U								
ZINC, FILTERED			695								
Field Parameters (mg/L)											
ALKALINITY					10 U				10 U		
CARBON DIOXIDE					400				125		
DISSOLVED OXYGEN	27.18				0.02	15.56			1	2.94	
DISSOLVED OXYGEN - METER		0.11		0.54	0.76		1.45		2.09		0.64
HYDROGEN SULFIDE (H2S)					0				0		
IRON(+2)					3.3 >				0.1		
MANGANESE(+2)					8.3				0.6		
NITRITE-N					0				0.031		
OXIDATION REDUCTION POTENTIAL (MV)	484.2	265		224	376.2	337.2	193.6		247.2	107.3	264
PH (S.U.)	4.57	3.48		3.65	3.43	3.47	5.46		5.59	7.32	3.95
SPECIFIC CONDUCTANCE (MS/CM)	1.397	1.504		1.445	1.3	1.288	0.212		0.195	0.298	0.245
SULFIDE					0.03				0.04		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT19	13MWT20	13MWT20	13MWT20	13MWT20	13MWT20	13MWT21	13MWT21	13MWT21	13MWT21	13MWT22
SAMPLING ROUND	03	01	01	01	02	03	01	01	02	03	01
SAMPLE NUMBER	13GWT1903	13GWT2001	13GWT2001-F	13GWT2002	13GWT2003	13GWT2004	13GWT2101	13GWT2101-D	13GWT2102	13GWT2103	13GWT2201
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/27/2004	4/28/2003	4/28/2003	5/9/2003	11/19/2003	7/30/2004	4/25/2003	4/25/2003	11/5/2003	7/28/2004	5/6/2003
TEMPERATURE (C)	18.49	15.78		16.7	15.9	20.04	13.01		15.17	20.07	14.15
TURBIDITY (NTU)	0.4	19		1.4	6.91	3.8	8.2		2.61	4	0
Miscellaneous Parameters (mg/L)											
AMMONIA-N		1.6			1.6 J		0.05	0.04	0.02		0.01 U
NITRITE/NITRATE-N		0.07			0.025 U		0.64	0.65	1.2		0.02 U
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
1,3-DINITROBENZENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.532 U			0.51 U			0.47 U				0.5 U
2,4,6-TRINITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
2,4-DIAMINO-6-NITROTOLUENE	0.266 U			0.26 U			0.24 U				0.25 U
2,4-DINITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
2,6-DIAMINO-4-NITROTOLUENE	0.266 U			0.26 U			0.24 U				0.25 U
2,6-DINITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
2-AMINO-4,6-DINITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
2-NITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	1	0.145 U		0.25 UJ
3,5-DINITROANILINE	0.266 U			0.26 U			0.24 U				0.25 U
3-NITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
4-AMINO-2,6-DINITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 U
4-NITROTOLUENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 UJ
DNX	0.266 U			0.26 U			0.24 U				0.25 U
HMX	23	23	13	14	16	2.1	2.2	2.2	0.34		0.85
MNX	0.266 U			0.26 U			0.35 J				0.25 U
NITROBENZENE	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 U
PICRAMIC ACID											
PICRIC ACID											
RDX	26	26	17	21	17	7.3	9	8.7	0.4		1.2 J
TETRYL	0.266 U	0.27 U	0.5 U	0.26 U	0.26 U	0.65 U	0.24 U	0.27 U	0.145 U		0.25 U
TNX	0.266 U			0.26 U			0.24 U				0.25 U
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	1360 J		192 J	38.2 U		47.3 U	14.2 U		39000 J		73500 J
ANTIMONY	0.03 U		0.04 U	0.02 U		0.03 U	0.02 U		0.35 U		0.44 U
ARSENIC	0.4 U		0.41 U	0.09 U		0.07 U	0.14 U		15.4 J		14.3 J
BARIUM	31.6 J		38.4 J	35 J		22.7 J	18.6 J		303 J		355 J
BERYLLIUM	3.6 J		0.06 U	0.04 U		0.03 U	0.04 U		2.3 J		3.4 J
CADMIUM	0.49 U		0.13 U	0.1 U		0.05 UJ	0.06 U		2.7 J		2.7 J
CALCIUM	12200 J		10300 J	12500 J		34300 J	37900 J		117000 J		53900 J
CHROMIUM	1.7 J		0.55 U	0.35 U		0.37 U	0.27 U		64.9 J		89.9 J
COBALT	69 J		5.1 J	2.4 J		3.7 J	10.1 J		33 J		48 J
COPPER	6.4 J		0.35 U	0.2 U		4 J	0.19 U		89.5 J		82.8 J
IRON	846 J		414 J	118 U		65.7 U	3190 J		36000 J		41000 J
LEAD	3 J		0.36 U	0.14 U		0.18 U	0.09 U		54.3 J		51.3 J
LITHIUM			12.2 J			18.2 J			74.4 J		
MAGNESIUM	10000 J		10800 J	10900 J		34500 J	33600 J		19900 J		22700 J
MANGANESE	327 J		404 J	256 J		525 J	2010 J		2080 J		839 J
MERCURY	0.14 J		0.2 U	0.02 U		0.02 U	0.02 U		0.052 J		0.098 J
NICKEL	138 J		5.5 J	4.9 J		6.3 J	9.4 J		82.1 J		120 J
POTASSIUM	964 J		796 J	875 J		1010 J	1120 J		11000 J		18100 J
SELENIUM	0.1 U		0.24 U	0.19 U		0.29 U	0.2 U		1.8 J		4.1 J
SILVER	0.05 U		0.08 U	0.03 U		0.04 U	0.03 U		1.2 U		1.3 U
SODIUM	15500 J		37200 J	34000 J		44200 J	41000 J		27900 J		31400 J
STRONTIUM			49.9 J			81 J			262 J		
THALLIUM	0.1 U		0.07 U	0.04 U		0.04 U	0.04 U		0.6 U		0.75 U
TIN	0.12 U		0.13 U	0.1 U		0.13 U	0.1 U		0.55 U		1.5 U
TITANIUM	9.1 J		6.9 J	0.55 U		2.1 U	0.13 U		285 J		516 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
VANADIUM	1.4 U		0.51 U	0.08 U		0.06 U	0.06 U		75.3 J		93.5 J
ZINC	273		4 J	4.1 U		8.2 J	3.7 U		260 J		340 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED										344 J	
ANTIMONY, FILTERED										0.29 U	
ARSENIC, FILTERED										0.36 U	
BARIUM, FILTERED										62.6 J	
BERYLLIUM, FILTERED										0.09 U	
CADMIUM, FILTERED										0.47 U	
CALCIUM, FILTERED										64700 J	
CHROMIUM, FILTERED										0.81 U	
COBALT, FILTERED										2.5 J	
COPPER, FILTERED										2.8 J	
IRON, FILTERED										198 J	
LEAD, FILTERED										0.44 U	
LITHIUM, FILTERED										57.3 J	
MAGNESIUM, FILTERED										14100 J	
MANGANESE, FILTERED										460 J	
MERCURY, FILTERED										0.2 U	
NICKEL, FILTERED										26.3 J	
POTASSIUM, FILTERED										5560 J	
SELENIUM, FILTERED										2 J	
SILVER, FILTERED										0.04 U	
SODIUM, FILTERED										27100 J	
STRONTIUM, FILTERED										135 J	
THALLIUM, FILTERED										0.08 U	
TIN, FILTERED										0.11 U	
TITANIUM, FILTERED										7.3 J	
VANADIUM, FILTERED										0.8 U	
ZINC, FILTERED										22.8 J	
Field Parameters (mg/L)											
ALKALINITY	10 U			25			90				
CARBON DIOXIDE	50			23			28				
DISSOLVED OXYGEN	1	2.51		7	3.37		0.5	1.07			
DISSOLVED OXYGEN - METER	1.65		4.09	2.37		2.89	29.68		4.21		0.96
HYDROGEN SULFIDE (H2S)	0			0			0				
IRON(+2)	0.37			0.09			3.21				
MANGANESE(+2)	0.1			0.1			1.8				
NITRITE-N	0.005			0.004			0				
OXIDATION REDUCTION POTENTIAL (MV)	351.6	448.2	131	397.5	141	284	59.9	395	219.1		333
PH (S.U.)	4.09	3.81	5.19	5.5	5.48	5.9	6.14	5.41	6.45		5.29
SPECIFIC CONDUCTANCE (MS/CM)	0.243	0.294	0.314	0.309	0.315	0.671	0.672	0.669	0.511		0.341
SULFIDE	0.06			0.01			0				

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT22	13MWT22	13MWT23	13MWT23	13MWT23	13MWT24	13MWT24	13MWT24	13MWT25	13MWT25	13MWT25
SAMPLING ROUND	02	03	01	02	03	01	02	03	01	01	02
SAMPLE NUMBER	13GWT2202	13GWT2203	13GWT2301	13GWT2302	13GWT2303	13GWT2401	13GWT2402	13GWT2403	13GWT2501	13GWT2501-F	13GWT2502
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	12/4/2003	7/27/2004	5/6/2003	10/28/2003	7/25/2004	4/28/2003	10/28/2003	7/23/2004	4/26/2003	4/26/2003	11/6/2003
TEMPERATURE (C)	11.4	19.61	16.46	13.67	17.26	16.76	14.27	20.16	12		16.7
TURBIDITY (NTU)	1.03	1.5	0.7	2.09	2.1	5.2	1.66	5.82	999 >		39
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.01 U		0.01 U	0.01 U		0.02	0.01 U		0.09		0.05 J
NITRITE/NITRATE-N	0.17 J		0.5	0.51		0.39	0.27		0.02 U		0.17 J
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
1,3-DINITROBENZENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE					0.538 U		0.505 U		0.515 U		
2,4,6-TRINITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
2,4-DIAMINO-6-NITROTOLUENE					0.269 U		0.253 U		0.258 U		
2,4-DINITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
2,6-DIAMINO-4-NITROTOLUENE					0.269 U		0.253 U		0.258 U		
2,6-DINITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
2-AMINO-4,6-DINITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
2-NITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
3,5-DINITROANILINE					0.269 U		0.253 U		0.258 U		
3-NITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
4-AMINO-2,6-DINITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
4-NITROTOLUENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
DNX					0.269 U		0.253 U		0.258 U		
HMX		2.3		2.4	2.4	1.8	15	38	0.258 U		0.25 U
MNX					0.269 U		0.253 U		0.258 U		
NITROBENZENE		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
PICRAMIC ACID											
PICRIC ACID											
RDX		1.6		0.4 J	0.53 J	0.38 J	32	74	0.258 U		0.25 U
TETRYL		0.27 U		0.19 U	0.269 U	0.26 U	0.253 U	0.27 U	0.258 U		0.25 U
TNX					0.269 U		0.253 U		0.258 U		
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM		836 J		241	340 J		1980 J		6270 J		
ANTIMONY		0.08 U		0.04 U	0.02 U		0.02 U		2.9 J		
ARSENIC		0.55 U		0.25 U	0.21 U		3.1 J		15.2 J		
BARIUM		39.9 J		21.2 J	13.9 J		78.1 J		65.3 J		
BERYLLIUM		0.99 U		0.03 U	0.03 U		2.3 J		0.27 U		
CADMIUM		0.42 U		0.05 U	0.04 U		0.3 U		0.04 U		
CALCIUM		22900 J		22700 J	27100 J		11100 J		10600 J		
CHROMIUM		2.2 U		0.76 J	0.51 U		3.2 J		11.7 J		
COBALT		56.5 J		5 J	1.7 U		41.1 J		2 J		
COPPER		18.2 J		0.45 U	0.31 U		19.6 J		1.4 U		
IRON		961 J		238 J	334 U		17300 J		2460 J		
LEAD		2.9 J		0.15 U	0.14 U		3.3 J		2.5 U		
LITHIUM				35.7 J							
MAGNESIUM		12800 J		13700 J	14900 J		7520 J		2950 J		
MANGANESE		125 J		391 J	271 U		594 J		66.7 J		
MERCURY		0.03 U		0.02 U	0.007 U		0.007 U		0.007 U		
NICKEL		123 J		8 J	5.9 J		67.4 J		7.1 J		
POTASSIUM		1800 J		474 J	412 J		4170 J		3670 J		
SELENIUM		1.4 U		0.09 U	0.04 U		0.04 U		4.1 J		
SILVER		0.03 U		0.04 U	0.03 U		0.03 U		0.03 U		
SODIUM		39700 J		29200 J	41200 J		14900 J		124000 J		
STRONTIUM				56.9 J							
THALLIUM		0.05 U		0.04 U	0.04 U		0.25 U		0.06 U		
TIN		0.45 U		0.22 U	0.1 U		0.12 U		0.63 U		
TITANIUM				6.8 J	6.5 J		12.4 J		99 J		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
VANADIUM		1.4 J		0.46 U	0.55 U		1.9 J		12.5 J		
ZINC		138 J		4.7 J	2.8 U		94.9		6.7 J		
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	79.8 U		154 J							102 U	
ANTIMONY, FILTERED	0.22 U		0.07 U							3 J	
ARSENIC, FILTERED	0.17 U		0.11 U							13.6 J	
BARIUM, FILTERED	35.9 J		36.3 J							36.9 J	
BERYLLIUM, FILTERED	0.1 U		0.79 U							0.03 U	
CADMIUM, FILTERED	0.74 U		0.35 U							0.04 U	
CALCIUM, FILTERED	28600 J		20700 J							8960 J	
CHROMIUM, FILTERED	0.34 U		1.1 U							0.81 U	
COBALT, FILTERED	30.5 J		54.2 J							0.55 U	
COPPER, FILTERED	1.8 U		13.1 J							1 U	
IRON, FILTERED	93.6 U		130 J							25.5 U	
LEAD, FILTERED	0.14 U		1.3 U							0.2 U	
LITHIUM, FILTERED											
MAGNESIUM, FILTERED	9360 J		11100 J							1800 J	
MANGANESE, FILTERED	177 J		105 J							3.7 U	
MERCURY, FILTERED	0.007 U		0.03 U							0.007 U	
NICKEL, FILTERED	73.9 J		118 J							3.1 J	
POTASSIUM, FILTERED	2700 J		1550 J							1880 J	
SELENIUM, FILTERED	2.5 J		1.4 U							3.9 J	
SILVER, FILTERED	0.03 U		0.02 U							0.04 U	
SODIUM, FILTERED	29600 J		33300 J							122000 J	
STRONTIUM, FILTERED											
THALLIUM, FILTERED	0.04 U		0.02 U							0.04 U	
TIN, FILTERED	0.1 U		0.06 U							0.19 U	
TITANIUM, FILTERED	3.6 J									1.4 U	
VANADIUM, FILTERED	0.27 U		0.06 U							2 J	
ZINC, FILTERED	95.5 J		126 J							3.5 J	
Field Parameters (mg/L)											
ALKALINITY					60		10 U		150		
CARBON DIOXIDE					50		45		10 U		
DISSOLVED OXYGEN		1.87			1.7	0.89	5	4.96	0.5		0.26
DISSOLVED OXYGEN - METER				4.2	1.7		1.67		0.57		
HYDROGEN SULFIDE (H2S)					0		0		0		
IRON(+2)					0		0.21		0.01		
MANGANESE(+2)					0.3		0		0		
NITRITE-N					0.01		0.001		0.007		
OXIDATION REDUCTION POTENTIAL (MV)		717		189	354	752	223.2	423.5	-34.1		73.5
PH (S.U.)		4.58		6.05	5.95	5.27	4.4	3.36	9.15		8.08
SPECIFIC CONDUCTANCE (MS/CM)		0.382		0.352	0.333	0.43	0.288	0.294	0.495		1.217
SULFIDE					0.05		0		0		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER
LOCATION	13MWT25	13MWT25	13MWT25	13MWT26	13MWT26	13MWT26	13MWT27	13MWT27	13MWT28	13MWT28	13MWT28
SAMPLING ROUND	02	03	03	01	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2502-F	13GWT2503	13GWT2503-F	13GWT2601	13GWT2602	13GWT2603	13GWT2701	13GWT2702	13GWT2801	13GWT2801-F	13GWT2802
SUBMATRIX	GF	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/19/2003	7/24/2004	7/24/2004	4/25/2003	11/19/2003	7/23/2004	11/25/2003	7/30/2004	12/7/2003	12/7/2003	7/31/2004
TEMPERATURE (C)		21.8		12.01	15.68	19.78	14.29	20.1	13.59		17.98
TURBIDITY (NTU)		40		7.1	9.81	22	110	3.3	260		65
Miscellaneous Parameters (mg/L)											
AMMONIA-N				0.02	0.005 UJ		0.39		0.46 J		
NITRITE/NITRATE-N				0.03	0.06 J		0.1 J		0.66 J		
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
1,3-DINITROBENZENE	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.51 U		0.485 U		0.581 U		0.532 U		0.5 U		
2,4,6-TRINITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
2,4-DIAMINO-6-NITROTOLUENE	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
2,4-DINITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
2,6-DIAMINO-4-NITROTOLUENE	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
2,6-DINITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
2-AMINO-4,6-DINITROTOLUENE	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
2-NITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.37 J	0.266 U	0.24 U	0.25 U		0.29 U
3,5-DINITROANILINE	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
3-NITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
4-AMINO-2,6-DINITROTOLUENE	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
4-NITROTOLUENE	0.039 UJ	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
DNX	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
HMX	0.97 J	1.7 J	0.243 U	0.26 U	4.5	8.1	0.92	0.86	5.3		11
MNX	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
NITROBENZENE	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
PICRAMIC ACID											
PICRIC ACID											
RDX	3.8	10	1.1 J	4	9.3	22	2.7 J	2.3	4.3		4.2
TETRYL	0.039 U	0.26 U	0.243 U	0.26 U	0.291 U	0.27 U	0.266 U	0.24 U	0.25 U		0.29 U
TNX	0.25 U		0.243 U		0.291 U		0.266 U		0.25 U		
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	781 J		2680 J		79.1 U		168 U		17100 J		2350 J
ANTIMONY	0.02 U		0.11 U		0.04 U		0.04 U		0.66 U		0.22 U
ARSENIC	0.3 U		1.1 U		0.16 U		0.18 U		4.9 J		2.1 J
BARIUM	23.2 J		21.7 J		41.7 J		38.2 J		103 J		50.6 J
BERYLLIUM	1 U		5.9 J		0.06 U		0.03 U		1.4 U		0.37 U
CADMIUM	0.21 U		0.47 U		0.29 U		0.06 U		0.57 U		0.15 U
CALCIUM	26800 J		25700 J		34700 J		31600 J		6020 J		4300 J
CHROMIUM	4 J		0.86 U		0.36 U		0.34 U		23.8 J		6.1 J
COBALT	69.8 J		104 J		18.9 J		2.2 J		13.4 J		7 J
COPPER	0.68 U		4.5 J		0.6 U		0.45 U		9.6 J		6.9 U
IRON	60900 J		36600 J		61.5 U		276 U		16100 J		6090 J
LEAD	0.39 U		3.8 J		0.07 U		0.24 U		9.4 J		5.1 J
LITHIUM											
MAGNESIUM	18000 J		18800 J		41400 J		20000 J		5930 J		3600 J
MANGANESE	1320 J		3230 J		3170 J		84.8 J		837 J		274 J
MERCURY	0.02 U		0.007 U		0.007 U		0.007 U		0.007 J		0.03 U
NICKEL	173 J		167 J		93.8 J		7.8 J		29.9 J		21.8 J
POTASSIUM	3810 J		4150 J		4430 J		885 J		5580 J		1340 J
SELENIUM	0.04 U		0.12 U		0.14 U		0.51 U		0.53 U		0.25 U
SILVER	0.03 U		0.11 U		0.03 U		0.03 U		0.48 U		0.08 U
SODIUM	44400 J		38500 J		84800 J		31000 J		11800 J		11700 J
STRONTIUM											
THALLIUM	0.15 U		0.24 U		0.04 U		0.04 U		0.7 U		0.14 U
TIN	0.1 U		0.16 U		0.1 U		1 U		1.1 U		0.67 U
TITANIUM	21.6 J		0.61 U		0.72 U		1.9 U		150 J		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
VANADIUM	1 U		0.28 U		0.09 U		0.24 U		25.8 J		6.2 J
ZINC	162 J		280		21.3 J		6.8 U		45.4 J		49.6 J
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED										52.6 U	
ANTIMONY, FILTERED										0.41 U	
ARSENIC, FILTERED										0.87 U	
BARIUM, FILTERED										33.9 J	
BERYLLIUM, FILTERED										0.3 U	
CADMIUM, FILTERED										0.24 U	
CALCIUM, FILTERED										9670 J	
CHROMIUM, FILTERED										0.73 U	
COBALT, FILTERED										14.7 J	
COPPER, FILTERED										1.1 U	
IRON, FILTERED										4810 J	
LEAD, FILTERED										0.34 U	
LITHIUM, FILTERED											
MAGNESIUM, FILTERED										7230 J	
MANGANESE, FILTERED										1110 J	
MERCURY, FILTERED										0.007 U	
NICKEL, FILTERED										21.6 J	
POTASSIUM, FILTERED										1460 J	
SELENIUM, FILTERED										0.16 U	
SILVER, FILTERED										0.24 U	
SODIUM, FILTERED										13000 J	
STRONTIUM, FILTERED											
THALLIUM, FILTERED										0.3 U	
TIN, FILTERED										0.22 U	
TITANIUM, FILTERED										1 U	
VANADIUM, FILTERED										0.54 U	
ZINC, FILTERED										22.4 J	
Field Parameters (mg/L)											
ALKALINITY	10 U										
CARBON DIOXIDE	150										
DISSOLVED OXYGEN	0.02	8.4		7.03		23.4		10.9			5.56
DISSOLVED OXYGEN - METER	0.44		0.88		5.66		8.98		3.75		
HYDROGEN SULFIDE (H2S)	0										
IRON(+2)	3.3 >										
MANGANESE(+2)	1.3										
NITRITE-N	0										
OXIDATION REDUCTION POTENTIAL (MV)	-473	2.8	396.6	142	246.7	518.6	223.6	71	91.7		559.8
PH (S.U.)	5.56	5.62	3.34	5.2	5.67	5.39	6.26	6.99	5.88		4.96
SPECIFIC CONDUCTANCE (MS/CM)	0.589	0.662	0.568	0.795	0.793	1.444	0.386	0.519	0.234		0.091
SULFIDE	0.04										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT29	13MWT29	13MWT30	13MWT30	13MWT31	13MWT31	13MWT32	13MWT32	13MWT33	13MWT33	13MWT33
SAMPLING ROUND	02	03	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT2901	13GWT2902	13GWT3001	13GWT3002	13GWT3101	13GWT3102	13GWT3201	13GWT3202	13GWT3301	13GWT3301-F	13GWT3302
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	11/7/2003	7/27/2004	11/24/2003	7/26/2004	11/24/2003	7/26/2004	11/19/2003	7/27/2004	11/24/2003	11/24/2003	7/26/2004
TEMPERATURE (C)	15.52	19.73	9.18	15.4	10.09	15.98	14.73	18.79	8.83		16.12
TURBIDITY (NTU)	9.36	4	7	0.6	4.69	6.1	3.45	2.8	80		94
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.36		0.42		0.005 UJ		0.005 UJ		0.02		
NITRITE/NITRATE-N	0.025 U		0.05 U		0.13 J		0.25 J		1.2 J		
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.24 U
1,3-DINITROBENZENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.5 U		0.472 U			0.538 U	0.538 U		0.52 U	
2,4,6-TRINITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
2,4-DIAMINO-6-NITROTOLUENE		0.25 U		0.236 U			0.269 U	0.269 U		0.26 U	
2,4-DINITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
2,6-DIAMINO-4-NITROTOLUENE		0.25 U		0.236 U			0.269 U	0.269 U		0.26 U	
2,6-DINITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
2-AMINO-4,6-DINITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.24 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
2-NITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
3,5-DINITROANILINE		0.25 U		0.236 U			0.269 U	0.269 U		0.26 U	
3-NITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
4-AMINO-2,6-DINITROTOLUENE		0.29 J	0.26 J	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.5
4-NITROTOLUENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 UJ	0.24 U
DNX		1		0.236 U			0.269 U	0.269 U		1.5 J	
HMX		29	28	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	25	140
MNX		4.5		0.236 U			0.269 U	0.269 U		5.2	
NITROBENZENE		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.24 U
PICRAMIC ACID											
PICRIC ACID											
RDX		460	400	0.236 U		0.25 U	0.27 J	0.275 U	6.1	650	2100
TETRYL		0.25 U	0.24 U	0.236 U		0.25 U	0.269 U	0.275 U	0.27 U	0.04 U	0.24 U
TNX		0.25 U		0.236 U			0.269 UJ	0.269 U		0.73	
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM		277 J		20900 J			147 U	655 J		140 U	
ANTIMONY		0.02 U		6.7 J			0.09 U	1.3 U		0.02 U	
ARSENIC		0.13 U		15 J			0.22 U	0.5 U		0.27 U	
BARIUM		17.7 J		94.7 J			30.5 J	33 J		38.8 J	
BERYLLIUM		0.23 U		1 U			0.09 U	1.3 U		0.05 U	
CADMIUM		0.04 U		0.07 U			0.54 U	1.8 U		0.13 U	
CALCIUM		14700 J		18000 J			48800 J	49400 J		21600 J	
CHROMIUM		0.55 U		35 J			0.89 U	1.5 U		0.72 U	
COBALT		10.3 J		5.6 J			3.7 J	4.3 J		14.8 U	
COPPER		1.7 J		6.1 J			0.88 U	1.3 U		0.83 U	
IRON		316 J		10300 J			83.6 U	130 U		1760 J	
LEAD		0.77 U		7.2 J			0.42 U	1.7 U		0.94 U	
LITHIUM											
MAGNESIUM		12300 J		6520 J			45800 J	47400 J		14500 J	
MANGANESE		645 J		118 J			437 J	458 J		834 J	
MERCURY		0.007 U		0.007 U			0.007 U	0.007 U		0.02 U	
NICKEL		42.5 J		22 J			56.4 J	63.3 J		12.9 J	
POTASSIUM		2980 J		10100 J			2330 J	2510 J		1810 J	
SELENIUM		0.26 U		1.7 U			0.28 U	0.54 U		0.1 U	
SILVER		0.03 U		0.03 U			0.04 U	1.2 U		0.03 U	
SODIUM		34500 J		166000 J			49700 J	51200 J		29600 J	
STRONTIUM											
THALLIUM		0.05 U		0.19 U			0.07 U	1.3 U		0.04 U	
TIN		0.13 U		0.51 U			0.12 U	2 U		0.1 U	
TITANIUM		2.8 J		104 J			4.2 J	18.6 J		8 J	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
VANADIUM		0.3 U		31.6 J			0.23 U	1.2 U		0.4 U	
ZINC		28.8 J		30.6 J			31.2 J	36.2 J		16.8 J	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED	66.5 U				130 U						
ANTIMONY, FILTERED	0.65 U				7.3 J						
ARSENIC, FILTERED	0.33 U				13.1 J						
BARIUM, FILTERED	32.5 J				24 J						
BERYLLIUM, FILTERED	0.39 U				0.03 U						
CADMIUM, FILTERED	0.35 U				0.04 U						
CALCIUM, FILTERED	3290 J				17000 J						
CHROMIUM, FILTERED	1.4 U				2.3 J						
COBALT, FILTERED	6.7 J				3 J						
COPPER, FILTERED	4 U				0.42 U						
IRON, FILTERED	201 J				32.2 U						
LEAD, FILTERED	0.56 U				0.07 U						
LITHIUM, FILTERED											
MAGNESIUM, FILTERED	3300 J				3130 J						
MANGANESE, FILTERED	287 J				9 J						
MERCURY, FILTERED	0.03 U				0.007 U						
NICKEL, FILTERED	21.7 J				0.75 U						
POTASSIUM, FILTERED	562 J				5390 J						
SELENIUM, FILTERED	0.21 U				2.4 U						
SILVER, FILTERED	0.48 U				0.03 U						
SODIUM, FILTERED	12200 J				161000 J						
STRONTIUM, FILTERED											
THALLIUM, FILTERED	0.33 U				0.04 U						
TIN, FILTERED	0.48 U				0.1 U						
TITANIUM, FILTERED					1.2 U						
VANADIUM, FILTERED	0.3 U				2.8 J						
ZINC, FILTERED	19 J				4 J						
Field Parameters (mg/L)											
ALKALINITY		10 U		200			10 U	10 U			
CARBON DIOXIDE		32		10 U			40	40			
DISSOLVED OXYGEN		1	13.42	5.5		0.98	5.5	5.5	16.14		2.9
DISSOLVED OXYGEN - METER		2.35		5.28			4.91			4.82	
HYDROGEN SULFIDE (H2S)		0		0			0	0			
IRON(+2)		0.18		0.02			0.03	0.05			
MANGANESE(+2)		0.8		0			0.3	0.2			
NITRITE-N		0.005		0			0.003	0			
OXIDATION REDUCTION POTENTIAL (MV)		276	149.6	105.2			252.1		350.1	-144.9	133.5
PH (S.U.)		4.97	5.06	9.08		7.58	5.68		5.51	5.75	6.26
SPECIFIC CONDUCTANCE (MS/CM)		0.312	0.347	0.781		0.718	0.721		0.68	0.307	0.174
SULFIDE		0		0.01			0.01	0.01			

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER
LOCATION	13MWT33	13MWT34	13MWT34	13MWT35	13MWT35	13MWT35	13MWT36	13MWT36	13MWT36	13MWT37	13MWT37
SAMPLING ROUND	03	02	03	02	02	03	02	02	03	02	03
SAMPLE NUMBER	13GWT3302-F	13GWT3401	13GWT3402	13GWT3501	13GWT3501-F	13GWT3502	13GWT3601	13GWT3601-D	13GWT3602	13GWT3701	13GWT3702
SUBMATRIX	GF	GW	GW	GW	GF	GW	GW	GW	GW	GW	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	ORIG
SAMPLE DATE	7/26/2004	12/4/2003	7/29/2004	12/10/2003	12/10/2003	8/1/2004	12/8/2003	12/8/2003	7/29/2004	11/6/2003	7/30/2004
TEMPERATURE (C)		10.94	18.58	13.6		15.91	12.24		15.66	13.32	17.35
TURBIDITY (NTU)		6.07	21	1000 >		1000 >	6.06		9.9	3.2	5
Miscellaneous Parameters (mg/L)											
AMMONIA-N		0.04		0.56			0.01 U	0.01 U		0.005 U	
NITRITE/NITRATE-N		0.3 J		0.05 U			0.08	0.06		0.28	
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.24 U	0.253 UJ		0.24 U	0.04 U		0.27 U	0.04 U	0.25 U	0.269 UJ	
1,3-DINITROBENZENE	0.24 U	0.253 U		0.24 U	0.04 U		0.27 U	0.04 U	0.25 U	0.269 UJ	
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.505 U			0.52 U			0.51 UJ		0.538 U	
2,4,6-TRINITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
2,4-DIAMINO-6-NITROTOLUENE		0.253 U			0.26 U			0.26 U		0.269 U	
2,4-DINITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
2,6-DIAMINO-4-NITROTOLUENE		0.253 U			0.26 U			0.26 U		0.269 U	
2,6-DINITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
2-AMINO-4,6-DINITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.42 J		0.28 J	0.04 U	0.25 U	0.269 UJ	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
2-NITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
3,5-DINITROANILINE		0.253 U			0.26 U			0.26 U		0.269 U	
3-NITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
4-AMINO-2,6-DINITROTOLUENE	0.47 J	0.253 U		0.24 U	0.56 J		0.5 J	0.52 J	1.1	0.269 UJ	
4-NITROTOLUENE	0.24 U	0.253 UJ		0.24 U	0.04 UJ		0.27 U	0.04 UJ	0.25 U	0.269 UJ	
DNX		0.253 U			43 J			0.9 J		0.269 U	
HMX	150	0.253 U		0.24 U	48 J		74	14	22	0.269 UJ	
MNX		0.253 U			7.7			3.3		0.269 U	
NITROBENZENE	0.24 U	0.253 U		0.24 U	0.04 U		0.27 U	0.04 U	0.25 U	0.269 UJ	
PICRAMIC ACID											
PICRIC ACID											
RDX	2300	0.253 U		0.24 U	180		190	140	230	0.269 UJ	
TETRYL	0.24 U	0.253 U		0.24 U	0.04 U		0.27 U	0.04 U	0.25 U	0.269 UJ	
TNX		0.253 U			2.4			0.26 U		0.269 U	
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM		4720 J			2010 J			221 J		29800 J	
ANTIMONY		3.8 J			0.02 U			0.09 U		5.6 J	
ARSENIC		24.5 J			1.1 U			0.35 U		20.6 J	
BARIUM		32.2 J			104 J			49.2 J		114 J	
BERYLLIUM		0.3 U			0.12 U			0.09 U		1.2 U	
CADMIUM		0.04 U			0.23 U			0.42 U		0.43 U	
CALCIUM		5790 J			52200 J			14900 J		18500 J	
CHROMIUM		12.5 J			4.2 J			0.58 U		38.7 J	
COBALT		1.6 U			5.5 J			31.4 J		11.2 J	
COPPER		1.6 J			2.1 J			1.3 J		10.9 J	
IRON		5410 J			1450 J			272 J		23700 J	
LEAD		5.8 J			1.1 U			0.78 U		12 J	
LITHIUM											
MAGNESIUM		1040 J			14300 J			11800 J		6520 J	
MANGANESE		67.4 J			1290 J			855 J		300 U	
MERCURY		0.02 U			0.02 U			0.02 U		0.007 U	
NICKEL		5.7 J			25.6 J			26.4 J		34 J	
POTASSIUM		5180 J			5110 J			1840 J		7170 J	
SELENIUM		2.2 U			0.11 U			0.39 U		5.1 J	
SILVER		0.03 U			0.03 U			0.22 U		0.05 U	
SODIUM		71400 J			15800 J			33000 J		86700 J	
STRONTIUM											
THALLIUM		0.04 U			0.04 U			0.09 U		0.18 U	
TIN		0.25 U			0.1 U			0.12 U		1.3 U	
TITANIUM		26.6 J			55.3 J			6.1 J		101 J	

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
VANADIUM		25.6 J			4.1 J			0.42 U		33.9 J	
ZINC		11.6 J			14.3 J			14.4 J		77.6 J	
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED			285 J			53.1 U					95.6 U
ANTIMONY, FILTERED			4 J			0.08 U					5.6 J
ARSENIC, FILTERED			21.3 J			0.31 U					9.4 J
BARIUM, FILTERED			9.6 J			93.6 J					16.7 J
BERYLLIUM, FILTERED			0.03 U			0.03 U					0.05 U
CADMIUM, FILTERED			0.04 U			0.33 U					0.1 U
CALCIUM, FILTERED			3980 J			48000 J					17300 J
CHROMIUM, FILTERED			0.8 U			0.17 U					0.34 U
COBALT, FILTERED			1.5 U			5.2 J					3.9 J
COPPER, FILTERED			0.57 U			1.3 U					1.1 U
IRON, FILTERED			85.6 U			447 J					47.3 U
LEAD, FILTERED			0.12 U			0.06 U					0.33 U
LITHIUM, FILTERED											
MAGNESIUM, FILTERED			140 U			13700 J					2810 J
MANGANESE, FILTERED			4.2 U			1190 J					30.9 U
MERCURY, FILTERED			0.02 U			0.02 U					0.007 U
NICKEL, FILTERED			0.48 U			23.8 J					2.6 J
POTASSIUM, FILTERED			4260 J			4540 J					2960 J
SELENIUM, FILTERED			2 U			0.16 U					4.2 J
SILVER, FILTERED			0.03 U			0.03 U					0.03 U
SODIUM, FILTERED			65200 J			15500 J					82100 J
STRONTIUM, FILTERED											
THALLIUM, FILTERED			0.04 U			0.06 U					0.06 U
TIN, FILTERED			0.1 U			0.1 U					0.28 U
TITANIUM, FILTERED			1.6 U			1.2 U					0.9 U
VANADIUM, FILTERED			7 J			0.07 U					0.68 U
ZINC, FILTERED			1.7 U			11.3 J					17 J
Field Parameters (mg/L)											
ALKALINITY		108									
CARBON DIOXIDE		10 U									
DISSOLVED OXYGEN		3.5		1.7			6.07		0.39		
DISSOLVED OXYGEN - METER		4.7			5.35			6.28		3.72	
HYDROGEN SULFIDE (H2S)		0									
IRON(+2)		0									
MANGANESE(+2)		0.1									
NITRITE-N		0									
OXIDATION REDUCTION POTENTIAL (MV)		10.3		72.9	135.1		321	100.3	538	170	
PH (S.U.)		11.39		8.44	6.4		5.85	5.53	5.04	8.36	
SPECIFIC CONDUCTANCE (MS/CM)		0.332		0.665	0.391		0.352	0.273	0.329	0.394	
SULFIDE		0									

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	UPPER	LOWER	LOWER	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER
LOCATION	13MWT37	13MWT38	13MWT38	13MWT38	13MWT39	13MWT39	13MWT39	13MWT40	13MWT40	13MWT41	13MWT41
SAMPLING ROUND	03	02	02	03	02	02	03	02	03	02	02
SAMPLE NUMBER	13GWT3702-D	13GWT3801	13GWT3801-F	13GWT3802	13GWT3901	13GWT3901-F	13GWT3902	13GWT4001	13GWT4002	13GWT4101	13GWT4101-F
SUBMATRIX	GW	GW	GF	GW	GW	GF	GW	GW	GW	GW	GF
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	7/30/2004	11/10/2003	11/10/2003	7/31/2004	11/7/2003	11/7/2003	7/29/2004	11/5/2003	7/30/2004	11/23/2003	11/24/2003
TEMPERATURE (C)		13.18		21.72	13.29		16.31	13.28	15.02	14.01	
TURBIDITY (NTU)		999 >		18	17.9		2.2	6.2	1.28	1000 >	
Miscellaneous Parameters (mg/L)											
AMMONIA-N		0.44			0.36			0.11 J		0.18 J	
NITRITE/NITRATE-N		0.11			0.77			0.28		0.025 U	
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
1,3-DINITROBENZENE	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		0.52 UJ			0.481 U		0.51 U		0.515 U		
2,4,6-TRINITROTOLUENE	0.24 U	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
2,4-DIAMINO-6-NITROTOLUENE		0.26 U			0.24 U		0.255 U		0.258 U		
2,4-DINITROTOLUENE	0.24 U	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
2,6-DIAMINO-4-NITROTOLUENE		0.26 U			0.24 U		0.255 U		0.258 U		
2,6-DINITROTOLUENE	0.24 U	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
2-AMINO-4,6-DINITROTOLUENE	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
2-NITROTOLUENE	0.45 J	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
3,5-DINITROANILINE		0.26 U			0.24 U		0.255 U		0.258 U		
3-NITROTOLUENE	0.24 U	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.34 J		0.24 U
4-AMINO-2,6-DINITROTOLUENE	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
4-NITROTOLUENE	0.24 U	0.04 UJ		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
DNX		0.26 U			0.24 U		0.255 U		0.258 U		
HMX	0.24 U	64		330 J	0.97 J	1.2	0.255 U	0.24 U	0.258 U		0.24 U
MNX		0.32 J			0.24 U		0.255 U		0.258 U		
NITROBENZENE	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
PICRAMIC ACID											
PICRIC ACID											
RDX	0.24 U	41		140 J	0.72 J	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
TETRYL	0.24 U	0.04 U		0.28 UJ	0.24 U	0.27 U	0.255 U	0.24 U	0.258 U		0.24 U
TNX		0.26 U			0.24 U		0.255 U		0.258 U		
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM		24300 J			2500 J		135 J		4300 J		
ANTIMONY		0.26 U			0.04 U		0.65 U		0.81 U		
ARSENIC		5.8 J			1.9 J		1.4 U		2.1 J		
BARIUM		130 J			28.9 J		29.6 J		64.3 J		
BERYLLIUM		0.98 U			3 J		0.03 U		0.13 U		
CADMIUM		0.19 U			1.1 U		0.04 U		0.04 U		
CALCIUM		11800 J			21400 J		20200 J		14000 J		
CHROMIUM		39.6 J			0.72 U		0.43 U		5.6 J		
COBALT		17.8 J			65 J		0.36 U		0.91 U		
COPPER		10 J			4.3 J		0.25 U		4.8 J		
IRON		20000 J			4600 J		168 J		1630 J		
LEAD		8.7 J			1.1 U		1 U		1.5 U		
LITHIUM											
MAGNESIUM		6730 J			9940 J		6020 J		3510 J		
MANGANESE		2330 J			825 J		58.1 J		120 J		
MERCURY		0.02 U			0.007 U		0.007 U		0.007 U		
NICKEL		28.4 J			129 J		1.4 U		3.1 J		
POTASSIUM		8410 J			2890 J		3630 J		3440 J		
SELENIUM		0.28 U			0.18 U		0.46 U		1.2 U		
SILVER		0.14 U			0.03 U		0.03 U		0.13 U		
SODIUM		7420 J			16400 J		145000 J		87500 J		
STRONTIUM											
THALLIUM		0.23 U			0.18 U		0.04 U		0.05 U		
TIN		0.83 U			0.15 U		0.17 U		0.44 U		
TITANIUM		237 J			0.71 U		1.6 U		58.6 J		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
VANADIUM		34.4 J			0.41 U		0.33 U		6.7 J		
ZINC		32.8 J			250		0.5 J		8.5 J		
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED			73.6 U							103 U	
ANTIMONY, FILTERED			0.32 U							1 U	
ARSENIC, FILTERED			1.6 J							1.4 U	
BARIUM, FILTERED			30.4 J							43.8 J	
BERYLLIUM, FILTERED			0.1 U							0.03 U	
CADMIUM, FILTERED			0.14 U							0.04 U	
CALCIUM, FILTERED			12000 J							13500 J	
CHROMIUM, FILTERED			0.36 U							0.61 U	
COBALT, FILTERED			13.2 J							3.1 J	
COPPER, FILTERED			0.69 U							1.3 U	
IRON, FILTERED			112 U							31.5 U	
LEAD, FILTERED			0.17 U							0.15 U	
LITHIUM, FILTERED											
MAGNESIUM, FILTERED			4200 J							3160 J	
MANGANESE, FILTERED			2000 J							104 J	
MERCURY, FILTERED			0.02 U							0.007 U	
NICKEL, FILTERED			12.8 J							1.4 U	
POTASSIUM, FILTERED			2520 J							2360 J	
SELENIUM, FILTERED			0.76 U							1.6 U	
SILVER, FILTERED			0.09 U							0.03 U	
SODIUM, FILTERED			7100 J							91500 J	
STRONTIUM, FILTERED											
THALLIUM, FILTERED			0.1 U							0.04 U	
TIN, FILTERED			0.12 U							0.1 U	
TITANIUM, FILTERED			2 U							1.6 U	
VANADIUM, FILTERED			0.23 U							0.68 U	
ZINC, FILTERED			3.3 J							2.8 J	
Field Parameters (mg/L)											
ALKALINITY											
CARBON DIOXIDE											
DISSOLVED OXYGEN	0.53			2.12		3.43		0.56			7.97
DISSOLVED OXYGEN - METER		1.46			4.37		0.79		0.55		
HYDROGEN SULFIDE (H2S)											
IRON(+2)											
MANGANESE(+2)											
NITRITE-N											
OXIDATION REDUCTION POTENTIAL (MV)	149	105		132.1	298.5	364.8	-70	76.3	55.5		116.5
PH (S.U.)	6.85	6.39		5.66	4.47	4.19	7.77	7.74	8.19		6.78
SPECIFIC CONDUCTANCE (MS/CM)	1.001	0.19		0.101	0.303	0.263	0.595	0.853	0.357		0.703
SULFIDE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	UPPER	UPPER	UPPER	UPPER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
LOCATION	13MWT41	13MWT42	13MWT42	13MWT42	13MWT43	13MWT43	13MWT44	13MWT44	13MWT45	13MWT45	13MWT45
SAMPLING ROUND	03	02	02	03	02	03	02	03	02	02	03
SAMPLE NUMBER	13GWT4102	13GWT4201	13GWT4201-F	13GWT4202	13GWT4301	13GWT4302	13GWT4401	13GWT4402	13GWT4501	13GWT4501-F	13GWT4502
SUBMATRIX	GW	GW	GF	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	8/1/2004	11/6/2003	11/6/2003	7/31/2004	12/4/2003	8/1/2004	12/4/2003	8/1/2004	12/8/2003	12/10/2003	7/29/2004
TEMPERATURE (C)	14.73	14.03		16.71	12.83	14.5	11.37	23.1	13.36		25.29
TURBIDITY (NTU)	110	1000 >		1000 >	1.9	8.9	4.6	110	75		19
Miscellaneous Parameters (mg/L)											
AMMONIA-N		0.16 J			0.11		0.42		0.26		
NITRITE/NITRATE-N		0.025 U			0.05 U		0.51 J		0.05 U		
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
Volatile Organics (ug/L)											
1,1,1,2-TETRACHLOROETHANE											
1,1,1-TRICHLOROETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,1,2-TRICHLOROETHANE											
1,1-DICHLOROETHANE											
1,1-DICHLOROETHENE											
1,2,3-TRICHLOROPROPANE											
1,2-DIBROMO-3-CHLOROPROPANE											
1,2-DIBROMOETHANE											
1,2-DICHLOROETHANE											
1,2-DICHLOROPROPANE											
1,4-DIOXANE											
2-BUTANONE											
2-HEXANONE											
3-CHLOROPROPENE											
4-METHYL-2-PENTANONE											
ACETONE											
ACETONITRILE											
ACROLEIN											
ACRYLONITRILE											
BENZENE											
BROMODICHLOROMETHANE											
BROMOFORM											
BROMOMETHANE											
CARBON DISULFIDE											
CARBON TETRACHLORIDE											
CHLOROBENZENE											
CHLORODIBROMOMETHANE											
CHLOROETHANE											
CHLOROFORM											
CHLOROMETHANE											
CHLOROPRENE											
CIS-1,2-DICHLOROETHENE											
CIS-1,3-DICHLOROPROPENE											
DIBROMOMETHANE											
DICHLORODIFLUOROMETHANE											
ETHYL METHACRYLATE											
ETHYLBENZENE											
ISOBUTANOL											
METHACRYLONITRILE											
METHYL IODIDE											
METHYL METHACRYLATE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
METHYLENE CHLORIDE											
PROPIONITRILE											
STYRENE											
TETRACHLOROETHENE											
TOLUENE											
TOTAL XYLENES											
TRANS-1,2-DICHLOROETHENE											
TRANS-1,3-DICHLOROPROPENE											
TRANS-1,4-DICHLORO-2-BUTENE											
TRICHLOROETHENE											
TRICHLOROFLUOROMETHANE											
VINYL ACETATE											
VINYL CHLORIDE											
Semivolatile Organics (ug/L)											
1,2,4,5-TETRACHLOROBENZENE											
1,2,4-TRICHLOROBENZENE											
1,2-DICHLOROBENZENE											
1,3-DICHLOROBENZENE											
1,4-DICHLOROBENZENE											
1,4-NAPHTHOQUINONE											
1,4-PHENYLENEDIAMINE											
1-NAPHTHYLAMINE											
2,2'-OXYBIS(1-CHLOROPROPANE)											
2,3,4,6-TETRACHLOROPHENOL											
2,4,5-TRICHLOROPHENOL											
2,4,6-TRICHLOROPHENOL											
2,4-DICHLOROPHENOL											
2,4-DIMETHYLPHENOL											
2,4-DINITROPHENOL											
2,6-DICHLOROPHENOL											
2-ACETYLAMINOFLUORENE											
2-CHLORONAPHTHALENE											
2-CHLOROPHENOL											
2-METHYLNAPHTHALENE											
2-METHYLPHENOL											
2-NAPHTHYLAMINE											
2-NITROANILINE											
2-NITROPHENOL											
2-PICOLINE											
3&4-METHYLPHENOL											
3,3'-DICHLOROBENZIDINE											
3,3'-DIMETHYLBENZIDINE											
3-METHYLCHOLANTHRENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
3-NITROANILINE											
4,6-DINITRO-2-METHYLPHENOL											
4-AMINOBIPHENYL											
4-BROMOPHENYL PHENYL ETHER											
4-CHLORO-3-METHYLPHENOL											
4-CHLOROANILINE											
4-CHLOROPHENYL PHENYL ETHER											
4-NITROANILINE											
4-NITROPHENOL											
4-NITROQUINOLINE-1-OXIDE											
5-NITRO-O-TOLUIDINE											
7,12-DIMETHYLBENZ(A)ANTHRACENE											
A,A-DIMETHYLPHENETHYLAMINE											
ACENAPHTHENE											
ACENAPHTHYLENE											
ACETOPHENONE											
ANILINE											
ANTHRACENE											
ARAMITE											
BENZO(A)ANTHRACENE											
BENZO(A)PYRENE											
BENZO(B)FLUORANTHENE											
BENZO(G,H,I)PERYLENE											
BENZO(K)FLUORANTHENE											
BENZYL ALCOHOL											
BIS(2-CHLOROETHOXY)METHANE											
BIS(2-CHLOROETHYL)ETHER											
BIS(2-ETHYLHEXYL)PHTHALATE											
BUTYL BENZYL PHTHALATE											
CHLOROBENZILATE											
CHRYSENE											
DI-N-BUTYL PHTHALATE											
DI-N-OCTYL PHTHALATE											
DIALLATE											
DIBENZO(A,H)ANTHRACENE											
DIBENZOFURAN											
DIETHYL PHTHALATE											
DIMETHYL PHTHALATE											
DIPHENYLAMINE											
ETHYL METHANE SULFONATE											
FLUORANTHENE											
FLUORENE											
HEXACHLOROBENZENE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
HEXACHLOROBUTADIENE											
HEXACHLOROCYCLOPENTADIENE											
HEXACHLOROETHANE											
HEXACHLOROPROPENE											
INDENO(1,2,3-CD)PYRENE											
ISODRIN											
ISOPHORONE											
ISOSAFROLE											
KEPONE											
METHAPYRILENE											
METHYL METHANE SULFONATE											
N-NITROSO-DI-N-BUTYLAMINE											
N-NITROSO-DI-N-PROPYLAMINE											
N-NITROSODIETHYLAMINE											
N-NITROSODIMETHYLAMINE											
N-NITROSOMETHYLETHYLAMINE											
N-NITROSOMORPHOLINE											
N-NITROSOPIPERIDINE											
N-NITROSOPYRROLIDINE											
NAPHTHALENE											
O,O,O-TRIETHYL PHOSPHOROTHIOATE											
O-TOLUIDINE											
P-(DIMETHYLAMINO)AZOBENZENE											
PENTACHLOROBENZENE											
PENTACHLOROETHANE											
PENTACHLORONITROBENZENE											
PHENACETIN											
PHENANTHRENE											
PHENOL											
PRONAMIDE											
PYRENE											
PYRIDINE											
SAFROLE											
Energetics (ug/L)											
1,3,5-TRINITROBENZENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
1,3-DINITROBENZENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE	0.556 U		0.521 U								
2,4,6-TRINITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
2,4-DIAMINO-6-NITROTOLUENE	0.278 U		0.26 U								
2,4-DINITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
2,6-DIAMINO-4-NITROTOLUENE	0.278 U		0.26 U								
2,6-DINITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
2-AMINO-4,6-DINITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.39 J		0.266 U

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
2-NITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
3,5-DINITROANILINE	0.278 U		0.26 U								
3-NITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
4-AMINO-2,6-DINITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.62	0.27 U	0.27 U		0.78
4-NITROTOLUENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
DNX	0.278 U		0.26 U								
HMX	0.278 U	0.26 U	0.26 U	0.24 U	0.86	0.85	27	0.27 U	120		17
MNX	0.278 U		0.26 U								
NITROBENZENE	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
PICRAMIC ACID											
PICRIC ACID											
RDX	0.278 U	0.26 U	0.26 U	0.24 U	0.54 J	0.53 J	32	0.27 U	250		190
TETRYL	0.278 U	0.26 U	0.26 U	0.24 U	0.275 U	0.27 U	0.27 U	0.27 U	0.27 U		0.266 U
TNX	0.278 U		0.26 U								
Herbicides (ug/L)											
HEXACHLOROPHENE											
PENTACHLOROPHENOL											
Total Metals (ug/L)											
ALUMINUM	472 J		16500 J	17400 J	8.35 U	16.2 U	39.4 U	93.9 J	1990 J		
ANTIMONY	0.05 U		0.02 U	0.03 U	0.085 U	0.52 U	0.085 U	1.5 U	0.13 U		
ARSENIC	0.5 U		3.2 J	4.1 J	0.21 U	0.37 U	0.43 U	1.2 J	2 J		
BARIUM	23.1 J		14.1 J	14.9 J	100 J	97.8 J	119 J	148 J	67 J		
BERYLLIUM	0.2 U		12.8 J	12.4 J	0.02 U	0.32 U	0.02 U	0.02 U	0.18 U		
CADMIUM	0.04 U		1.5 U	1.4 U	0.33 U	0.65 U	0.039 U	0.04 U	0.1 U		
CALCIUM	67700 J		41500 J	41200 J	148000 J	138000 J	69400 J	62400 J	22700 J		
CHROMIUM	0.67 U		1 U	1.6 U	0.81 U	0.86 U	0.84 U	0.98 U	4.6 J		
COBALT	2.9 J		194 J	249 J	0.97 U	1.1 J	1.1 J	2.2 J	29 J		
COPPER	0.42 U		29.9 J	35.2 J	0.46 U	0.74 U	0.62 U	1.4 J	3.4 U		
IRON	2350 J		24300 J	41600 J	26.9 U	29.6 U	158 J	92.9 J	5620 J		
LEAD	0.37 U		13.3 J	14.8 J	0.069 U	0.35 U	0.08 U	0.14 U	2.8 J		
LITHIUM											
MAGNESIUM	34100 J		37500 J	40500 J	13300 J	13100 J	11800 J	45700 J	9000 J		
MANGANESE	495 J		3960 J	3750 J	156	156	357	146	3370 J		
MERCURY	0.007 U		0.29	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U		
NICKEL	6 J		400 J	463 J	3.2 J	3.5 J	2.2 J	9.7 J	22.4 J		
POTASSIUM	3260 J		2570 J	2860 J	4220 J	4220 J	11900 J	5210 J	20100 J		
SELENIUM	0.13 U		0.11 U	0.11 U	0.094 U	0.31 U	0.094 U	6 J	0.18 U		
SILVER	0.03 U		0.05 U	0.02 U	0.028 U	0.44 U	0.028 U	0.028 U	0.02 U		
SODIUM	120000 J		63900 J	69900 J	32200 J	30100 J	9640 J	146000 J	7740 J		
STRONTIUM											
THALLIUM	0.04 U		0.7 U	0.84 U	0.043 U	0.38 U	0.043 U	0.043 U	0.07 U		
TIN	0.1 U		0.12 U	0.04 U	0.048 U	0.33 U	0.048 U	0.36 U	0.09 U		
TITANIUM	5.4 J		1 U								

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
VANADIUM	0.58 U		0.12 U	0.16 U	1.14 U	1.14 U	1.14 U	1.14 U	4.9 J		
ZINC	6.1 J		1070 J	1220 J	3.5 U	3.1 U	1.8 U	3.5 U	12.4 U		
Dissolved Metals (ug/L)											
ALUMINUM, FILTERED										6.4 U	
ANTIMONY, FILTERED										0.33 U	
ARSENIC, FILTERED										0.55 U	
BARIUM, FILTERED										51.6 J	
BERYLLIUM, FILTERED										0.08 U	
CADMIUM, FILTERED										0.13 U	
CALCIUM, FILTERED										24700 J	
CHROMIUM, FILTERED										0.83 U	
COBALT, FILTERED										30.4 J	
COPPER, FILTERED										1.2 U	
IRON, FILTERED										17.2 U	
LEAD, FILTERED										0.11 U	
LITHIUM, FILTERED											
MAGNESIUM, FILTERED										8400 J	
MANGANESE, FILTERED										3890 J	
MERCURY, FILTERED										0.03 U	
NICKEL, FILTERED										18.8 J	
POTASSIUM, FILTERED										20800 J	
SELENIUM, FILTERED										0.18 U	
SILVER, FILTERED										0.1 U	
SODIUM, FILTERED										7410 J	
STRONTIUM, FILTERED											
THALLIUM, FILTERED										0.1 U	
TIN, FILTERED										0.12 U	
TITANIUM, FILTERED											
VANADIUM, FILTERED										0.06 U	
ZINC, FILTERED										3.5 U	
Field Parameters (mg/L)											
ALKALINITY											
CARBON DIOXIDE											
DISSOLVED OXYGEN		0.05		0.51	0.15		0.3	2.42	8.32		0.91
DISSOLVED OXYGEN - METER	0.99		1.5								
HYDROGEN SULFIDE (H2S)											
IRON(+2)											
MANGANESE(+2)											
NITRITE-N											
OXIDATION REDUCTION POTENTIAL (MV)	-32.5	131	409.9	181.2	113.7		104.4	244.1	299		-68
PH (S.U.)	6.6	6.25	3.46	3.4	6.93		6.37	7.18	5.94		6.87
SPECIFIC CONDUCTANCE (MS/CM)	1.021	0.786	1634	1.056	0.719		0.45	0.881	0.278		1.583
SULFIDE											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	LOWER	LOWER	UPPER	UPPER	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	VALLEY	OVERBURDEN
LOCATION	13MWT46	13MWT46	13MWT47	13MWT47	13MWT48	13MWT48	13MWT49	13MWT50	13MWT51	13MWT51	13TW001
SAMPLING ROUND	02	03	02	03	03	03	03	03	03	03	ES/DI
SAMPLE NUMBER	13GWT4601	13GWT4602	13GWT4701	13GWT4702	13GWT4801	13GWT4801-D	13GWT4901	13GWT5001	13GWT5101	13GWT5101-F	13GWTW001
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GF	GW
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
SAMPLE DATE	12/9/2003	7/30/2004	12/9/2003	8/1/2004	8/14/2004	8/14/2004	8/14/2004	8/14/2004	8/1/2004	8/1/2004	2/14/2006
TEMPERATURE (C)	12.45	14.1	12.42	18.41	19.88		20.31	16.11	20.57		9.8
TURBIDITY (NTU)	8.72	2.81	5.4	7	1.95		1.54	8.34	33		39
Miscellaneous Parameters (mg/L)											
AMMONIA-N	0.12		0.44								
NITRITE/NITRATE-N	0.05 U		0.05 U								
TOTAL ORGANIC CARBON											

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
Volatile Organics (ug/L)										
1,1,1,2-TETRACHLOROETHANE										
1,1,1-TRICHLOROETHANE										
1,1,2,2-TETRACHLOROETHANE										
1,1,2-TRICHLOROETHANE										
1,1-DICHLOROETHANE										
1,1-DICHLOROETHENE										
1,2,3-TRICHLOROPROPANE										
1,2-DIBROMO-3-CHLOROPROPANE										
1,2-DIBROMOETHANE										
1,2-DICHLOROETHANE										
1,2-DICHLOROPROPANE										
1,4-DIOXANE										
2-BUTANONE										
2-HEXANONE										
3-CHLOROPROPENE										
4-METHYL-2-PENTANONE										
ACETONE										
ACETONITRILE										
ACROLEIN										
ACRYLONITRILE										
BENZENE										
BROMODICHLOROMETHANE										
BROMOFORM										
BROMOMETHANE										
CARBON DISULFIDE										
CARBON TETRACHLORIDE										
CHLOROBENZENE										
CHLORODIBROMOMETHANE										
CHLOROETHANE										
CHLOROFORM										
CHLOROMETHANE										
CHLOROPRENE										
CIS-1,2-DICHLOROETHENE										
CIS-1,3-DICHLOROPROPENE										
DIBROMOMETHANE										
DICHLORODIFLUOROMETHANE										
ETHYL METHACRYLATE										
ETHYLBENZENE										
ISOBUTANOL										
METHACRYLONITRILE										
METHYL IODIDE										
METHYL METHACRYLATE										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
METHYLENE CHLORIDE										
PROPIONITRILE										
STYRENE										
TETRACHLOROETHENE										
TOLUENE										
TOTAL XYLENES										
TRANS-1,2-DICHLOROETHENE										
TRANS-1,3-DICHLOROPROPENE										
TRANS-1,4-DICHLORO-2-BUTENE										
TRICHLOROETHENE										
TRICHLOROFLUOROMETHANE										
VINYL ACETATE										
VINYL CHLORIDE										
Semivolatile Organics (ug/L)										
1,2,4,5-TETRACHLOROBENZENE										
1,2,4-TRICHLOROBENZENE										
1,2-DICHLOROBENZENE										
1,3-DICHLOROBENZENE										
1,4-DICHLOROBENZENE										
1,4-NAPHTHOQUINONE										
1,4-PHENYLENEDIAMINE										
1-NAPHTHYLAMINE										
2,2'-OXYBIS(1-CHLOROPROPANE)										
2,3,4,6-TETRACHLOROPHENOL										
2,4,5-TRICHLOROPHENOL										
2,4,6-TRICHLOROPHENOL										
2,4-DICHLOROPHENOL										
2,4-DIMETHYLPHENOL										
2,4-DINITROPHENOL										
2,6-DICHLOROPHENOL										
2-ACETYLAMINOFLUORENE										
2-CHLORONAPHTHALENE										
2-CHLOROPHENOL										
2-METHYLNAPHTHALENE										
2-METHYLPHENOL										
2-NAPHTHYLAMINE										
2-NITROANILINE										
2-NITROPHENOL										
2-PICOLINE										
3&4-METHYLPHENOL										
3,3'-DICHLOROBENZIDINE										
3,3'-DIMETHYLBENZIDINE										
3-METHYLCHOLANTHRENE										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
3-NITROANILINE										
4,6-DINITRO-2-METHYLPHENOL										
4-AMINOBIPHENYL										
4-BROMOPHENYL PHENYL ETHER										
4-CHLORO-3-METHYLPHENOL										
4-CHLOROANILINE										
4-CHLOROPHENYL PHENYL ETHER										
4-NITROANILINE										
4-NITROPHENOL										
4-NITROQUINOLINE-1-OXIDE										
5-NITRO-O-TOLUIDINE										
7,12-DIMETHYLBENZ(A)ANTHRACENE										
A,A-DIMETHYLPHENETHYLAMINE										
ACENAPHTHENE										
ACENAPHTHYLENE										
ACETOPHENONE										
ANILINE										
ANTHRACENE										
ARAMITE										
BENZO(A)ANTHRACENE										
BENZO(A)PYRENE										
BENZO(B)FLUORANTHENE										
BENZO(G,H,I)PERYLENE										
BENZO(K)FLUORANTHENE										
BENZYL ALCOHOL										
BIS(2-CHLOROETHOXY)METHANE										
BIS(2-CHLOROETHYL)ETHER										
BIS(2-ETHYLHEXYL)PHTHALATE										
BUTYL BENZYL PHTHALATE										
CHLOROBENZILATE										
CHRYSENE										
DI-N-BUTYL PHTHALATE										
DI-N-OCTYL PHTHALATE										
DIALLATE										
DIBENZO(A,H)ANTHRACENE										
DIBENZOFURAN										
DIETHYL PHTHALATE										
DIMETHYL PHTHALATE										
DIPHENYLAMINE										
ETHYL METHANE SULFONATE										
FLUORANTHENE										
FLUORENE										
HEXACHLOROBENZENE										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
HEXACHLOROBUTADIENE										
HEXACHLOROCYCLOPENTADIENE										
HEXACHLOROETHANE										
HEXACHLOROPROPENE										
INDENO(1,2,3-CD)PYRENE										
ISODRIN										
ISOPHORONE										
ISOSAFROLE										
KEPONE										
METHAPYRILENE										
METHYL METHANE SULFONATE										
N-NITROSO-DI-N-BUTYLAMINE										
N-NITROSO-DI-N-PROPYLAMINE										
N-NITROSODIETHYLAMINE										
N-NITROSODIMETHYLAMINE										
N-NITROSOMETHYLETHYLAMINE										
N-NITROSOMORPHOLINE										
N-NITROSOPIPERIDINE										
N-NITROSOPYRROLIDINE										
NAPHTHALENE										
O,O,O-TRIETHYL PHOSPHOROTHIOATE										
O-TOLUIDINE										
P-(DIMETHYLAMINO)AZOBENZENE										
PENTACHLOROBENZENE										
PENTACHLOROETHANE										
PENTACHLORONITROBENZENE										
PHENACETIN										
PHENANTHRENE										
PHENOL										
PRONAMIDE										
PYRENE										
PYRIDINE										
SAFROLE										
Energetics (ug/L)										
1,3,5-TRINITROBENZENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
1,3-DINITROBENZENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE										
2,4,6-TRINITROTOLUENE	0.275 U	0.275 UJ	4 J	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	7.2
2,4-DIAMINO-6-NITROTOLUENE										
2,4-DINITROTOLUENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
2,6-DIAMINO-4-NITROTOLUENE										
2,6-DINITROTOLUENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
2-AMINO-4,6-DINITROTOLUENE	0.275 U	0.275 UJ	0.95 J	0.25 U	1.7 U	0.76 J	0.281 UJ	0.298 UJ	0.83 J	1.9 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
2-NITROTOLUENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
3,5-DINITROANILINE										
3-NITROTOLUENE	0.275 U	0.275 UJ	6 R	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
4-AMINO-2,6-DINITROTOLUENE	0.69	0.275 UJ	1.3 J	0.59	3.7	2.1 J	0.281 UJ	0.298 UJ	1.4 J	5.6
4-NITROTOLUENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
DNX										
HMX	16	3.6 J	13 J	140	33	150 J	0.281 UJ	1.3 J	81 J	60
MNX										
NITROBENZENE	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
PICRAMIC ACID										
PICRIC ACID										
RDX	170	10 J	160	1200	100	120 J	1.4 J	3.8 J	120 J	240
TETRYL	0.275 U	0.275 UJ	0.248 UJ	0.25 U	1.7 U	0.301 UJ	0.281 UJ	0.298 UJ	0.281 UJ	0.245 U
TNX										
Herbicides (ug/L)										
HEXACHLOROPHENE										
PENTACHLOROPHENOL										
Total Metals (ug/L)										
ALUMINUM										
ANTIMONY										
ARSENIC										
BARIUM										
BERYLLIUM										
CADMIUM										
CALCIUM										
CHROMIUM										
COBALT										
COPPER										
IRON										
LEAD										
LITHIUM										
MAGNESIUM										
MANGANESE										
MERCURY										
NICKEL										
POTASSIUM										
SELENIUM										
SILVER										
SODIUM										
STRONTIUM										
THALLIUM										
TIN										
TITANIUM										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
VANADIUM										
ZINC										
Dissolved Metals (ug/L)										
ALUMINUM, FILTERED										
ANTIMONY, FILTERED										
ARSENIC, FILTERED										
BARIUM, FILTERED										
BERYLLIUM, FILTERED										
CADMIUM, FILTERED										
CALCIUM, FILTERED										
CHROMIUM, FILTERED										
COBALT, FILTERED										
COPPER, FILTERED										
IRON, FILTERED										
LEAD, FILTERED										
LITHIUM, FILTERED										
MAGNESIUM, FILTERED										
MANGANESE, FILTERED										
MERCURY, FILTERED										
NICKEL, FILTERED										
POTASSIUM, FILTERED										
SELENIUM, FILTERED										
SILVER, FILTERED										
SODIUM, FILTERED										
STRONTIUM, FILTERED										
THALLIUM, FILTERED										
TIN, FILTERED										
TITANIUM, FILTERED										
VANADIUM, FILTERED										
ZINC, FILTERED										
Field Parameters (mg/L)										
ALKALINITY										
CARBON DIOXIDE										
DISSOLVED OXYGEN		4.94		9.3				3.89		0.29
DISSOLVED OXYGEN - METER										
HYDROGEN SULFIDE (H2S)										
IRON(+2)										
MANGANESE(+2)										
NITRITE-N										
OXIDATION REDUCTION POTENTIAL (MV)		141		195				-7		28
PH (S.U.)		6.46		7.75				6.38		6.75
SPECIFIC CONDUCTANCE (MS/CM)		1.66		2.479				0.215		0.74
SULFIDE										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN	OVERBURDEN
LOCATION	13TW001	13TW002	13TW003	13TW004	13TW005	13TW006	13TW007	13TW008	13TW009	13TW010
SAMPLING ROUND	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW001-D	13GWTW002	13GWTW003	13GWTW004	13GWTW005	13GWTW006	13GWTW007	13GWTW008	13GWTW009	13GWTW010
SUBMATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	2/14/2006	2/14/2006	2/15/2006	2/15/2006	2/28/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006
TEMPERATURE (C)		9.53		3.85				9.66		7.96
TURBIDITY (NTU)		1 >		65				1 >		39
Miscellaneous Parameters (mg/L)										
AMMONIA-N										
NITRITE/NITRATE-N										
TOTAL ORGANIC CARBON										

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
Volatile Organics (ug/L)		
1,1,1,2-TETRACHLOROETHANE		
1,1,1-TRICHLOROETHANE		
1,1,2,2-TETRACHLOROETHANE		
1,1,2-TRICHLOROETHANE		
1,1-DICHLOROETHANE		
1,1-DICHLOROETHENE		
1,2,3-TRICHLOROPROPANE		
1,2-DIBROMO-3-CHLOROPROPANE		
1,2-DIBROMOETHANE		
1,2-DICHLOROETHANE		
1,2-DICHLOROPROPANE		
1,4-DIOXANE		
2-BUTANONE		
2-HEXANONE		
3-CHLOROPROPENE		
4-METHYL-2-PENTANONE		
ACETONE		
ACETONITRILE		
ACROLEIN		
ACRYLONITRILE		
BENZENE		
BROMODICHLOROMETHANE		
BROMOFORM		
BROMOMETHANE		
CARBON DISULFIDE		
CARBON TETRACHLORIDE		
CHLOROBENZENE		
CHLORODIBROMOMETHANE		
CHLOROETHANE		
CHLOROFORM		
CHLOROMETHANE		
CHLOROPRENE		
CIS-1,2-DICHLOROETHENE		
CIS-1,3-DICHLOROPROPENE		
DIBROMOMETHANE		
DICHLORODIFLUOROMETHANE		
ETHYL METHACRYLATE		
ETHYLBENZENE		
ISOBUTANOL		
METHACRYLONITRILE		
METHYL IODIDE		
METHYL METHACRYLATE		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
METHYLENE CHLORIDE		
PROPIONITRILE		
STYRENE		
TETRACHLOROETHENE		
TOLUENE		
TOTAL XYLENES		
TRANS-1,2-DICHLOROETHENE		
TRANS-1,3-DICHLOROPROPENE		
TRANS-1,4-DICHLORO-2-BUTENE		
TRICHLOROETHENE		
TRICHLOROFLUOROMETHANE		
VINYL ACETATE		
VINYL CHLORIDE		
Semivolatile Organics (ug/L)		
1,2,4,5-TETRACHLOROBENZENE		
1,2,4-TRICHLOROBENZENE		
1,2-DICHLOROBENZENE		
1,3-DICHLOROBENZENE		
1,4-DICHLOROBENZENE		
1,4-NAPHTHOQUINONE		
1,4-PHENYLENEDIAMINE		
1-NAPHTHYLAMINE		
2,2'-OXYBIS(1-CHLOROPROPANE)		
2,3,4,6-TETRACHLOROPHENOL		
2,4,5-TRICHLOROPHENOL		
2,4,6-TRICHLOROPHENOL		
2,4-DICHLOROPHENOL		
2,4-DIMETHYLPHENOL		
2,4-DINITROPHENOL		
2,6-DICHLOROPHENOL		
2-ACETYLAMINOFLUORENE		
2-CHLORONAPHTHALENE		
2-CHLOROPHENOL		
2-METHYLNAPHTHALENE		
2-METHYLPHENOL		
2-NAPHTHYLAMINE		
2-NITROANILINE		
2-NITROPHENOL		
2-PICOLINE		
3&4-METHYLPHENOL		
3,3'-DICHLOROBENZIDINE		
3,3'-DIMETHYLBENZIDINE		
3-METHYLCHOLANTHRENE		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
3-NITROANILINE		
4,6-DINITRO-2-METHYLPHENOL		
4-AMINOBIPHENYL		
4-BROMOPHENYL PHENYL ETHER		
4-CHLORO-3-METHYLPHENOL		
4-CHLOROANILINE		
4-CHLOROPHENYL PHENYL ETHER		
4-NITROANILINE		
4-NITROPHENOL		
4-NITROQUINOLINE-1-OXIDE		
5-NITRO-O-TOLUIDINE		
7,12-DIMETHYLBENZ(A)ANTHRACENE		
A,A-DIMETHYLPHENETHYLAMINE		
ACENAPHTHENE		
ACENAPHTHYLENE		
ACETOPHENONE		
ANILINE		
ANTHRACENE		
ARAMITE		
BENZO(A)ANTHRACENE		
BENZO(A)PYRENE		
BENZO(B)FLUORANTHENE		
BENZO(G,H,I)PERYLENE		
BENZO(K)FLUORANTHENE		
BENZYL ALCOHOL		
BIS(2-CHLOROETHOXY)METHANE		
BIS(2-CHLOROETHYL)ETHER		
BIS(2-ETHYLHEXYL)PHTHALATE		
BUTYL BENZYL PHTHALATE		
CHLOROBENZILATE		
CHRYSENE		
DI-N-BUTYL PHTHALATE		
DI-N-OCTYL PHTHALATE		
DIALLATE		
DIBENZO(A,H)ANTHRACENE		
DIBENZOFURAN		
DIETHYL PHTHALATE		
DIMETHYL PHTHALATE		
DIPHENYLAMINE		
ETHYL METHANE SULFONATE		
FLUORANTHENE		
FLUORENE		
HEXACHLOROBENZENE		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
HEXACHLOROBUTADIENE		
HEXACHLOROCYCLOPENTADIENE		
HEXACHLOROETHANE		
HEXACHLOROPROPENE		
INDENO(1,2,3-CD)PYRENE		
ISODRIN		
ISOPHORONE		
ISOSAFROLE		
KEPONE		
METHAPYRILENE		
METHYL METHANE SULFONATE		
N-NITROSO-DI-N-BUTYLAMINE		
N-NITROSO-DI-N-PROPYLAMINE		
N-NITROSODIETHYLAMINE		
N-NITROSODIMETHYLAMINE		
N-NITROSOMETHYLETHYLAMINE		
N-NITROSOMORPHOLINE		
N-NITROSOPIPERIDINE		
N-NITROSOPYRROLIDINE		
NAPHTHALENE		
O,O,O-TRIETHYL PHOSPHOROTHIOATE		
O-TOLUIDINE		
P-(DIMETHYLAMINO)AZOBENZENE		
PENTACHLOROBENZENE		
PENTACHLOROETHANE		
PENTACHLORONITROBENZENE		
PHENACETIN		
PHENANTHRENE		
PHENOL		
PRONAMIDE		
PYRENE		
PYRIDINE		
SAFROLE		
Energetics (ug/L)		
1,3,5-TRINITROBENZENE	0.27 U	0.271 U
1,3-DINITROBENZENE	0.27 U	0.271 U
2,2',6,6'-TETRANITRO-4,4'-AZOXYTOLUENE		
2,4,6-TRINITROTOLUENE	0.27 U	250
2,4-DIAMINO-6-NITROTOLUENE		
2,4-DINITROTOLUENE	0.27 U	0.271 U
2,6-DIAMINO-4-NITROTOLUENE		
2,6-DINITROTOLUENE	0.27 U	6.8 J
2-AMINO-4,6-DINITROTOLUENE	0.27 U	9 J

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
2-NITROTOLUENE	0.27 U	0.271 U
3,5-DINITROANILINE		
3-NITROTOLUENE	0.27 U	0.271 U
4-AMINO-2,6-DINITROTOLUENE	0.27 U	22
4-NITROTOLUENE	0.27 U	1.1 R
DNX		
HMX	1.4 J	270
MNX		
NITROBENZENE	0.27 U	0.271 U
PICRAMIC ACID		
PICRIC ACID		
RDX	7.3	150
TETRYL	0.27 U	0.271 U
TNX		
Herbicides (ug/L)		
HEXACHLOROPHENE		
PENTACHLOROPHENOL		
Total Metals (ug/L)		
ALUMINUM		
ANTIMONY		
ARSENIC		
BARIUM		
BERYLLIUM		
CADMIUM		
CALCIUM		
CHROMIUM		
COBALT		
COPPER		
IRON		
LEAD		
LITHIUM		
MAGNESIUM		
MANGANESE		
MERCURY		
NICKEL		
POTASSIUM		
SELENIUM		
SILVER		
SODIUM		
STRONTIUM		
THALLIUM		
TIN		
TITANIUM		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
VANADIUM		
ZINC		
Dissolved Metals (ug/L)		
ALUMINUM, FILTERED		
ANTIMONY, FILTERED		
ARSENIC, FILTERED		
BARIUM, FILTERED		
BERYLLIUM, FILTERED		
CADMIUM, FILTERED		
CALCIUM, FILTERED		
CHROMIUM, FILTERED		
COBALT, FILTERED		
COPPER, FILTERED		
IRON, FILTERED		
LEAD, FILTERED		
LITHIUM, FILTERED		
MAGNESIUM, FILTERED		
MANGANESE, FILTERED		
MERCURY, FILTERED		
NICKEL, FILTERED		
POTASSIUM, FILTERED		
SELENIUM, FILTERED		
SILVER, FILTERED		
SODIUM, FILTERED		
STRONTIUM, FILTERED		
THALLIUM, FILTERED		
TIN, FILTERED		
TITANIUM, FILTERED		
VANADIUM, FILTERED		
ZINC, FILTERED		
Field Parameters (mg/L)		
ALKALINITY		
CARBON DIOXIDE		
DISSOLVED OXYGEN	0.91	
DISSOLVED OXYGEN - METER		
HYDROGEN SULFIDE (H2S)		
IRON(+2)		
MANGANESE(+2)		
NITRITE-N		
OXIDATION REDUCTION POTENTIAL (MV)	-1	
PH (S.U.)	6.87	
SPECIFIC CONDUCTANCE (MS/CM)	0.559	
SULFIDE		

TABLE G-6

SUMMARY OF ANALYTIC RESULTS
GROUND WATER SAMPLES ROUNDS 1 THROUGH 3 AND EXTERNAL SUMP/DRAINAGE INVESTIGATION
SWMU 13 (MINE FILL B)
NSWC CRANE
CRANE, INDIANA

WATER BEARING ZONE	OVERBURDEN	OVERBURDEN
LOCATION	13TW011	13TW012
SAMPLING ROUND	ES/DI	ES/DI
SAMPLE NUMBER	13GWTW011	13GWTW012
SUBMATRIX	GW	GW
SAMPLE CODE	NORMAL	NORMAL
SAMPLE DATE	3/1/2006	2/28/2006
TEMPERATURE (C)	1.73	
TURBIDITY (NTU)	6.9	
Miscellaneous Parameters (mg/L)		
AMMONIA-N		
NITRITE/NITRATE-N		
TOTAL ORGANIC CARBON		

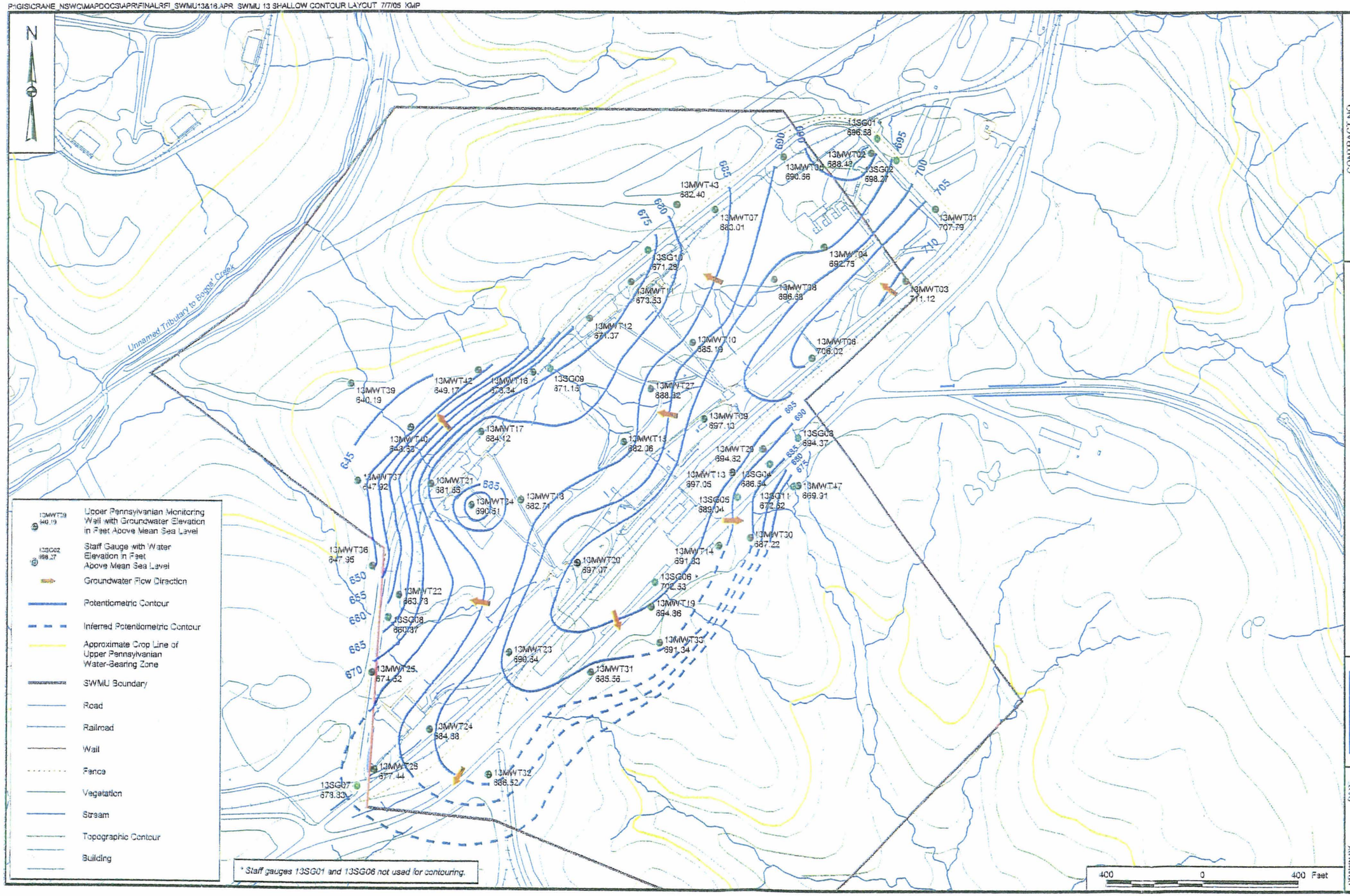
APPENDIX E

SWMU 13

POTENTIOMETRIC SURFACE MAPS, ROUNDS 2-8

ROUND 2

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINAL\RFI_SWMU13&16.APR SWMU 13 SHALLOW CONTOUR LAYOUT 7/7/05 KMP



CONTRACT NO. 7448

APPROVED BY ____ DATE ____

APPROVED BY ____ DATE ____

DRAWING NO. FIGURE 4-9

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 19 AND 20, 2004
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

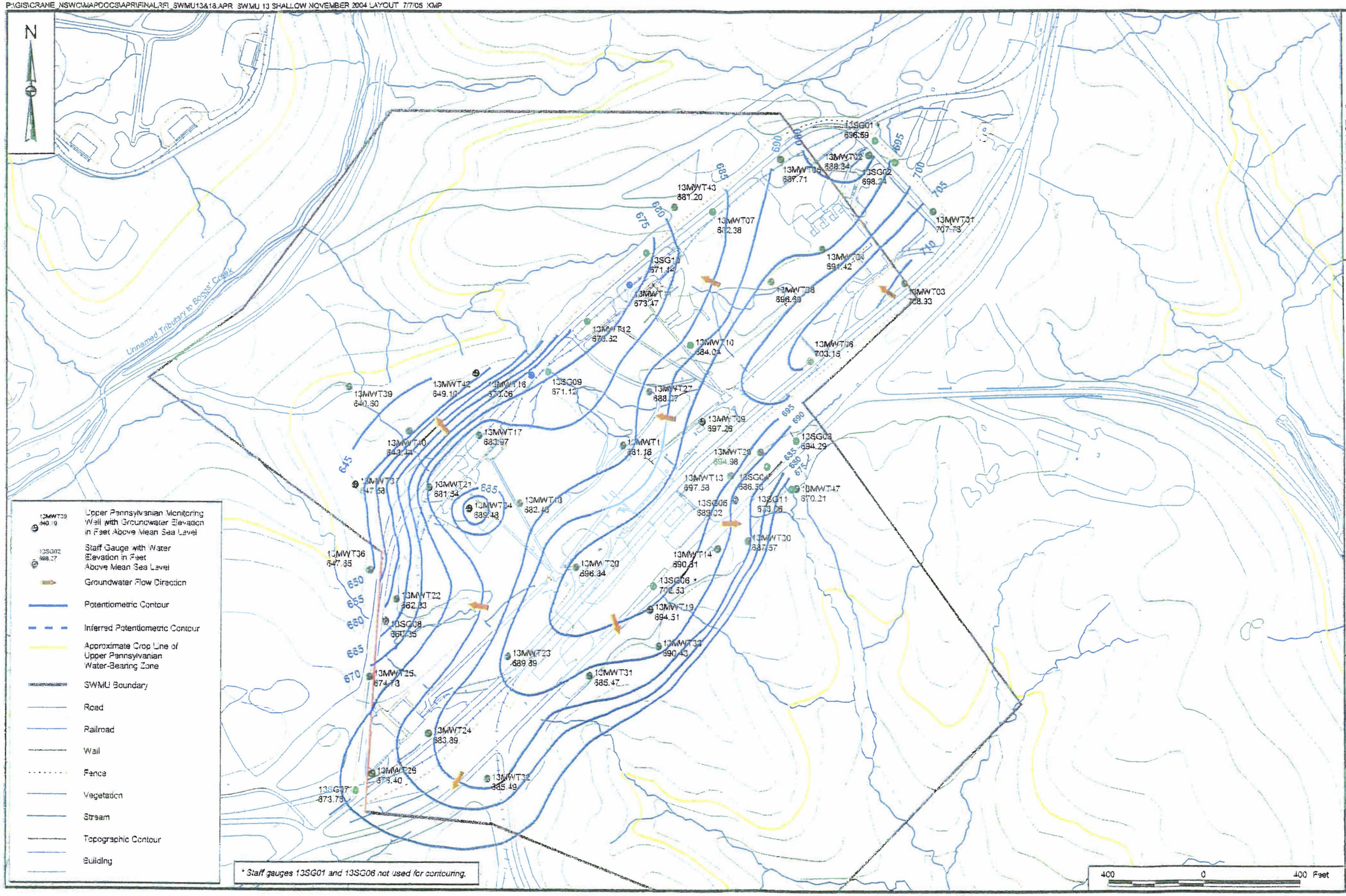
DRAWN BY A. JANOCHA DATE 2/23/04

CHECKED BY J. LUCAS DATE 5/13/04

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINAL35_SWMU13&18.APR SWMU 13 SHALLOW NOVEMBER 2004 LAYOUT 7/7/05 KMP



CONTRACT NO. 7448

APPROVED BY DATE

APPROVED BY DATE

DRAWING NO. FIGURE 4-10

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - NOVEMBER 14, 2004
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY A. JANOCHA DATE 2/23/04

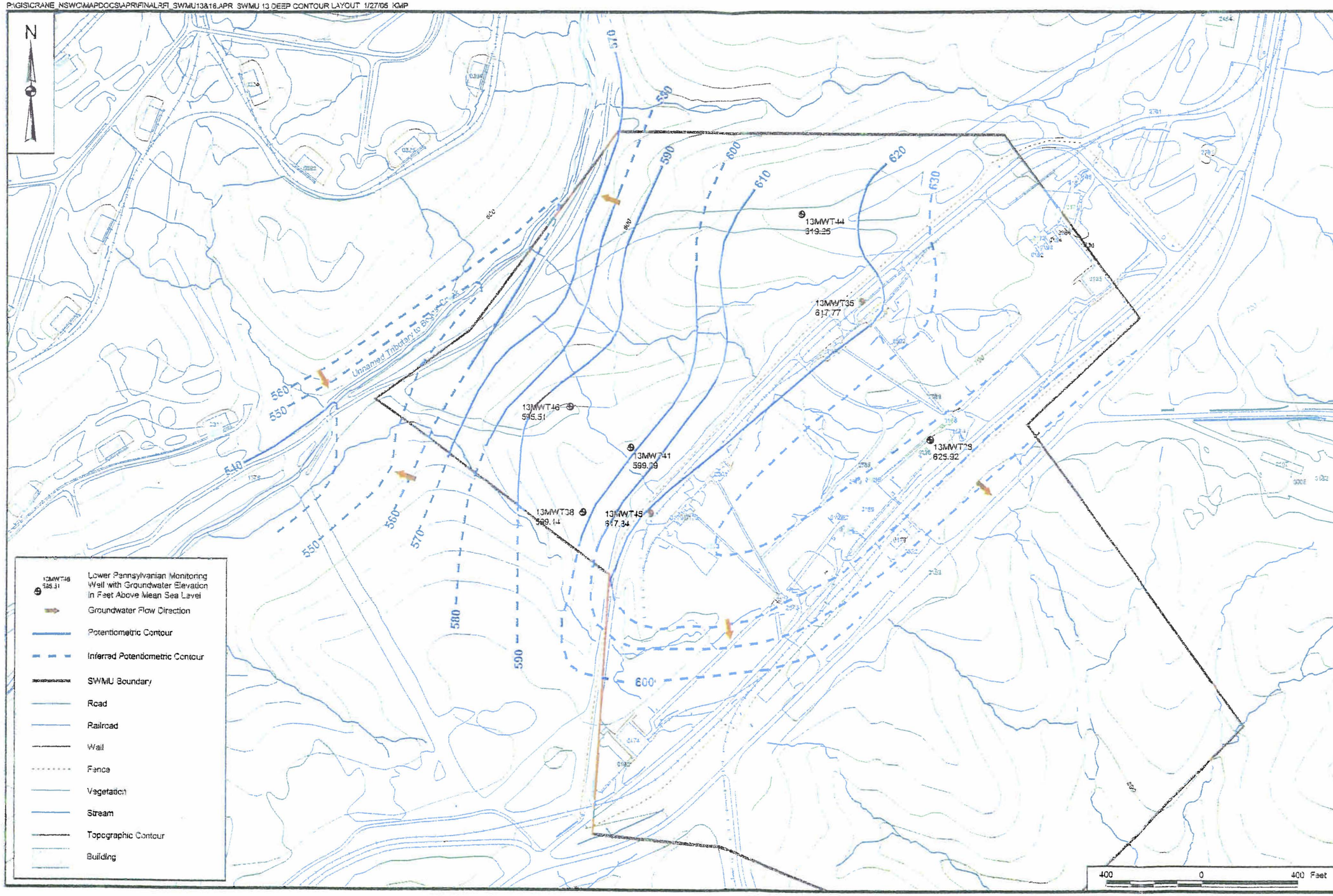
CHECKED BY J. LUCAS DATE 6/13/04

COST/SCHED-AREA

SCALE AS NOTED

ROUND 3

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINAL RFI_SWMU13&18.APR SWMU 13 DEEP CONTOUR LAYOUT 1/27/05 KMP



CONTRACT NO. 7448

APPROVED BY — DATE

APPROVED BY — DATE

DRAWING NO. FIGURE 4-11

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 19 AND 20, 2004
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

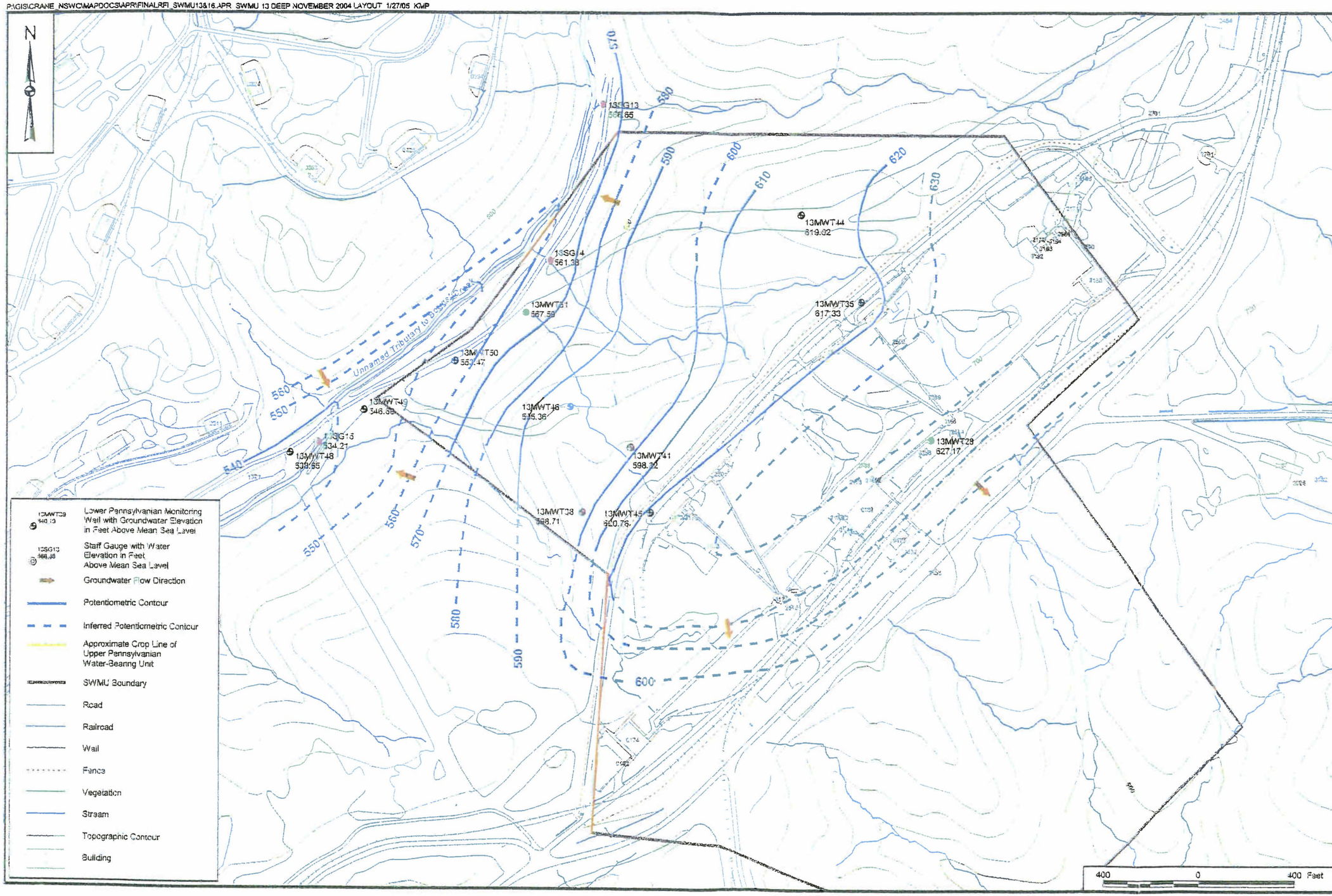
DRAWN BY A. JANOCHA — DATE 2/23/04

CHECKED BY F. RAMSER — DATE 3/17/04

COST/SQ.FT.-AREA

SCALE AS NOTED

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 DEEP NOVEMBER 2004 LAYOUT 1/27/05 KWP



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APPROVED BY ____ DATE ____

DRAWING NO. FIGURE 4-12

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - NOVEMBER 14, 2004
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY K. PEILA DATE 1/27/05

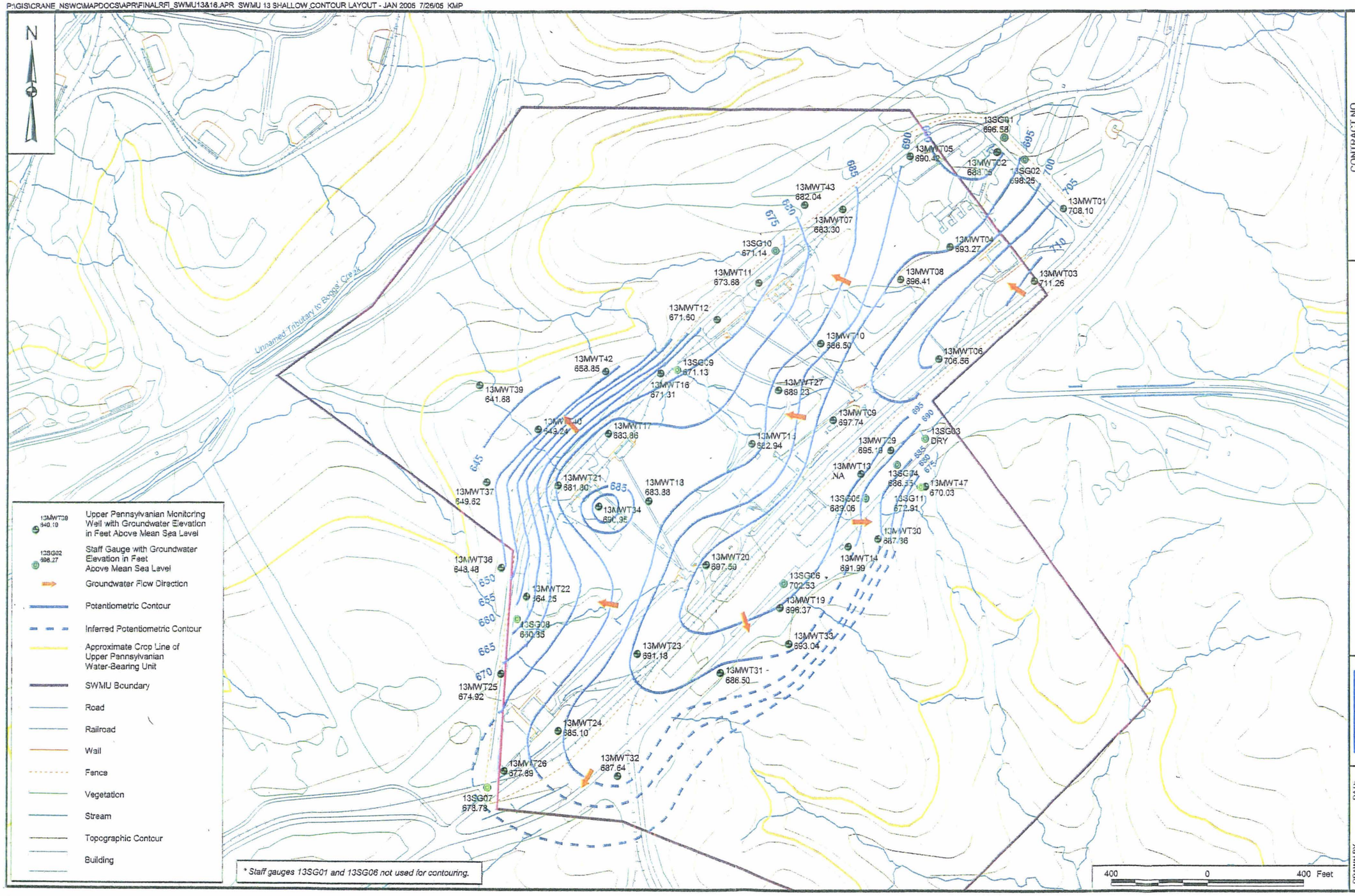
CHECKED BY J. SCHUBERT DATE 1/27/05

COST/SCHED-AREA

SCALE AS NOTED

ROUND 4

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 SHALLOW CONTOUR LAYOUT - JAN 2005 7/26/05 KMP



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APPROVED BY — DATE

DRAWING NO. FIGURE 4 - 1

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 19, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

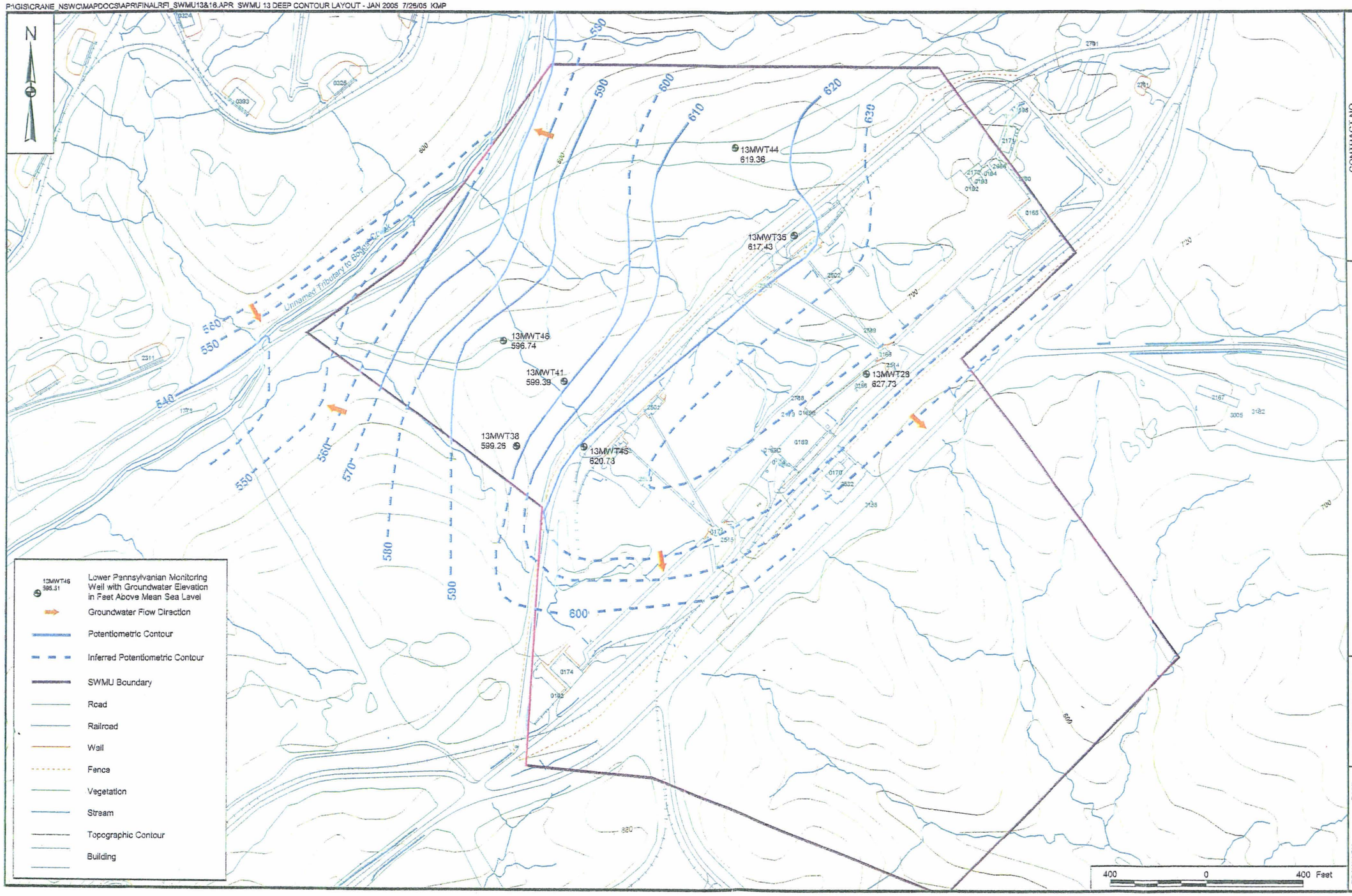
DRAWN BY A. JANOCHA — DATE 2/23/04

CHECKED BY J. LUCAS — DATE

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 DEEP CONTOUR LAYOUT - JAN 2005 7/26/05 KMP



CONTRACT NO. 7448

APPROVED BY DATE

APPROVED BY DATE

DRAWING NO. FIGURE 4 - 2

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 19, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY A. JANOCHA DATE 2/23/04

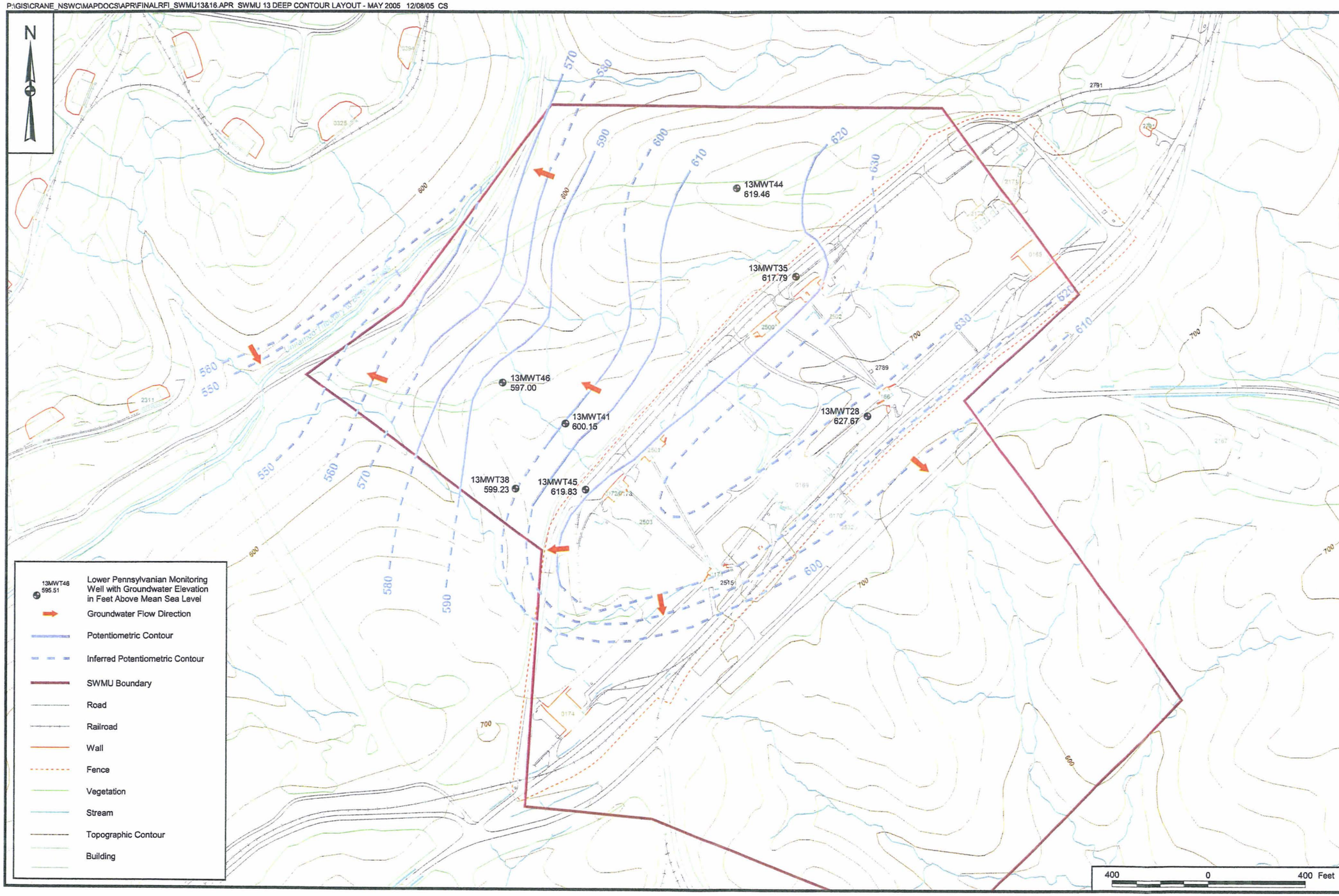
CHECKED BY J. LUCAS DATE

COST/SCHED-AREA

SCALE AS NOTED

ROUND 5

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 DEEP CONTOUR LAYOUT - MAY 2005 12/08/05 CS



CONTRACT NO. 00041

APPROVED BY ___ DATE ___

APPROVED BY ___ DATE ___

DRAWING NO. FIGURE 4 - 3

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - MAY 3, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

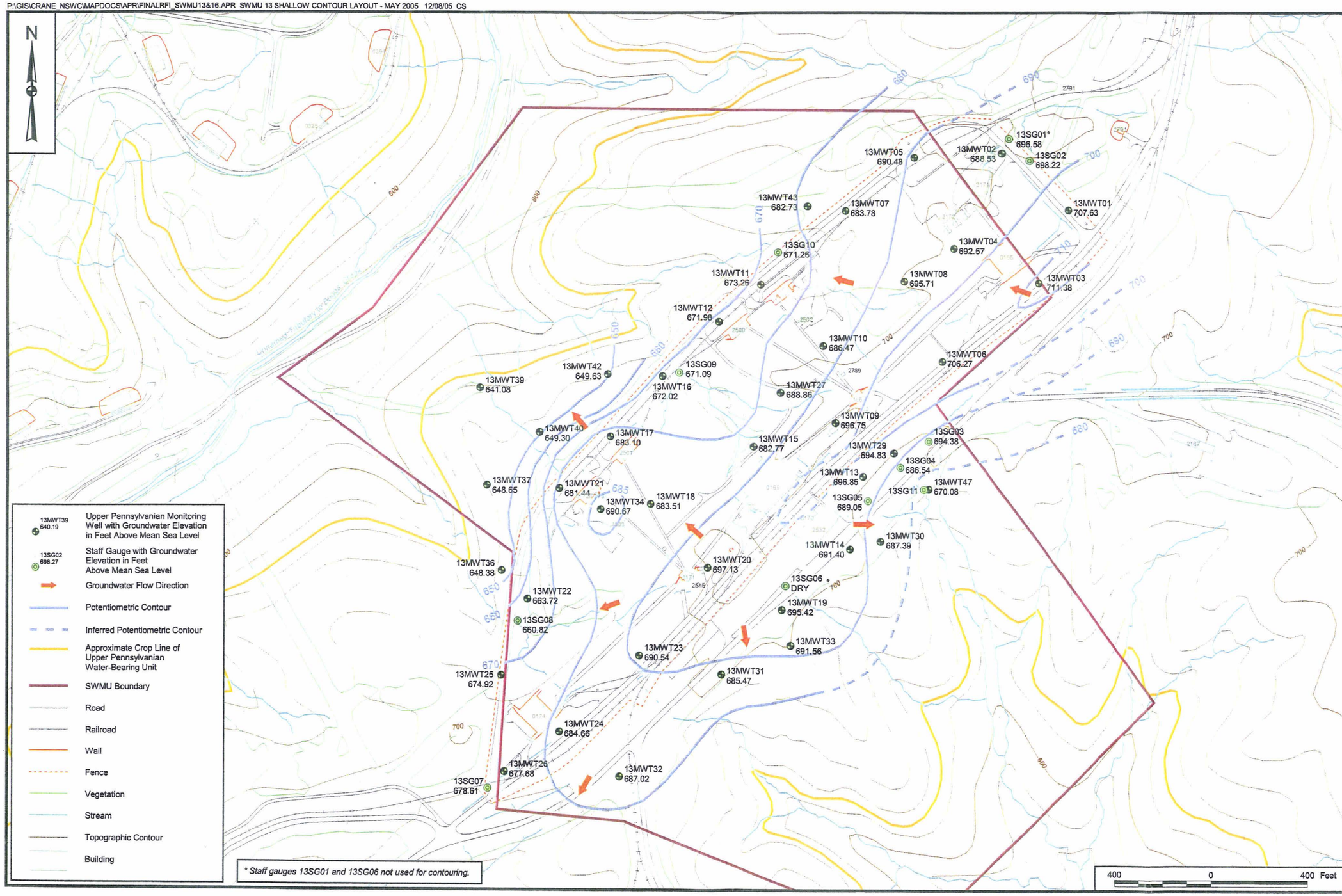
DRAWN BY C. SPEHAR DATE 12/06/05

CHECKED BY J. LUCAS DATE 12/06/05

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 SHALLOW CONTOUR LAYOUT - MAY 2005 12/08/05 CS



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APPROVED BY ___ DATE ___

DRAWING NO. FIGURE 4 - 1

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - MAY 3, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY C. SPEHAR DATE 12/06/05

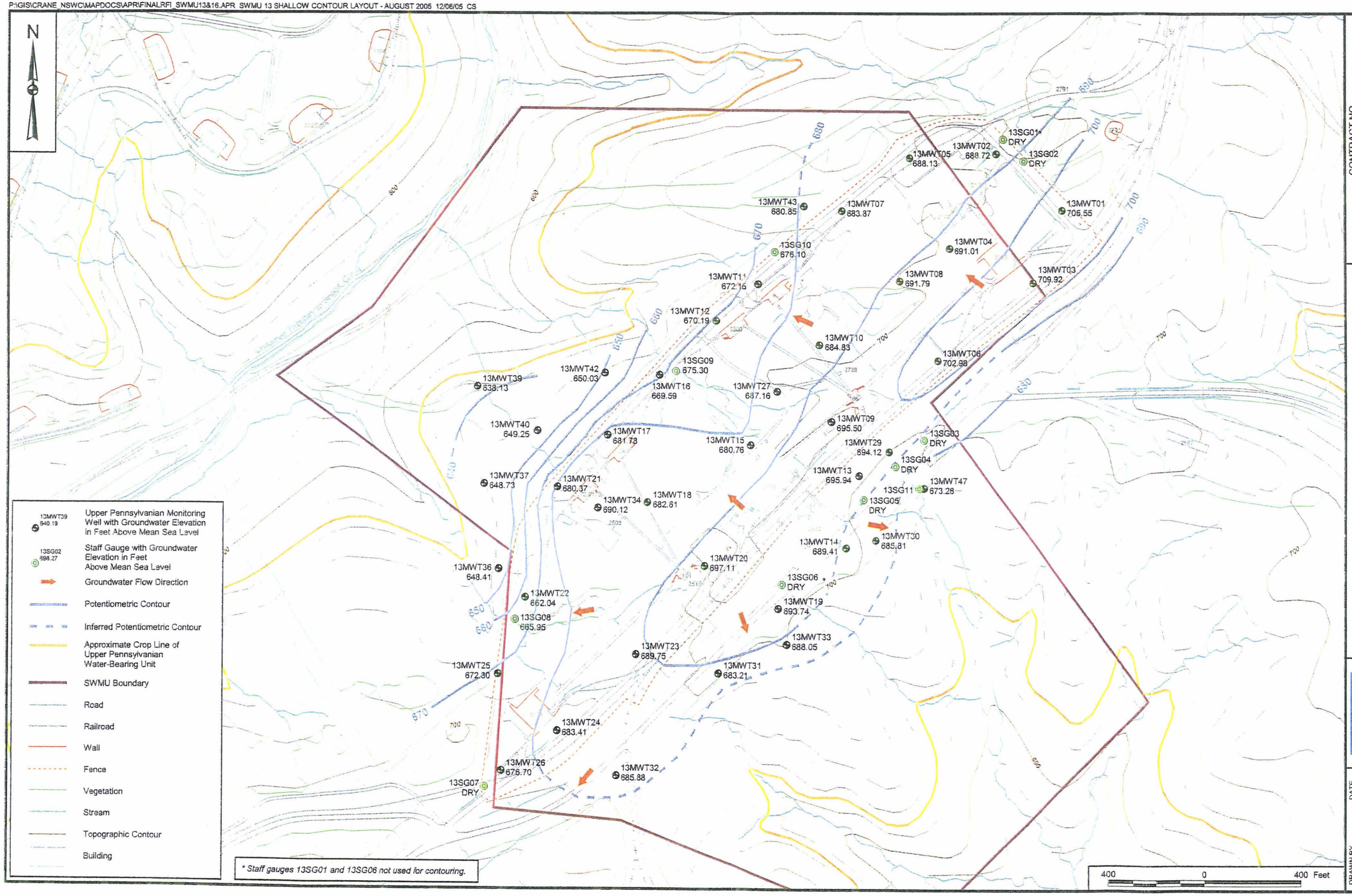
CHECKED BY J. LUCAS DATE 12/06/05

COST/SCHED-AREA

SCALE AS NOTED

ROUND 6

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINAL\RFI_SWMU13&16.APR SWMU 13 SHALLOW CONTOUR LAYOUT - AUGUST 2005 12/06/05 CS



CONTRACT NO. 00041

APPROVED BY ____ DATE ____

APPROVED BY ____ DATE ____

DRAWING NO. FIGURE 4 - 2

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - AUGUST 9, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

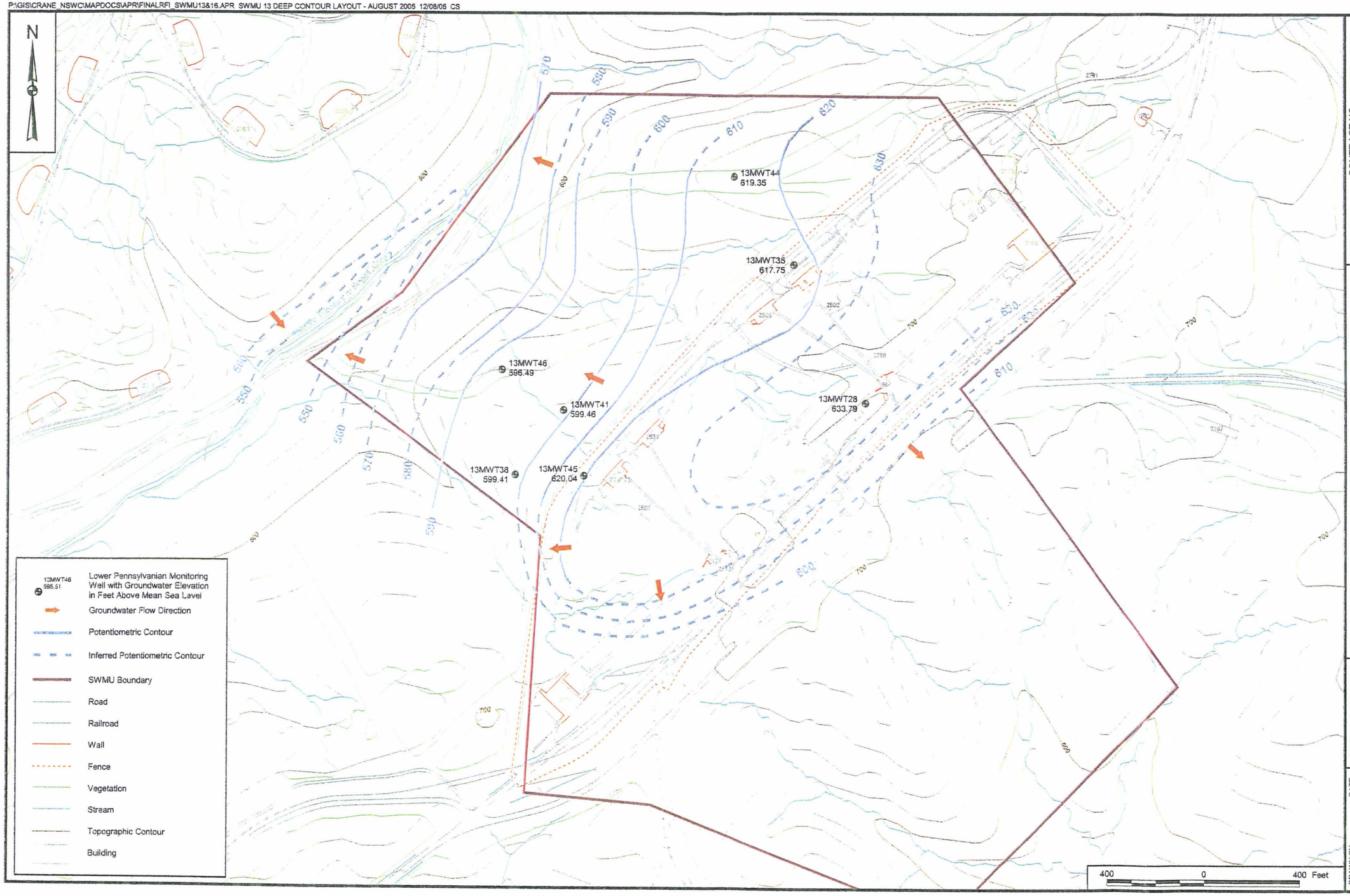
DRAWN BY C. SPEHAR DATE 12/06/05

CHECKED BY J. LUCAS DATE 12/06/05

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\CRANE_NSWC\MAPDOCS\APR\FINALRFI_SWMU13&16.APR SWMU 13 DEEP CONTOUR LAYOUT - AUGUST 2005 12/08/05 CS



CONTRACT NO.
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APPROVED BY ___ DATE ___

DRAWING NO. FIGURE 4 - 4

REV 0

POTENTIOMETRIC SURFACE ELEVATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - AUGUST 9, 2005
SWMU 13 MINE FILL B
NSWC CRANE
CRANE, INDIANA

NAVFAC

DRAWN BY C. SPEHAR DATE 12/06/05

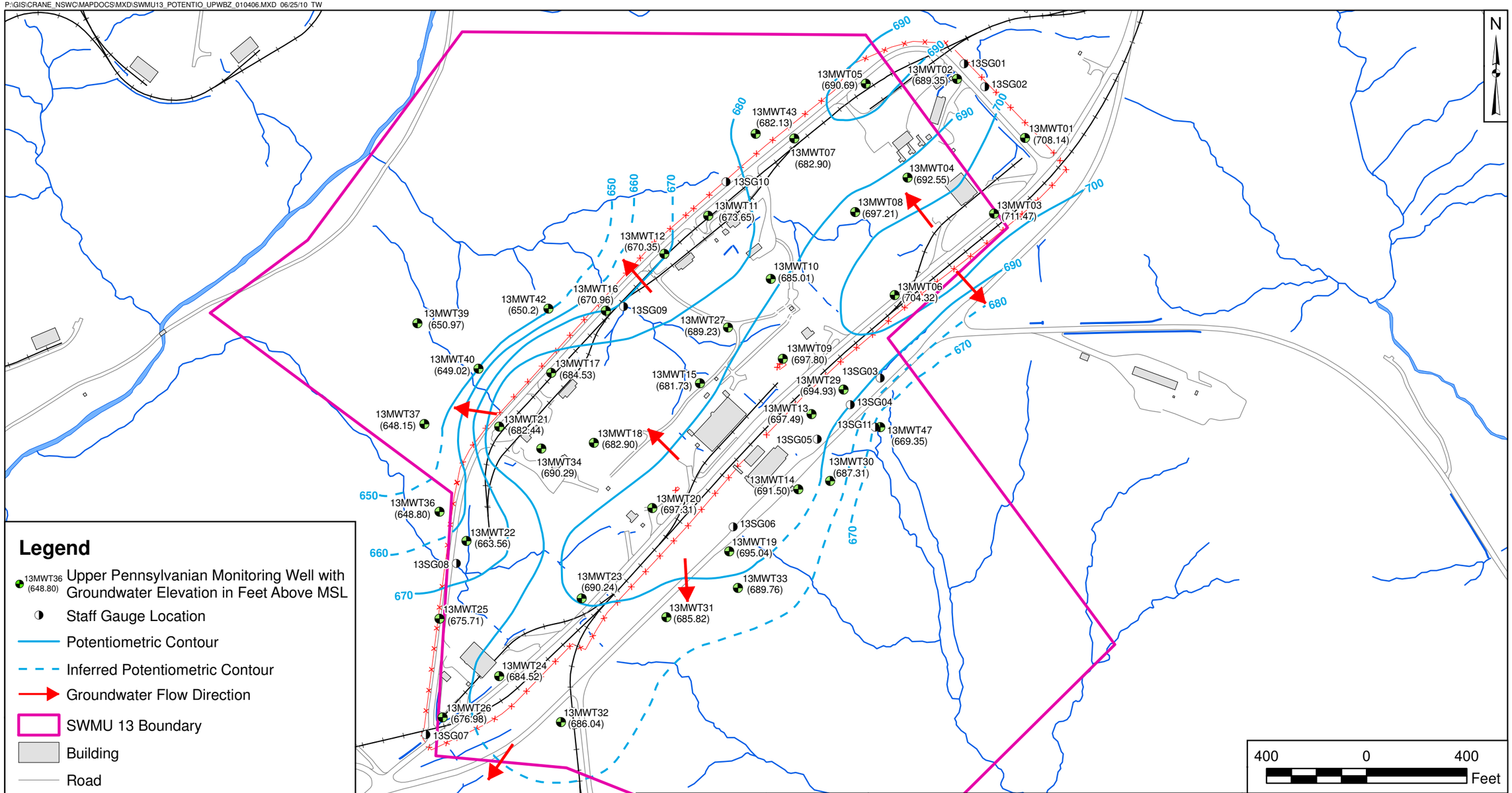
CHECKED BY J. LUCAS DATE 12/06/05

COST/SCHED-AREA

SCALE AS NOTED

ROUND 7

P:\GIS\CRANE_NSWC\MAPDOCS\MXD\SWMU13_POTENTIO_UPWBZ_010406.MXD 06/25/10 TW



Legend

- 13MWT36 (648.80) Upper Pennsylvanian Monitoring Well with Groundwater Elevation in Feet Above MSL
- Staff Gauge Location
- Potentiometric Contour
- Inferred Potentiometric Contour
- Groundwater Flow Direction
- SWMU 13 Boundary
- Building
- Road
- Railroad
- Fenceline
- Stream
- Surface Water

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CHECKED BY	DATE
J. LUCAS	06/25/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

MONITORING WELL AND STAFF GAUGE LOCATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 4, 2006
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041		
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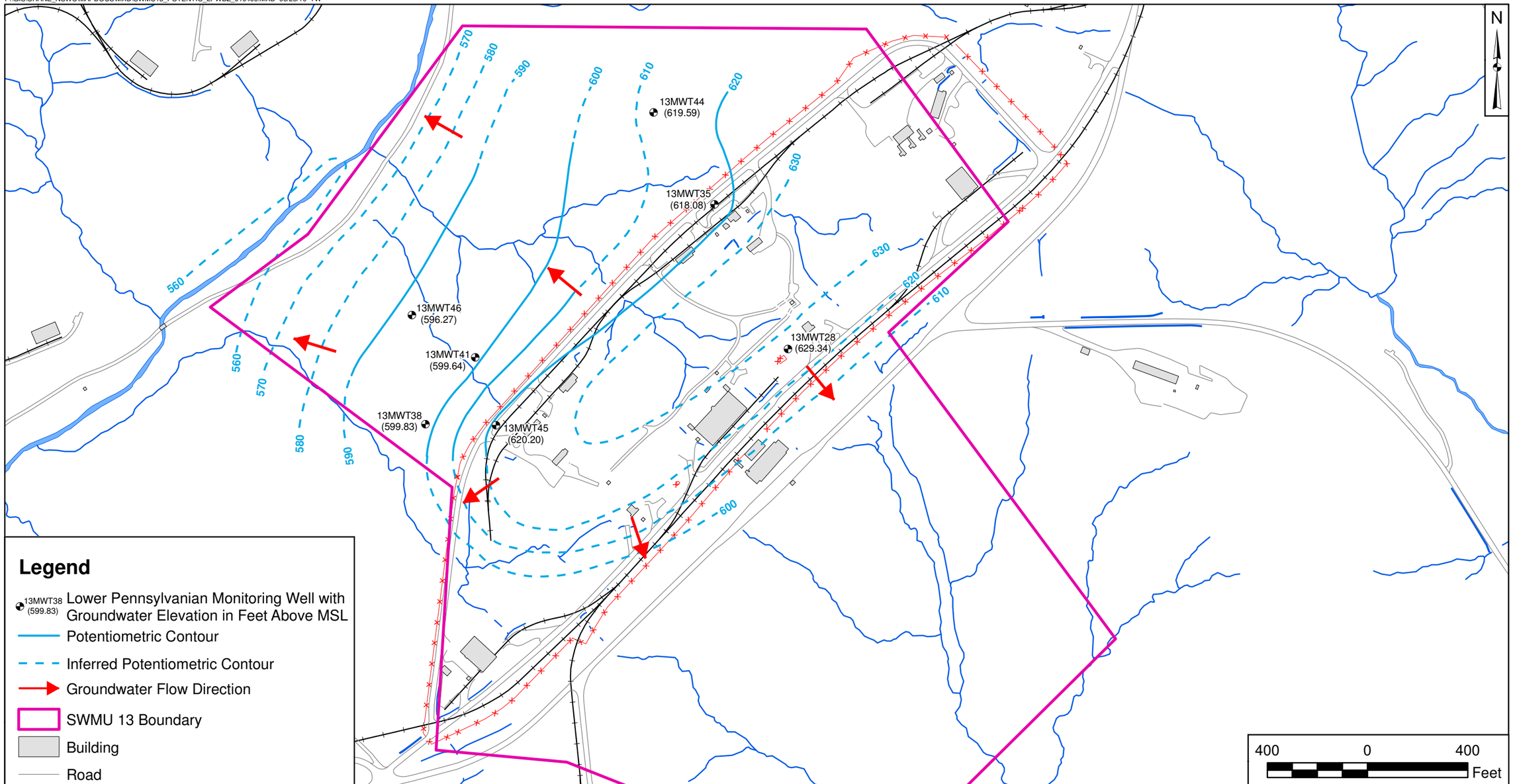
APPROVED BY —	DATE —	
FIGURE NO. FIGURE 4-1		REV 0

P:\GIS\CRANE_NSWC\MAPDOCS\MXD\SWMU13_POTENTIO_LPWBZ_010406.MXD 06/25/10 TW



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T. WHEATON	06/25/10
CHECKED BY	DATE
J. LUCAS	06/25/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

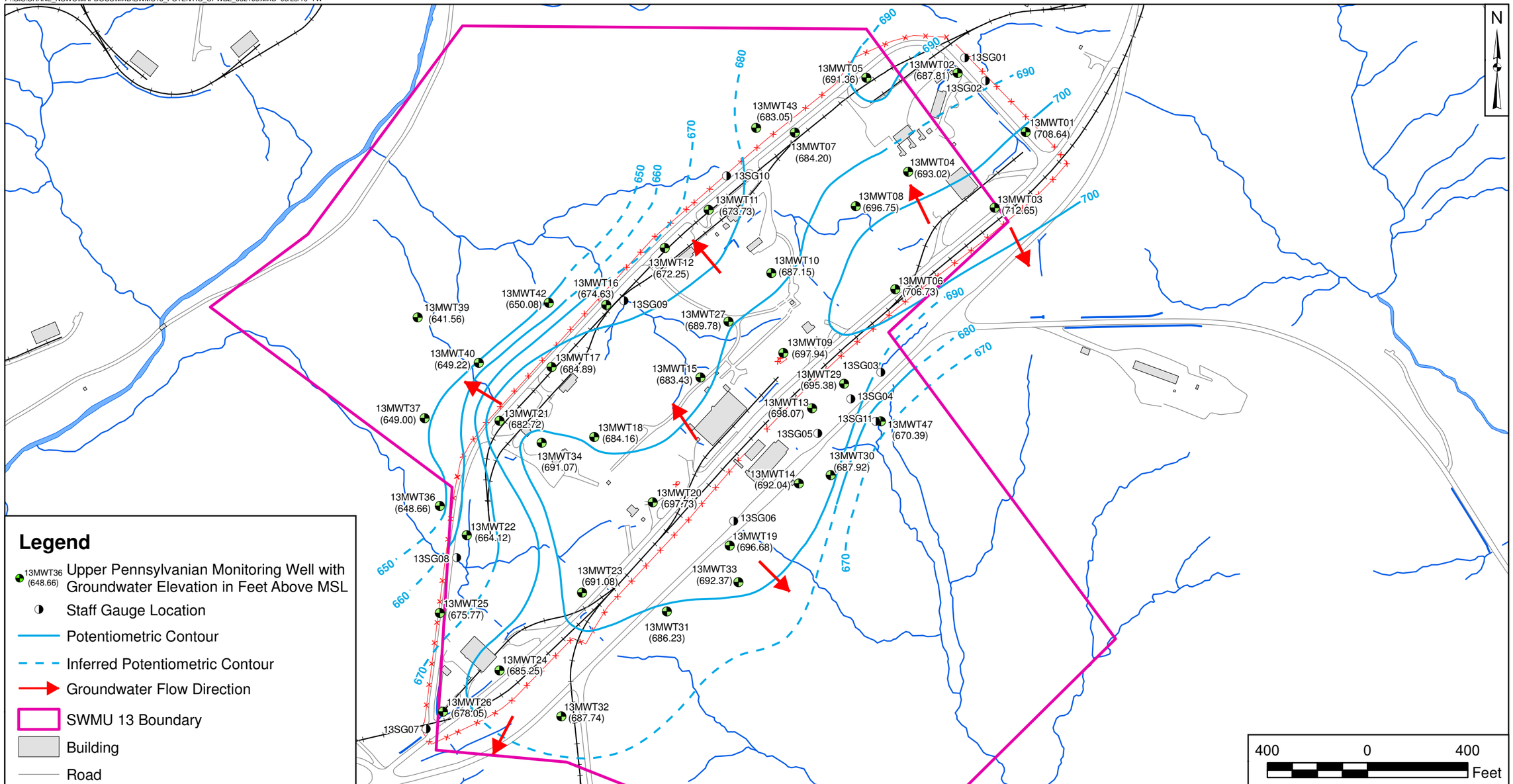
NAVFAC

MONITORING WELL LOCATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - JANUARY 4, 2006
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. FIGURE 4-2	REV 0

ROUND 8

P:\GIS\CRANE_NSWC\MAPDOCS\MXD\SWMU13_POTENTIO_UPWBZ_052106.MXD 06/25/10 TW



Legend

- 13MWT36 (648.66) Upper Pennsylvanian Monitoring Well with Groundwater Elevation in Feet Above MSL
- Staff Gauge Location
- Potentiometric Contour
- Inferred Potentiometric Contour
- Groundwater Flow Direction
- SWMU 13 Boundary
- Building
- Road
- Railroad
- Fenceline
- Stream
- Surface Water

DRAWN BY	DATE
T. WHEATON	06/25/10
CHECKED BY	DATE
J. LUCAS	06/25/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

MONITORING WELL AND STAFF GAUGE LOCATION MAP
FOR THE UPPER PENNSYLVANIAN
WATER-BEARING ZONE - MAY 21, 2006
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. FIGURE 4-1	REV 0

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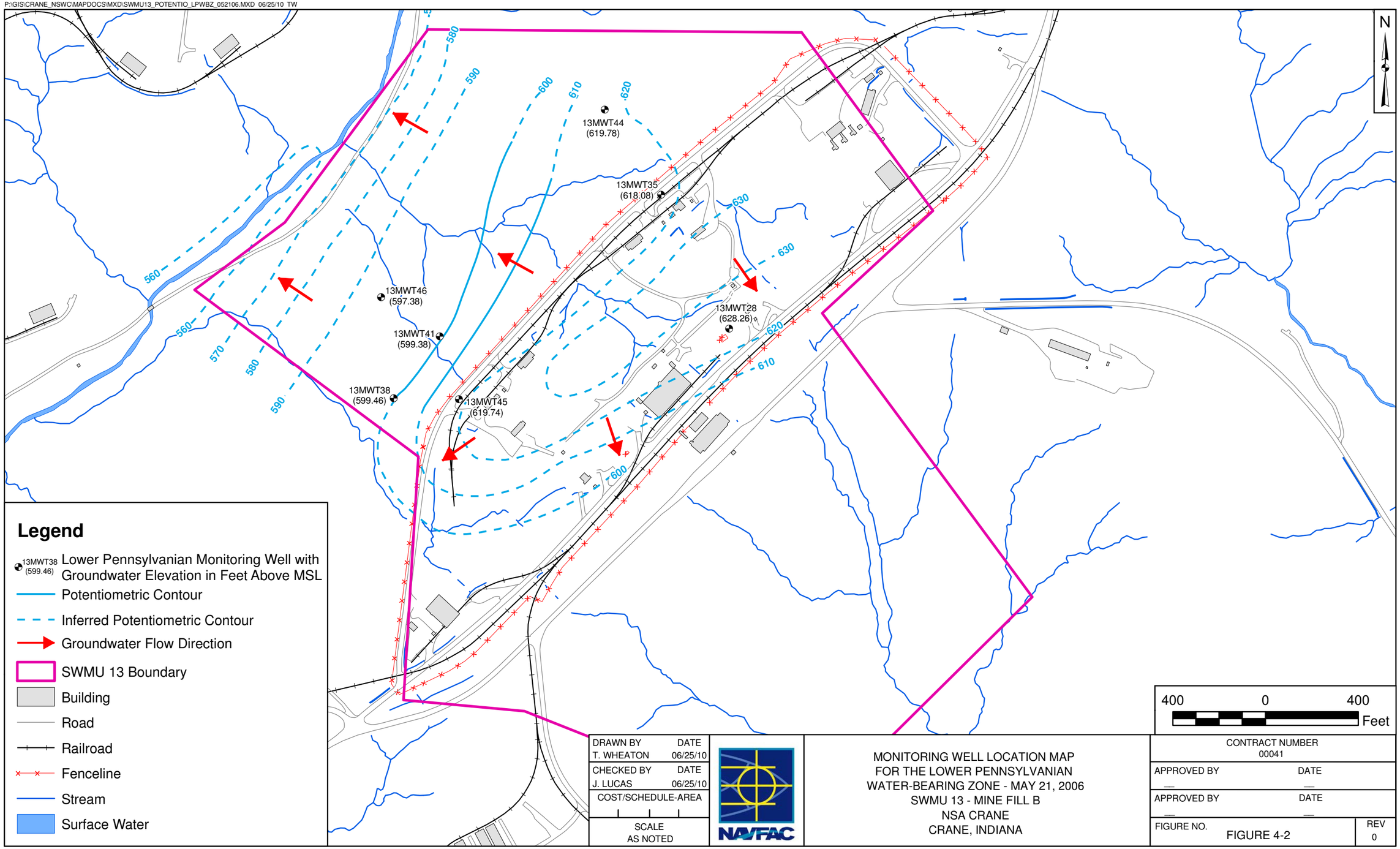

DRAWN BY	DATE
T. WHEATON	06/25/10
CHECKED BY	DATE
J. LUCAS	06/25/10
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

MONITORING WELL LOCATION MAP
FOR THE LOWER PENNSYLVANIAN
WATER-BEARING ZONE - MAY 21, 2006
SWMU 13 - MINE FILL B
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER 00041	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. FIGURE 4-2	REV 0