N00164.AR.000765
NSWC CRANE
5090.3a

Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)

for

PCB Capacitor Burial/Pole Yard Solid Waste Management Unit (SWMU) 17

Naval Surface Warfare Center Crane

Crane, Indiana

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0205

August 2002

DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090/S4.7.3
Ser 095/2298

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Illinois, Indiana, and Michigan Section
ATTN: Mr. Peter Ramanauskas (DW-8J)
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NSWC Crane) submits the final interim measures (IM) sampling report for the PCB Capacitor Burial-Pole Yard (PCB-PY), Solid Waste Management Unit 17/04. Two copies of this report are found as enclosure (1). The permit required Certification Statement is provided as enclosure (2).

NSWC Crane point of contact is Mr. Thomas J. Brent, Code 09510, telephone 812-854-6160.

Sincerely,

JAMES M. HUNSICKER
Director, Environmental
Protection Department
By direction of the Commander

Encl:
(1) PCB-PY IM Sampling Final Report
(2) Certification Statement

Copy to:
ADMINISTRATIVE RECORD
SOUTHNAVFACENGCOM (Code ES32) (w/o encl)
IDEM (Doug Griffin)
TTNUS (Ralph Basinski) (w/o encl)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Phillip A. Keith, Acting

SIGNATURE

Environmental Protection Department Manager 9/4/02

TITLE DATE

U.S. EPA REGION 5 COMMENTS DATED AUGUST 8, 2002
RFI REPORT FOR
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

Comment 1:

"Solid" is misspelled in the Acronym List section for SWMU.

The spelling error was corrected in the Acronym List.

Comment 2:

Section 2.11, page 2-9, states that samples of decontamination fluid were analyzed and found to contain PCBs at unacceptable levels for disposal in the NSWC-permitted sanitary sewer system. Please amend this section to state how the fluids were disposed.

Although the decon water could not go into the sanitary sewer, the concentration of PCBs in the water were otherwise non-regulated. The water was sent off site through the NSWC Crane hazardous waste contractor for disposal.

The third paragraph of Section 2.11 was modified to read as follows:

"All DPT rig and sampling decontamination fluids were collected and stored onsite in a 500-gallon plastic holding tank. As per SOP number CTO205-08 the decontamination fluids may be discharged into the NSWC-permitted sanitary sewer system if PCB concentrations are less than 3 parts per billion (ppb). Samples of decontamination fluid were analyzed by the laboratory and were found to contain Aroclor 1260 at a concentration of 120 ppb, hence it was not permissible for decontamination fluids generated during this investigation to be discharged to the NSWC-permitted sanitary sewer system. Although the decontamination fluid could not be discharged into the sanitary sewer system, the concentration of PCBs in the fluids were otherwise non-regulated. The decontamination fluid was shipped off site through the NSWC Crane hazardous waste contractor for disposition."

Comment 3:

If there was any handling or storage of PCB electrical equipment inside building 3072 or 357, some description should be included of the considerations made to determine why the buildings were not sampled. This may be based on background information, visual inspections, previous samples, etc.

There is no information to suggest that there was any handling or storage of PCB electrical equipment inside buildings 3072 or 357. The source of PCB contamination is known to be poles that were stored in the Pole Yard and potentially from buried capacitors. The pattern of contamination is consistent with this assumption.

No text revisions were made in response to this comment.

Comment 4:

It seems like there should be more investigation of sediment in NW drainage way unless an investigation will be pursued upon analysis of verification samples after the removal of the contaminated sediment.

The Navy concurs that the extent of PCB contamination in the NW drainage way has not been determined. Further investigation of the northwest drainage way will be pursued through analysis of verification samples after removal of contaminated sediment. This will be discussed in the Interim measure Removal Work Plan.

No text revisions were made in response to this comment.

Comment 5:

The TSCA program has generally required removal of contaminated material to the next clean sampling point. The proposed excavation areas as depicted in Figure 3-4 do not seem to be to the next clean sampling points and instead to almost a midpoint between a sample of contaminated material and a sample of clean material. The excavation can still be to the bounded areas as depicted in Figure 3-4, but verification sampling should be conducted to confirm that all the contaminated material was removed. This may be further explained in the Interim Measure removal work plan. See Comment 6 on required verification sampling.

PCB-contaminated soils will be excavated as depicted in Figure 3-4. Verification sampling will be conducted to confirm that PCB-contaminated soils have been removed to the cleanup level. If the verification sampling does not confirm that the cleanup objective has been attained, additional excavation will be conducted until verification sampling confirms that the cleanup objective has been attained. This will be further described in the Interim Measure Removal Work Plan.

No text revisions were made in response to this comment.

Comment 6:

After removal of the contaminated soil, additional sampling to verify that the removal met the cleanup objectives is required (see 40 CFR 761.61(a)(6)). A description of the verification-sampling plan should be included in the Interim Measure removal work plan.

A description of the verification-sampling plan is already included in Section 4.5.2 of the approved-QAPP. This section provides details of how this sampling will be conducted. This information will be incorporated by reference in the Interim Measures Removal Work Plan.

No text revisions were made in response to this comment.

Comment 7:

Section 1.3.1, 1st sentence: there is no section 1.2.4.

The incorrect reference to Section 1.2.4 was replaced with a reference to Section 1.2.3.

Comment 8:

Figure 3-1: the surface sample identifications should be 17SSxx, instead of 17SBxx.

The surface soil sample identification should be 17SSxx, however the tags for Figure 3-1 are composed by sample location and the sample locations are all soil borings and hence named 17SBxx. The depths shown on these tags indicate whether the data is surface or subsurface.

The following sentence was added after the fourth sentence of the first paragraph in Section 3.1 to address this comment.

"The depths shown on the tags indicate whether the data is surface or subsurface."

Comment 9:

Table 3-4: Location of Maximum Concentration for March 2002 sample should be 17SB38.

The location of maximum for March 2002 was revised to read 17SB380204.

050206/P

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATION (RFI) FOR PCB CAPACITOR BURIAL/POLE YARD SOLID WASTE MANAGEMENT UNIT (SWMU) 17

NAVAL SURFACE WARFARE CENTER, CRANE
CRANE, INDIANA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0205

AUGUST 2002

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ACRONYM LIST

ALPEC	Ammunition Loading and Production Engineering Center
amsl	above mean sea level
bgs	below ground surface
CAAA	Crane Army Ammunition Activity
CASCO	Crane Ammunition Supply Control Officer
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action Navy
COC	chain-of-custody
CS	composite sample
CTO	Contract Task Order
DI	deionized
DPT	direct-push technology
EM	electromagnetic
FD	field duplicate
FOL	field operations leader
GS	grab sample
HASP	health and safety plan
IAS	initial assessment study
IDEM	Indiana Department of Environmental Management
IDW	investigation-derived waste
MC	macro-core
mg/kg	milligram per kilogram
MS	matrix spike
MSD	matrix spike duplicate
mV	millivolt
NAD	Naval Ammunition Depot
NAD27	North American Datum of 1927
NAVFAC	Naval Facilities Engineering Command
Navy	United States Department of the Navy
NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Engineering Services Center
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration

NSWC	Naval Surface Warfare Center
nT	nanoTesla
NWSCC	Naval Weapons Support Center Crane
°F	degrees Fahrenheit
PCB	polychlorinated biphenyl
PID	photoionization detector
ppb	parts per billion
PPE	personal protection equipment
ppm	parts per million
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RB	rinsate blank
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
S/N	serial number
SB	soil boring
SOP	standard operating procedure
SWMU	solid waste management unit
TSCA	Toxic Substances Control Act
TtEMI	Tetra Tech EM Inc.
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
WES	Waterways Experiment Station

1.0 INTRODUCTION

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report was prepared by Tetra Tech NUS, Inc. (TtNUS) for the Naval Surface Warfare Center (NSWC) facility located in Crane, Indiana. The work was performed through the U.S. Navy Southern Division Naval Facilities Engineering Command (NAVFAC) under Contract Task Order (CTO) 0205, for the Comprehensive Long-Term Environmental Action Navy (CLEAN 3), Contract Number N62467-94-D-0888. This RFI report addresses solid waste management unit (SWMU) 17 (PCB Capacitor Burial/Pole Yard) where transformers and capacitors that may have contained Polychlorinated Biphenyls (PCBs) were stored and where capacitors that may have contained PCBs were buried. It is known that capacitors were buried at SWMU 17 in the early to mid-1970s; however, it is not known whether any capacitors were buried prior to the early 1970s or after the mid-1970s. The purpose of this RFI report is to define the magnitude and extent of PCB contamination.

1.1 PROJECT OBJECTIVES AND SCOPE

Soil sampling for PCBs conducted in March 2001 at the SWMU 17 revealed the presence of PCBs in surface and subsurface soil at levels that exceed environmental soil cleanup standards promulgated under the Toxic Substances Control Act (TSCA) in 40 Code of Federal Regulations (CFR). This sampling was not adequate to delineate the extent of PCB contamination, however, this RFI was undertaken to further delineate the nature and extent of PCB contamination in soil in support of an upcoming removal action.

This report was generated as follows: Section 1.0 of the report is this introduction, including the project scope, objectives, and background information. Section 2.0 describes field investigation activities in the approved quality assurance project plan (QAPP) (TtNUS, December 2001). Section 3.0 presents an evaluation of the nature and extent of contamination detected at SWMU 17. Supporting documentation for this report (including the geophysical survey) is attached as Appendices A through J.

1.2 BACKGROUND

1.2.1 Facility Location and Description

NSWC Crane is located in the southern part of Indiana, immediately east of Crane Village and Burns City. The facility is approximately 75 miles southwest of Indianapolis and 71 miles northwest of Louisville, Kentucky (Figure 1-1). NSWC Crane encompasses approximately 100 square miles (62,463 acres); the

majority of the facility is located in the northern portion of Martin County. Smaller portions of the facility are located in Greene, Davies, and Lawrence Counties. The area around NSWC Crane is rural and sparsely populated. Most of the facility is forested, and the surrounding area is wooded or farmed land.

NSWC Crane provides naval support for equipment, shipboard weapons systems, and ordnance. NSWC Crane also supports the Crane Army Ammunition Activity (CAAA) with production and renovation of conventional ammunition and storage, shipment, demilitarization, and disposal of conventional ammunition (Murphy, 1992). The SWMU 17 study area is located in the north-central portion of the installation as shown on Figure 1-1. Figure 1-2 is an aerial photo of SWMU 17. Figure 1-3 displays land use and the location and direction of site photographs. Figure 1-4 displays current site photographs.

1.2.2 History of Ownership and Operation

In 1940, Congress authorized construction of a Naval Ammunition Depot (NAD) in southern Indiana, and the Naval Ammunition Depot Burns City was commissioned in late 1941. In 1943, NAD Burns City was renamed NAD Crane, and the town of Crane was built to house the rapidly growing number of civil service employees. NAD Crane's overall mission was to load, prepare, renovate, receive, store, and issue ammunition to the fleet.

During World War II, NAD Crane's mission expanded to include pyrotechnics production, mine filling, rocket assembly, field storage, torpedo storage, and ordnance spare parts and mobile equipment storage. During the 1950s, several new departments were created, the Ammunition Loading and Production Engineering Center (ALPEC) was transferred to Crane, and the Central Ammunition Supply Control Office (CASCO) was established. NAD Crane supplied ammunition to the fleet during the Korean and Vietnam Conflicts. During the Southeast Asia crisis, the number of full-time employees at NAD Crane grew to 6,800.

In 1975, NAD Crane was designated Naval Weapons Support Center Crane (NWSCC). Its new mission was to provide support for ships, aircraft, equipment, shipboard weapons systems, and assigned ordnance items, and to perform additional functions as directed.

In 1977, the Single Manager Concept was implemented. The CAAA was created, and the Army assumed ordnance production, storage, and related responsibilities as a tenant organization. Other functions remained Navy, and currently the Navy retains ownership of all real estate and facilities at NSWC Crane. Responsibility for overall station safety, security, and environmental protection remains with the

Commanding Officer, NSWC Crane. In 1992, the facility was designated as Naval Surface Warfare Center Crane (NSWC Crane). Presently, approximately 4,000 people are employed at NSWC Crane.

1.2.3 SWMU 17 Operations

A site map for SWMU 17, showing the approximate study area boundary, and an aerial photograph are provided as Figures 1-1 and 1-2. The PCB Capacitor Burial/Pole Yard has been in use since before 1966. Historically, the site has been used for the following:

- Storage of capacitors, some of which contained PCBs.
- Storage of transformers, some of which contained PCBs.
- Reported burial of capacitors, some of which may have contained PCBs.
- Storage of creosote-impregnated utility poles, some of which may have contained PCBs as a result of burst transformers.

It is known that capacitors were buried at SWMU 17 in the early to mid-1970s. It is not known whether any capacitors were buried before the early 1970s or after mid-1970. Figure 1-5 shows SWMU 17, including areas where activities have historically occurred.

1.3 PREVIOUS INVESTIGATIONS

The following sections describe the available historical soil data for SWMU 17. These data were obtained from samples collected and analyzed in March 2001.

1.3.1 Soil

NSWC Crane intends to utilize the SWMU 17 area in the future for different purposes than the use described in Section 1.2.3. As part of the investigation to determine the suitability of the site soils for future uses, samples were collected and analyzed for PCBs. Figure 1-5 includes information on the results of a previous soil investigation for PCBs (i.e., March 2001). The results show that PCBs are present at concentrations exceeding TSCA regulatory limits for soils. Table 1-1 summarizes the historical soil data (March 2001) and Table 1-2 is a presentation of applicable TSCA regulatory limits.

The data show that PCB 1260 is the primary contaminant.

The presence of PCBs correlates with information regarding historical activities at the PCB Capacitor Burial/Pole Yard. PCBs were found at locations where capacitors are reportedly buried, transformers

were stored, and creosote-impregnated utility poles were stored. PCBs were also found at a drainage area receiving runoff from the transformer storage and capacitor burial areas.

1.4 GENERAL CHARACTERISTICS OF NSWC CRANE AND SWMU 17

1.4.1 Physiography and Topography

The topography is generally flat in the vicinity of the PCB Capacitor Burial/Pole Yard site and ranges between 720 feet-above mean sea level (amsl) and 730 feet-amsl. The site sits at a local topographic high with surface elevation decreasing to the north, south, and west. The industrialized portion of the site is devoid of vegetation. Woods are located along the perimeter of the developed industrialized portion of the site.

1.4.2 Climatology and Meteorology

NSWC Crane is located in a warm, temperate climatic zone. In general, the summers are warm and humid, and winters are mild with occasional short cold periods. The temperature ranges from an average maximum July temperature of 89 degrees Fahrenheit (°F) to an average minimum January temperature of 26°F. Precipitation is fairly evenly distributed throughout the calendar year; the maximum precipitation is during the spring and early summer. The average annual precipitation at the facility is 44 inches, which consists of 42 inches of rain and 15 inches of snow. The average humidity ranges from 40 to 90 percent in summer and 60 to 90 percent in winter. Long-term climatological records for the area indicate that the monthly prevailing wind direction is from the southwest from April through December and from the northwest during January through March [National Oceanic and Atmospheric Administration (NOAA), 1988]. The annual prevailing wind direction for the region is from the southwest, and the annual average wind speed for the area is about 9.6 miles per hour.

1.4.3 Hydrology and Hydrogeology

Information regarding the hydrology and hydrogeology at NSWC Crane is incorporated by reference from Section 1.2.6 of the approved Jeep Trail/Little Sulphur Creek QAPP (TtNUS, 2001).

PCBs are not generally soluble in groundwater and are therefore not mobile in groundwater. As a result, groundwater characterization was not part of this investigation.

1.4.4 Geology and Stratigraphy

Since borings were only taken to a depth of 4 feet at SWMU 17, a discussion of the site-specific geology is not possible. A discussion of the general geology of the Crane site is presented in the Jeep Trail/Little Sulphur Creek QAPP (TtNUS, 2001).

1.4.5 Land Use

Information regarding land use classification surrounding NSWC Crane is incorporated by reference from Section 1.2.2 of the approved Jeep Trail/Little Sulphur Creek QAPP (TtNUS, 2001).

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TABLE 1-1

HISTORICAL PCB CONCENTRATIONS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE,
CRANE, INDIANA

Label	0-6 inches Concentration of Total PCBs (mg/kg)	6-12 inches Concentration of Total PCBs (mg/kg)
GSS01	<0.05	<0.05
GSS02	0.650	0.200
GSS03	1.700	1.500
GSS04	180.000	3.000
GSS05	96.00	210.000
GSS06	170.000	0.350
GSS07	0.120	0.084
GSS08	<0.05	<0.05
CSS01	17.000	9.300
CSS01	17.000	9.300
CSS01	17.000	9.300
CSS02	7.300	37.000
CSS02	7.300	37.000
CSS02	7.300	37.000
CSS03	<0.05	<0.05
CSS03	<0.05	<0.05
CSS03	<0.05	<0.05
CSS04	<0.05	<0.05
CSS04	<0.05	<0.05
CS004	<0.05	<0.05
CSS05	11.000	67.000
CSS05	11.000	67.000
CSS05	11.000	67.000
CSS06	0.830	0.290
CSS06	0.830	0.290
CSS06	0.830	0.290

MG/KG - milligrams/kilogram.
PCBs - Polychlorinated biphenyls.
GS - indicate grab sample.
CS - indicate composite sample.

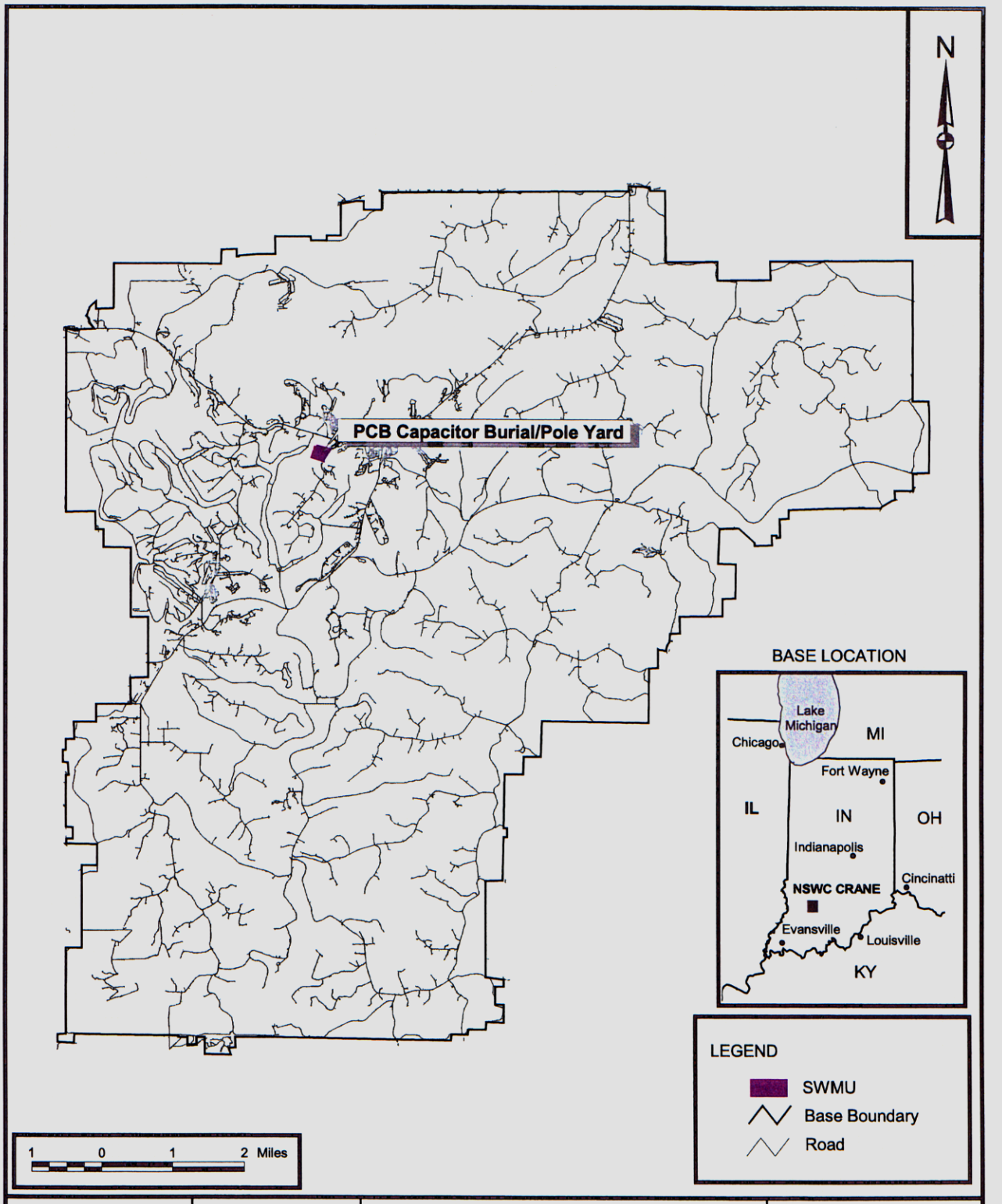
TABLE 1-2

DETCTION LIMITS VERSUS CLEANUP CRITERIA FOR SOILS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE,
CRANE, INDIANA

Parameter	CAS NUMBER	TSCA High Occupancy[1][2] (mg/kg)	TSCA Low Occupancy[1][3] (mg/kg)	IDEM Residential[1][4] (mg/kg)
PCBs SW-846 METHOD 8082				
Aroclor-1016	12674-11-2	1.0	25	1.8
Aroclor-1221	11104-28-2	1.0	25	1.8
Aroclor-1232	11141-16-5	1.0	25	1.8
Aroclor-1242	53469-21-9	1.0	25	1.8
Aroclor-1248	12672-29-6	1.0	25	1.8
Aroclor-1254	11097-69-1	1.0	25	1.8
Aroclor-1260	11096-82-5	1.0	25	1.8

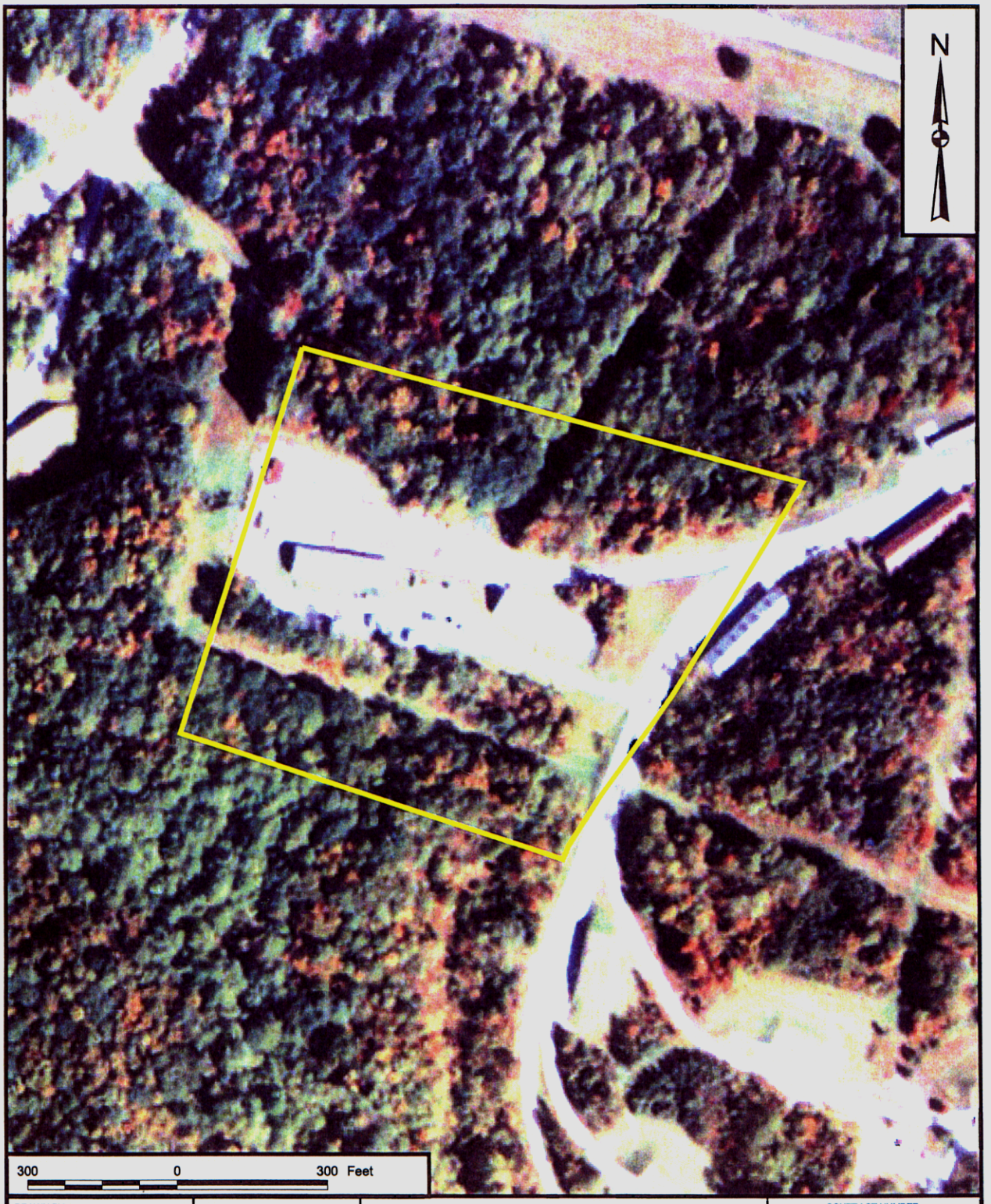
mg/kg = milligrams per kilogram.

1 The levels apply to total PCBs. Total PCBs represent the total of all Aroclors. For example, the lin an individual Aroclor would be either 1 mg/kg or 25 mg/kg for high or low occupancy, respectively, Aroclors were detected.
2 40 CFR 761.61(a)(4)(i)(A)
3 40 CFR 761.61(a)(4)(i)(B)
4 RISC Technical Guidance, Indiana Department of Environmental Management (IDEM), July 2001



DRAWN BY	DATE		CONTRACT NUMBER 4070
J. LAMEY	5/6/02	SITE LOCATION MAP SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD NAVAL SURFACE WARFARE CENTER CRANE, INDIANA	APPROVED BY — DATE —
CHECKED BY	DATE		APPROVED BY — DATE —
COST/SCHEDULE-AREA			DRAWING NO. FIGURE 1-1 / REV 0
SCALE AS NOTED			

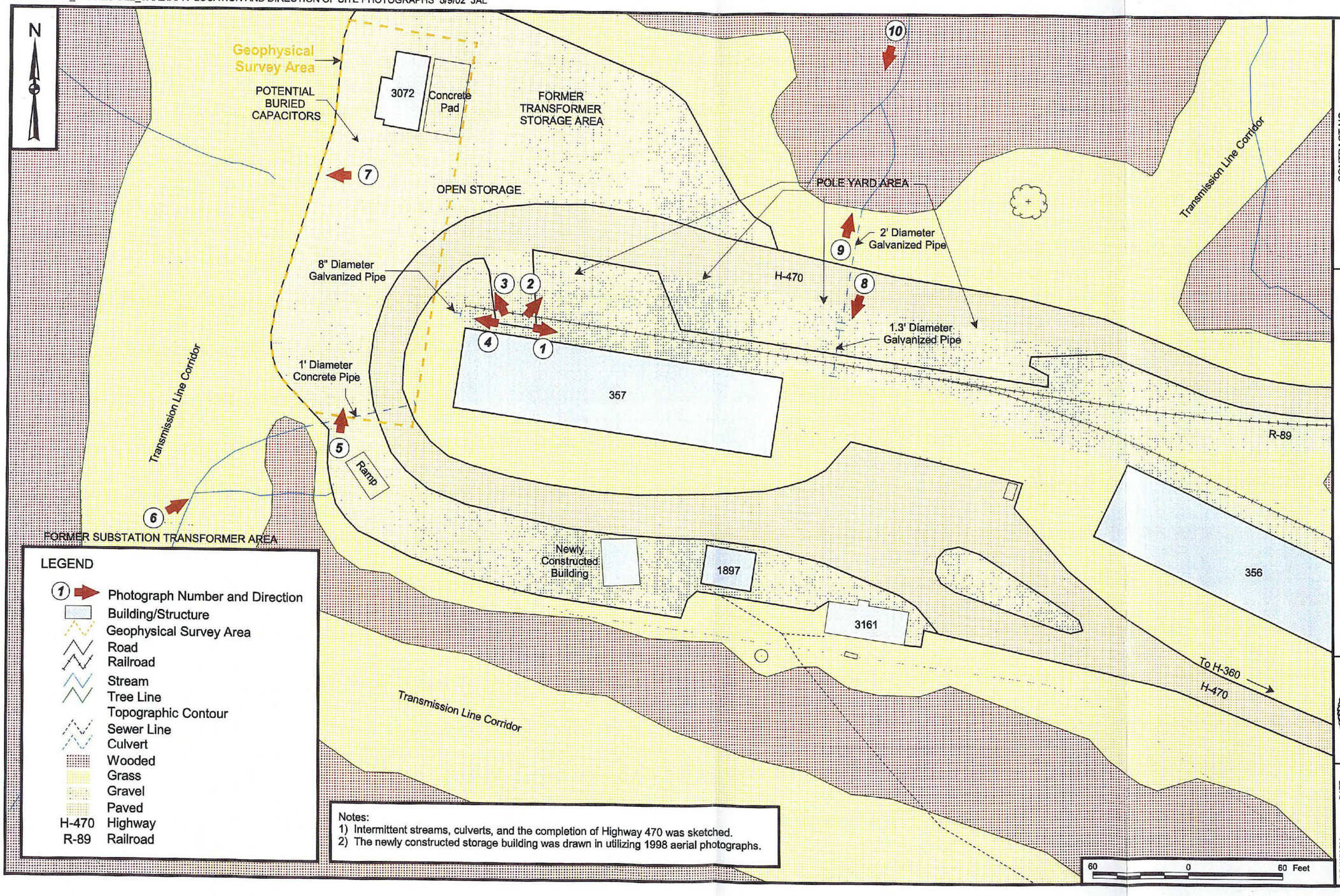
P:\GIS\NSWC_CRANE\POLE_YARD.APR SITE LOCATION 5/7/02 JAL



DRAWN BY J. LAMEY	DATE 5/3/02	1998 AERIAL PHOTOGRAPH SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD NAVAL SURFACE WARFARE CENTER CRANE, INDIANA	CONTRACT NUMBER 4070
CHECKED BY	DATE		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 REV 0

P:\GIS\NSWC_CRANE\APR\POLE_YARD.APR SITE LOCATION-AERIAL 5/7/02 JAL

P:\GIS\NSWC_CRANE\POLE_YARD.APR LOCATION AND DIRECTION OF SITE PHOTOGRAPHS 5/9/02 JAL



CONTRACT NO. 4070
APPROVED BY — DATE
APPROVED BY — DATE
DRAWING NO. FIGURE 1-3
REV —

LAND USE MAP WITH THE LOCATION AND DIRECTION OF SITE PHOTOGRAPHS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN BY J. LAMEY — DATE 5/7/02
CHECKED BY — DATE
COST/SCHED-AREA
SCALE AS NOTED

FIGURE 1-4

SITE PHOTOGRAPHS (3-08-02)
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE, INDIANA
PAGE 1 OF 5

Photograph 1 - first photograph in an east to west site panorama taken from the NW corner of Building 357 showing the pole yard storage area, gravel railroad bed and wooded area in the background.

Photograph 2 - second photograph in an east to west site panorama taken from the NW corner of Building 357 showing the pole yard storage area to the right and former transformer storage area to the left.

FIGURE 1-4

SITE PHOTOGRAPHS (3-08-02)
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
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Photograph 3 - third photograph in an east to west site panorama taken from the NW corner of Building 357 showing Building 3072 and transformer storage area on top of concrete pad.

Photograph 4 - forth and last photograph in an east to west site panorama taken from the NW corner of Building 357 showing an ~8" galvanized pipe that drains surface run-off under the road, with the geophysical survey area/storage yard and wooded area in the background.

FIGURE 1-4

SITE PHOTOGRAPHS (3-08-02)
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Photograph 5 – showing the geophysical survey area with Building 3072 in the background. Note: photograph was taken after stored items were removed from the area.

Photograph 6 - taken from transmission line corridor showing surface water drainage pathway at the SW corner of SWMU 17.

FIGURE 1-4

SITE PHOTOGRAPHS (3-08-02)
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
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Photograph 7 - taken from geophysical survey area showing surface water drainage system located in the NW portion of SWMU 17.

Photograph 8 - showing culvert NE of Building 357 at upper reaches of the northern surface water drainage system and close up of pole rack at SWMU 17.

FIGURE 1-4

SITE PHOTOGRAPHS (3-08-02)
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
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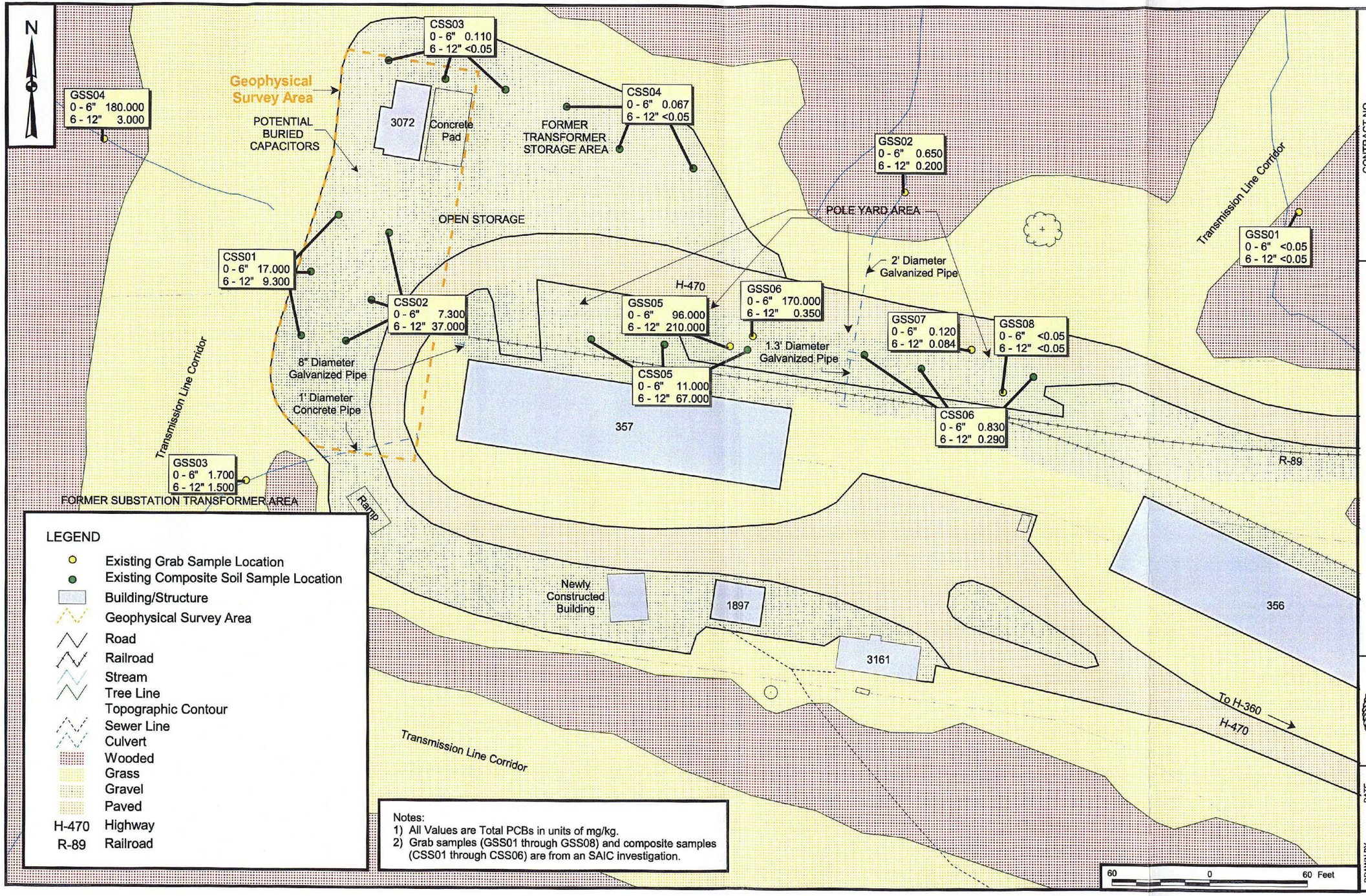
Photograph 9 - showing northern drainage system leaving SWMU 17 just north of the Highway 470 loop.

Photograph 10 - taken down gradient of photographs 8 and 9 showing northern surface water drainage system, and an abandoned 55-gallon drum with Building 357 in the background.

P:\GIS\NSWC_CRANE\POLE_YARD.APR SITE FEATURES AND EXISTING SAMPLE LOCATIONS 5/30/02 JAL



CONTRACT NO. 4070

APPROVED BY — DATE
APPROVED BY — DATE
DRAWING NO. FIGURE 1-5 REV —

SITE FEATURES AND EXISTING SAMPLE LOCATIONS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV. NAVAL FACILITIES ENGINEERING COMD ★

DRAWN BY J. LAMEY — DATE 5/7/02
CHECKED BY — DATE
COST/SCHED-AREA
SCALE AS NOTED

2.0 FIELD INVESTIGATION

2.1 OVERVIEW

This section discusses sampling activities, procedures, and documentation utilized during field operations performed for the SWMU 17 RFI. These activities were performed between March 4 and 10, 2002, in accordance with the procedures and methodologies described in the approved QAPP (TtNUS, December 2001). Referenced standard operating procedures (SOP) are included in Appendix B of the QAPP. Copies of the field logbooks, all field data sheets, and survey information are provided in Appendices A through H of this report as follows:

- A Dig Permit
- B Survey Data
- C Geophysical Survey Report
- D Boring Logs
- E Soil Sample Log Sheets
- F Field Logbooks
- G Chain of Custody Records
- H Equipment Calibration Log

2.1.1 Mobilization/Demobilization

Upon approval of the QAPP, TtNUS began mobilization activities. In addition to the QAPP, all field team members reviewed the health and safety plan (HASP) prior to the start of project activities.

Before the initiation of fieldwork, the field operations leader (FOL) arrived at the site and began on-site mobilization activities. These activities included coordination with base personnel and utility clearance of drilling locations. Utility clearance for SWMU 17 was issued through NSWC Crane Public Works and the dig permit is presented in Appendix A. NSWC Crane Environmental provided building space for use as the field office. Equipment required for the field activities was shipped to the site. After field activities were completed, the FOL was responsible for the decontamination and demobilization of all equipment and for cleaning the field office.

2.1.2 Site Restoration

TtNUS and its drilling subcontractor performed site restoration activities where needed. Since a light weight track mounted Geoprobe® was used to install all soil borings only minimal site restoration was needed and is discussed in further detail in Section 2.4.3 of this report.

2.2 SITE SURVEYING

All surveying was subcontracted to Bledsoe Tapp & Rigger, Inc., of Bloomington, Indiana, and was directed by an Indiana-licensed surveyor. Ground surface elevation at each new boring location was surveyed to within 0.01-foot vertical accuracy. Vertical elevations were referenced to the 1988 National Geodetic Vertical Datum (NGVD88). Existing survey monuments around NSWC Crane were used as reference points. Horizontal locations of soil borings and geophysical survey information were surveyed to Indiana State Plane coordinates within the nearest 0.10 foot and referenced to the 1927 North American Datum (NAD27). The survey data can be found in Appendix B.

Before the site geophysicist laid out the geophysical survey grid, the site surveyors established the corners of the geophysical survey area. The surveying team also located and staked out all historical sampling points and new sampling locations before any drilling activities were initiated. Tall wooden lathes identified the boring locations. Each lathe was labeled with a waterproof marker with a unique soil boring number, corresponding to the boring log; the boring log contained the survey data for the boring.

2.3 GEOPHYSICAL SURVEY

A surficial geophysical survey was performed from March 4 through 8, 2002 at SWMU 17 to help define the lateral distribution of buried capacitors within the designated geophysical survey area (see Figure 2-1). The geophysical survey included use of both a Geonics® EM61 Terrain Conductivity meter (EM61) and a Geometrics G-858 gradiometer. The instruments were calibrated and used in accordance with the manufacturer's instructions. A trained and experienced geophysicist conducted the geophysical survey. The geophysical survey successfully identified several anomalies that may be candidates for the objective target area, as well as a large waste burial area and many locations of subsurface metal, including buried utilities. Figure 2-2 presents a map interpreting the results of the geophysical survey and visual inspection. The interpretation of the results of the geophysical survey are presented in Section 8.1 of Appendix C. The anomalies as marked on Figure 2-2 were surveyed. Additionally, the site surveying subcontractor surveyed the perimeter of each geophysical anomaly.

The geophysical survey report is included in Appendix C of this report.

2.4 SUBSURFACE INVESTIGATION METHODOLOGIES AND PROCEDURES

2.4.1 Drilling

Soil borings were advanced with both a light-weight track-mounted Geoprobe® rig using direct-push technology (DPT) methods and by hand auger drilling. All new drilling locations are shown in Figure 2-1, and their coordinates, elevation, and sampling information are presented in Table 2-1. All DPT borings were drilled in accordance with SOP number CTO205-04 and logged in accordance with SOP number CTO205-06, both presented in Appendix B of the QAPP. Boring logs generated at SWMU 17 can be found in Appendix D of this report.

2.4.1.1 Direct-Push Drilling

The DPT involved pushing sampling tools hydraulically and/or mechanically downward into the ground to the desired depth. The DPT method was used to complete a total of 41 soil borings at SWMU 17. Soil samples were collected for both chemical analyses and lithologic logging. The borings were advanced to a total depth of 4 feet.

2.4.1.2 Hand Auger Drilling

The hand auger drilling involved manually advancing a 3-inch diameter stainless steel bucket bit downward into the ground to the desired depth. The hand auger drilling method was used to complete a total of 3 soil borings (17SB03, 17SB04, and 17SB34) at SWMU 17. Soil samples were collected for both chemical analyses and lithologic logging. Hand auger borings were also advanced to a total depth of 4 feet.

2.4.2 Borehole and Sample Logging

TtNUS field personnel maintained a log for each boring, in accordance with SOP number CTO205-06. At a minimum, the boring logs contain the following information:

- Boring identification
- Name of geologist logging the boring
- Name of drilling contractor
- Sample numbers and types
- Sample depths

- Sample recovery and sample interval
- Soil density or cohesiveness
- Soil color
- Unified Soil Classification System (USCS) material description
- Location of boring
- Drilling problems or deviations from the project-specific QAPP
- Date(s) of drilling

In addition, depths of changes in lithology, sample moisture observations, presence of organic vapor using a photoionization detector (PID), and total depth of each borehole are included on each log, as well as any other pertinent observations.

2.4.3 Borehole Abandonment

All boreholes were backfilled in accordance with SOP number CTO205-04, included in Appendix B of the QAPP. Additionally, wherever soil borings were installed through asphalt road (Highway 470), the holes were backfilled to within 6 inches of the road surface, then topped and finished with cold patch before the field team left the site at the end of the day.

2.5 GENERAL SAMPLING OPERATIONS

This section discusses the sampling methodology for surface and subsurface soil sampling activities performed at SWMU 17. All soil samples were collected in accordance with SOP number CTO205-07, included in Appendix B of the QAPP. The new sampling locations are shown on Figure 2-1.

2.5.1 Soil Sampling

2.5.1.1 Surface Soil Sampling

A total of 44 surface soil samples were collected during this field investigation (see Table 2-1). These samples were collected from the ground surface to a maximum depth of 2 feet using both DPT [utilizing a 4-foot long, 2-inch-diameter macro-core with a disposable, clear polyvinylchloride (PVC) core liner] and hand auger (with a decontaminated 3-inch-diameter stainless-steel bucket bit) sampling techniques. Upon sample retrieval, all samples were monitored with a PID for the presence of volatile organics. The soil contained in the macro-core liner was scanned with the PID immediately after the field team sliced the core lengthwise with a Geoprobe® MC Liner Kit (the subsurface sample was also scanned at this time since the macro-core was pushed to a depth of 4 feet). Likewise, the soil inside the bucket bit, was

immediately scanned with the PID upon retrieval when the hand auger drilling method was employed. In addition to the macro-core's clear PVC core liner and bucket bit a decontaminated stainless-steel mixing bowl and single-use, disposable plastic trowel were used to remove rocks, gravel, and other coarse debris and homogenize the sample. The sample was then collected for PCB analysis in the required container. The container was labeled, tagged, bubble bagged, sealed in a Ziploc® plastic bag and placed in an insulated cooler at 4°C (see Section 2.8). As samples were added to a cooler, the chain-of-custody form was updated to include each new sample container (see SOP CTO205-03 in Appendix B of the QAPP). All surface soil sampling information was recorded on soil sample log sheets and in the field logbook (included in Appendices E and F, respectively).

The soil core, as well as the soil retrieved from the bucket bit, was visually inspected and logged by a trained technician, noting the soil texture, grain size (sand, silt, or clay), color (and any unusual discoloration), moisture content, and classification according to the Unified Soil Classification System (USCS). The data were recorded on the boring log form in accordance with SOP number CTO205-06 (presented in Appendix B of the QAPP). A new boring log form was used for each boring.

Details regarding the collection and labeling of soil samples are included in SOPs CTO205-01 and CTO205-07 in the QAPP.

2.5.1.2 Subsurface Soil Sampling

A total of 44 subsurface soil samples were collected during this field investigation (see Table 2-1). All borings were drilled to a depth of 4 feet below the ground surface (bgs), and the subsurface soil sample was collected from a depth of 2 to 4 feet bgs. Subsurface soil samples were collected in the same manner as the surface soil samples. All subsurface soil sampling information was recorded on soil sample log sheets and in the field logbook (included in Appendices E and F, respectively).

The 4-foot-long clear PVC liners used inside the direct-push macro-core samplers were disposed as described in Section 2.11.

2.6 FIELD SAMPLE DOCUMENTATION

Sample documentation consisted of the completion of chain-of-custody (COC) forms, field logbooks, soil sample log sheets, equipment calibration sheets, and health and safety documentation. Field documentation was discussed in Section 4.9 of the QAPP and in SOP number CTO205-03 (presented in Appendix B of the QAPP). The soil sample log sheets contain information such as sample time, date,

description, analysis, container requirements, and method of collection. Any problems or unusual circumstances encountered during sample collection were noted on the form. Copies of all boring logs, sample log sheets, field logbooks, COCs, and equipment calibration log sheets are contained in Appendices D, E, F, G and H respectively. The FOL was responsible for the maintenance and security of all field records. Eventually, all field records, including copies of all the health and safety records were docketed and incorporated in the CTO 205 file at the TtNUS Pittsburgh, Pennsylvania office.

All samples collected at SWMU 17, NSWC Crane were properly labeled with a sample label affixed to the sample container and sample tag. Details regarding the information included on the sample labels and tags is provided in SOP number CTO205-01 (presented in Appendix B of the QAPP).

2.7 SAMPLE HANDLING, PACKAGING, AND SHIPMENT

The secured sample containers (each container individually placed inside a bubble bag and then sealed in a Ziploc® plastic bag) were placed in an insulated cooler lined with a large plastic garbage bag. The bottom of the cooler was also lined with a cushioning material (bubble wrap) to prevent container breakage. Samples were cooled with ice placed around the sample containers. A temperature blank was placed in the cooler prior to shipment. The inside plastic garbage bag was sealed with a knot, and the COC record was sealed in a Ziploc® plastic bag and taped to the inside of the cooler lid. The cooler was sealed at both ends using strapping tape. A signed and dated custody seal was applied to the front and back of the cooler lid in a staggered fashion, underneath the last wrap of strapping tape, to provide two tamper-evident seals. A FedEx® airbill was applied to the shipping cooler. TtNUS maintained custody of the samples until they were relinquished to the carrier. The FedEx® tracking number (airbill) was recorded on the COC record and the sender's copy of the airbill was maintained for shipment tracking. All samples were shipped to the laboratory using overnight shipping and received within sample holding times. The procedures for sample preservation, packing, and shipment can be found in Section 4.8 of the QAPP and in SOP number CTO205-11 (presented in Appendix B of the QAPP). The procedures used to maintain sample custody requirements are described in Section 4.9 of the QAPP and in SOP number CTO205-03, also presented in Appendix B of the QAPP.

2.8 QUALITY CONTROL (QC) SAMPLES

QC samples were collected and generated during sampling activities to monitor both field and laboratory procedures. These procedures are detailed in Section 4.7 of the QAPP. QC samples included field duplicates, equipment rinsate blanks, source water blanks and temperature blanks. A summary of QC samples is included in Table 2-2. These types of QC samples are briefly described below:

- Field Duplicates - Field duplicates were two samples collected from a single sample split into two portions. Field duplicates were collected at the rate of 1 in 10 and were used to assess the overall precision of the sampling and analysis program. Duplicates were analyzed for the same parameters in the laboratory and were labeled so that the identity of the duplicate was unknown to the laboratory (CTO205-02 provided in Attachment B of the QAPP summarizes sample nomenclature procedures).

- Equipment Rinsate Blanks - Equipment rinsate blanks were obtained under representative field conditions by collecting the rinse water that was generated by running analyte-free water through or over sample collection equipment after decontamination and before use. When pre-cleaned (i.e. the mixing bowl) or disposable sampling equipment (i.e. plastic trowels and clear PVC core liners) was used, one equipment rinsate blank was collected as a batch blank. Equipment rinsate blanks were analyzed for the same chemical constituents as the associated environmental samples. Rinsate blanks for disposable equipment were also collected.

- Source water blanks - Source water blanks were obtained by sampling the analyte-free water and potable water source(s) used for decontamination of sampling equipment. Source water blanks were used to determine whether the analyte-free water and the potable water (used for cleaning equipment) contributed to sample contamination.

- Temperature blanks - Temperature blanks were used to determine if samples were adequately cooled during shipment. Temperature blanks consist of analyte-free water poured in a sample container at the site or by the laboratory. One temperature blank was submitted to the laboratory in each cooler, and the temperature was checked upon receipt at the laboratory.

2.9 FIELD INSTRUMENT MEASUREMENTS

Field measurements were taken and recorded on the boring logs and sample log sheets during field sampling operations. A PID was used to obtain real-time ambient air measurements, which included the monitoring of organic vapors in the breathing zone during intrusive field investigation activities and monitoring of organic vapors emanating from site sources such as soil retrieved for sample collection and open boreholes.

SOP number CTO 205-05 in Appendix B of the QAPP provides additional detailed information concerning the calibration and use of the PID.

2.9.1 Equipment Calibration

The PID was calibrated daily prior to use and in accordance with the manufacturer's specifications. The PID equipment calibration log can be found in Appendix H.

2.10 DECONTAMINATION

The equipment involved in field sampling activities was decontaminated before beginning work, during drilling and sampling activities, and at the completion of the project. This equipment included the DPT rig, down-hole tools (macro-cores), and soil sampling equipment (stainless steel mixing bowl).

2.10.1 Major Equipment

The DPT rig was cleaned upon arrival and prior to leaving the site. The DPT rig was light weight and compact in structure, making it easy to maintain and keep clean.

2.10.2 Sampling Equipment

All non-dedicated reusable sampling equipment used to collect samples was decontaminated before field sampling, between samples, and before leaving the site. This equipment included DPT macro-core samplers and mixing bowls. The following decontamination steps were taken:

- Potable water, phosphate-free detergent wash (scrub if necessary)
- Potable water rinse
- Deionized (DI) water rinse
- Air dry (if possible)
- Wrap in aluminum foil (if not to be used immediately)

Note: An isopropanol rinse was not necessary because no oily residue was evident on the sampling equipment.

Additional guidance for decontamination was supplied in SOP number CTO205-09 (presented in Attachment B of the QAPP).

Disposable equipment used for sampling activities was decontaminated using detergent wash and potable water rinse, placed in plastic garbage bags, and discarded in dumpsters on the NSWC Crane

facility in accordance with procedures described in SOP number CTO205-08 (presented in Appendix B of the QAPP).

2.11 INVESTIGATION-DERIVED WASTE (IDW) HANDLING

Field investigations generated several types of potentially contaminated wastes, personal protective equipment (PPE), DPT sample core liners, DPT rig decontamination fluids and sampling equipment decontamination fluids. Based on the activities and types of contaminants present, none of the residues represented a significant risk to human health or the environment when properly managed. Management of each residue was performed as follows:

PPE and DPT Sample Liners - All PPE and DPT sample core liners were decontaminated, double-bagged, and placed in trash receptacles at the facility.

DPT and Equipment Decontamination Fluids - All DPT rig and sampling decontamination fluids were collected and stored onsite in a 500-gallon plastic holding tank. As per SOP number CTO205-08, the decontamination fluids may be discharged into the NSWC-permitted sanitary sewer system if PCB concentrations are less than 3 parts per billion (ppb). Samples of decontamination fluid were analyzed by the laboratory and were found to contain Aroclor 1260 at a concentration of 120 ppb, hence it is not permissible for decontamination fluids generated during this investigation to be discharged to the NSWC-permitted sanitary sewer system. Although the decontamination fluid could not be discharged to the sanitary sewer system, the concentration of PCBs found in these fluids were otherwise nonregulated. The decontamination fluid was shipped offsite through the NSWC Crane hazardous waste contractor for disposition.

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TABLE 2-1

SURVEY DATA
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
SURVEY DATA
NSWC CRANE, INDIANA
PAGE 1 OF 4

SOIL SAMPLING LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
17SB01	569202.4440	497586.7290	690.86
17SB02	569199.9440	497602.9790	692.83
17SB03	569213.0690	497557.9790	695.43
17SB04	569213.0690	497545.4790	697.69
17SB05	569194.9440	497557.3540	700.89
17SB06	569188.0690	497546.7290	700.89
17SB07	569393.6940	497532.9790	725.59
17SB08	569408.6940	497501.1040	725.82
17SB09	569437.4440	497497.3540	726.34
17SB10	569460.5690	497462.3540	724.63
17SB11	569492.4440	497481.1040	725.82
17SB12	569523.6940	497455.4790	FALLS IN POLE
17SB13	569564.9440	497476.7290	726.03
17SB14	569596.1940	497466.1040	725.12
17SB15	569639.9440	497483.6040	724.74
17SB16	569656.1940	497459.8540	724.89
17SB17	569641.1940	497429.2290	FALLS IN TRANSFORMER
17SB18	569633.0690	497404.8540	722.87
17SB19	569406.1940	497423.6040	724.7
17SB20	569385.5690	497393.6040	725.59
17SB21	569359.3190	497432.9790	724.27
17SB22	569393.0690	497476.7290	725.55
17SB23	569426.8190	497531.7290	726.48
17SB24	569470.5690	497512.3540	727.13
17SB25	569464.9440	497542.9790	726.99
17SB26	569531.1940	497496.1040	726.87
17SB27	569504.9440	497521.1040	727.39
17SB28	569510.5690	497542.9790	727.02
17SB29	569564.9440	497497.9790	726.54
17SB30	569565.5690	497529.2290	726.60
17SB31	569550.5690	497336.7290	729.02
17SB32	569462.4440	497349.8540	727.93
17SB33	569288.0690	497379.2290	726.13
17SB34	569318.0690	497350.4790	717.59
17SB35	569260.5690	497344.8540	714.53
17SB36	569329.9440	497444.8540	723.52
17SB37	569336.1940	497484.8540	723.67
17SB38	569354.3190	497519.8540	724.04
17SB39	569348.0690	497440.4790	723.99
17SB40	569365.5690	497472.9790	724.61
17SB41	569374.9440	497504.8540	725.10
17SB42	569500.5690	497437.9790	723.83
17SB43	569543.6940	497439.2290	723.59
17SB44	569603.0690	497434.8540	723.59

TABLE 2-1

SURVEY DATA
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
SURVEY DATA
NSWC CRANE, INDIANA
PAGE 2 OF 4

HISTORICAL COMPOSITE SOIL SAMPLE LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
CSS01	569325.4477	497446.1205	-
CSS01	569331.4340	497485.5119	-
CSS01	569348.4967	497520.3049	-
CSS02	569353.1690	497442.8618	-
CSS02	569368.9373	497468.3474	-
CSS02	569379.7915	497509.5698	-
CSS03	569379.3917	497614.6727	-
CSS03	569413.9226	497603.4764	-
CSS03	569450.7109	497597.2535	-
CSS04	569488.8713	497586.9704	-
CSS04	569521.1715	497561.3205	-
CSS04	569566.1447	497549.7010	-
CSS05	569548.5022	497441.4340	-
CSS05	569600.2316	497438.4541	-
CSS06	569671.9412	497435.6097	-
CSS06	569707.1881	497427.0794	-
CSS06	569776.0228	497422.4127	-
CSS05	569503.9555	497444.3400	-
HISTORICAL GRAB SOIL SAMPLE LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
GSS01	569939.2765	497524.3316	-
GSS02	569697.0013	497535.5595	-
GSS03	569291.4619	497356.3188	-
GSS04	569203.3248	497566.3509	-
GSS05	569589.0891	497440.4669	-
GSS06	569603.6724	497446.6720	-
GSS07	569738.1309	497438.9665	-
GSS08	569757.3953	497412.7509	-
CORNERS OF GEOPHYSICAL SURVEY AREA			
LOCATION	EASTING	NORTHING	ELEVATION
GSANW	569354.0605	497623.6731	-
GSANE	569433.2288	497609.2723	-
GSASW	569336.5044	497377.7586	-
GSASE	569395.3511	497367.1833	-
GEOPHYSICAL SURVEY AREA ANOMALIES			
LOCATION	EASTING	NORTHING	ELEVATION
GSA01 (1.3' RADIUS)	569343.3399	497398.0574	723.94
GSA02 (2.9' RADIUS)	569352.5167	497416.7615	724.14
GSA03 (1.9' RADIUS)	569360.1196	497415.5741	724.45
GSA04 (1.7' RADIUS)	569360.0234	497418.7207	724.49
GSA05 (1.7' RADIUS)	569353.0583	497434.0100	724.07
GSA06 (2.3' RADIUS)	569346.4132	497442.7521	723.85
GSA07 (1.1' RADIUS)	569360.0693	497442.6963	724.32
GSA08 (1.2' RADIUS)	569352.0378	497455.8253	724.04
GSA09 (1.2' RADIUS)	569349.1952	497456.4509	723.96
GSA10 (1.2' RADIUS)	569353.9152	497458.6187	724.07
GSA11 (4.3' RADIUS)	569361.9752	497475.2786	724.35
GSA12 (1.9' RADIUS)	569406.6179	497510.9241	725.76
GSA13 (1.5' RADIUS)	569350.6692	497521.5956	723.85

TABLE 2-1

SURVEY DATA
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
SURVEY DATA
NSWC CRANE, INDIANA
PAGE 3 OF 4

GEOPHYSICAL SURVEY AREA ANOMALIES CONTINUED			
LOCATION	EASTING	NORTHING	ELEVATION
GSA14 (1.5' RADIUS)	569355.8428	497512.3775	723.97
GSA15 (2.0' RADIUS)	569360.6787	497508.5262	724.20
GSA16 (1.0' RADIUS)	569363.2298	497514.5346	724.36
GSA17 (1.8' RADIUS)	569353.1623	497539.2602	724.11
GSA18 (3.0' RADIUS)	569370.8846	497521.5195	724.64
GSA19 (ANOMALY)	569370.1044	497519.1432	724.62
GSA19 (ANOMALY)	569366.1606	497517.3169	724.44
GSA19 (ANOMALY)	569367.8182	497512.6766	724.61
GSA19 (ANOMALY)	569381.4368	497505.8434	725.11
GSA19 (ANOMALY)	569387.7664	497508.4943	725.24
GSA19 (ANOMALY)	569386.1503	497511.9420	725.23
GSA20 (6.0' RADIUS)	569386.9887	497541.1416	725.55
GSA21 (6.0' RADIUS)	569371.9445	497545.1472	724.98
GSA22FE (CULVERT)	569322.0065	497504.1767	723.04
GSA22 (CULVERT)	569332.6313	497503.1963	723.42
GSA22 (CULVERT)	569341.3493	497494.3831	723.67
GSA22 (CULVERT)	569350.1449	497498.0507	723.77
GSA22/23COR (CULVERT)	569339.4825	497523.5723	723.49
GSA22/23FE (CULVERT)	569331.9838	497527.8464	722.93
GSA23 (ANOMALY)	569350.8188	497527.8472	723.83
GSA23 (ANOMALY)	569346.8907	497539.0183	723.71
GSA23 (ANOMALY)	569349.0941	497543.5667	723.88
GSA23 (ANOMALY)	569354.9861	497549.5587	724.33
GSA23 (ANOMALY)	569356.0332	497563.4825	724.49
GSA23 (ANOMALY)	569348.5008	497579.3129	724.20
GSA23FE (ANOMALY)	569341.0687	497584.8372	723.41
GSA24 (ANOMALY)	569361.9308	497580.9430	724.68
GSA24 (ANOMALY)	569367.5636	497575.7016	724.76
GSA24 (ANOMALY)	569367.8107	497582.5602	724.79
GSA24 (ANOMALY)	569364.2806	497587.4805	724.75
GSA24 (ANOMALY)	569360.2859	497591.1016	724.72
PIPE (ANOMALY)	569433.3840	497603.3738	726.21
GSA25 (5.0' RADIUS)	569352.9556	497491.2268	723.77
GSA26 (ANOMALY)	569375.6467	497619.0241	725.39
GSA26 (ANOMALY)	569389.6508	497617.8854	725.65
GSA26 (ANOMALY)	569403.9407	497619.4083	725.90
GSA26 (ANOMALY)	569397.5017	497629.6943	725.65
GSA26 (ANOMALY)	569385.1495	497632.6779	725.18
GSA26 (ANOMALY)	569374.1539	497627.0085	725.06
PIPE (ANOMALY)	569393.3377	497612.2936	725.80
GSA27 (10' RADIUS)	569423.3982	497623.8547	725.75
GSA28 (ANOMALY)	497632.7987	497632.7987	724.91
GSA28 (ANOMALY)	497643.3520	497643.3520	724.51
GSA28/29COR (ANOMALY)	497647.9630	569378.2522	724.36
GSA28/29FE (ANOMALY)	497655.8740	569380.5561	722.16
GSA29 (ANOMALY)	497639.1504	569368.8789	724.35
GSA29FE (ANOMALY)	497624.5265	569344.1758	723.12
GSA30 (1.8' RADIUS)	497600.9419	569343.1504	723.89
GSA31 (ANOMALY)	497531.8069	569382.6710	725.27
GSA31 (ANOMALY)	497523.3578	569380.2829	725.10

TABLE 2-1

SURVEY DATA
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
SURVEY DATA
NSWC CRANE, INDIANA
PAGE 4 OF 4

GEOPHYSICAL SURVEY AREA ANOMALIES CONTINUED			
LOCATION	EASTING	NORTHING	ELEVATION
GSA31 (ANOMALY)	497518.7721	569406.0282	725.82
GSA31 (ANOMALY)	497524.6198	569407.9306	725.91
GSA32 (2.3' RADIUS)	497471.1535	569315.1252	723.19
GSA33 (ANOMALY)	497500.9015	569390.5077	725.29
GSA33 (ANOMALY)	497502.7220	569384.2720	725.21
GSA33 (ANOMALY)	497496.8887	569382.8455	725.11
GSA33 (ANOMALY)	497492.0636	569377.6798	724.97
GSA33 (ANOMALY)	497488.3558	569379.8132	725.05
GSA33 (ANOMALY)	497489.0201	569386.1755	725.24

BUILDING 357 COORDINATES			
LOCATION	EASTING	NORTHING	ELEVATION
NW CORNER BLDG. 357	569428.6250	497431.7500	-
NE CORNER BLDG. 357	569627.8750	497402.3120	-
NW CORNER BLDG. 356	569844.6129	497348.5008	-
SW CORNER BLDG. 356	569822.7563	497302.4968	-

TABLE 2-2

SUMMARY OF SOIL QUALITY CONTROL SAMPLES
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD STUDY AREA
NSWC CRANE, CRANE, INDIANA

Duplicate Samples	
Field Duplicate ID	**Environmental Sample ID**
FD03080201	17SS190002
FD03080202	17SS420002
FD03080203	17SS330002
FD03080204	17SB300204
FD03090201	17SB410204
FD03090202	17SS370002
FD03090203	17SB220204
FD03090204	17SS240002
FD03090205	17SB110204

Matrix Spike/Matrix Spike Duplicate Samples
17SB190204
17SB020204
17SB410204
17SS390002
17SS090002

Equipment Rinsate Blanks
RB03070203
RB03090201
RB03100201

1 Field duplicates were collected at a frequency of one per every 10 samples.
2 Matrix spike (MS) and matrix spike duplicate (MSD) samples were collected at a frequency of one per every 20 samples.
3 Rinsate blanks were collected at a frequency of one per every sampling device in contact with the samples.

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P:\GIS\NSWC_CRANE\POLE_YARD.APR SITE CHARACTERIZATION SAMPLE LOCATIONS 5/9/02 JAL

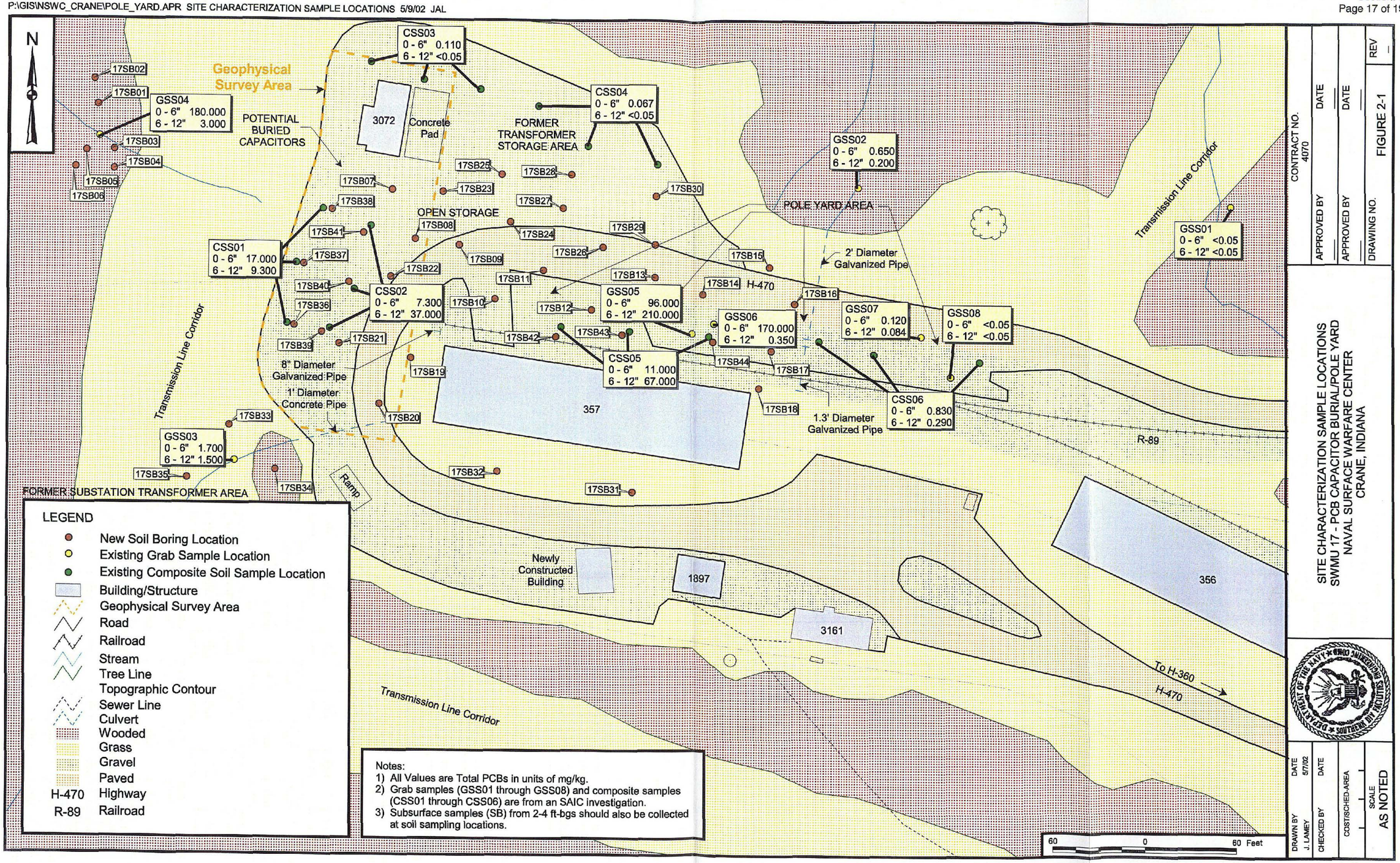
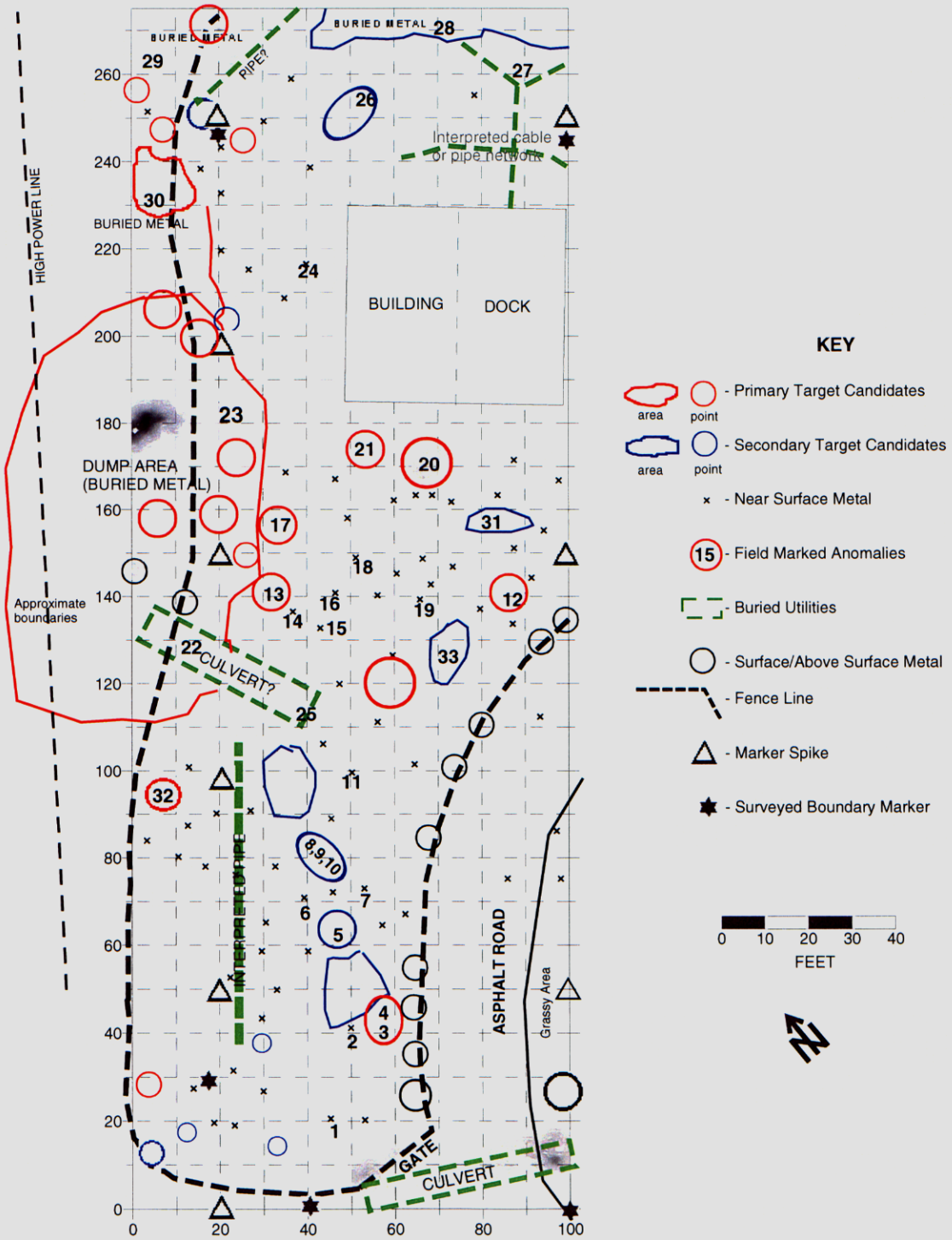


FIGURE 2-2: INTERPRETATION OF GEOPHYSICAL SURVEY
SWMU 17
NSWC CRANE
CRANE, INDIANA



3.0 NATURE AND EXTENT OF CONTAMINATION

Surface soil (collected at depths between 0 and 2 feet) and subsurface soil (collected at depths between 2 and 4 feet) samples were collected from SWMU 17 and analyzed for the presence of PCBs during the investigation phase of the RFI. Based on analytical data obtained during this investigation (i.e., March 2002 sampling event) and an investigation performed during March 2001 (data collected by SAIC), the nature and extent of contamination in the surface and subsurface soil at SWMU 17 are discussed in the following subsections.

The soil samples were only analyzed for PCBs via SW-846 method 8081A (USEPA June 1997). The following PCB congener mixtures were targeted in this analysis: Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260. Aroclor is the industrial trade name for these PCB congeners. Hereafter, these compounds will be referred to as PCB-1016, PCB-1221, etc. Positive PCB results in soil samples were tallied and displayed as Total PCBs; nondetected results are not included in this tally.

All data collected in support of this RFI were validated as per the criteria outlined in Section 9.0 of the approved Jeep Trail/Little Sulphur Creek QAPP (TtNUS, 2001). Copies of the Data Validation Memoranda are included as Appendix I of this RFI.

Soil data collected from SWMU 17 were compared to TSCA environmental soil cleanup standards. The standards used in this comparison are the TSCA High Occupancy Standard of 1 mg/kg (i.e., ppm) and the TSCA Low Occupancy Standard of 25 mg/kg [40 CFR 761.61 (a)(3)(i)(A and B)]. Total PCB concentrations of individual samples were compared to these standards. Hereafter, these standards shall be referred to as simply, the 1 mg/kg standard and the 25 mg/kg standard, respectively.

3.1 SURFACE SOIL

As shown in Table 3-1, 28 surface soil samples were collected during March 2001 and 44 surface soil samples were collected during March 2002 to evaluate the nature and extent of PCB contamination at SWMU 17. Surface soil samples collected during March 2001 were collected at two depth ranges 0 to 6 inches and 6 to 12 inches. Surface soil samples collected during March 2002 were collected at a depth range of 0 to 2 feet. Figure 3-1 displays the surface and subsurface soil sample locations and the Total PCB concentrations. The depths shown on these tags indicate whether the data is surface or subsurface. Figure 3-2 graphically displays where Total PCB concentrations in surface soil exceed the 1 mg/kg

standards (represented by a yellow circle) and 25 mg/kg (represented by a red circle). Because there are two different surface soil results (i.e., 0 to 6 inches and 6 to 12 inches) for the composite and grab samples collected by SAIC during March 2001 only the maximum total PCB concentration is presented in Figure 3-2 for these locations.

Table 3-2 presents a summary of descriptive statistics for surface soil detections, including range of detection, frequency of detection and location of maximum. Appendix J contains a copy of the entire analytical database for SWMU 17 soil.

March 2001

PCBs were detected in 22 of the 28 surface soil samples collected during the March 2001 sampling event. PCB-1260 and PCB-1242 were the only PCB congener detected in these samples. As displayed by Tables 3-1 and 3-2, concentrations of PCB-1260 ranged from 0.067 mg/kg to 210 mg/kg. PCB-1242 was detected at a concentration of 15 mg/kg in sample GSUB04. Total PCB concentrations in samples CSS01, CSS02, CSS05, GSS03, CSUB01, GSUB03, and GSUB04 exceeded the 1 mg/kg standard but were less than the 25 mg/kg standard. Total PCB concentrations in samples GSS04 (180 mg/kg), GSS05 (96 mg/kg), GSS06 (170 mg/kg), CSUB02 (37 mg/kg), CSUB05 (67 mg/kg), and GSUB05 (210 mg/kg) were in excess of the 25 mg/kg standard.

March 2002

PCBs were detected in 23 of the 44 surface soil samples collected during the March 2002 sampling event. PCB-1260 was the only PCB congener detected in these samples. As displayed by Tables 3-1 and 3-2, concentrations of PCB-1260 ranged from 0.18 mg/kg to 140 mg/kg. Total PCB concentrations in samples 17SS110002, 17SS120002, 17SS140002, 17SS150002, 17SS210002, 17SS220002, 17SS370002, and 17SS400002 exceeded the 1 mg/kg standard but were less than the 25 mg/kg standard. The locations from where these samples were collected are displayed in Figure 3-1 and 3-2 and are labeled as locations 17SB11, 17SB12, 17SB14, 17SB15, 17SB21, 17SB22, 17SB37, and 17SB40, respectively. Total PCB concentrations in samples 17SS100002 (120 mg/kg) and 17SS420002 (140 mg/kg) were in excess of the 25 mg/kg standard.

3.2 SUBSURFACE SOIL

As shown in Table 3-3, 44 subsurface soil samples were collected during March 2002 to evaluate the nature and extent of PCB contamination in subsurface soil at SWMU 17. No subsurface soil samples were collected during the March 2001 sampling event. Figure 3-1 displays the surface and subsurface

soil sample locations and the Total PCB concentrations. Figure 3-3 graphically displays where Total PCB concentrations in subsurface soil exceed the 1 mg/kg standard (represented by a yellow circle) and the 25 mg/kg standard (represented by a red circle).

Table 3-4 presents a summary of descriptive statistics for subsurface soil detections, including range of detection, frequency of detection, and location of maximum. Appendix J contains a copy of the entire analytical database for SWMU 17 soil.

March 2002

PCBs were detected in six of the 44 subsurface soil samples collected during the March 2002 sampling event. PCB-1260 was the only PCB congener detected in these samples. As displayed by Tables 3-3 and 3-4, concentrations of PCB-1260 ranged from 0.2 mg/kg to 1.6 mg/kg. The Total PCB concentration in sample 17SB380204 (i.e., location 17SB38) exceeded the 1 mg/kg standard but was less than the 25 mg/kg standard. All Total PCB results were less than the 25 mg/kg standard.

3.3 SUMMARY AND CONCLUSION

To concisely summarize results, SWMU 17 was further broken down into several different areas. The Building 357 – Pole Yard Area which is defined as the area immediately east of the geophysical survey area and encompassed by and including Highway 470. The Former Transformer Storage Area which is defined as the area immediately east of the geophysical survey area and north of Highway 470. The Geophysical Survey Area (the boundary of which is shown all Figures in this RFI) and Drainage ways.

In this discussion only the maximum total PCB concentrations as displayed on Figure 3-2 will be discussed for the grab and composite surface soil samples collected by SAIC during March of 2001.

Building 357 - Pole Yard Area

As shown in Figure 3-2, surface soil samples collected from locations 17SB10, 17SB42, GSS05, CSS05, and GSS06 displayed maximum Total PCB concentrations in excess of the 25 mg/kg standard. These samples were collected within 30 feet of Building 357. The subsurface soil samples from locations 17SB10 and 17SB42 did not contain any PCBs.

The maximum Total PCB concentrations in surface soil samples collected from locations 17SB11, 17SB12, 17SB14, and 17SB15 exceed the 1 mg/kg standard but are less than the 25 mg/kg standard. These samples were collected within 60 feet of Building 357, except 17SS150002 (at location 17SB15)

which was collected approximately 90 feet north of the northeast corner of Building 357. The subsurface soil samples collected from locations 17SB11, 17SB12, and 17SB15 did not contain PCBs. Subsurface soil collected from location 17SB14 contained Total PCBs in excess of the 1 mg/kg standard but less than the 25 mg/kg standard. In the remainder of the surface and subsurface soil samples collected from within the Pole Yard vicinity contained PCBs at concentrations less than the 1 mg/kg standard. It does not appear that PCBs in the Pole Yard area are migrating beyond the Highway 470.

Former Transformer Storage Area

Surface soil samples collected in the vicinity of the Former Transformer Storage Area contained PCBs at concentrations less than the 1 mg/kg standard. PCBs were not detected in subsurface soil samples collected in the vicinity of the Former Transformer Storage Area.

Geophysical Survey Area (Potential Buried Capacitors)

Surface soil sample locations, CSS01, 17SB37, 17SB21, 17SB22, and 17SB40, which were collected from within the boundary of the geophysical survey area contained Total PCBs at concentrations greater than the 1 mg/kg standard but less than the 25 mg/kg standard. Surface soil collected from location CSS02 contained maximum Total PCB concentrations in excess of the 25 mg/kg standard. Additionally, a subsurface soil sample collected from 17SB38 also contained Total PCBs in excess of the 1 mg/kg standard but less than the 25 mg/kg standard. PCB concentrations in the remainder of the subsurface soil samples from within the geophysical survey area were less than the 1 mg/kg standard or not detected.

Drainage ways

Surface soil collected from location GSS01 in the extreme eastern portion of the SWMU 17 did not contain PCBs. Surface soil collected at location GSS02 which is near a drainage way to the north of the Pole Yard contained Total PCBs at concentrations less than the 1 mg/kg standard. No other samples were collected in the vicinity of samples GSS01 and GSS02.

Surface soil from location GSS03, which was collected in a drainage way southwest of Building 357 and the geophysical survey area, contained Total PCBs at a concentration of 1.7 mg/kg which is greater than the 1 mg/kg standard but less than the 25 mg/kg standard. Soil samples outside the drainage channel were collected in this vicinity, however the Total PCB concentrations in these samples (both surface and subsurface) were less than the 1 mg/kg standard or not detected.

Samples were also collected from a drainage way to the north and to the extreme west of both Building 357 and the geophysical survey area. The surface soil samples collected from GSS04 contained maximum Total PCBs at a concentration in excess of the 25 mg/kg standard, however all the surface and subsurface soil samples surrounding this locations did not contain PCBs.

A few key features of the contaminant distributions are evident. Samples GSS04 and GSS03 were collected in drainage ditches that drain the western side of SWMU 17. These samples exhibited total PCB concentrations of 180 mg/kg and 1.7 mg/kg, respectively. Of all the surface and subsurface soil samples (locations 17SB01 through 17SB07, and 17SB33 through 17SB35) that were collected outside of the respective drainage ditches near these two samples, the total PCB concentrations were less than detectable concentrations. The sole exception was the surface soil sample at location 17SS33, which had a total PCB concentration of 0.89 mg/kg. This contamination pattern is consistent with migration of contaminated soil runoff and sediment within, but not outside of, the drainage channels. Sample GSS04 at 180 ppm of total PCBs, represents significant PCB transport to the northwest of the site. The total PCB concentration of sample GSS03 barely exceeded the 1 mg/kg standard at 1.7 mg/kg, which indicates a much lesser PCB transport to the southwest of the site. Surface and subsurface soil contamination patterns on the western side of the SWMU exhibited greater concentrations near the head of the northwestern drainage channel than at the head of the southwestern drainage channel. This contamination pattern, especially for surface soils that are expected to feed surface runoff to the drainage channels, is consistent with greater PCB concentrations in the northwestern drainage channel. The extent of contaminated sediment in this channel is unknown at this time.

Conclusion

The majority of elevated concentrations observed for soil samples follow a line running east to west through the SWMU that is flanked by Highway 470 and the northern edge of Building 357 and crosses the highway to the west. The contamination patterns displayed in Figures 3-2 and 3-3 show a much greater impact to surface soils than to subsurface soils. This is consistent with the known behavior of PCBs in soil to remain relatively localized in soils unless transported through erosion.

The contaminant patterns, in general, suggest a patchy distribution of PCB contamination, primarily in surface soils. Despite this patchiness, two characteristics are clear: 1) there is a much lesser impact to subsurface soils than to surface soils, and 2) the greatest PCB concentrations are observed in those areas where capacitors are known to have been buried. The east-west surface and subsurface soil contaminant patterns are well bounded by the sampling pattern to the north, east, and south at the 1 ppm level. A sole exception exists at sampling location 17SB15 where the surface soil had a total PCB

concentration of 4.4 mg/kg. To the west, the soil contaminant patterns are not completely bounded relative to the 1 mg/kg standard but they are bounded relative to the 25 mg/kg standard. PCBs are being transported in drainage channels, but the majority of this transport is associated with the northwestern channel. Contamination in this channel is not bounded relative to either the 1 mg/kg or the 25 mg/kg standard. Contamination in the southwestern drainage channel is not bounded relative to the 1 mg/kg standard but it is bounded relative to the 25 mg/kg standard. Contamination in the northeastern drainage exhibited no PCB contamination in excess of the 1 mg/kg standard.

PCBs were detected most frequently in surface soil samples. PCB concentrations increased with depth at the following locations 17SB38, CSS02, CSS05, and GSS05. PCB concentrations decreased with depth in the remainder of the sample locations. In many cases, subsurface soil samples collected from the 2 to 4 foot depth range did not contain any positive PCB detections.

PCB contamination is well bounded by the sampling pattern to the north, east and south relative to the 1 mg/kg standard. The sole exception is surface soil at sampling location17SB15 that had a total PCB concentration of 4.4 mg/kg. Samples collected in the easternmost, northernmost, and westernmost portion of the site are bounded with respect to the 25 mg/kg standard.

In order to provide a clear picture of PCB contamination in soil, Figures 3-4 and 3-5 were generated and include PCB concentration contours. The PCB contours were generated using Environmental Visualization System (PRO Version) software, Version 5.11, by C Tech Development Corporation. The Krig Z and Isolines modules were used to produce the 1 ppm and 25 ppm contour lines for each data set (surface and subsurface soils). Each data set was processed using logarithmic values and setting the minimum input parameter to half the detection limit and the maximum input parameter to the maximum value in each data set. The kriging boundary was defined by the convex adaptive grid of the data set. This method limits the kriging to the spatial distribution of the data points themselves confining interpolation within the limits of the outermost data points within an area. For the purposes of kriging the site was divided into the following three data sets:

1) All sample points except those associated with the northwest and southwest drainage ways.

2) The northwest drainage way which includes samples from locations GSS04, 17SB01, 17SB02, 17SB03, 17SB04, 17SB04, 17SB05, and 17SB06.

3) The southwest drainage way which includes samples from locations GSS03, 17SB33, 17SB34, and 17SB35.

Figure 3-4 displays a blue contour line outlining the area of surface soil (0 to 2 feet) exceeding the 1 mg/kg standard and the magenta contour line outlining the area of surface soil (0 to 2 feet) exceeding the 25 mg/kg standard. Figure 3-5 displays a blue contour line outlining the area of subsurface soil (2 to 4 feet) exceeding the 1 mg/kg standard, concentrations of total PCBs in subsurface soil samples were all less than 2 mg/kg and hence did not necessitate drawing a 25 mg/kg contour line. These figures display cross hatching of the anticipated excavation area. Excavation areas do not move past the fence line to the west of the site into the transmission corridor and do include areas under buildings or paved surfaces. The dashed contour line indicates that the limit of kriging is interrupted by physical features (i.e., paved surface) or by the data set (i.e., there were no other data points outside the area with which to interpolate concentrations).

The contours were used to calculate soil volumes proposed for excavation. The delineated areas of PCB contamination in surface soil (Figure 3-4) and subsurface soil (3-5) were measured using the Planix Model 5.5 Planimeter. The planimeter measurements along with the scale of the figures were used to calculate the total volume of PCB contamination in surface soil and subsurface soil. Appendix K of this report contains the calculation of soil volume. Each noncontiguous contour location was measured separately and added together to get the total soil area (as displayed in the Appendix K sample calculation). Figure 3-4 denotes these areas as 1A through 1E (i.e., those contoured location/areas exceeding the 1 mg/kg standard) and 25A through 25E (i.e., those contoured locations/areas exceeding the 25 mg/kg standard). The total volume of surface soil exceeding the 1 mg/kg standard is 1312 cubic yards. The total volume of surface soil exceeding the 25 mg/kg standard is 265 cubic yards and finally, the total volume of subsurface soil exceeding the 1 mg/kg standard is 10 cubic yards. There were no subsurface soil exceedances of the 25 mg/kg standard.

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TABLE 3-1

SUMMARY OF POSITIVE DETECTIONS IN SURFACE SOIL
SWMU 17- PCB CAPACITOR BURIAL.POLE YARD
NSWC CRANE
CRANE, INDIANA
PAGE 1 OF 2

Sample Identification:	17SS010002	17SS020002	17SS030002	17SS040002	17SS050002	17SS060002	17SS070002	17SS080002	17SS090002	17SS100002	17SS110002	17SS120002
Depth Range:	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet
Date of Collection:	3/8/2002	3/8/2002	3/10/2002	3/10/2002	3/8/2002	3/8/2002	3/8/2002	3/8/2002	3/9/2002	3/8/2002	3/9/2002	3/9/2002
Polychlorinated Biphenyls (mg/kg)												
PCB-1260	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.83	0.18 J	120	1.2 J	1.8 J
Total PCBs	ND	ND	ND	ND	ND	ND	ND	0.83	0.18	120	1.2	1.8

Sample Identification:	17SS130002	17SS140002	17SS150002	17SS160002	17SS170002	17SS180002	17SS190002	17SS200002	17SS210002	17SS220002	17SS230002	17SS240002
Depth Range:	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet
Date of Collection:	3/9/2002	3/9/2002	3/10/2002	3/10/2002	3/10/2002	3/10/2002	3/8/2002	3/8/2002	3/9/2002	3/9/2002	3/8/2002	3/9/2002
Polychlorinated Biphenyls (mg/kg)												
PCB-1260	0.82 J	20	4.4	0.17	0.14 U	0.15 U	0.15 U	0.32	3.4	1.3	0.24	0.44 J
Total PCBs	0.82	20	4.4	0.17	ND	ND	ND	0.32	3.4	1.3	0.24	0.44

Sample Identification:	17SS250002	17SS260002	17SS270002	17SS280002	17SS290002	17SS300002	17SS310002	17SS320002	17SS330002	17SS340002	17SS350002	17SS360002
Depth Range:	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet
Date of Collection:	3/8/2002	3/9/2002	3/8/2002	3/8/2002	3/9/2002	3/8/2002	3/8/2002	3/8/2002	3/8/2002	3/10/2002	3/8/2002	3/9/2002
Polychlorinated Biphenyls (mg/kg)												
PCB-1260	0.14 U	0.60 J	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.89	0.15 U	0.15 U	0.14 U
Total PCBs	ND	0.6	ND	ND	ND	ND	ND	ND	0.89	ND	ND	ND

Sample Identification:	17SS370002	17SS380002	17SS390002	17SS400002	17SS410002	17SS420002	17SS430002	17SS440002	CSS01	CSS02	CSS03	CSS04
Depth Range:	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 2 feet	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches
Date of Collection:	3/9/2002	3/8/2002	3/9/2002	3/9/2002	3/9/2002	3/8/2002	3/9/2002	3/10/2002	3/1/2001	3/1/2001	3/1/2001	3/1/2001
Polychlorinated Biphenyls (mg/kg)												
PCB-1260	1.6	0.28	0.42	11	0.36	140 J	0.87 J	0.13 U	17	7.3	0.11	0.067
Total PCBs	1.6	0.28	0.42	11	0.36	140	0.87	ND	17	7.3	0.11	0.067

Sample Identification:	CSS05	CSS06	GSS01[1]	GSS02[1]	GSS03[1]	GSS04[1]	GSS05	GSS06	GSS07	GSS08
Depth Range:	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches
Date of Collection:	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001
Polychlorinated Biphenyls (mg/kg)										
PCB-1260	11	0.83	0.05 U	0.65	1.7	180	96	170	0.12	0.05 U
Total PCBs	11	0.83	ND	0.65	1.7	180	96	170	0.12	ND

TABLE 3-1

SUMMARY OF POSITIVE DETECTIONS IN SURFACE SOIL
SWMU 17- PCB CAPACITOR BURIAL.POLE YARD
NSWC CRANE
CRANE, INDIANA
PAGE 2 OF 2

Sample Identification:	CSUB01	CSUB02	CSUB03	CSUB04	CSUB05	CSUB06	GSUB01[1]	GSUB02[1]	GSUB03[1]
Depth Range:	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches	6 - 12 inches
Date of Collection:	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01
Polychlorinated Biphenyls (PCBs) (mg/kg)									
PCB-1242	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
PCB-1260	9.3	37	0.05 U	0.05 U	67	0.29	0.05 U	0.2	1.5
Toatal PCBs	9.3	37	ND	ND	67	0.29	ND	0.2	1.5

Sample Identification:	GSUB07	GSUB08
Depth Range:	6 - 12 inches	6 - 12 inches
Date of Collection:	03/01/01	03/01/01
Polychlorinated Biphenyls (PCBs) (mg/kg)		
PCB-1242	0.05 U	0.05 U
PCB-1260	0.084	0.05 U
Toatal PCBs	0.084	ND

1 - Grab sample collected in the surface water drainage pathway.
U - Indicates that the chemical was not detected at the numerical detection limit (sample-specific quantitation limit) noted. Nondetected results from the laborator This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introc or laboratory analysis.
UJ - Indicates that the chemical was not detected. However, the detection limit (sample-specific quantitation limit) is considered to be estimated based on probler laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.
J - Indicates that the chemical was detected. However, the associated numerical result is not a precise representation of the amount that is actually present in th The laboratory-reported concentration is considered to be an estimate of the true concentration.
ND - Not detected.
mg/kg - milligram per kilogram.
PCBs - Polychlorinated biphenyls.
Note: Samples collected in March 2001 by SAIC. Data were provided by the Navy.

TABLE 3-2

FREQUENCY OF DETECTION SURFACE SOIL
SWMU 17- PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

CAS Number	Parameter	Detection Frequency	Minimum Concentration	Maximum Concentration	Minimum Nondetect	Maximum Nondetect	Location of Maximum Concentration
March 2001[1] Polychlorinated Biphenyls (mg/kg)							
53469-21-9	PCB-1242	1/28	15	15	0.05	0.17	GSUB04
11096-82-5	PCB-1260	22/28	0.067	210	0.05	0.17	GSUB05
March 2002[2] Polychlorinated Biphenyls (mg/kg)							
11096-82-5	PCB-1260	23/44	0.18	140	0.05	0.16	17SS420002
Total PCBs							
	Total PCBs	45/72	0.067	210	0.05	0.16	GSUB05

1 - Associated samples March 2001:

CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	GSS01	GSS02	GSS03	GSS04
GSS05	GSS06	GSS07	GSS08	CSUB01	CSUB02	CSUB03	CSUB04	CSUB05	CSUB06
GSUB01	GSUB02	GSUB03	GSUB04	GSUB05	GSUB06	GSUB07	GSUB08		

2 - Associated Samples March 2002:

17SS010002	17SS020002	17SS030002	17SS040002	17SS050002	17SS060002	17SS070002	17SS080002	17SS090002	17SS100002
17SS110002	17SS120002	17SS130002	17SS140002	17SS150002	17SS160002	17SS170002	17SS180002	17SS190002	17SS200002
17SS210002	17SS220002	17SS230002	17SS240002	17SS250002	17SS260002	17SS270002	17SS280002	17SS290002	17SS300002
17SS310002	17SS320002	17SS330002	17SS340002	17SS350002	17SS360002	17SS370002	17SS380002	17SS390002	17SS400002
17SS410002	17SS420002	17SS430002	17SS440002						

mg/kg - milligram per kilogram.
PCBs - Polychlorinated biphenyls.

TABLE 3-3

SUMMARY OF POSITIVE DETECTIONS IN SUBSURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Sample Identification:	17SB010204	17SB020204	17SB030204	17SB040204	17SB050204	17SB060204	17SB070204	17SB080204	17SB090204	17SB100204	17SB110204	17SB120204
Depth Range (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/08/02	03/08/02	03/10/02	03/10/02	03/08/02	03/08/02	03/08/02	03/08/02	03/09/02	03/08/02	03/09/02	03/09/02
Polychlorinated Biphenyls (PCBs) (mg/kg)												
PCB-1242	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
PCB-1260	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
Toatal PCBs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample Identification:	17SB130204	17SB140204	17SB150204	17SB160204	17SB170204	17SB180204	17SB190204	17SB200204	17SB210204	17SB220204	17SB230204	17SB240204
Depth Range (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/09/02	03/09/02	03/10/02	03/10/02	03/10/02	03/10/02	03/08/02	03/08/02	03/09/02	03/09/02	03/08/02	03/09/02
Polychlorinated Biphenyls (PCBs) (mg/kg)												
PCB-1242	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
PCB-1260	0.2 J	0.69	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
Toatal PCBs	0.2	0.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample Identification:	17SB250204	17SB260204	17SB270204	17SB280204	17SB290204	17SB300204	17SB310204	17SB320204	17SB330204	17SB340204	17SB350204	17SB360204
Depth Range (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/08/02	03/09/02	03/08/02	03/08/02	03/09/02	03/08/02	03/08/02	03/08/02	03/08/02	03/10/02	03/08/02	03/09/02
Polychlorinated Biphenyls (PCBs) (mg/kg)												
PCB-1242	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
PCB-1260	0.14 U	0.33 J	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
Toatal PCBs	ND	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample Identification:	17SB370204	17SB380204	17SB390204	17SB400204	17SB410204	17SB420204	17SB430204	17SB440204
Depth Range (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/09/02	03/08/02	03/09/02	03/09/02	03/09/02	03/08/02	03/09/02	03/10/02
Polychlorinated Biphenyls (PCBs) (mg/kg)								
PCB-1242	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U
PCB-1260	0.43	1.6	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.26
Toatal PCBs	0.43	1.6	ND	ND	ND	ND	ND	0.26

1 - Grab sample collected in the surface water drainage pathway.
U - Indicates that the chemical was not detected at the numerical detection limit (sample-specific quantitation limit) noted. Nondetected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.
UJ - Indicates that the chemical was not detected. However, the detection limit (sample-specific quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.
J - Indicates that the chemical was detected. However, the associated numerical result is not a precise representation of the amount that is actually present in the sample. The laboratory-reported concentration is considered to be an estimate of the true concentration.
ND- Not detected.
mg/kg - milligram per kilogram.
PCBs - Polychlorinated biphenyls.
Note:Samples collected in March 2001 by SAIC. Data were provided by the Navy.

TABLE 3-4

FREQUENCY OF DETECTION SUBSURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

CAS Number	Parameter	Detection Frequency	Minimum Concentration	Maximum Concentration	Minimum Nondetect	Maximum Nondetect	Location of Maximum Concentration
March 2002[2] Polychlorinated Biphenyls (mg/kg)							
11096-82-5	PCB-1260	6/44	0.2	1.6	0.05	0.17	17SB380204
Total PCBs							
	Total PCBs	16/58	0.1	210.0	0.05	0.17	GSUB05

1 Associated Samples March 2002:

17SB010204	17SB020204	17SB030204	17SB040204	17SB050204	17SB060204	17SB070204	17SB080204	17SB090204	17SB100204
17SB110204	17SB120204	17SB130204	17SB140204	17SB150204	17SB160204	17SB170204	17SB180204	17SB190204	17SB200204
17SB210204	17SB220204	17SB230204	17SB240204	17SB250204	17SB260204	17SB270204	17SB280204	17SB290204	17SB300204
17SB310204	17SB320204	17SB330204	17SB340204	17SB350204	17SB360204	17SB370204	17SB380204	17SB390204	17SB400204
17SB410204	17SB420204	17SB430204	17SB440204						

PCBs - Polychlorinated biphenyls.
mg/kg milligram per kilogram.

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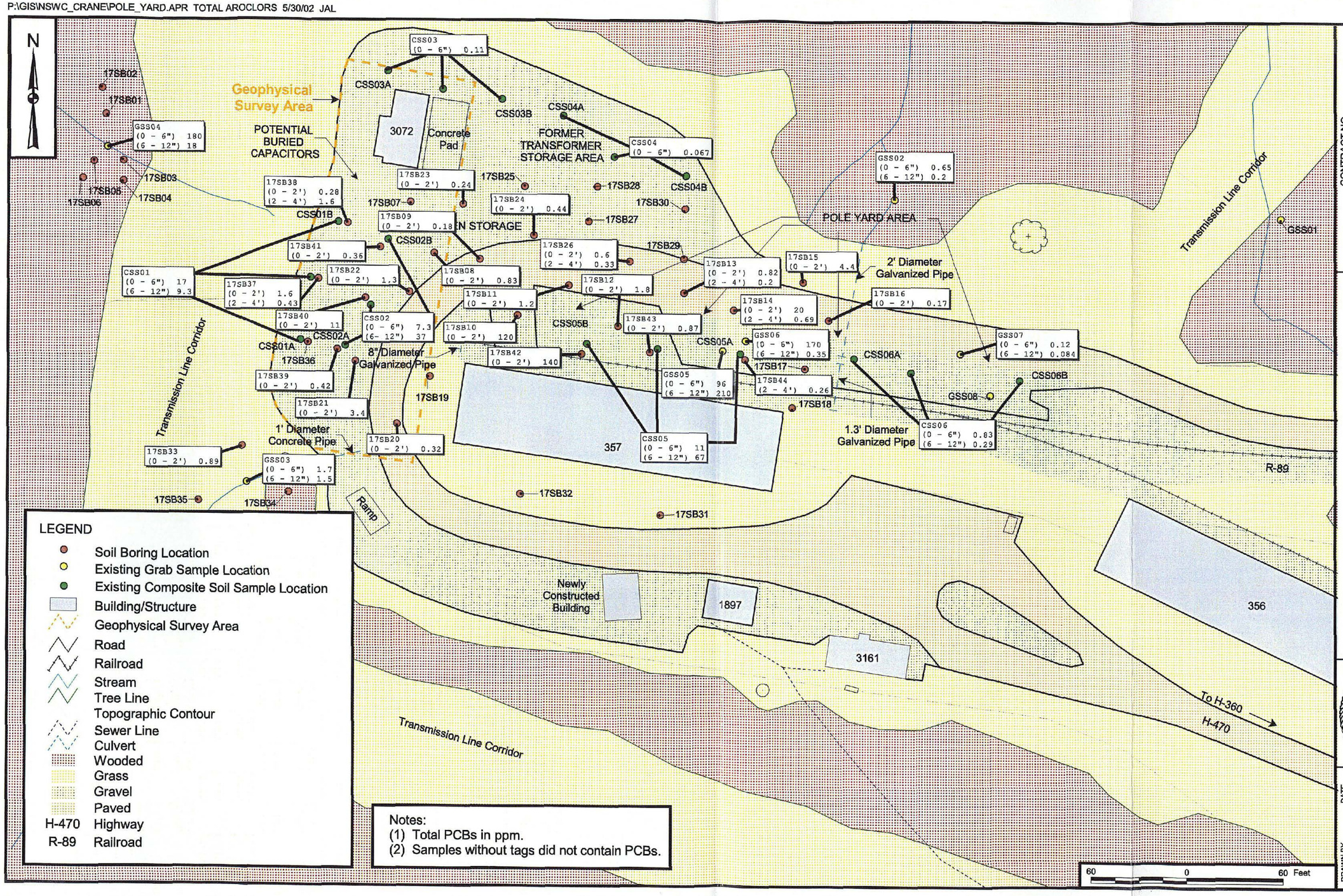
P:\GIS\NSWC_CRANE\POLE_YARD.APR TOTAL AROCLORS 5/30/02 JAL

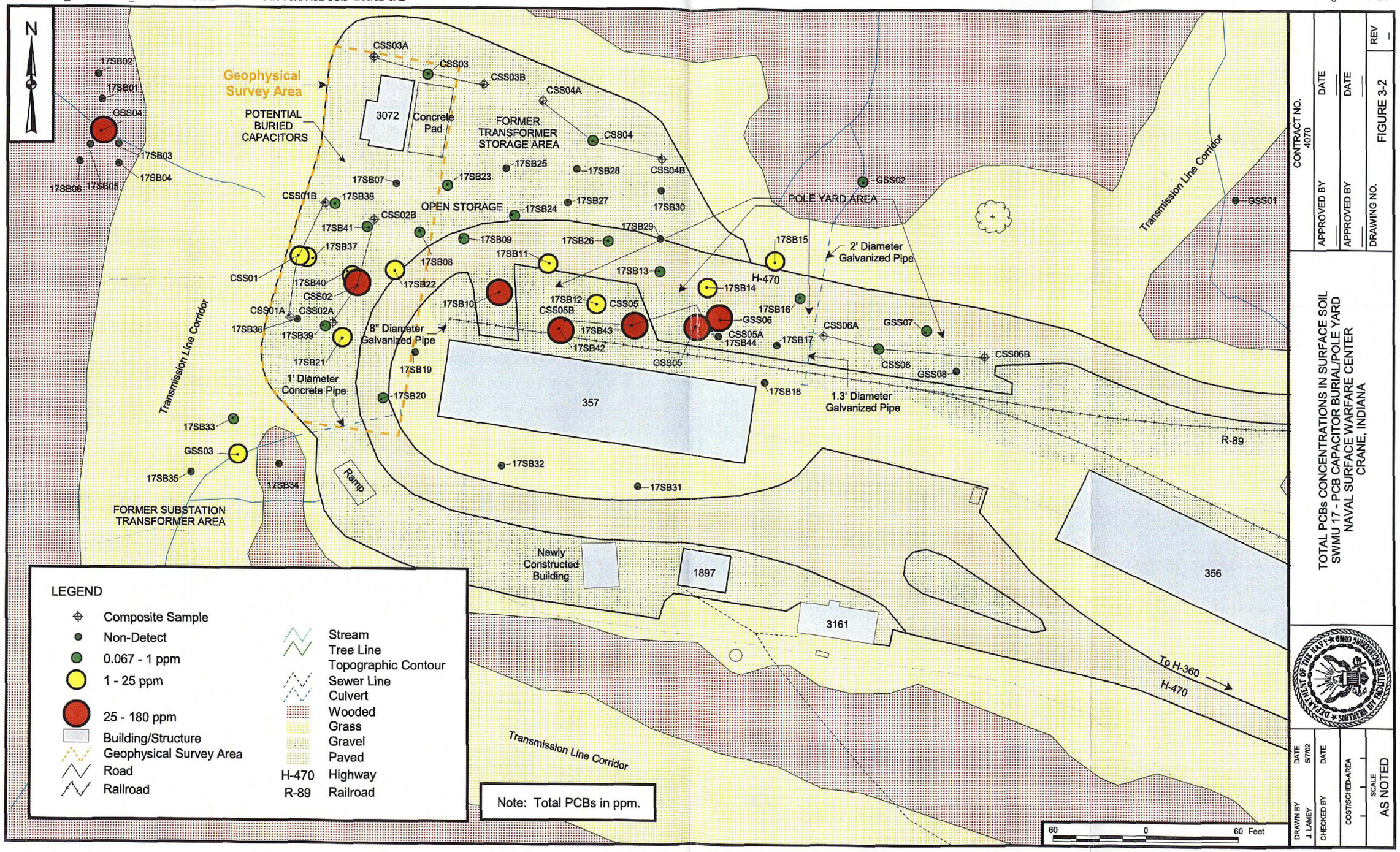


CONTRACT NO. 4070
APPROVED BY ___ DATE ___
APPROVED BY ___ DATE ___
DRAWING NO. FIGURE 3-1
REV 1

TOTAL PCBs CONCENTRATIONS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN BY J. LAMEY DATE 5/7/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

P:\GIS\NSWC_CRANE\POLE_YARD.APR TOTAL AROCLORS IN SURFACE SOIL 5/30/02 JAL



CONTRACT NO. 4070
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-2
REV -

TOTAL PCBs CONCENTRATIONS IN SURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN BY J. LAMEY DATE 5/7/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

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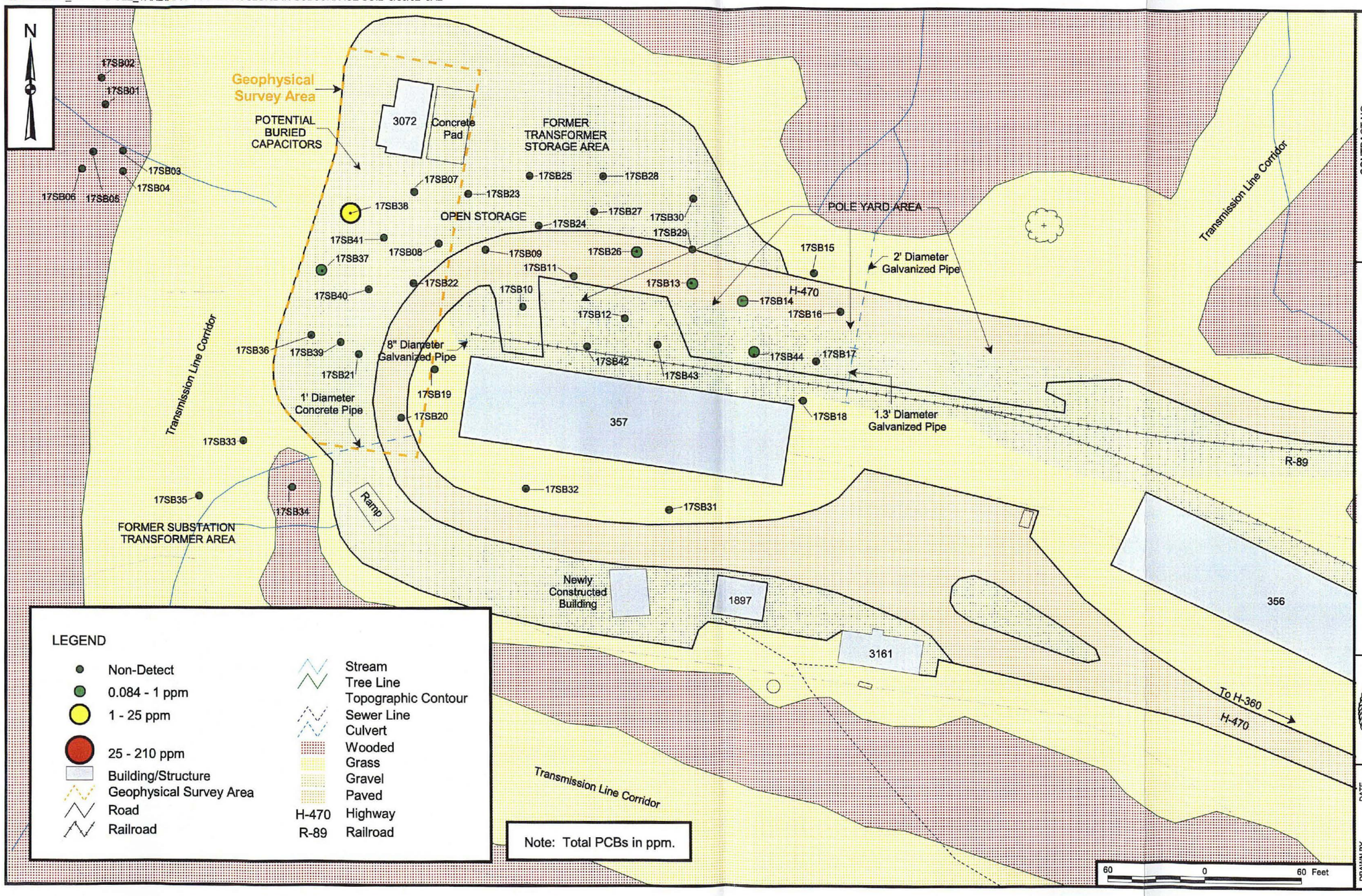


CONTRACT NO. 4070

APPROVED BY ___ DATE ___

APPROVED BY ___ DATE ___

DRAWING NO. FIGURE 3-3

REV –

TOTAL PCBs CONCENTRATIONS IN SUBSURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

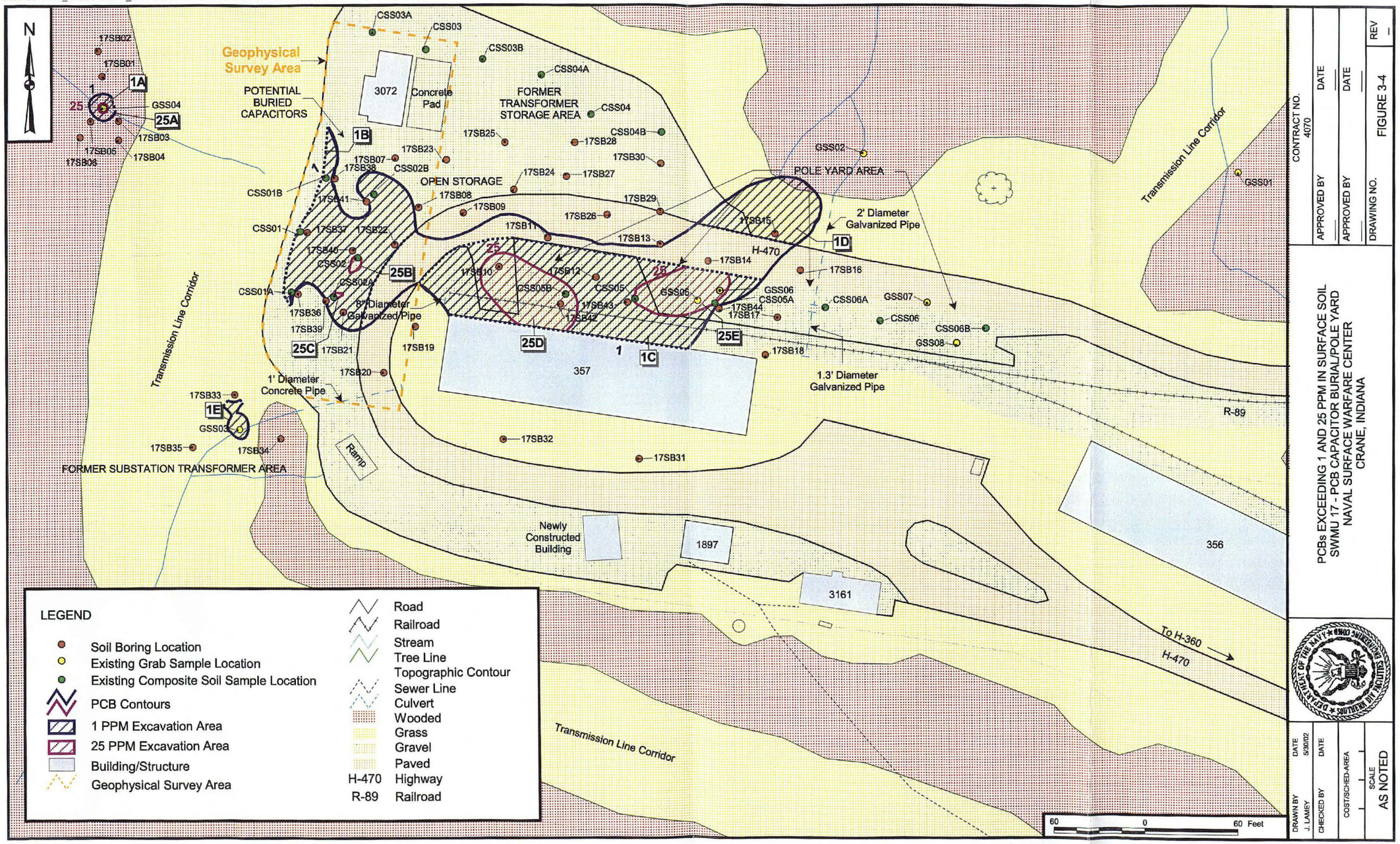
DRAWN BY J. LAMEY DATE 5/7/02

CHECKED BY DATE

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\NSWC_CRANE\POLE_YARD.APR TOTAL AROCLORS IN SURFACE SOIL-CONTOURS 6/11/02 JAL



CONTRACT NO. 4070

APPROVED BY ___ DATE ___

APPROVED BY ___ DATE ___

DRAWING NO. FIGURE 3-4

REV –

PCBs EXCEEDING 1 AND 25 PPM IN SURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

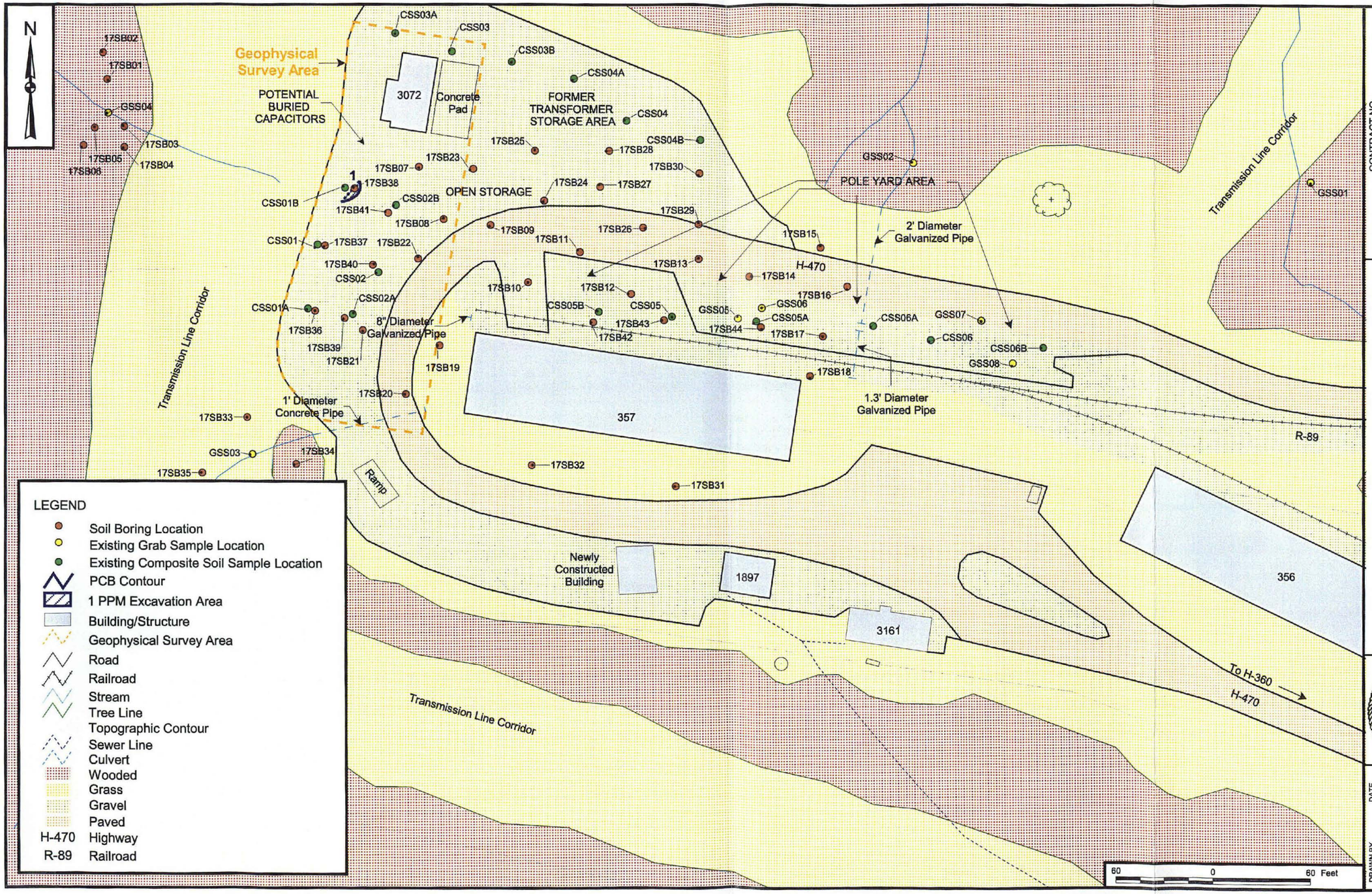
DRAWN BY J. LAMEY DATE 5/30/02

CHECKED BY DATE

COST/SCHED-AREA

SCALE AS NOTED

P:\GIS\NSWC_CRANE\POLE_YARD.APR TOTAL AROCLORS IN SUBSURFACE SOIL-CONTOURS 6/11/02 JAL



CONTRACT NO. 4070

APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO.	FIGURE 3-5	REV 1

PCBs EXCEEDING 1 PPM IN SUBSURFACE SOIL
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN BY J. LAMEY	DATE 6/7/02	
CHECKED BY	DATE	
COST/SCHED-AREA		SCALE AS NOTED

REFERENCES

Indiana Department of Environmental Management (IDEM), 2001. RISC Technical Resource Guidance, Indianapolis, Indiana. July 24.

Murphy, W.L., 1992. Draft RCRA Facility Investigation, Phase III Groundwater Release Characterization Report, SWMU #03/10 ABG, NSWCC, Crane, Indiana. U.S. Army Corps of Engineers Waterways Experimental Station, Vicksburg, Mississippi.

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NOAA, 1988. National Oceanic and Atmospheric Administration, National Climatic Data Center, "Local Climatological Data, Part III - Central Region", Indianapolis, Indiana, March 1988.

Tetra Tech NUS, Inc. (TtNUS), 2001. Quality Assurance Project Plan for Ammunition Burning Grounds Little Sulphur Creek and Jeep Trail Resource and Recovery Act, Phase III RCRA Facility Investigation. April.

Tetra Tech NUS, Inc. (TtNUS), December 2001. Quality Assurance Project Plan for PCB Capacitor Burial/Pole Yard Solid Waste Management Unit (SWMU) 17 RCRA Facility Investigation and Verification of Removal. December 2001.

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40 CFR 761.61(a)(4)(i)(A-B)

APPENDIX A

DIG PERMIT

DIGGING PERMIT
NWSCC 11000/3 (REV. 12/89)

3694

REQUESTED BY: Terry Pate X-1460
DATE: 2/25/02
WORK REQUEST OR E/S NO.: 33527
LOCATION: SWMU 17/04 - B 357 & B 3072
WORK WILL BE PERFORMED BY: Tetra Tech NUS, Inc.
DATE (Start - on or about): 3/1/02
WORK DESCRIPTION: Drill 44 soil borings to obtain subsurface samples. Area is SWMU 17/04, PCB Capacitor Burial/Pole Yard in the vicinity of B-357 & B-3072. Drawing Attached.

EQUIPMENT TYPE

☐ HAND TOOLS ☐ CORE DRILL ☐ TRENCHER ☐ BACKHOE ☐ HEAVY EQUIPMENT

Faxed ZI 2/25/02

UNDERGROUND UTILITIES LOCATED IN WORK SITE

UTILITY	PRESENT	MARKED	NOT LOCATED	REMARKS
COMPRESSED AIR ZI	N/A			SJ 2-28-02
ELECTRICAL	YES	YES		SF
FIRE ALARM	N/A			SFC 2/26/0
GROUNDING ZI	NA			SJ 2-25-02
Exp 3/17 NATURAL GAS 02 704 68	✓	✓	OK TO SOUTH	2/26/02 MWM
SECURITY ALARM	NA			2/25/02
SEWER	NA			2-26-02 Rich
STEAM	NA			2-26
TELEPHONE Faxed 2/25/02	NA			2-28-02
WATER	NA			2-26-02 Rich
ZI Electrical	NA			SJ 2-28-02
Faxed 2/25/02 General Dynamics				JB 2/28/02

In addition to the general precautions for excavating where underground utilities are present, comply with the following:

PERMIT HOLDER SIGNATURE: [signature] DATE: 3-4-02

DIGGING PERMIT APPROVED BY: [signature] DATE: 3/1/02

DISTRIBUTION:

ORIGINAL - Code 0932 File
YELLOW - Supv. at work site
PINK - Permit requestor

APPENDIX B

SURVEY DATA

SURVEY DATA
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA
PCB CAPACITOR BURIAL/POLE YARD SURVEY POINTS

SOIL SAMPLING LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
17SB01	569202.4440	497586.7290	690.86
17SB02	569199.9440	497602.9790	692.83
17SB03	569213.0690	497557.9790	695.43
17SB04	569213.0690	497545.4790	697.69
17SB05	569194.9440	497557.3540	700.89
17SB06	569188.0690	497546.7290	700.89
17SB07	569393.6940	497532.9790	725.59
17SB08	569408.6940	497501.1040	725.82
17SB09	569437.4440	497497.3540	726.34
17SB10	569460.5690	497462.3540	724.63
17SB11	569492.4440	497481.1040	725.82
17SB12	569523.6940	497455.4790	FALLS IN POLE
17SB13	569564.9440	497476.7290	726.03
17SB14	569596.1940	497466.1040	725.12
17SB15	569639.9440	497483.6040	724.74
17SB16	569656.1940	497459.8540	724.89
17SB17	569641.1940	497429.2290	FALLS IN TRANSFORMER
17SB18	569633.0690	497404.8540	722.87
17SB19	569406.1940	497423.6040	724.7
17SB20	569385.5690	497393.6040	725.59
17SB21	569359.3190	497432.9790	724.27
17SB22	569393.0690	497476.7290	725.55
17SB23	569426.8190	497531.7290	726.48
17SB24	569470.5690	497512.3540	727.13
17SB25	569464.9440	497542.9790	726.99
17SB26	569531.1940	497496.1040	726.87
17SB27	569504.9440	497521.1040	727.39
17SB28	569510.5690	497542.9790	727.02
17SB29	569564.9440	497497.9790	726.54
17SB30	569565.5690	497529.2290	726.60
17SB31	569550.5690	497336.7290	729.02
17SB32	569462.4440	497349.8540	727.93
17SB33	569288.0690	497379.2290	726.13
17SB34	569318.0690	497350.4790	717.59
17SB35	569260.5690	497344.8540	714.53
17SB36	569329.9440	497444.8540	723.52
17SB37	569336.1940	497484.8540	723.67
17SB38	569354.3190	497519.8540	724.04
17SB39	569348.0690	497440.4790	723.99
17SB40	569365.5690	497472.9790	724.61
17SB41	569374.9440	497504.8540	725.10
17SB42	569500.5690	497437.9790	723.83
17SB43	569543.6940	497439.2290	723.59
17SB44	569603.0690	497434.8540	723.59

E2 BASED ON F.F. OF BUILDING 357 FROM SURVEY SUPPLIED BY BILL HUDSON
BASIS ARE ON CORNERS OF BUILDING 357
COORDINATES SUPPLIED BY TETRA TECH

SURVEY DATA
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA
PCB CAPACITOR BURIAL/POLE YARD SURVEY POINTS

HISTORICAL COMPOSITE SOIL SAMPLE LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
CSS01	569325.4477	497446.1205	-
CSS01	569331.4340	497485.5119	-
CSS01	569348.4967	497520.3049	-
CSS02	569353.1690	497442.8618	-
CSS02	569368.9373	497468.3474	-
CSS02	569379.7915	497509.5698	-
CSS03	569379.3917	497614.6727	-
CSS03	569413.9226	497603.4764	-
CSS03	569450.7109	497597.2535	-
CSS04	569488.8713	497586.9704	-
CSS04	569521.1715	497561.3205	-
CSS04	569566.1447	497549.7010	-
CSS05	569548.5022	497441.4340	-
CSS05	569600.2316	497438.4541	-
CSS06	569671.9412	497435.6097	-
CSS06	569707.1881	497427.0794	-
CSS06	569776.0228	497422.4127	-
CSS05	569503.9555	497444.3400	-
HISTORICAL GRAB SOIL SAMPLE LOCATIONS			
LOCATION	EASTING	NORTHING	ELEVATION
GSS01	569939.2765	497524.3316	-
GSS02	569697.0013	497535.5595	-
GSS03	569291.4619	497356.3188	-
GSS04	569203.3248	497566.3509	-
GSS05	569589.0891	497440.4669	-
GSS06	569603.6724	497446.6720	-
GSS07	569738.1309	497438.9665	-
GSS08	569757.3953	497412.7509	-
CORNERS OF GEOPHYSICAL SURVEY AREA			
LOCATION	EASTING	NORTHING	ELEVATION
GSANW	569354.0605	497623.6731	-
GSANE	569433.2288	497609.2723	-
GSASW	569336.5044	497377.7586	-
GSASE	569395.3511	497367.1833	-
GEOPHYSICAL SURVEY AREA ANOMALIES			
LOCATION	EASTING	NORTHING	ELEVATION
GSA01 (1.3' RADIUS)	569343.3399	497398.0574	723.94
GSA02 (2.9' RADIUS)	569352.5167	497416.7615	724.14
GSA03 (1.9' RADIUS)	569360.1196	497415.5741	724.45
GSA04 (1.7' RADIUS)	569360.0234	497418.7207	724.49
GSA05 (1.7' RADIUS)	569353.0583	497434.0100	724.07
GSA06 (2.3' RADIUS)	569346.4132	497442.7521	723.85
GSA07 (1.1' RADIUS)	569360.0693	497442.6963	724.32
GSA08 (1.2' RADIUS)	569352.0378	497455.8253	724.04
GSA09 (1.2' RADIUS)	569349.1952	497456.4509	723.96
GSA10 (1.2' RADIUS)	569353.9152	497458.6187	724.07
GSA11 (4.3' RADIUS)	569361.9752	497475.2786	724.35
GSA12 (1.9' RADIUS)	569406.6179	497510.9241	725.76
GSA13 (1.5' RADIUS)	569350.6692	497521.5956	723.85

SURVEY DATA
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA
PCB CAPACITOR BURIAL/POLE YARD SURVEY POINTS

GEOPHYSICAL SURVEY AREA ANOMALIES CONTINUED			
LOCATION	EASTING	NORTHING	ELEVATION
GSA14 (1.5' RADIUS)	569355.8428	497512.3775	723.97
GSA15 (2.0' RADIUS)	569360.6787	497508.5262	724.20
GSA16 (1.0' RADIUS)	569363.2298	497514.5346	724.36
GSA17 (1.8' RADIUS)	569353.1623	497539.2602	724.11
GSA18 (3.0' RADIUS)	569370.8846	497521.5195	724.64
GSA19 (ANOMALY)	569370.1044	497519.1432	724.62
GSA19 (ANOMALY)	569366.1606	497517.3169	724.44
GSA19 (ANOMALY)	569367.8182	497512.6766	724.61
GSA19 (ANOMALY)	569381.4368	497505.8434	725.11
GSA19 (ANOMALY)	569387.7664	497508.4943	725.24
GSA19 (ANOMALY)	569386.1503	497511.9420	725.23
GSA20 (6.0' RADIUS)	569386.9887	497541.1416	725.55
GSA21 (6.0' RADIUS)	569371.9445	497545.1472	724.98
GSA22FE (CULVERT)	569322.0065	497504.1767	723.04
GSA22 (CULVERT)	569332.6313	497503.1963	723.42
GSA22 (CULVERT)	569341.3493	497494.3831	723.67
GSA22 (CULVERT)	569350.1449	497498.0507	723.77
GSA22/23COR (CULVERT)	569339.4825	497523.5723	723.49
GSA22/23FE (CULVERT)	569331.9838	497527.8464	722.93
GSA23 (ANOMALY)	569350.8188	497527.8472	723.83
GSA23 (ANOMALY)	569346.8907	497539.0183	723.71
GSA23 (ANOMALY)	569349.0941	497543.5667	723.88
GSA23 (ANOMALY)	569354.9861	497549.5587	724.33
GSA23 (ANOMALY)	569356.0332	497563.4825	724.49
GSA23 (ANOMALY)	569348.5008	497579.3129	724.20
GSA23FE (ANOMALY)	569341.0687	497584.8372	723.41
GSA24 (ANOMALY)	569361.9308	497580.9430	724.68
GSA24 (ANOMALY)	569367.5636	497575.7016	724.76
GSA24 (ANOMALY)	569367.8107	497582.5602	724.79
GSA24 (ANOMALY)	569364.2806	497587.4805	724.75
GSA24 (ANOMALY)	569360.2859	497591.1016	724.72
PIPE (ANOMALY)	569433.3840	497603.3738	726.21
GSA25 (5.0' RADIUS)	569352.9556	497491.2268	723.77
GSA26 (ANOMALY)	569375.6467	497619.0241	725.39
GSA26 (ANOMALY)	569389.6508	497617.8854	725.65
GSA26 (ANOMALY)	569403.9407	497619.4083	725.90
GSA26 (ANOMALY)	569397.5017	497629.6943	725.65
GSA26 (ANOMALY)	569385.1495	497632.6779	725.18
GSA26 (ANOMALY)	569374.1539	497627.0085	725.06
PIPE (ANOMALY)	569393.3377	497612.2936	725.80
GSA27 (10' RADIUS)	569423.3982	497623.8547	725.75
GSA28 (ANOMALY)	497632.7987	497632.7987	724.91
GSA28 (ANOMALY)	497643.3520	497643.3520	724.51
GSA28/29COR (ANOMALY)	497647.9630	569378.2522	724.36
GSA28/29FE (ANOMALY)	497655.8740	569380.5561	722.16
GSA29 (ANOMALY)	497639.1504	569368.8789	724.35
GSA29FE (ANOMALY)	497624.5265	569344.1758	723.12
GSA30 (1.8' RADIUS)	497600.9419	569343.1504	723.89
GSA31 (ANOMALY)	497531.8069	569382.6710	725.27
GSA31 (ANOMALY)	497523.3578	569380.2829	725.10

SURVEY DATA
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA
PCB CAPACITOR BURIAL/POLE YARD SURVEY POINTS

GEOPHYSICAL SURVEY AREA ANOMALIES CONTINUED			
LOCATION	EASTING	NORTHING	ELEVATION
GSA31 (ANOMALY)	497518.7721	569406.0282	725.82
GSA31 (ANOMALY)	497524.6198	569407.9306	725.91
GSA32 (2.3' RADIUS)	497471.1535	569315.1252	723.19
GSA33 (ANOMALY)	497500.9015	569390.5077	725.29
GSA33 (ANOMALY)	497502.7220	569384.2720	725.21
GSA33 (ANOMALY)	497496.8887	569382.8455	725.11
GSA33 (ANOMALY)	497492.0636	569377.6798	724.97
GSA33 (ANOMALY)	497488.3558	569379.8132	725.05
GSA33 (ANOMALY)	497489.0201	569386.1755	725.24

BUILDING 357 COORDINATES			
LOCATION	EASTING	NORTHING	ELEVATION
NW CORNER BLDG. 357	569428.6250	497431.7500	-
NE CORNER BLDG. 357	569627.8750	497402.3120	-
NW CORNER BLDG. 356	569844.6129	497348.5008	-
SW CORNER BLDG. 356	569822.7563	497302.4968	-

APPENDIX C

GEOPHYSICAL SURVEY REPORT

Tetra Tech EM Inc.

Geophysical Survey

for

PCB Capacitor Burial/Pole Yard

SWMU 17/04

Naval Surface Warfare Center Crane

Crane, Indiana

TO: Ralph Basinski

Task Order Manager

661 Andersen Dr.
Pittsburgh, PA 15222
Tetra Tech NUS, Inc.

FROM: Joe Parish, CHMM.

Geophysicist

11116 South Towne Square

St. Louis, MO 63123

Tetra Tech EM Inc.

DATE: May 10, 2002

SUBJECT: Memorandum Report

Geophysical Investigation at Solid Waste Management Unit 17/04,

Buried Capacitor/Pole Yard

Naval Surface Warfare Center

Crane Division

Crane, Indiana

RE: Comprehensive Long-Term Environmental Action Navy (CLEAN)

Southern Division

Naval Facilities Engineering Command

CLEAN Contract No. N62467-94-D-0888

INTERCORPORATE SUBCONTRACT AGREEMENT No. N4070-IC2012

Tetra Tech EM Inc. Project No. I4020.01

1.0 INTRODUCTION

The following is Tetra Tech EM Inc's (EMI) report on findings of the Crane Naval Surface Warfare Center (NSWC), Solid Waste Management Unit 17 (SWMU 17/04) geophysical survey. The survey was conducted at the buried capacitor/pole yard site from March 4 to March 7, 2002 (see Site Location Map, Figure 1). The survey successfully identified several anomalies that are candidates for the objective target area (i.e., Buried PCB Capacitor) as well as a large waste burial area and many locations of subsurface metal, including buried utilities. The objective of the survey was to locate capacitors believed to have been buried using hand or power post-hole diggers to a maximum depth of 10 feet sometime in the 1970s. A previous geophysical survey conducted by U.S. Army Corps of Engineers (USACE) Waterway Experiment Station (WES) in 1996 (TtNUS, 2002) failed to locate the capacitors. As proposed, a Geonics EM61 time domain metal detector and a Geometrics G-858 gradiometer were used to complete the survey. The sections below discuss the project background, purpose, geophysical approach, data acquisition, processing, interpretation and results for the area surveyed and a summary of survey results. If you have any questions, contact Joe Parish at (314) 962-1891 extension 23 or Raye Lahti at (715) 794-2889.

2.0 BACKGROUND

NSWC Crane is located within Martin County, Indiana, in the southwestern portion of the state. In 1981, the U. S. Department of the Navy (Navy) initiated the Navy Assessment and Control of Installation Pollutants Program. Program initiation included an investigation for designated sites at NSWC Crane, these investigations were known as the Initial Assessment Study (IAS). The Navy Energy and Environmental Support Agency completed the IAS in 1983 with assistance from the Ordnance Environmental Support Agency and the USACE WES. The intent of the IAS was to identify and assess sites posing a potential threat to human health and the environment from past hazardous materials operations.

According to the May 1983 Initial Assessment Study (NEESA - Navy Energy and Environmental Support Activity), "In 1977, three PCB capacitors were buried at the pole yard." Subsequent to the on-site survey, NSWC personnel reported that the capacitors were "hermetically sealed" prior to burial. The state of Indiana indicated that NSWC was not required to remove the capacitors if buried before February 19, 1978. The state indicated that disturbing the area could pose a more significant problem. "Reports indicate capacitors have been buried in this property containing polychlorinated biphenyl's (PCBs)" (TtNUS, 2002).

In 1996, the USACE WES published its results of a November 1994 geophysical survey in a report entitled: "Geophysical Investigation at Solid Waste Management Units 14/00 and 17/04, Naval Surface Warfare Center, Crane Division, Crane, Indiana by Jose L. Llopis and Michael K." As stated in this report, "The objectives at SWMU-17/04, PCB Capacitor Burial-Pole Yard, were to excavate, remove, and dispose of buried PCB capacitors and contaminated soil. SWMU-17/04 was thoroughly searched by physical excavation and scanned with a magnetometer. Search locations were established based on anomalies resulting from a geophysical investigation performed by the USACE WES. Sources of the original anomalies were found to be buried rebar, wire, natural iron deposits, and various other debris; however, no PCB capacitors were found. Additional search locations based on NSWC Crane direction also failed to uncover the buried capacitors. No disposal was required for SWMU-17/04 soil as it was determined to be clean and was reused as backfill." (TtNUS, 2002)

According to other recently acquired information, the capacitors were reportedly buried in multiple holes dug using a mechanical post-hole digger. Expected depths are up to 10 feet. These capacitors are alleged to be 4 inches by 12 inches by 24 inches in dimension, are encased in steel, and weigh about 20 pounds each. Also, there may have been 15 or so capacitors buried in approximately five holes (TtNUS, 2002).

3.0 SITE DESCRIPTION

SWMU 17, an approximately 1/2-acre site, is located in the northwestern corner of NSWC Crane PCB burial site. The PCB burial site (the pole yard) is located in the northwestern quarter of NSWC Crane near Highway 45 (Figure 1).

The surface drainage at NSWC Crane has formed a dense, dendritic pattern throughout the installation. Four drainage basins have been identified at NSWC Crane. The PCB Capacitor Burial/Pole Yard is located in the northern portion of Basin IV, which occupies the central portion of the facility. Surface drainage in the immediate area of the PCB Capacitor Burial/Pole Yard empties into Turkey Creek (TtNUS, 2002).

Geology in the NSWC Crane area is within the Crawford Upland, a rugged, dissected plateau formed by differential erosion of Pennsylvanian and Mississippian age sedimentary rocks

4.0 PURPOSE

A geophysical survey was proposed by TtNUS to identify anomalies of buried metal that may mark locations of buried capacitors prior to soil boring sampling. Placement of future soil borings and exploratory trenching and other assessment activities will be based on results of the geophysical survey.

5.0 GEOPHYSICAL APPROACH

5.1 GENERAL

Tetra Tech EM Inc. (TtEMI) was contracted by TtNUS to conduct a geophysical survey at SWMU 17. TtEMI used a Geonics EM61 and Geometrics G858 gradiometer with tight line spacing of 3.3 feet (approximately 1 meter) and 5 feet (approximately 1.5 meters) respectively, for full site coverage. The survey area was laid out with the grid y-axis in a northeastward direction with 80-foot control lines spaced 50 feet apart and with stakes along the control lines at 10-foot intervals to maintain lateral control and line-of-site during the survey. The survey was extended 20 feet to the northwest as necessary for complete site coverage (see the attached figures). Data for both sets were collected continuously, and the instruments were set to record at intervals of less than one foot, fiducials marks were placed in the records at weigh point (at the control lines) for later interpolation of actual data locations.

5.2 INSTRUMENTATION

The EM61 is a time-domain metal detector that detects all types of metals. The instrument consists of two parallel loop transmitter/receiver coils, 40 centimeters apart, that are carted around on wheels. The lower coil is about 40 centimeters off the ground. A powerful transmitter generates a pulsed primary magnetic field in the earth that induces eddy currents in nearby metallic objects. The eddy current decay produces a secondary magnetic field measured by the receiver coil. The instrument is designed so that it essentially only responds to metallic objects and ignores soil conductivity. The unit of measurement for the EM61 is the millivolts (mV). The instrument records both the upper coil and lower coil responses, which are recorded in an integrated data logger. By comparing the two measurements, the geophysicist can glean some idea how deep the object is buried (with certain restrictions). The advantage of the EM61 is target resolution and easy interpretation.

The G858 gradiometer is a cesium vapor magnetometer that works on the principle of optical pumping. It consists of two sensors that are separated by about approximately one meter. Each sensor simultaneously measures the field strength of the earth's magnetic field, along with the disturbed field produced by the presence of ferrous materials. The difference between the two fields yields the magnetic

gradient (which essentially "zeroes out" the background field). The strength of the magnetic gradient is related to both the magnetic properties of the object (such as mass) and, more importantly, the distance the object is from the sensors. The preferred units for magnetic gradient are nanoTesla per meter (nT/M) and for total field (one sensor) nanoTesla (nT). By comparing the magnetic gradient and total field measurements, the geophysicists can glean some qualitative idea of how large the target is and how deep it is buried. The advantage of the G858 magnetic gradiometer is that it has a greater exploration depth and will only respond to ferrous materials. The EM61 responds to all metals.

Instrument identification:

Metal Detection survey: Geonics EM61.	S/N:	transmitter: 00712
		upper receiver coil: 10513
		lower receiver coil: 0126
Gradiometer survey: Geometrics G858:	S/N	console: 29008
		sensor 1: 030
		sensor 2: 173

6.0 FIELD ACTIVITIES AND DATA ACQUISITION

Field activities were performed from March 4 to March 8, 2002. These activities included a site reconnaissance, laying out the survey grid, performing the geophysical survey using the two methodologies proposed, and, based on contour maps produced from the geophysical survey, marking suspected anomalous areas for the surveyors to shoot in to mark on the site base map. The field team included TtEMI geophysicist Joe Parish and TtNUS field assistant Clyde Snyder.

The site reconnaissance revealed that there was too much surface metal to successfully perform a geophysical survey. There were many large transformers stored on a loading dock to the site building, and metal wire and other metallic debris straddled the site fence line. These conditions were reported back to TtNUS, which contacted Public Works to have the debris removed. Public Works spent the next 2 days removing the debris. As this was being done, the field team marked out the survey grid.

For maximum survey efficiency, the grid was laid out to correspond with site boundary markers that were placed by the contracted land surveyor. The grid lay out was established as a rectangle that trended from southwest to northeast and measured 80 feet by 275 feet to correspond with the natural site layout (see the attached figures). Parallel control lines were marked with stakes every 50 feet. The control lines were marked with stakes every 10 feet and with marking paint every 3.33 feet (approximately 1 meter) to

establish survey lines. The stakes were sprayed with orange marking paint for maximum visibility to maintain line of sight during surveying. During the survey, the grid was extended another 20 feet to the northeast for full site coverage.

The geophysical survey was performed from March 5 to March 7, 2002. Prior to the survey, a base station was established at a location away from the survey area, free of metallic interference. At the base station, the EM61 instrument was zeroed for background and a functional check was performed as prescribed by the manufacturer. At the end of each survey session, base station readings were recorded to maintain quality control. Base station readings were also recorded at the beginning and end of the gradiometer survey to check for the diurnal drift of the geomagnetic field. Additional quality control measures included repetitive readings at certain locations on the survey grid to check for external noise from the high-voltage power lines that bordered the property to the northwest (Figure 4).

Geophysical measurements were collected continuously along the y-axis (northeast) and stored electronically as prescribed by each instrument to maintain an interval of approximately 1 foot or less. Fiducial marks were electronically flagged every 50 feet at the control lines to maintain lateral control. The EM61 survey was completed over a 3-day period (March 5 to 6, 2002), and the gradiometer survey was completed in the afternoon of March 6. On March 7, the EM61 survey was extended 20 feet to the northeast beyond the fence line to better define an anomalous trend in that area. The completion of the survey was delayed by 1 day to allow time for Public Works to remove the transformers and metal debris and because of instrument problems and the extension of the survey.

On March 7, 2002, the team marked anomalies suspected to correspond to buried metal, as proposed by the contract agreement. These marked areas were based upon field maps generated from the data and actual real-time measurements in the field with the EM61. The marked areas included a large burial area that extended beyond the surveyed area to the northwest.

7.0 DATA PROCESSING AND INTERPRETATION

Data from the geophysical dataloggers were downloaded to a computer and entered into the Geonics DAT61® software package to check for accuracy and completeness and to check operator entry errors from the field data collection process. Each data set was then entered into SURFER™ data processing software for visual display. Contour maps of each data set, including EM61 and G858 gradiometer and total field data, were displayed on the computer screen and printed for interpretation. The total field data used two different contour intervals, 50 nT for high values, and 10 nT for low values so that all anomalies could be observed and interpreted. Contour maps were examined in the field, comparing existing surface features that could cause anomalous geophysical data. A sketch map was drawn in the field, showing the

property boundaries, fence line, and other structures for later use in geophysical data interpretation. Anomalous trends and point sources in the geophysical data that were interpreted from the field maps were noted on the maps and marked with paint in the survey area. The surveyors used the marks to map suspect locations in the field.

8.0 RESULTS

The following section discusses results of the geophysical survey at SWMU 17. The figures presented include contours of apparent EM61 responses (see Figure 2) from the bottom coil and the difference between top coil and bottom coil responses (D), gradiometer and total field responses (see Figure 3) and interpretation (see Figure 4). Data contouring was determined to provide the best presentation of the EM61 and gradiometer results for this memorandum report. All data presentations were processed using Geosoft Oasis Montaj software or Surfer for final presentation. The use of the contoured data, in conjunction with raw line data, and field observations provided the basis for interpretation of the presence of buried metal. Some aspects of the contouring software map may show incorrect contour intervals along the northwestern edge of the survey area. These incorrect intervals were ignored during the interpretation. The incorrect contours were interpreted to be the result of instrument noise from the high voltage power lines that were immediately northwest of the site.

Each figure has a scale of 1 inch equal to 30 feet. Figure 4 provides the interpreted extent of the burial area, interpreted buried utilities, target point sources, other buried metal areas, and site features.

8.1 INTERPRETATION

For the EM61, both upper and lower coil responses were adjusted to zero at a nearby, off-site location. In addition, base station readings were taken of the total ambient magnetic field before and after the G858 magnetic gradiometer survey. Assuming linearity, it was interpolated that there was only a 12 nT change in the field during the survey time, so the correction was not applied. Positive EM61 responses were generally interpreted to indicate that metallic objects are likely present. Positive and negative gradiometer readings were generally interpreted to indicate that ferrous metal objects were present (note: because of the dipole nature of magnetic fields, both positive and negative responses, which are generally aligned south to north, occur over ferrous objects).

The results of the geophysical survey identified four general response sources, which are described below. These are identified on the interpretation map (Figure 4):

1) Point sources: Point sources are essentially identified by a "spike" response (small closure or bull's eye). These are responses from one buried object, or several buried objects that are so close together that their response essentially behaves as one object. Point sources are the most likely candidates for the target objects (the capacitors), since historical records suggest that they were buried together in several holes. Point sources considered primary candidates for the search target are marked by red open circles, and those considered secondary targets are marked by blue open circles.

2) Extended sources: These areas contain larger amounts of buried metal and are essentially several or many point sources buried together so that their responses merge, making target discrimination difficult. Extended sources that are considered primary candidates for the search targets are marked in red, and those considered secondary candidates for the search targets are marked in blue, based on the criteria discussed below.

3) Non-target sources: These include buried utilities, such as pipes and culverts, and shallow buried metal point sources. Utilities are marked in green and shallow buried metal point sources are marked by a small black cross symbol.

4) Cultural interferences: These included above ground metal objects, such as fences, surface debris, buildings, power lines, etc. These are shown in Figure 4 as dashed or solid black lines and labeled.

The interpretation map (Figure 4) displays all four different types of sources, as described. Many of these anomalous areas were marked already out in the field. These are shown as numbers 1 through 33. Additional candidate areas were interpreted upon more detailed data examination.

Sources believed to be the primary candidates for the buried capacitors are marked in red, as described above. These areas were chosen based upon the following assumptions:

- Three capacitors buried in each of several holes by a mechanical post hole digger.
- The capacitors measured about 4 inches by 12 inches by 24 inches, were encased in steel, and probably weighed about 20 pounds each.
- The capacitors were buried at a depth of greater than 1 foot and so would likely be isolated by the EM61 "D" channel response (i.e., would be visible on the "D" response map, Figure 2, with an exception, described below). This is because the difference in response from the top and bottom coils from shallow, relatively small metal sources is negligible compared to more massive metal sources buried at depth or by massive, shallow or surface targets.

- If the depth of burial was less than about 5 feet, both the EM61 and G858 would respond well to these targets, since capacitors contain magnetically soft ferrous metal (i.e., steel casings).
- If the depth of burial was greater than approximately 5 feet, the targets would likely only be identified by the gradiometer and total field responses. In this special case, the response would not be visible on the EM61 response maps. These types of anomalies were also considered primary target locations. The only anomaly identified as meeting these criteria is located at the field coordinates 60, 120.

A significant area of interest delineated by the survey was a massive burial or "dump area" that straddled the fence line of the property to the northwest. This area extended about 20 feet into the property and about another 40 feet across the fence line into a gully outside the survey area (Figure 4.). The boundaries of this anomaly outside the survey area were marked in the field by scanning with the EM61. Field observations showed targets that may have been cylinders or other types of containers, and it was suggested that this area be investigated. This area is also marked as a primary area for the targets sources, since several point sources were resolved in this area and is not unreasonable that they were buried in a known dump area.

All other buried areas are marked in blue. These should be considered of secondary importance but not ignored. Sources that were identified as secondary candidates did not meet all the assumed criteria based on likely response and assumed burial depth.

9.0 SUMMARY

TtEMI was contracted by TtNUS to conduct a geophysical survey at NSWC Crane, Indiana at the property known as the PCB Capacitor Burial/Pole Yard to locate capacitors believed to have been buried using a post-hole digger in the 1970's. The survey was conducted from March 4 to March 7, 2002. The survey successfully identified several anomalies that are candidates for the objective target area, as well as a large waste burial area and many locations of subsurface metal, including buried utilities. Following a review of the geophysical data, TtNUS and TtEMI personnel walked over the entire disposal area to visually identify and mark on the sketch map site features and significant geophysical anomalies. The marked anomalies were surveyed.

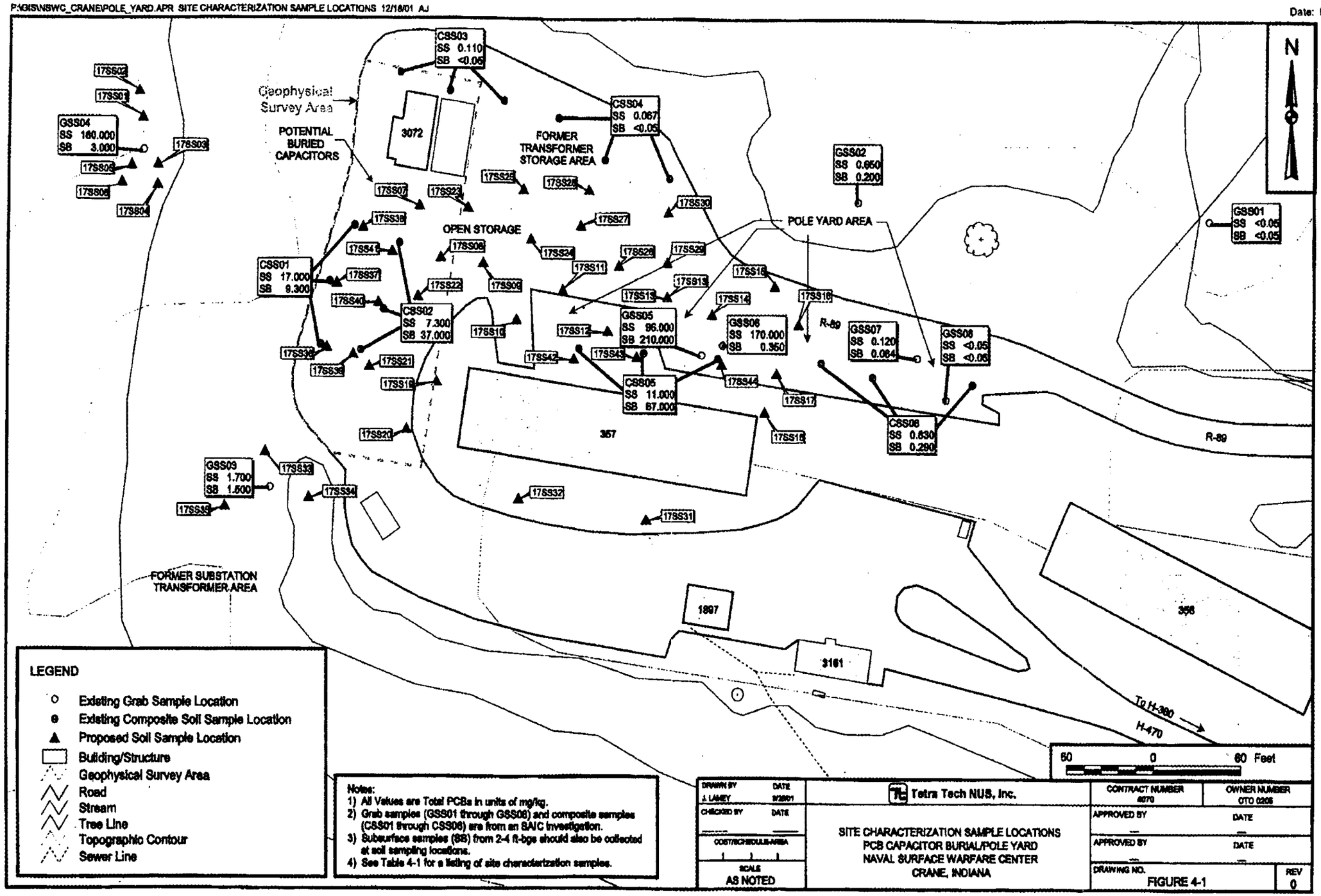
10.0 REFERENCES

Tetra Tech NUS, Inc. (TtNUS) 2002. Personal communication, quoting from several sources, including:

1. May , 1983 Initial Assessment Study (NEESA - Navy Energy and Environmental Support Activity.

2. June 16, 1995: Revised Draft Interim Measures Work Plan for the Sanitary Landfill & Lithium Battery Burial, PCB Capacitor Burial - Pole Yard, Ammunition Burning Grounds, Rockeye, & Dye Burial Ground.
3. 1996, the U.S. Army Corps of Engineers Waterway Experiment Station, November 1994 geophysical survey report: Geophysical Investigation at Solid Waste Management Units 14/00 and 17/04, Naval Surface Warfare Center, Crane Division, Crane, Indiana by Jose L. Llopis and Michael K. Sharp.
4. Personal interviews from msc. sources (communicated in conference call, April 17, 2002).

Figure 1: Site Location Map (From NUS Site Characterization Work Plan)



NSWC CRANE SWMU 17 GEOPHYSICAL SURVEY

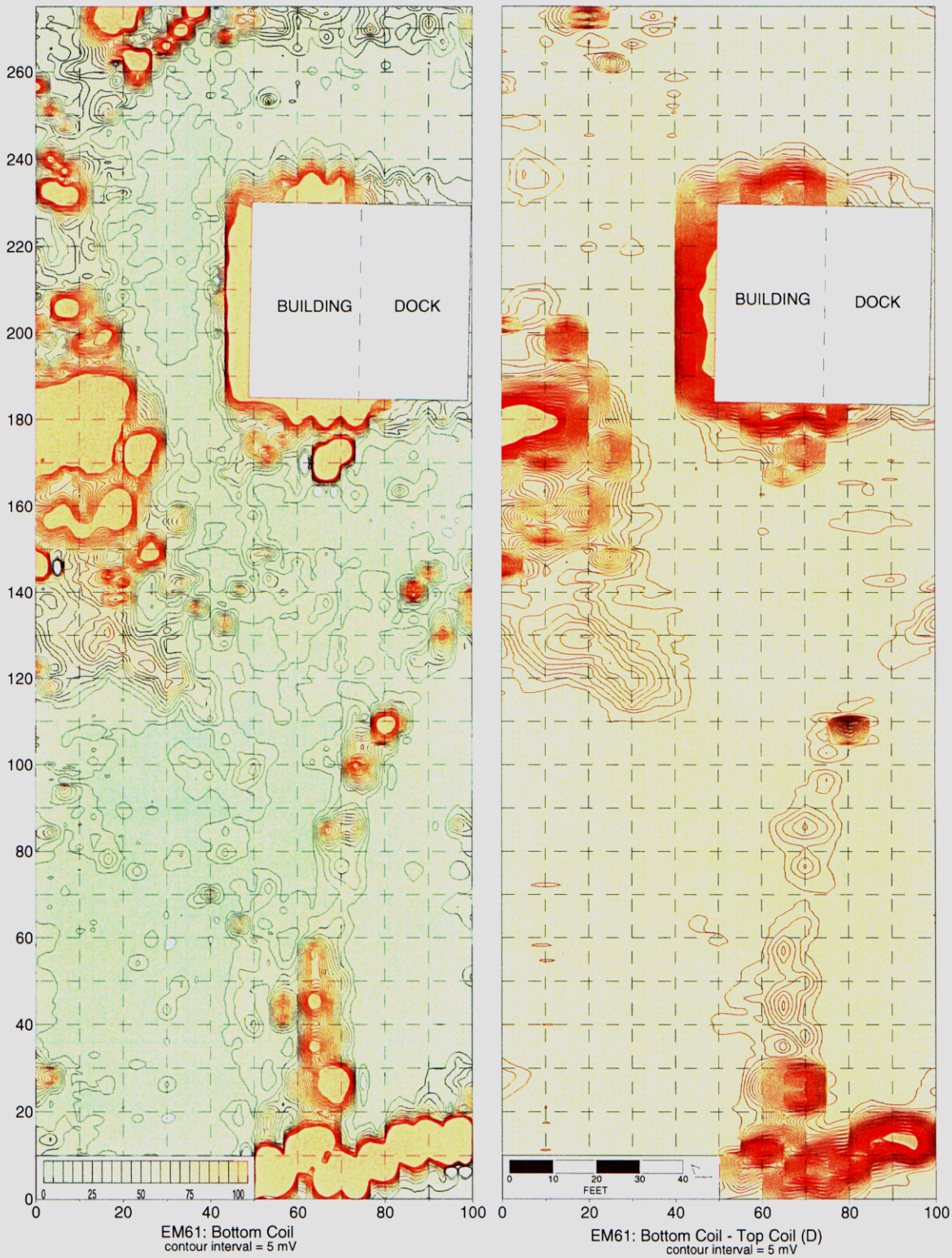


Figure 2: EM61 Data (mV)

NSWC CRANE SWMU 17 GEOPHYSICAL SURVEY

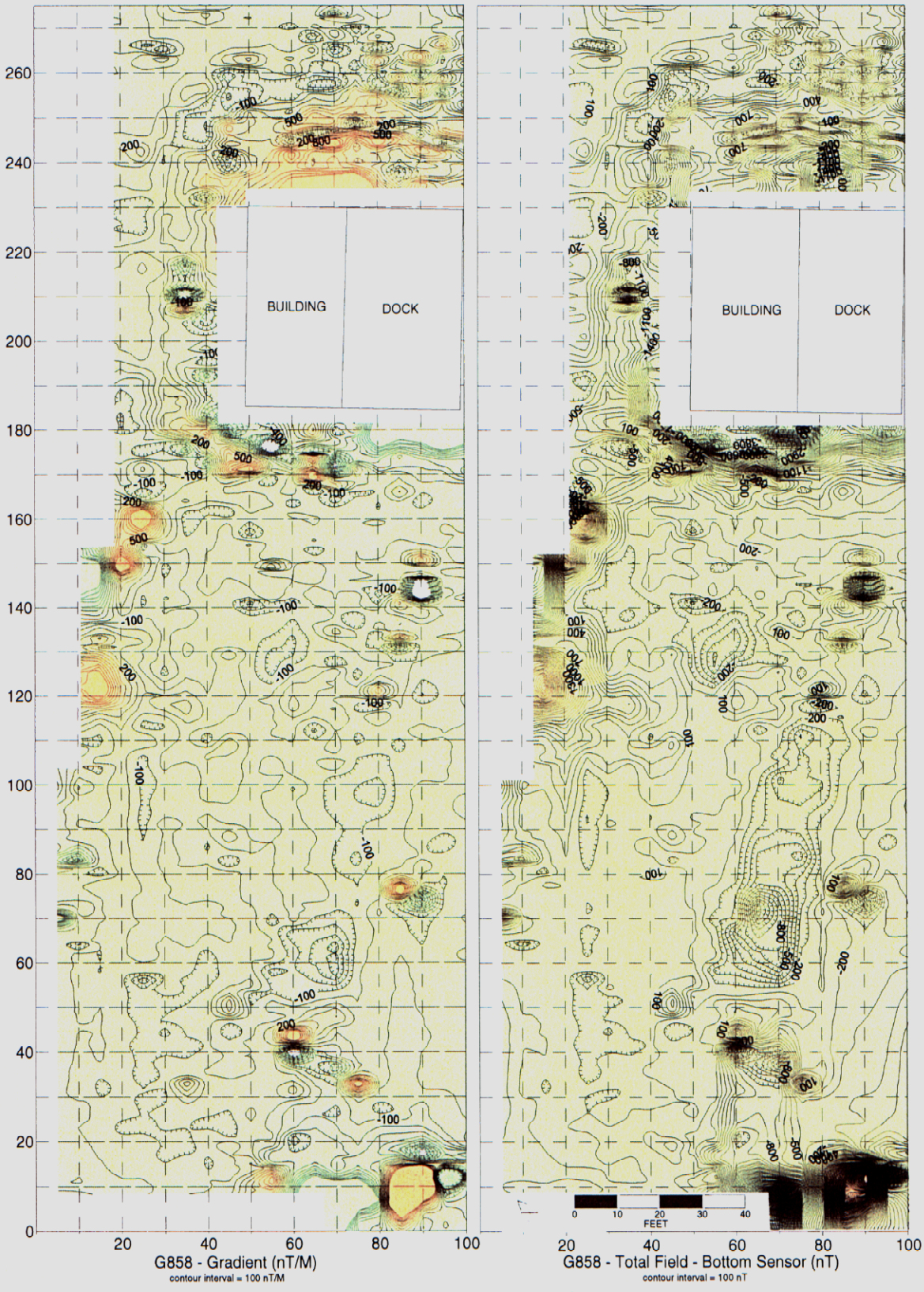


Figure 3: Gradient and Total Field Data

NSWC CRANE SWMU GEOPHYSICAL SURVEY

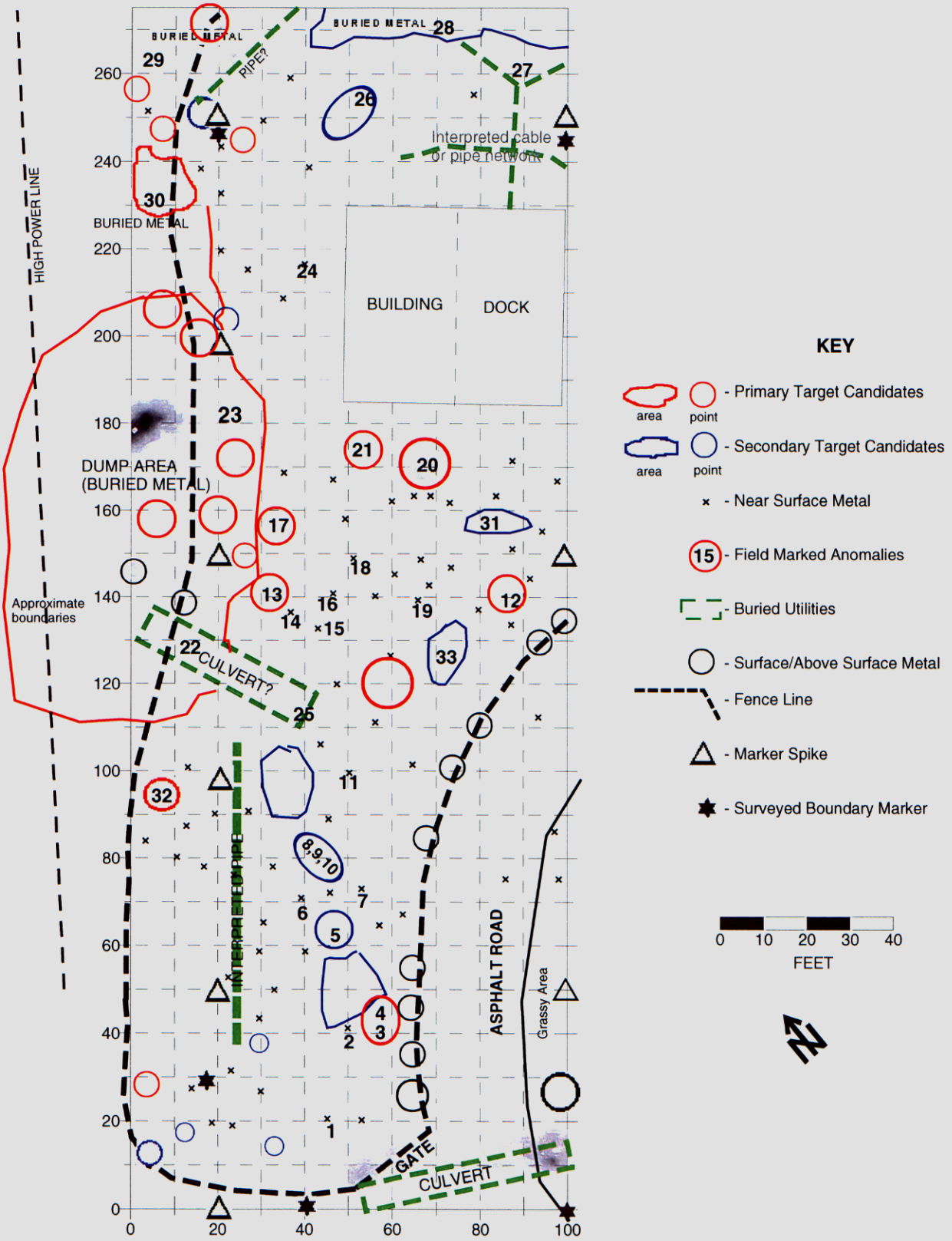
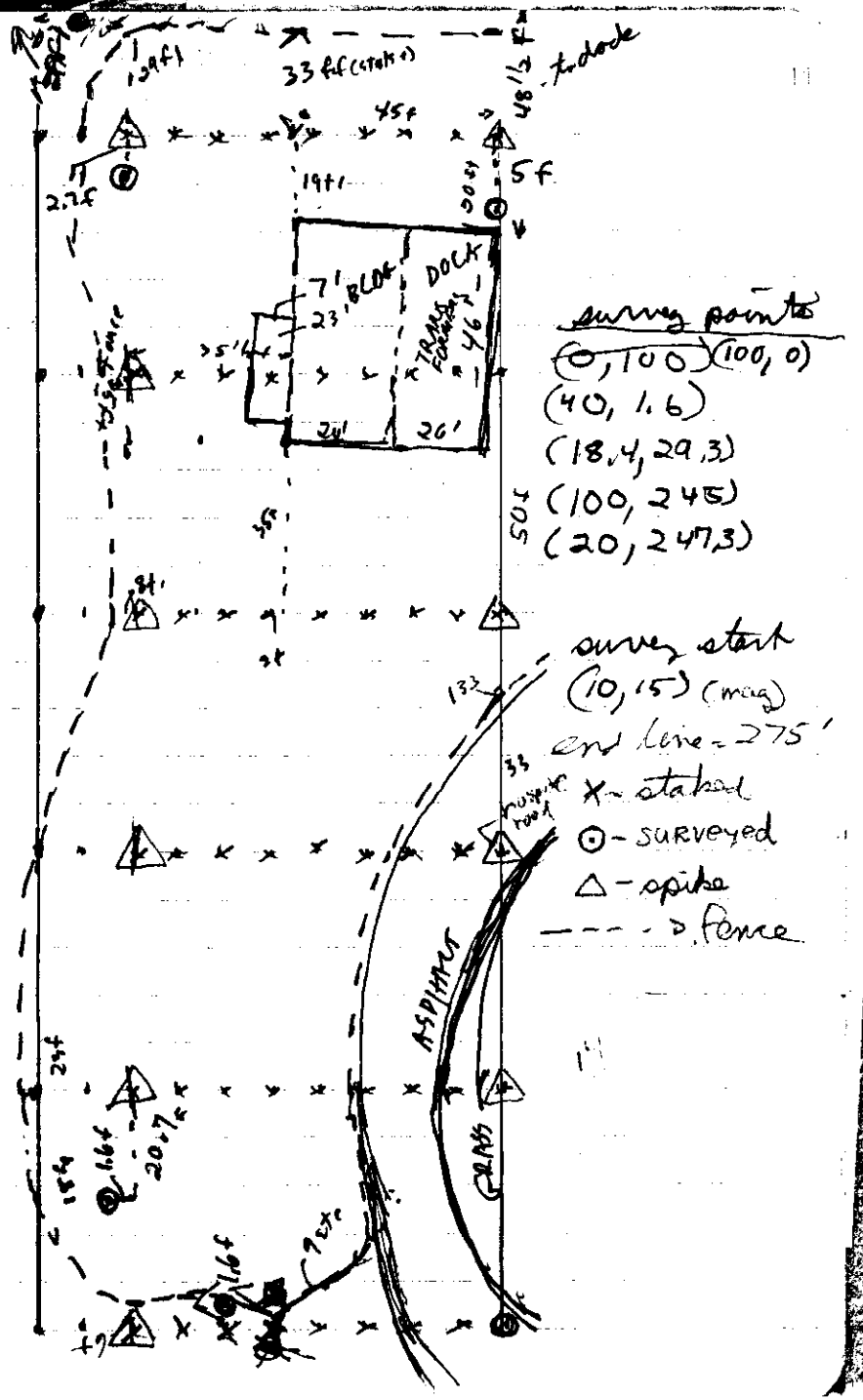


Figure 4: Interpretation Map


33 ft (total)
48 1/2 ft to dock
5 ft
19 ft
7'
23' BLDG
DOCK
TRANSFORMER
46'
20'
26'
50 ft
ASPHALT
survey points
(0, 100) (100, 0)
(40, 1.6)
(18.4, 29.3)
(100, 245)
(20, 247.3)
survey start
(10, 15) (mag)
end line = 275'
X - staked
⊙ - surveyed
△ - spike
- - - - fence

3/5/02
EM61 survey

1) actual calibration - average 115/100
0.8695 feet.

2) 0(zero) calibration - monostatic
free of anomalies.
span - upper - T = 4.43 (14 before)
B = 4.52 (8 before)

1355' External Noise Test
25' from power line

Point 16'50

#1 T = 2
B = 1

#4 T = 2
B = 1

#2 T = -5
B = -2

#5 T = 3
B = 2

#3 T = -1
B = +0

3/5/02

Point 30/54

#1 T= 14
B= 14

#2 T= 14
B= 14

#3 T= 15
B= 15

#4 T=16
B= 15

#5 T= 14
B= 14

Point 5/06

#1 T= 6
B 4

#2 T= 7
B= 5

#3 T= 4
B= 3

#4 T= 6
B= 4

#5 T= 8
B= 5

Point 5506

2116

#1 T= 2116
B 2415

#2 T 2618
B 2317

#3 2318

#1 T
B

#2 T
B=1

#3 T
B

~~Point 5506~~

Crane #1 Time 15:15

Point End of Day B

Rea

#1 T= 1
B= 2

#2 T= 1
B= 2

#3 T= 2
B= 2

#4

#8

Instrument BR Jo
Geonics Limited
EM61 1X05A
Serial # 0126 - cag
10513 - Co

Point 550 (#2) 3/5/02

1630 - added external power test -

#1 T=5
B=3

#2 T=3
B=3

#3 T=4
B=3

#4 T=10
B=6

#5 T=2
B=3

Point 1050 (#2)

#1 T=2
B=2

#2 T=-1
B=+1

#3 T=+3
B=2

#4 T=3
B=2

#5 T=3
B=2

Point 5050 (#2)

#1 T=13
B=13

#2 T=14
B=14

#3 T=14
B=14

#4 T=14
B=14

#5 T=14
B=14

— note for day:
had noise problem at ~1400 - power, began reading ~ -1000, changed cable to ground to data logger, rechecked all connections, gas switched ~~battery~~
- instrument worked.
completed survey from y=0 to 150, and x=20 to 100, marked perpendicular every 50 feet - START STATION on 1st line & every ~~other~~ 1st line accurate, first line is accurate on N count lines (at 150) - on most first entry in 150 - check for line outside fence for 56.7, to end (y=0)

3/5/02
~~Event~~ Public works came at 9 and moved most of junk, well finish tomorrow.

3/6/02

0842 Base Station
Calibration Analyzed
Top Span Bottom Span

Base Station

#1 T = 0
B = 1

#4 T = 0
B = 1

#2 T = 0
B = 1

#5 T = 0
B = 1

#3 T = 0
B = 1

Change Bottom Span to 4.19

#1 T = 0
B = 0

#4 T = -1
B = 0

#2 T = 0
B = 0

#5 T = 0
B = 0

#3 T = 0
B = 0

3/6/86 Crane #2 0936 3/6/86
55C 5050

#1 T= [illegible]
B= 25

#2 T= 26
B= 27

#3 T= 23
B= 26

#4 T= 24
B= 26

#5 T= 26
B= 24

#6 T= 26
B= 26

#1 T= 12
B= 11

#2 T= 11
B= 11

#3 T= 12
B= 11

#4 T= 11
B= 11

#5 T= 11
B= 11

1056

#1 T= 2
B= 1

#2 T= 0
B= 1

#3 T= -3
B= -1

#4 T= 2
B= 0

#5 T= -2
B= 0

Crane 2 fab (C2) - survey SCU
come to 150
note: 0.333 extra = 3.33
(no data at about 10 feet or so
line for correction) line segment 2C -
erase.

Crane 3. survey (C3) - North half
- excluding north half of bldg
note: line 46.7 - delete segment from
180 to 230 - (fiducial at 230)
- under bar
line 63.3 - scrap - noise problem
(~~[illegible]~~ air hoffer intense cause?)

22

3/5/02

Area north of [illegible] are for 235 to 275. Scanned area between 250 and 225 — are several anomalies. between 225 & 250 - relatively clean.

Base Station (New Reading) 1417 hrs

5385 magnetometer survey

53836 begin survey - 1500 hrs

53837 end survey - 1620 hrs

Began survey at 5,10 (coordinate)

(17 nT difference)

53854 } Base Station

53853 } End 1630 hours

53853

- [illegible] equipment problem, [illegible] battery - contacted BC JENNS [illegible] B.C. at about 1:30 hours.
- [illegible] problem - fixed
- [illegible] in lack of backpack.
- [illegible] always [illegible] data logger.
- B.R. [illegible] well [illegible] horizontal.

Base Station 1

#1 T = 0
B = 1

#4 T = 1
B = 1

#2 T = 0
B = 1

#5 T = 1
B = 1

#3 T = 0
B = 1

Base Station 1

#1 T = 0
B = 0

#4
2

#2 T = -1
0 -1

#5
B

#3 T = -1
B = -1

Scale 5 (cm) [illegible]
line 50 - 100 (y

12.4 nT change during survey.

3/7/02

Base Station 12:25

(zero no-zeroed)

#1 T = -1
B = 0

#4 T = -1
B = +1

#2 T = -1
B = 1

#5 T = 0
B = +1

#3 T = -1
B = 0

1300 hrs - completed area C6

note:

- [illegible] line of [illegible] line
  [illegible] C6 - 100-500 feet
  C7 - [illegible] - 275 feet.
  (now that line)
- [illegible] [illegible] of
  [illegible] by scanning w/
  EM61
- [illegible] of anomalies
  [illegible] 5 feet of [illegible] area)
  33 anomalies located.

345 hrs - completed area C7.

1400 - [illegible] 345 [illegible]
[illegible] fraction.

3/8/02

- [illegible] on [illegible] - report /
  [illegible] / [illegible]

APPENDIX D

BORING LOGS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB01
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Swyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATION IN WOODS	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT	BRN	CLAY & SILT	CL	MOIST TR ROOTS	0	0	0	0
	2				↓	↓	↓ ↓ GRAY MOTTLING	↓	↓	↓	↓	↓	↓
	3				MED STIFF	LT BRN	SAND STONE FRAGS. ~~w. SANDSTONE~~ KS	↓	↓	↓	↓	↓	↓
	4		3/4		↓ STIFF	↓ ~~BLACK~~	↓ ↓ BLACK WEATHERED SANDSTONE	↓	↓	↓	↓	↓	↓
	5												
	6						BLACK @ BTM 0.5'						
	7						LOOKS LIKE CHARCOAL! IS STONE (SANDSTONE)						
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
BORING NUMBER: 17SB02
PROJECT NUMBER: CTO 205 job # 4070
DATE: 3.8.02
DRILLING COMPANY: Environmental Field Services
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Sm
DRILLING RIG: GeoProbe 54 LT
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATION IN WOODS	USCS*	Remarks	PID/FID Reading: Sample	Sampler BZ	Borehole**
	1				SOFT	BRN	CLAY & SILT TR SANDSTONE FRAGS	CL	MOIST	0	0	0
	2				STIFF	LT BRN	↓	↓	↓	↓	↓	↓
	3				VERY	↓	GRAY MOTTLING WEATHER SANDSTONE FRIABLE	↓	↓	↓	↓	↓
	4		4 / 4		STIFF ↓	↓	↓	SP	DRY ↓	↓	↓	↓
	5											
	6											
	7											
	8											
	9											
	10											
							TD = 4					

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: ~~Environmental Field Services~~ NA
DRILLING RIG: ~~GeoProbe 54 LT~~ HAND AUGER

BORING NUMBER: 17SB03
DATE: 3.10.02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Snyder
DRILLER: ~~Tony Strati~~ NA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification IN THE WOODS	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	SILT & CLAY	ML	MOIST	0	0	0	0
	2						SANDSTONE FRAGS						
	3						RUST COLOR & GRAY MOTTLING						
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: ~~Environmental Field Services~~ NA
DRILLING RIG: ~~GeoProbe 54 LT~~ HAND AUGER

BORING NUMBER: 17SB04
DATE: 3.10.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sny.
DRILLER: ~~Tony Strati~~ NA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification IN WOODED AREA	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	SILT SOME CLAY TR SANDSTONE FRAGS	ML	MOIST	0	0	0	0
	2						TR F. SAND						
	3												
	4		4/4		VERY STIFF								
	5												
	6						MORE F. SAND AND SANDSTONE FRAGS.						
	7						BTM. 2'						
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X

Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB ~~06~~ KS 05
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification IN WOODS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler B.Z.	Borehole**	Driller B.Z.**
	1				SOFT	BRN	SILT SOME CLAY	ML	MOIST, TR ROOTS	0	0	0	0
	2												
	3				MED STIFF	LT BRN	SILTY F. SAND TR CLAY						
	4		3 / 4				W. GRAY MOTTLING W. RUST COLOR NODULES						
	5						W. SANDSTON FRAGS						
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: NA

SB06

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB06 (06)
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification IN WOODS	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				MED STIFF	BRN	CLAY SOME SILT	CL	MOIST TR ROOT	0	0	0	0
	2						SILT SOME CLAY						
	3						RED SAND STONE FRAG.						
	4		2.5/3.5										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 3.5 REFUSAL						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X

Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB07
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rajahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON LIMESTONE GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			----	VERY STIFF	GRAY BRN	LIMESTONE GRAVEL SILT SOME CLAY	GM CL	MOIST	0	0	0	0
	2						TR. SANDSTONE TR F. SAND FRAGS						
	3						+ GRAY MOTTLING						
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 08
DATE: 3.8.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATION ~~[illegible]~~ IN GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	LIMESTONE GRAVEL SILT SOME CLAY	GM	MOIST	0	0	0	0
	2					BRN	GRAY, RUST BRN MOTTLING	CL					
	3					GRAY	CLAY SOME SILT						
	4		3.5/4										
	5												
	6						BLACK ORGANIC MAT 1/8" THICK						
	7						@ 3'						
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB09
DATE: 3-9-02
GEOLOGIST: K. Simpson & ~~T. Rajahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							ON ASPHALT						
	1				STIFF	GRAY	LIMESTONE GRAVEL CLAY & SILT	CL	MOIST	0	0	0	0
	2					BRN	TR RUST COLOR NODULES	CL					
	3												
	4		4/4										
	5												
	6						SOME GREENISH GRAY TOP OF CLAY/SILT						
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT
BORING NUMBER: 17 SB 10
DATE: 3-8-02
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATION ON GRAVEL	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	LIMESTONE GRAVEL PARKING LOT W/FINES	GC	MOIST	0	0	0	0
	2					BRN	CLAYEY SILT	CL					
	3						→ RUST COLOR SAND STONE FRAG 1" Ø						
	4		4/4				FINE/COURSE SAND SOME SILT	SM	DRY				
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB11
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	LIMESTONE GRAVEL	GM	MOIST	0	0	0	0
	2					BRN	CLAY & SILT	CL					
	3						SILT TR CLAY TR F. SAND	ML	DRY				
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB12
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification UNDER POLE RACK	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	SILT & CLAY	CL	MOIST	0	0	0	0
	2				↓	↓	↓ ↓	↓	↓	↓	↓	↓	↓
	3				HARD	↓	SILT - SILT STRNE WEATHERED	ML	DRY	↓	↓	↓	↓
	4		3.9 / 4		↓	↓	↓ ↓	↓	↓	↓	↓	↓	↓
	5												
	6						BETWEEN 2-3' RUST COLOR LENSES						
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB13
DATE: 3-9-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: ON ASPHALT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
	1				STIFF	BRN	SILTY & CLAY	CL	MOIST	0	0	0	0
	2						CLAYEY SILT						
	3				VERY		GRAY & RUST COLOR MOTTLING		DRY				
	4		4 / 4		STIFF								
	5												
	6						DRY AT BTM 2'						
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 14
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	IN GRAVEL Material Classification OFF N. EDGE OF POLE RACK	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	GRAVEL (LIMESTONE) SILT & CLAY	SM CL	MOIST	0	0	0	0
	2					BRN	SILT - WEATHERED	ML	DRY				
	3				VERY		SILT STONE TR SANDSTONE FRAGS.						
	4		4		STIFF		TR GRAY & RUST COLOR MOTTLING						
	5						LT BRN @ BTM						
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB15
DATE: 3.10.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL ROAD SIDE	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	LIMESTONE GRAVEL SOME ASPHALT	GM CL	MOIST	0	0	0	0
	2					BRN	SILT & CLAY TR GRAY & RUST COLOR MOTTLING						
	3												
	4		4 / 4										
	5												
	6						TR SMALL SANDSTONE FRAGS. 1-2'						
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT
BORING NUMBER: 17 SB16
DATE: 3 10.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sny.
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON ASPHALT RD	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			- - -	STIFF	GRAY	LIMESTONE GRAVEL TR ASPHALT	GM	MOIST	0	0	0	0
	2					BRN GRAY	SILT SOME CLAY / CLAY SOME SILT	CL					
	3												
	4		4/4			BRN	RUST COLOR NODULES						
	5					BR							
	6						TR SMALL SAND STONE FRAGS 1-2'						
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 17
DATE: 3-16-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: S. OF POLE RACK	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	TR LIMESTONE GRAVEL SILT & CLAY	CL	MOIST	0	0	0	0
	2				↓	↓	GRAY MOTTLING TR RUST COLOR	↓	↓	↓	↓	↓	↓
	3				↓	↓	NODULES	↓	↓	↓	↓	↓	↓
	4		4/4		↓	↓	↓	↓	↓	↓	↓	↓	↓
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB18
DATE: 3 10 · 02
GEOLOGIST: K. Simpson ~~& T. Rojahn~~ C. Sn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification N. E. CORNER OF BLD	USCS	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
	1				SOFT	BRN	SILTY CLAY TR ROCK FRAGS	ML	MOIST	0	0	0	6
	2				↓	↓	GRAY MOTTLING	↓	↓	↓	↓	↓	↓
	3				STIFF	↓	SILT TR CLAY RUST NODULES	ML	DRY	↓	↓	↓	↓
	4		4/4		↓	↓	↓	↓	↓	↓	↓	↓	↓
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 19
DATE: 3·8·02
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATION ON GRASS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT ↓ STIFF	BRN	CLAYEY SILT	CL	MOIST TR ROOTS	0	0	0	0
	2						GRAY MOTTLING TR RUST COLOR NODULES						
	3												
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 20
DATE: 3-08-02
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							LOCATION ON ASPHALT						
	1				VERY STIFF	DK. BRN GRAY	LIMESTONE GRAVEL BLACK CHARED MATERIAL (CORE LIKE) SILT SOME CLAY	FM	MOIST	0	0	0	0
	2							CL					
	3					BRN	CLAYEY SILT GRAY MOTTLING						
	4		4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 175B21
DATE: 3-9-02
GEOLOGIST: K. Simpson & ~~T. Bojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	~~GRAY~~ BRN	LIMESTONE GRAVEL SILT SOME CLAY	~~GM~~ CL	MOIST	0	0	0	0
	2						GRAY & RUST MOTTLING						
	3						LESS CLAY						
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB22
DATE: 3-9-02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Sn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			----	STIFF	LT GRAY BRN	LIMESTONE GRAVEL SILT SOME CLAY GRAY & RUST MOTTLING	GM CL	MOIST	0	0	0	0
	2												
	3						LESS CLAY						
	4		3.7/4										
	5												
	6						TR RUST COLOR SANDSTONE FRAGS BTM 2'						
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 23
DATE: 3.8.02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY	LIMESTONE GRAVEL	GM	MOIST	0	0	0	0
	2						SILTY CLAY	CL					
	3												
	4		3.4/4			BRN							
	5												
	6						RUST COLOR LENS @ 1.5'						
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB24
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sr.
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON ASPHALT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	GRAY BRN	LIMESTONE GRAVEL	GM	MOIST	0	0	0	0
	2						CLAY & SILT	CL					
	3												
	4		4/4										
	5												
	6						TR GRAY & RUST COLOR THRU-OUT						
	7						BTM 3' (1-4')						
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 25
DATE: 3.8.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL WT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			~~SF~~	STIFF	LT GRAY BRN	LIMESTONE GRAVEL SILT SOME CLAY	GM CL	MOIST	0	0	0	0
	2				VERY STIFF								
	3												
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB26
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sly
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON ASPHALT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			----	STIFF	GRAY BRN	LIMESTONE GRAVEL	GM CL	MOIST	0	0	0	0
	2						SILT & CLAY						
	3												
	4		4				SILT TR CLAY TR F SAND	ML	DRY				
	5						TR SANDSTONE FRAGS						
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 27
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATION ON PARKING LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole **	Driller BZ**
	1				STIFF	LT GRAY BRN	LIMESTONE GRAVEL CLAYEY SILT	GM CL	MOIST	0	0	0	0
	2				↓	↓	GRAY MOTTLING TR RUST COLOR NODULES	↓	↓				
	3				VERY STIFF	↓	↓	↓	↓				
	4		4/4		↓	↓	↓	↓	↓				
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB28
DATE: 3.8.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATED ON GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			-----	STIFF	GRAY BRN	LIMESTONE GRAVEL CLAYEY SILT WITH GRAY MOTTLING TR RUST COLOR NODULES	GM CL	MOIST	0	0	0	0
	2												
	3												
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB29
DATE: 3. 9. 02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON ASPHALT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	GRAVEL	~~CM~~ CL	MOIST	0	0	0	0
	2				↓	↓	SAME AS	↓	↓	↓	↓	↓	↓
	3				↓ VERY	↓	SB 13	↓	↓	↓	↓	↓	↓
	4		4/4		STIFF ↓	↓		↓	↓	↓	↓	↓	↓
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB30
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sny
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATED ON GRAVEL LOT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
	1			----	STIFF	GRAY-BRN	LIMESTONE GRAVEL CLAYEY SILT	GM CL	WET MOIST	0	0	0	0
	2						GRAY MOTTLING TR RUST COLOR NODULES						
	3												
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB31
DATE: 3.8.02
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Bolt Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATION ON GRASS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1008	1				MED STIFF	BRN	BLACK SILT/SAND (DEBRIS OFF RO) TO 0.1' CLAYEY SILT	CL	MOIST, TR ROOTS	0	0	0	0
	2						GRAY MOTTLING TR S, RUST COLOR NODULES						
	3												
1012	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB32
DATE: 3-9-2
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: LOCATION ON GRASS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT		CLAYEY SILT TR GRAVEL TO 0.5'	CL	MOIST TR ROOTS	0	0	0	0
	2				MED		GRAY MOTTLING						
	3				STIFF								
	4		4/4		STIFF								
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X

Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB33
DATE: 3·8·02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATION ON GRASS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT	BRN	CLAYEY SILT	CL	MOIST, TR ROOTS	0	0	0	0
	2				↓	↓	SANDSTONE FRAGS (RUST COLOR) ↓ CLAY SOME SILT	↓		↓	↓	↓	↓
	3				MED STIFF								
	4		3.8/4		↓	↓	↓	↓		↓	↓	↓	↓
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: ~~Environmental Field Services~~ NA
DRILLING RIG: ~~GeoProbe 54 LT~~ HANDAUGER

BORING NUMBER: 17 SB 34
DATE: 3.10.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sis
DRILLER: ~~Tony Strati~~ NA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification IN WOODS	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	SILT SOME CLAY GRAY MOTTLING	ML	MOIST	0	0	0	0
	2												
	3						ROCK FRAGS (SAND STONE)						
	4		4 / 4						WET				
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB35
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							LOCATION ON GRASS						
	1				SOFT	BRN	CLAY WITH SILT	CL	MOIST, TR ROOTS	0	0	0	0
	2				MED								
	3				STIFF								
	4		3.9/4		STIFF		F-M SAND SOME SILT W ROCK FRAGS.	SP					
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
BORING NUMBER: 17 SB36
PROJECT NUMBER: CTO 205 job # 4070
DATE: 3.9.02
DRILLING COMPANY: Environmental Field Services
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sn.
DRILLING RIG: GeoProbe 54 LT
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification OH GRAVEL UT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			----	STIFF	LT GRAY BRN	LIMESTONE GRAVEL CLAYEY SILT	GM CL	MOIST	0	0	0	0
	2						GRAY MOTTLING						
	3						TR SMALL ROCK FRAGS						
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17SB37
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
	1			-----	STIFF	LT GRAY	LIMESTONE GRAVEL SILT SOME CLAY	GM CL	MOIST	0	0	0	0
	2					BRN	TRACE F. SAND						
	3												
	4		4/4			GRAY	SMALL ROCK FRAGS.						
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 38
DATE: 3-8-02
GEOLOGIST: K. Simpson & ~~T. Rejahn~~ C. Say
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL CUT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Driller BZ**
	1			------	STIFF	GRAY BRN	LIMESTONE GRAVEL CLAY & SILT	GM CL	MOIST	0	0	0	0
	2						GRAY MOTTLING SOME SANDSTONE FRAGS						
	3												
	4		4 / 4			GRAY							
	5												
	6						BLACK ORGANIC MAT = 1/4" THICK						
	7						@ 3.4						
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB39
DATE: 3-9-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL WT	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			----	STIFF	GRAY/ BRN	LIMESTONE GRAVEL SILT SOME CLAY	GM CL	MOIST	0	0	0	0
	2						GRAY & RUST MOTTLING						
	3						LESS CLAY						
	4		4/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB40
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Say
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification ON GRAVEL LOT	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	LT GRY	LIME STONE GRAVEL	GM	MOIST	0	0	0	0
	2					BRN	CLAYEY SILT TR FINE SAND TR LIMESTONE GRAVEL	CL					
	3												
	4		3.3 / 4		SOFT								
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 41
DATE: 3.4.02
GEOLOGIST: K. Simpson & ~~T. Rojaho~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification (LOCATED ON GRAVEL LOT)	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	LT GRAY	LIMESTONE GRAVEL	GR	MOIST	0	0	0	0
	2					BRN	CLAYEY SILT	CL					
	3					LT GRAY	GRAY MOTTLING						
	4		3.2/4										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB42
DATE: 3.8.02
GEOLOGIST: K. Simpson & T. Rojahn
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification LOCATION ON GRAVEL	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				STIFF	BRN	F. GRAVEL, W. ROUNDED WITH F/C SAND	GM	MOIST	0	0	0	0
						↓	SILTY CLAY	CL	↓				
	2					LT	FINE SAND	SM	DRY				
	3					BRN	SOME WEATHERED SAND STONE FRIABLE						
	4		3/3										
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 3' REFUSAL @ 3' 2 ATTEMPTS						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB 43
DATE: 3.9.02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Snyder
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: UNDER POLE RACK	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			- - -	STIFF	BRN	GRAVEL SILT CLAY WEATHERED	GM ML	MOIST DRY	0	0	0	0
	2				↓	↓	SILT STONE WITH RUST COLOR LENSES + GRAY	↓	↓	↓	↓	↓	↓
	3				HARD		TR RUST COLOR SANDSTONE FRAGS.						
	4		4/4		↓	↓	↓ ↓						
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: NA

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE - Pole Yard
PROJECT NUMBER: CTO 205 job # 4070
DRILLING COMPANY: Environmental Field Services
DRILLING RIG: GeoProbe 54 LT

BORING NUMBER: 17 SB44
DATE: 3-10-02
GEOLOGIST: K. Simpson & ~~T. Rojahn~~ C. Sa
DRILLER: Tony Strati

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification S. of POLE RACK	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			CL	STIFF	BRN	SILT SOME CLAY	CL	MOIST	0	0	0	0
	2			ML	VERY STIFF		SILT - WEATHERED SILTSTONE	ML	DRY				
	3						TR ROCK FRAGS (SILTSTONE)						
	4		4/4				TR RUST COLOR NODULES						
	5												
	6												
	7												
	8												
	9												
	10												
							TD = 4'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: NA

APPENDIX E

SOIL SAMPLE LOG SHEETS

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 01 0002
Sample Location: 17 SB 01
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1456 Method: DPT Monitor Reading (ppm): 0	0-2	BRN	MOIST, CLAY & SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 01 0204
Sample Location: 17 SB 01
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

Date: 3·8·02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1500	2-4	BRN TO BLACK BTM 0.5'	MOIST CLAY & SILT W SANDSTONE FRAGS. BLACK WEATHERED SANDSTONE BTM 0.5'
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS02 0002
Sample Location: 17SB02
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1450 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, CLAY & SILT TR SANDSTONE FRAGS.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB02 0204
Sample Location: 17SB02
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

Date: 3·8·02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1452	2 - 4	LT BRN	DRY, TR CLAY & SILT WEATHERED SANDSTONE
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD YES

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS03 0002
Sample Location: 17SB03
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02 Time: 1030 Method: HAND AUGER Monitor Reading (ppm): 0	0-2	BRN	MOIST, SILT & CLAY SANDSTONE FRAGS

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

HANDAUGER

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 030204
Sample Location: 17 SB 03
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 of 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3 10 02	2 - 4	BRN	MOIST, SILT & CLAY
Time: 1040			
Method: HAND AUGER			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS04 0002
Sample Location: 17 SB 04
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02	0 - 2	BRN	MOIST, SILT SOME CLAY
Time: 1050			
Method: HAND AUGER			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB04 0204
Sample Location: 17 SB 04
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02	2-4	BRN	MOIST SILT TR CLAY, SOME F. SAND, + SANDSTONE FRAGS
Time: 1100			SEE LOG
Method: HANDAUGER			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 05 0002
Sample Location: 17 SB 05
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1430 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, SILT SOME CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB05 0204
Sample Location: 17 SB 05
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

Date: 3·8·02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1435	2 - 4	BRN	MOIST, SILTY F. SAND TR 'CLAY
Method: DPT			SEE LOG SHEET
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

RJS

SOIL SAMPLE LOG SHEET

SB06

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS05 0002
Sample Location: 17 SB 06
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1417 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, CLAY SOME SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

SB06

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB06 0204
Sample Location: 17 SB06
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02			
Time: 1420	~~2-4~~ 2-2.5	BRN	MOIST SILT SOME CLAY RUST COLOR SANDSTONE FRAGS
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

KS

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS07 0002
Sample Location: 17 SB07
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1650 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO	MOIST LIMESTONE GRAVE SILT SOME CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 07 020F
Sample Location: 17 SB 07
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02	2-4	BRN	MOIST, SILT, SOME CLAY
Time: 1655			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 08 0002
Sample Location: 17 SB 08
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

Date: 3-8-02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1635	0 - 2	GRAY TO BRN	MOIST, LIMESTONE GRAVEL SILT SOME CLAY
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB08 0204
Sample Location: 17 SB08
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1640 Method: DPT Monitor Reading (ppm): 0	2 - 4	GRAY	MOIST, CLAY SOME SILT BLACK ORGANTIC MAT @ 3'

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 09 002
Sample Location: 17 SB 09
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1310 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAY & SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	X VOC FOR MS/MSD		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB09 0204
Sample Location: 17SB09
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1315 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST, CLAY SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 10 0002
Sample Location: 17 SB 10
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth'	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1057 Method: DPT Monitor Reading (ppm): 0	0 - 2	GRAY / BRN	MOST, LIMESTONE GRAVEL w/ FINES & CLAYEY SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

TJ SL.

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB10 0204
Sample Location: 17SB10
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8-8-02 Time: 1100 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST TO DRY @ BTM. CLAYEY SILT & F/C SAND SOME SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS 11 0002
Sample Location: 17SB 11
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1335 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAY & SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): K. E. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB11 0204
Sample Location: 17 SB 11
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 1337 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	~~MOIST~~ DRY LS, SILT TR. CLAY TR F. SAND SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	2x vol for DUP		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030902 05

Signature(s): K. E. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS 12 0002
Sample Location: 17SB 12
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1404 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, SILT & CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. E. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB120204
Sample Location: 17SB12
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02	2-4	BRN	DRY, SILT WEATHERED SILT STONE
Time: 1408			
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS 13 0002
Sample Location: 17SB 13
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02	0 - 2	BRN	MOIST, SILT & CLAY
Time: 1431			
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 13 0204
Sample Location: 17 SB 13
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 6 of 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1435 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST, CLAYEY SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS14 0002
Sample Location: 17SB14
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 1500 Method: DPT Monitor Reading (ppm): 0	0 - 2	GRAY TO BRN	MOIST SILT & CLAY TR GRAVEL SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB14 0204
Sample Location: 17 SB14
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

Date: 3.9.02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1502	2 - 4	BRN TO LT BRN	DRY, SILT WEATHERED SILT STONE SEE LOG
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS15 0002
Sample Location: 17SB15
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·10·02 Time: 0750 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL, SILT & CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 15 0204
Sample Location: 17 SB 15
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02 Time: 0755 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST, SILT & CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS16 0002
Sample Location: 17 SB 16
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02 Time: 0900 Method: DPT Monitor Reading (ppm): 0	0 - 2	GRAY TO BRN	MOIST LIMESTONE GRAVEL SILT SOME CLAY SEE WG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB16 0204
Sample Location: 17 SB 16
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·10·02 Time: 0803 Method: DPT Monitor Reading (ppm): 0	2 - 4	GRAY TO BRN	MOIST, SILT SOME CLAY CLAY SOME SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS17 0002
Sample Location: 17SB17
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·10·02	0-2	BRN	MOIST, SILT & CLAY
Time: 0820			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB17 0204
Sample Location: 17SB17
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.10.02	2-4	BRN	MOIST, SILT & CLAY
Time: 0825			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS18 0002
Sample Location: 17SB18
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-10-02 Time: 0835 Method: DPT Monitor Reading (ppm): 0	0-2	BRN	MOIST, SILTY CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB18 0204
Sample Location: 17SB18
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 of 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·10·02 Time: 0938 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	DRY SILT & CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass		Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 19 0002
Sample Location: 17 SB 19
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

Date: 3-8-02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1035	0-2	BRN	MOIST, TR ROOTS, CLAYEY SILT GRAY MOTTLING, TR RUST NODULES
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030802 01

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB19 0204
Sample Location: 17 SB 19
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1040 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST, CLAYEY SILT, GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	2X VOC		
	FOR MS/MSD		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 20 0002
Sample Location: 17 SB 20
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1025 Method: DPT Monitor Reading (ppm): 0	0 - 2	DRK. BRN. GRAY	MOIST LIMESTONE GRAVEL CHARED MATERIAL (COKE?) GM / CL

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 20 0204
Sample Location: 17 SB 20
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

Date: 3·8·02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1030	2 - 4	BRN	MOIST, CL - SILT/CLAY
Method: DPT			GRAY MOTTLING > 3'
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 21 0002
Sample Location: 17 SB 21
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·9·02 Time: 0910 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY - BRN	MOIST, LIMESTONE GRAVEL SILT SOME CLAY SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Kirk S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB21 0204
Sample Location: 17 SB21
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02	2-4	BRN	MOIST, SILT SOME CLAY
Time: 0912			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K S Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS220002
Sample Location: 17 SB22
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

Date: 3-9-02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0945	0 - 2	LT GRAY TO BRN	MOIST LIMESTONE GRAVEL SILT SOME CLAY
Method: DPT			
Monitor Reading (ppm): 0			SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB22 0204
Sample Location: 17 SB22
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02			
Time: 0947	2-4	BRN	MOIST, SILT SOME CLAY
Method: DPT			
Monitor Reading (ppm): 0			SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	X VOL FOR DUP		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030902 03

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 23 0002
Sample Location: 17 SB 23
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1625 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, SILTY CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

KJ SL

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB23 0204
Sample Location: 17 SB23
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1628 Method: DPT Monitor Reading (ppm): 0	2-4	GRAY - BRN	MOIST, SILTY CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS24 0002
Sample Location: 17 SB24
Sampled By: K. Simpson & ~~J. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

Date: 3-9-02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1327	0-2	GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAY & SILT
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	2X VOL FOR DUP		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030902 04

Signature(s): K-1 S Snyder

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB24 0204
Sample Location: 17SB24
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·9·02	2-4	BRN	MOIST, CLAY & SILT
Time: 1330			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Sim

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 25 0002
Sample Location: 17 SB25
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1610 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, SILT SOME CLAY LIMESTON GRAVEL @ TOP

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB25 0204
Sample Location: 17 SB25
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1612 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST, SILT SOME CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS26 0002
Sample Location: 17 SB26
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1355 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST LIMESTONE GRAVEL SILT & CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. E. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB26 0204
Sample Location: 17SB26
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1358 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST/DRY SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 27 0002
Sample Location: 17 SB 27
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1605 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAYEY SILT GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB27 0204
Sample Location: 17 SB27
Sampled By: K. Simpson & ~~T. Rojahn~~ C Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1607 Method: DPT Monitor Reading (ppm): 0	2-4	LT. GRAY & BRN	MOIST, CLAYEY SILT, GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS28 0002
Sample Location: 17 SB28
Sampled By: K. Simpson & ~~T. Rejohn~~ C. Snyder
C.O.C. No.: PAGE 3 of 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1552 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST LIME STONE GRAVEL CLAYEY SILT WITH GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB28 0204
Sample Location: 17 SB28
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1555 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST CLAYEY SILT WITH GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS29 0002
Sample Location: 17SB29
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth[1]	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1455 Method: DPT Monitor Reading (ppm): 0	0-2	BRN	TR GRAVEL, MOIST SILT & CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB29 0204
Sample Location: 17 SB29
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02	2 - 4	BRN	MOIST, CLAYEY SILT
Time: 1458			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS30 0002
Sample Location: 17 SB 30
Sampled By: K. Simpson ~~& T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1546 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAYEY SILT GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB30 020F
Sample Location: 17 SB 30
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 3 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1548 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST CLAYEY SILT GRAY MOTTLING TR RUST COLOR NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.: FD 030802 04

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS31 0002
Sample Location: 17SB31 0204
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1010 Method: DPT Monitor Reading (ppm):	0 - 2	BLACK ON TOP BRN	MOIST, TR ROOTS CLAYEY SILT GRAY MOTTLING, RUST NODULES

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB310204
Sample Location: 17 SB31
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

Date: 3·8·02	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1012	2-4	BRN	MOIST, CLAYEY SILT GRAY MOTTLING TR RUST COLOR NODULES
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS32 0002
Sample Location: 17SB32
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·8·02 Time: 1020 Method: DPT Monitor Reading (ppm): 0	0 – 2	BRN	MOIST, TR ROOTS, CLAYEY SILT GRAY MOTTLING

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB32 02Q4
Sample Location: 17 SB32
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1022 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST, CLAYEY SILT GRAY MOTTLING

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 33 0002
Sample Location: 17 SB 33
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 2 of 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02	0 - 2	BRN	MOIST, TR ROOTS CLAYEY SILT SANDSTONE FRAGS
Time: 1402			
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030802 03

Signature(s): [illegible] SL

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB33 0204
Sample Location: 17 SB33
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 2 of 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1406 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST, CLAY SOME SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS34 0002
Sample Location: 17SB34
Sampled By: K. Simpson & ~~T. Bojaha~~ C. Snyder
C.O.C. No.: PAGE 8 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3 10 02 Time: 1000 Method: HAND AUGER Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, SILT SOME CLAY GRAY MOTTLING

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

HANDAUGER

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[✓] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB34 0204
Sample Location: 17SB 34
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 8 OF 8

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

GRAB SAMPLE DATA:

Date: 3.10.02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1010	2 - 4	BRN	WET SILT SOME CLAY, TR ROCK FRAGS SEE LOGS
Method: (TR) ~~D RT~~ HAND AUGER			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

HANDAUGER

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 35 0002
Sample Location: 17 SB 35
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3 · 8 · 02	0 - 2	BRN	MOIST, TR ROOTS CLAY WITH SILT
Time: 1347			
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 35 0204
Sample Location: 17 SB 35
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 2 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1350 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN	MOIST, CLAY WITH SILT F-M SAND W SANDSTONE FRAGS

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

KS SL

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS36 0002
Sample Location: 17SB36
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 0842 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST LIMESTONE GRAVEL CLAYEY SILT SEE W9

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

K. S. Simp

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB36 020A
Sample Location: 17 SB 36
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·9·02 Time: 0845 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST, CLAYEY SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Kirk S Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 37 0002
Sample Location: 17 SB 37
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 of 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 0835 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST LIMESTONE GRAVEL SILT SOME CLAY

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	X VOL FOR DUP		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030902 02

Signature(s): K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 37 0204
Sample Location: 17 SB 37
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 0838 Method: DPT Monitor Reading (ppm): 0	2 - 4	BRN TO GRAY	MOIST, SILT SOME CLAY TR. F. SAND

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SS38 0002
Sample Location: 17SB38
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1702 Method: DPT Monitor Reading (ppm): 0	0 - 2	LT GRAY TO BRN	MOIST, CLAY & SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB38 0204
Sample Location: 17SB38
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-0 Time: 1705 Method: DPT Monitor Reading (ppm): 0	2-4	BRN TO GRAY	MOIST, CLAY & SILT SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS39 0002
Sample Location: 17 SB39
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 0902 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST. LIMESTONE GRAVEL SILT SOME CLAY SEE WG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s): K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB390204
Sample Location: 17 SB39
Sampled By: K. Simpson & ~~T. Flojahn~~ C. Snyder
C.O.C. No.: PAGE 5 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 0905 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST, SILT SOME CLAY, LESS CLAY BTM 2' SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	X VOC MS/MSD		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Kirk E. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS40 0002
Sample Location: 17 SB 40
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 0819 Method: DPT Monitor Reading (ppm): 0	0-2	LT GRAY TO BRN	MOIST, LIMESTONE GRAVEL CLAYEY SILT

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 40 0204
Sample Location: 17 SB 40
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 0823 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	MOIST CLAYEY SILT TR F. SAND TR LIMESTONE GRAVEL

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17 SS 41 0002
Sample Location: 17 SB 41
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 4 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02	0 - 2	GRAY TO BRN	MOIST LIMESTONE GRAVEL CLAYEY SILT
Time: 0812			
Method: DPT			
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

K. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB41 020A
Sample Location: 17 SB41
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 4 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 0815 Method: DPT Monitor Reading (ppm): 0	2-4	BRN - LT GRAY	MOIST, CLAYEY SILT GRAY MOTTLING

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks
	X VOC		
	FOR DUP + MS/MSD		

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	FD 030902 01

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 42 0002
Sample Location: 17 SB 42
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-8-02 Time: 1014 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	MOIST, FINE GRAVEL W/SAND SILTY CLAY FINE SAND

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 030802 02

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB 42 0204
Sample Location: 17 SB 42
Sampled By: K. Simpson & T. Rojahn
C.O.C. No.: PAGE 1 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.8.02 Time: 1016 Method: DPT Monitor Reading (ppm): 0	2-4	LT. BRN	MOIST, F. SAND WITH WEATHERED SAND STONE

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SS 43 0002
Sample Location: 17 SB 43
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3-9-02 Time: 1424 Method: DPT Monitor Reading (ppm): 0	0 - 2	BRN	DRY, SILT STONE WEATHERED SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17 SB43 0204
Sample Location: 17 SB43
Sampled By: K. Simpson & ~~T. Rojam~~ C. Snyder
C.O.C. No.: PAGE 6 OF 8

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3.9.02 Time: 1428 Method: DPT Monitor Reading (ppm): 0	2-4	BRN	DRY, WEATHERED SILT STONE

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

Sample ID No.: 17SS44 0002
Sample Location: 17SB44
Sampled By: K. Simpson & ~~T. Rejahn~~ C. Snyder
C.O.C. No.: PAGE 7 of 8

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

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

GRAB SAMPLE DATA:

Date: 3·10·02	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0815	0 - 2	BRN	MOIST, SILT
Method: DPT			
Monitor Reading (ppm): 0			SEE LOG

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN - Pole Yard
Project No.: CTO 205 job # 4070 SWMU 17

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 17SB44 0204
Sample Location: 17SB44
Sampled By: K. Simpson & ~~T. Rojahn~~ C. Snyder
C.O.C. No.: PAGE 7 OF 8

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

GRAB SAMPLE DATA:

	Depth '	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3·10·02	2-4	BRN	DRY, SILT
Time: 0818			
Method: DPT			SEE LOG
Monitor Reading (ppm): 0			

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PCBs	(1) 4 oz. Glass	✓	Laucks

OBSERVATIONS / NOTES:

MAP:

See Figure 4 - 1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

APPENDIX F

FIELD LOGBOOKS

TITLE NSWC CRANE

PROJECT NO. 4070

BOOK 2450

MONDAY 3.4.02

Work continued from Page

WEATHER: 3/4 COLD, CLEAR 5-20°F

SUNDAY PM CLYDE SNYDER, TERRY RODAHN & KEITH SIMPSON TRAVEL TO SITE. HOTEL ARRIVE @ 2130 TRAVEL DAY ONLY.

0655 KS, TR & CS @ CRANE GATE PICK-UP PASSES TO BLD 3245 UNLOAD EQ. PREP FOR SAMPLING.

0800 DAVID MEIER & RICH JENKS BT&R SURVEYORS ON SITE

0830 ALL 5 OF US TO POLE YARD LAY-OUT CORNERS OF GEO PHY GRID AND CHECK SAMPLE LOCATION FOR EQ. POLES, TRANSFORMERS ETC THAT MAY NEED MOVED. ONLY ONE SB UNDER UTILITY POLES (LAYING IN RACKS)

1030 TR CS & KS TO LANDFARM & START LAYOUT

1140 TO LUNCH - PICK-UP DIG PERMIT FOR POLE YARD.

1200 JOE PARISH (GEO PHY.) @ BLD 3245 CLYDE S. CONDUCTES H&S TRAINING

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature]

WITNESS

DATE 3.4.02

DATE

TITLE NSWC CRANE

PROJECT NO. 4070

BOOK 2450

3.4.02

Work continued from Page

1320 CLYDE & JOE P. TO POLE YD KS & TR TO LANDFARM FOR LAY-OUT

1725 KS & TR BACK @ BLD 3245 UNLOAD TRUCK DECON STAINLESS MIXING BOWLS PAPER WORK

a 1/2 LANDFARM IS LAYED-OUT

1800 CLYDE & JOE RETURN FROM POLE YARD

1830 OFF SITE TO LOWE'S FOR SUPPLIES

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature]

WITNESS

DATE 3.4.02

DATE

TITLE NSWC CRANE
TUE 3.5.02

PROJECT NO. 7393/4070
BOOK 2450

Work continued from Page WEATHER: WARMER 25-42°F
OVERCAST
0650 RS, CS, TR & JOE PARISH ON SITE @ BLD 3245
TALKED WITH TOM BRENT ABOUT HAVING PUBLIC WORKS MOVE POLES & TRANSFORMERS @ THE POLE YD. TOM WILL CALL PW THIS AM.
0725 CS & JP TO POLE YD
RS & TR TO LANDFARM, CONTINUE LAYOUT
0950 COMPLETE LAYOUT AT LANDFARM TO POLE YARD MET WITH TOM BRENT, STEVE ___ FROM PW & JOE PARISH. PW WILL MOVE ALL EQUIPMENT IN THE AREA OF GEO SURVEY ALSO TOM B. WILL CHECK WITH ENGINEERING BILL HUDSON @ BLD 3173 - THE FLOOR OF BLD 357 IS 727.54' FROM 1956 SURVEY
1050 RETURN TO BLD 3245 CALLED RALPH B. AND JUDY L. FOR SOME SURVEY INFO. FOR POLE YD.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605
Work continued to Page

SIGNATURE [signature]
WITNESS
DATE 3.5.02
DATE

TITLE NSWC CRANE
3.5.02

PROJECT NO. 7393/4070
BOOK 2450

Work continued from Page
1130 RETURN TO POLE YD THEN LUNCH
1200 LAY OUT ORR THEN RETURN TO BLD 3245
CALLED MARK FRANCIS AND DISCUSSED ORR SAMPLE LOCATIONS. WE WILL HAVE SURVEYORS RELOCATE 07SB16 (WINTER 2001) NOW 07SB47.
ALSO ADD VALVE TO SURVEY
ORR 07SB16
1305631.933
302611.6.225
508.44 ELEV.
1530 CALLED JUDY LAMEY FIG 4-1 POLE YARD LOCATIONS WERE TAKEN FROM NSWC CRANE SUPPLIED DRAWINGS. IT WILL HELP IF THE SURVEYORS SHOOT A FEW BUILDING CORNERS (WE ADDED 8-10 TO THERE LIST).
AND SURVEYORS WILL SUPPLY DATA FOR ALL SITES (PER JUDY'S OK) IN NAD27 / NAVD 88.
1620 TR & RS PREP FOR SBs @ ORR ON WED. AM

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605
Work continued to Page

SIGNATURE [signature]
WITNESS
DATE 3.5.02
DATE

TITLE NSWC CRANE 3-5-02

PROJECT NO. 7393/4070

BOOK 2450

Work continued from Page

1650 JOE PERISH OFF-SITE TO HOTEL
CLYDE S. @ BLD 3245
CLEAN-UP & STORE EQ.
1750 CS, TR & KS OFF SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 3-5-02

DATE

TITLE NSWC CRANE WED 3-6-02

PROJECT NO. 7393/4070 3961

BOOK 2450

Work continued from Page WEATHER: WINDY OVERCAST 40-55

0645 KEITH S. & TERRY R. AT BLD
3245 LOAD TRUCK FOR SAMPLING
@ ORR
0715 JOE P. & CLYDE S. TO POLE
YARD
0715 TONY STRATI EFS @ BLD
3245 TERRY R. GOING OVER
H&S WITH TONY.
0755 KS, TR & TONY TO ORR
1130 COMPLETE SAMPLING @ ORR
7 SBs
LOAD EQUIPMENT TO LUNCH
1230 @ BLD 3245 - SURVEYORS ARE
DONE @ ORR & LANDFARM WILL
RETURN LATER IN THE WEEK TO
COMPLETE THE POLE YARD
1300 RESTOCK SUPPLIES TO LANDFARM
TO START SBs
CALLED SECURITY TO LET THEM
KNOW EFS TRAILER WILL BE LEFT
ON LF TONIGHT
1715 COMPLETED 3 CELLS & 2 BOUNDARY
SAMPLES LOAD TRUCKS TO BLD 3245
DECON PAPER WORK, PREP FOR SAMPLING
1830 ON 3.7.02 OFF SITE TO WAL-MART
1900 KS OFF SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page CS/TR

SIGNATURE

WITNESS

DATE 3-6-02

DATE

TITLE NSWC CRANE **PROJECT NO.**

THUR 3-7-02 **BOOK** 2450

Work continued from Page WEATHER: NICE, 45-65°F
CLEAR
0655 ON SITE @ BLD 3245 KEITH S.,
TERRY R., CLYDE S. (T+N4S)
TONY S. (EFS) JOE P. (EMI)
CLYDE & JOE TO POLE YARD
0720 KS & TR TO LANDFARM
1145 COMPLETE 4 CELLS 03, 04, 05 & 10 +
SB02 TO LUNCH
1215 @ BLD 3245 RESTOCK TRUCK, DECON
1240 BOWLS - RETURN TO LANDFARM
1700 COMPLETE 2 SB & 4 CELLS
ALL BUT 1 CELL DONE
TO BLD 3245. DECON, PACK
SAMPLES FOR FEDEX, PAPERWORK

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE [signature] DATE 3-7-02
WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.**

FRIDAY 3-8-02 **BOOK** 2450

Work continued from Page WEATHER: WINDY, CLEAR
45-55°F
0650 KS, TR & CS ON SITE BLD 3245
CAL PID LOAD TRUCKS
0700 TONY S. (EFS) ON SITE
TO LANDFARM TO COMPLETE
LAST CELL (3 SAMPLES).
0850 COMPLETE LF SAMPLING
CLYDE & TONY TO PCB SITE 17
KS & TR TO BLD 3245 DECON
0935 & RESTOCK TRUCK THEN TO
PCB SITE. START SBs
1145 COMPLETED 6 SBs TO LUNCH
@ BLD 3245 FOR SUPPLIES
1225 TO SITE SB SAMPLING
1730 TO BLD 3245 20 SBs COMPLETE
TERRY R. WORK ON ECO.
STUDYS THE REST OF SHIFT
PAPER WORK, DECON, STOCK TRUCK
FOR SAMPLING
1850 DEPART SITE TO HOTEL: TR & CS
1910 KS TO HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE [signature] DATE 3-8-02
WITNESS DATE

TITLE NSWC CRANE

SAT. 3.9.02

PROJECT NO. 4070

BOOK 2450

Work continued from Page WEATHER: RAIN STARTING @
0500 RAIN - ON/OFF 48-60° WINDY
0650 KS, TR & CS ON SITE @ BLD
3245 PREP FOR SB SAMPLING
@ POLE YD KS & CS
TR WORKING ON ECO. STUDYS
0720 TO POLE YD SAMPLING SBs
HEAVY RAIN 0950 → 1115
1540 COMPLETE DPT SAMPLING
RETURN TO BLD 3245 DECON,
RINSATE BLANK, PAPER WORK
1600 TONY OFF SITE
1740 KS, TR & CS OFF SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature]

DATE 3.9.02

WITNESS

DATE

TITLE NSWC CRANE

SUN. 3.10.02

PROJECT NO. 4070

BOOK 2450

Work continued from Page WEATHER: 14-40°F CLEAR
0650 KS, CS & TR ON SITE @
BLD 3245 CAL PID PREP
FOR SAMPLING @ POLE YARD
TR WORKING ON ECO. STUDIES.
0730 KS, CS & TONY S. → POLE YD
0900 COMPLETE ALL DPT SBs 41
1000 TONY S. OFF SITE
KS & CS START 3 HAND AUGER
LOCATION.
1130 COMPLETE HAND AUGER LOCATION
RETURN TO BLD 3245 DECON,
PAPER WORK, PACK EQ FOR SHIPPING
1600 CLYDE CLEANING BLD 3245
TR & KS TO SWMU 5 TO WORK ON
ECO. STUDY
1830 OFF SITE TO HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE [signature]

DATE 3.10.02

WITNESS

DATE

TITLE NSWC CRANE **PROJECT NO.** ECO. STUDY

MONDAY 3.11.02 **BOOK** 2450

Work continued from Page WEATHER: CLEAR 33-44°F

0650 KS & TR @ BLD 3245, PAPER WORK
DEPART TO SWMU 5 FOR ECO.
STUDY.
WORKING ON ECO. STUDY ALL DAY

TRAVEL TO PGH 3.12.02

SEE ALSO LOG BOOK #
PL-006

END OF SHIFT

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE [illegible] DATE 3.11.02

WITNESS DATE

TITLE **PROJECT NO.**

BOOK

Work continued from Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE DATE

WITNESS DATE

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Fire Ambulance Safety
812-854-3306

Name CLYDE SNYDER

Address

Phone

Project NSWC CRANE
SWMU 17
POLE YARD

BOOK# PL-0066

Yellow Polyethylene Protective Slipcovers (Item #31) are available for this style of notebook.
Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

CONTENTS

PAGE	REFERENCE	DATE

3/4/02

0700 Arrived on site

Unpacked supplies

1000 Went to landfarm
laid out site

1200 H+S training

1330 Proceeded to Pole Yard
to lay out site

1800 Returned to Building 3245

1810 Completed log book

1815 left site

3/5/02

0700 Arrived on site

0705 Completed Safe Work Permits
distributed to field crews

0745 Proceeded to PCB Site
(Pole Yard)

0800 Completed layout check
measurements

1230 Removal of materials from
site commenced.

1335 Started Survey South half
of site

1400 Experienced equipment problems (Changed batteries)

1555 Completed South half of
Survey

1600 Took notes on survey broke
down equipment

1700 Returned to office J. Parish
proceeded to hotel to down load
data.

3/5/0. Continued

1710 Prepared for Site Safety training for drillers

1720 Completed Logbook

1745 Left site

3/6/02

0700 Arrived on site
Completed Safe Work Permit for drillers packed vehicles

0730 Proceeded to Pole Yard
Crew finish moving materials completed at 1000 AM

0745 Start marking anomilies till remaining material moved

1000 Began survey of remaining areas

1200 Battery dead return to office to charge

1330 Began magnotometer survey

1430 Completed survey

1500 Began final area for Geophysics Survey

1545 Completed return to office

1600 Took end of day reading for PID completed logbook

1615 Left station to get supplies at Wal Mart

3/7/02

0700 Arrived on site Calibrated PID

0730 Met surveyors at site (Poteau) showed areas to be surveyed

0830 Started survey of remaining areas J. Parish extended survey into area outside fence (west) into wash area observed barrels or drums, cross arms, insulators, various other debris in wash area.

1400 Completed survey marked all remaining anomilies surveyors completed left site 1230.

1230 J. Parish mapped area re-checked some areas packed equipment

1500 Returned to office packed + cleaned equipment, emptied old samples from coolers, completed rinsate

1700 Prepared samples for shipment

1805 left site for Fed Ex

1845 Arrived Fed Ex End of day.

[illegible]

APPENDIX G

CHAIN OF CUSTODY RECORDS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 8

PROJECT NO: CTO 205 #4070	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412 921 8308	LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS:
		CARRIER/WAYBILL NUMBER: 8280 7402 8000 FEDEX SEATTLE WA	CITY, STATE: SEATTLE WA

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 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs								COMMENTS
3/8	1010	17 SS 31 0002	S	G	1	1								
	1012	17 SB 31 0204	S	G	1	1								
	1020	17 SS 32 0002	S	G	1	1								
	1022	17 SB 32 0204	S	G	1	1								
	1025	17 SS 20 0002	S	G	1	1								
	1030	17 SB 20 0204	S	G	1	1								
	0000	FD03080201	S	G	1	1								17SS19 0002
	1035	17 SS 19 0002	S	G	1	1								
	1040	17 SB 19 0204	S	G	2	2								MS/MSD
	1057	17 SS 10 0002	S	G	1	1								
	1100	17 SB 10 0204	S	G	1	1								
	1014	17 SS 42 0002	S	G	1	1								
	1116	17 SB 42 0204	S	G	1	1								

1. RELINQUISHED BY: [signature]	DATE: 3.11.02	TIME: 1800	1. RECEIVED BY: FEDEX	DATE	TIME
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)

3/99

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 8

PROJECT NO: CTO 205 #4070	SITE NAME: NSWC CRANC
PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412 921 8308	LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): K. S. Simpson	FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131
	ADDRESS:
CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000	CITY, STATE: SEATTLE WA

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 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs								COMMENTS
3/8	0000	FD 030802 02	S	G	1	1								17 SS 42 0002
	1347	17 SS 35 0002	S	G	1	1								
	1350	17 SB 35 0204	S	G	1	1								
	1402	17 SS 33 0002	S	G	1	1								
	1406	17 SB 33 0204	S	G	1	1								
	0000	FD 03080203	S	G	1	1								17 SS 33 0002
	1417	17 SS 06 0002	S	G	1	1								
	1420	17 SB 06 0204	S	G	1	1								
	1430	17 SS 05 0002	S	G	1	1								
	1435	17 SB 05 0204	S	G	1	1								
	1450	17 SS 02 0002	S	G	1	1								
	1452	17 SB 02 0204	S	G	2	2								MS/MSD
	1416	17 SS 01 0002	S	G	1	1								

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: K. S. Simpson	3.11.02	1800	1. RECEIVED BY: FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

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FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 3 OF 8

PROJECT NO: CTO 205 #4070
SITE NAME: NSWC CRANE
PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412921 8308
LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): [signature]
FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412921 8131
ADDRESS:
CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000
CITY, STATE: SEATTLE WA

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: PCBs

DATE YEAR 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	PCBs							COMMENTS
3/8	1500	17SB01 0204	S	G	1	1							
	0000	FD030802 04	S	G	1	1							17SB30 0204
	1552	17SS28 0002	S	G	1	1							
	1555	17SB28 0204	S	G	1	1							
	1546	17SS30 0002	S	G	1	1							
	1548	17SB30 0204	S	G	1	1							
	1605	17SS27 0002	S	G	1	1							
	1607	17SB27 0204	S	G	1	1							
	1610	17SS25 0002	S	G	1	1							
	1612	17SB25 0204	S	G	1	1							
	1625	17SS23 0002	S	G	1	1							
	1628	17SB23 0204	S	G	1	1							
	1635	17SS08 0002	S	G	1	1							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	3.11.02	1800	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS 001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 4 OF 8

PROJECT NO: CTO205 #4070	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412 921 8308	LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): Keith S. Simpson		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS:
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000	CITY, STATE: SEATTLE WA

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: KC

DATE YEAR 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs								COMMENTS
3/8	1640	17SB08 0204	S	G	1	1								
	1650	17SS07 0002	S	G	1	1								
	1655	17SB07 0204	S	G	1	1								
	1702	17SS38 0002	S	G	1	1								
	1705	17SB38 0204	S	G	1	1								
3/9	0812	17SS41 0002	S	G	1	1								
	0815	17SB41 0204	S	G	2	2								MS/MSD
	0819	17SS40 0002	S	G	1	1								
	0823	17SB40 0204	S	G	1	1								
	0835	17SS37 0002	S	G	1	1								
	0838	17SB37 0204	S	G	1	1								
	0000	FD030902 02	S	G	1	1								17SS37 0002
	0000	FD030902 01	S	G	1	1								17SB41 0204

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: Keith S. Simpson	3.11.02	1800	1. RECEIVED BY: FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 5 OF 8

PROJECT NO: CTO 205 #4070	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412921 8309	LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412921 8131	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8006	CITY, STATE: SEATTLE WA

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 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs								COMMENTS
3/9	0842	17SS36 0002	S	G	1	1								
	0845	17SB36 0204	S	G	1	1								
	0902	17SS39 0002	S	G	2	2								MS/MSD
	0905	17SB39 0204	S	G	1	1								
	0910	17SS21 0002	S	G	1	1								
	0912	17SB21 0204	S	G	1	1								
	0945	17SS22 0002	S	G	1	1								
	0947	17SB22 0204	S	G	1	1								
	0000	FD030902 03	S	G	1	1								17SB22 0204
	1310	17SS09 0002	S	G	2	2								MS/MSD
	1315	17SB09 0204	S	G	1	1								
	1327	17SS24 0002	S	G	1	1								
	1330	17SB24 0204	S	G	1	1								

1. RELINQUISHED BY [signature]	DATE 3-11-02	TIME 1800	1. RECEIVED BY FEDEX	DATE	TIME
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)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 6 OF 8

PROJECT NO: CTO 205 #4070	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412 921 8308	LABORATORY NAME AND CONTACT: LAUCK'S LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS:
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000	CITY, STATE: SEATTLE WA

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 2002	TIME	SAMPLE ID: SWMU 17	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs							COMMENTS
3/9	0000	FD 030902 04	S	G	1	1							175524 0002
	1335	175511 0002	S	G	1	1							
	1337	175B11 0204	S	G	1	1							
	0000	FD 030902 05	S	G	1	1							175B11 0204
	1355	175526 0002	S	G	1	1							
	1358	175B26 0204	S	G	1	1							
	1404	175512 0002	S	G	1	1							
	1408	175B12 0204	S	G	1	1							
	1424	175543 0002	S	G	1	1							
	1428	175B43 0204	S	G	1	1							
	1431	175513 0002	S	G	1	1							
	1435	175B13 0204	S	G	1	1							
	1455	175529 0002	S	G	1	1							

1. RELINQUISHED BY [signature]	DATE 3.11.02	TIME 1800	1. RECEIVED BY FEDEX	DATE	TIME
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)

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 7 OF 8

PROJECT NO: CTO 205 #4070	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI 412 921 8308	LABORATORY NAME AND CONTACT: LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000	CITY, STATE: SEATTLE WA

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 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs								COMMENTS
3/9	1458	17SB29 0204	S	G	1	1								
	1500	17SS14 0002	S	G	1	1								
	1502	17SB14 0204	S	G	1	1								
	1620	RB030902 01	AQ	G	2	2								DPT STEEL CUTTING SHOE
3/10	0750	17SS50002	S	G	1	1								
	0755	17SB15 0204	S	G	1	1								
	0800	17SS16 0002	S	G	1	1								
	0803	17SB16 0204	S	G	1	1								
	0815	17SS44 0002	S	G	1	1								
	0818	17SB44 0204	S	G	1	1								
	0820	17SS17 0002	S	G	1	1								
	0825	17SB17 0204	S	G	1	1								
	1330	RB031002 01	AQ	G	2	2								HAND AUGER BUCKET

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	3.11.02	1800	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 8 OF 8

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO205 # 4070	NSWC CRANE	RALPH BASINSKI 412 921 8308	LAUCKS LAB - HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8000	CITY, STATE: SEATTLE WA

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: NONE

DATE YEAR 2002	TIME	SAMPLE ID (SWMU 17)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PCBs							COMMENTS
3/10	0835	175S18 0002	S	G	1	1							
	0838	175B18 0204	S	G	1	1							
	1000	175S34 0002	S	G	1	1							
	1010	175B34 0204	S	G	1	1							
	1030	175S03 0002	S	G	1	1							
	1040	175B03 0204	S	G	1	1							
	1050	175S04 0002	S	G	1	1							
	1100	175B04 0204	S	G	1	1							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	3.11.02	1800	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER PAGE 5 OF

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 19 # 7393	NSWC CRANE	ROGER CLARK 412 921 8415	CHUCKS - HUGH PRENTICE
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		KEITH SIMPSON 412 921 8131	
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FEDEX 8280 7402 8113	SEATTLE WA

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2002	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: SELECT METALS, CR+6, CN, PH	METALS	CN	CR+6, PH	ENERGETICS	PCBs			COMMENTS
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	P	P	P	G	G			
					PRESERVATIVE USED	4°C	HNO3	NaOH	4°C	4°C	4°C			
		LANDFARM SWMU 30												
3/7	0000	FD 030702 05	S	C	1	1								30CP01 0204
	1605	30 CP 01 0001	S	C	1	1								
	1615	30 CP 01 0002	S	C	1	1								*
	1620	30 CP 01 0204	S	C	1	1								
	1633	30 SS 06 0001	S	G	1	1								
	1635	30 SS 06 0002	S	G	1	1								*
	1638	30 SB 06 0204	S	G	1	1								
	1730	RB 030702 03	AQ	G	7	—	1	1	1	2	2			PLASTIC DPT SLEEVE

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	3.7.02	1830	FEDEX		
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * - SAMPLES TO BE HELD | RB WILL COVER SLEEVE FOR CTO19, 160 & 205

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3/99
FORM NO. TtNUS-001

APPENDIX H

EQUIPMENT CALIBRATION LOG

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PE PHOTOVAC

PROJECT NAME : NSWC Crane

SERIAL NUMBER: EDFJ 236

PROJECT NUMBER : CTOs 19, 160 & 205

MANUFACTURER : PHOTOVAC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
3/4/02	0 / 100	Isobutylene	As/manuc/	clock	0/100	[illegible]	✓ FILTER
3/6/02	0/100	"	"	NA	0/100	[illegible]	OK
3/6/02					70.4	[illegible]	End of Day Reading
3/7/02	0/100	"	"	0/100	100	[illegible]	Filter good
3/7/02		"			68.4		End of day
3/8/02	0/100	"	"	"	100.0	[illegible]	Re-adjust settings
3/8/02					82.1	[illegible]	End of Day
3/9/02	0/100	"	"	"	100.0	[illegible]	
3/9/02	0/100				87.1	[illegible]	End of Day Reading
3/10/02	0/100	"	"	"	100.0	[illegible]	Readjust date
3/10/02					100.0	[illegible]	End of day reading

Instrument Rented From: T+NUS

APPENDIX I

DATA VALIDATION MEMORANDA

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. BASINSKI**	**DATE:**	**April 22, 2002**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- PCB CTO 205, NSWC CRANE SDG T20504**		

SAMPLES: 2 / Aqueous

RB03090201 RB03100201

20 / Solid

17SB030204	17SB040204	17SB140204	17SB150204
17SB170204	17SB180204	17SB340204	17SB440204
17SS030002	17SS040002	17SS140002	17SS150002
17SS160002	17SB160204	17SS170002	17SS180002
17SS340002	17SS440002		

OVERVIEW

The sample set for CTO 205 NSWC Crane, SDG T20504 consists of two rinsate blanks and eighteen (18) solid environmental samples. The samples were analyzed for polychlorinated biphenyls (PCBs).

The samples were collected by TetraTech NUS on March 9 and 10, 2002 and analyzed by Laucks Testing Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted using SW-846 Method 8082. The data contained in this SDG were validated with regard to the following parameters:

*	• Data completeness
*	• Holding times
	• Initial/continuing calibrations
*	• Laboratory method blank results
*	• Surrogate Recoveries
*	• Blank Spike/Blank Spike Duplicate Results
*	• Matrix Spike/Matrix Spike Duplicate Results
*	• Compound Quantitation
*	• Compound Identification
*	• Detection Limits

The symbol (*) indicates that quality control criteria were not met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

PCBs

The continuing calibration analyzed on 3/21/02 @14:02 had a percent difference (%D) greater than the 15% quality control criteria for Aroclor-1016 on the DB-XLB column. No qualifications were made on this basis

because Aroclor-1016 was compliant on the DB-35ms column.

The continuing calibration analyzed on 3/22/02 @13:45 had a percent difference (%D) greater than the 15% quality control criteria for Aroclor-1016 on the DB-XLB column. No qualifications were made on this basis because Aroclor-1016 was compliant on the DB-35ms column.

The MS/MSD performed on sample 17SS140002 had recoveries outside of the quality criteria for Aroclor-1260 due to high concentrations of Aroclor-1260 in the sample. Because sample concentration is greater than 10X the spike added concentration, meaningful percent recoveries could not be determined. No action was taken on this basis.

Aroclor-1260 exceeded the linear calibration range for samples 17SS140002 and 17SS150002. Dilution results were transposed onto the undiluted analysis and verified by the validator.

Additional Comments:

The laboratory incorrectly identified sample 17SB160204 as 17SS160204. The correct sample identifier was entered into the database.

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Aroclor-1016 exceeded the continuing calibration %D criteria.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), EPA Region V Validation Guidelines (08/93), and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB030204
samp_date	3/10/02
lab_id	0203231-18
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	300	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB040204
samp_date	3/10/02
lab_id	0203231-20
qc_type	NM
units	UG/KG
Pct_Solids	83
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB140204
samp_date	3/9/02
lab_id	0203231-02
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	690		

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB150204
samp_date	3/10/02
lab_id	0203231-05
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB160204
samp_date	3/10/02
lab_id	0203231-07
qc_type	NM
units	UG/KG
Pct_Solids	81
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB170204
samp_date	3/10/02
lab_id	0203231-11
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB180204
samp_date	3/10/02
lab_id	0203231-14
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

nsample	17SB340204
samp_date	3/10/02
lab_id	0203231-16
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	300	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB440204
samp_date	3/10/02
lab_id	0203231-09
qc_type	NM
units	UG/KG
Pct_Solids	89
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	260		

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS030002
samp_date	3/10/02
lab_id	0203231-17
qc_type	NM
units	UG/KG
Pct_Solids	79
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	320	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS040002
samp_date	3/10/02
lab_id	0203231-19
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS140002
samp_date	3/9/02
lab_id	0203231-01
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	20000		

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS150002
samp_date	3/10/02
lab_id	0203231-04
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	4400		

nsample	17SS160002
samp_date	3/10/02
lab_id	0203231-06
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	170		

nsample	17SS170002
samp_date	3/10/02
lab_id	0203231-10
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20504 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS180002
samp_date	3/10/02
lab_id	0203231-13
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	300	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS340002
samp_date	3/10/02
lab_id	0203231-15
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS440002
samp_date	3/10/02
lab_id	0203231-08
qc_type	NM
units	UG/KG
Pct_Solids	92
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

PROJ_NO: 4070

SDG: T20504 MEDIA: WATER DATA FRACTION: PEST/PC

nsample	RB03090201
samp_date	3/9/02
lab_id	0203231-03
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	0.47	U	
AROCLOR-1221	0.94	U	
AROCLOR-1232	0.47	U	
AROCLOR-1242	0.47	U	
AROCLOR-1248	0.47	U	
AROCLOR-1254	0.47	U	
AROCLOR-1260	0.47	U	

nsample	RB03100201
samp_date	3/10/02
lab_id	0203231-12
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	0.48	U	
AROCLOR-1221	0.96	U	
AROCLOR-1232	0.48	U	
AROCLOR-1242	0.48	U	
AROCLOR-1248	0.48	U	
AROCLOR-1254	0.48	U	
AROCLOR-1260	0.48	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. BASINSKI**	**DATE:**	**April 22, 2002**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- PCB CTO 205, NSWC CRANE SDG T20505**		
SAMPLES:	20 / Solid		

17SB090204	17SB110204	17SB120204	17SB130204
17SB220204	17SB240204	17SB260204	17SB290204
17SB430204	17SS090002	17SS110002	17SS120002
17SS130002	17SS240002	17SS260002	17SS290002
17SS430002	FD03090203	FD03090204	FD03090205

OVERVIEW

The sample set for CTO 205 NSWC Crane, SDG T20505 consists of twenty (20) solid environmental samples. The samples were analyzed for polychlorinated biphenyls (PCBs). Three (3) field duplicate pairs were included in this SDG: FD03090203 / 17SB220204, FD03090204 / 17SS240002, FD03090205 / 17SB110204.

The samples were collected by TetraTech NUS on March 9, 2002 and analyzed by Laucks Testing Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted using SW-846 Method 8082. The data contained in this SDG were validated with regard to the following parameters:

*	Data completeness
	Holding times
*	Initial/continuing calibrations
*	Laboratory method blank results
*	Surrogate Recoveries
*	Blank Spike/Blank Spike Duplicate Results
*	Matrix Spike/Matrix Spike Duplicate Results
	Field Duplicate Results
	Compound Quantitation
*	Compound Identification
*	Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

PCBs

All samples were extracted 3 days outside of the 14 day extraction hold time. The re-extraction was performed due to the incorrect samples being extracted in the original batch. The extracted results are considered the valid results and positive and non-detected results were qualified "J" and "UJ" respectively.

The percent difference (%D) between columns exceeded 25% for Aroclor-1260 in sample FD03090204. The Aroclor-1260 result was reported as estimated, "J" in sample FD03090204.

Field duplicate imprecision (RPD >50%) was noted in samples FD03090204 / 17SS240002 for Aroclor-1260. The Aroclor-1260 results for the aforementioned samples were qualified as estimated, "J".

Additional Comments: None.

EXECUTIVE SUMMARY

Laboratory Performance Issues: All samples were extracted outside of the 14 day extraction hold time.

Other factors affecting data quality: A %D exceeded the quality control limit between columns for Aroclor-1260 in sample FD03090204. Field duplicate imprecision was noted in samples FD03090204 and 17SS240002.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), EPA Region V Validation Guidelines (08/93), and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Edward Sedlmyer
Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB090204
samp_date	3/9/02
lab_id	0203230-04
qc_type	NM
units	UG/KG
Pct_Solids	83
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	300	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	140	UJ	H

nsample	17SB110204
samp_date	3/9/02
lab_id	0203230-09
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	290	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	140	UJ	H

nsample	17SB120204
samp_date	3/9/02
lab_id	0203230-14
qc_type	NM
units	UG/KG
Pct_Solids	93
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	UJ	H
AROCLOR-1221	270	UJ	H
AROCLOR-1232	130	UJ	H
AROCLOR-1242	130	UJ	H
AROCLOR-1248	130	UJ	H
AROCLOR-1254	130	UJ	H
AROCLOR-1260	130	UJ	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB130204
samp_date	3/9/02
lab_id	0203230-18
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	290	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	200	J	H

nsample	17SB220204
samp_date	3/9/02
lab_id	0203230-01
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	300	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	150	UJ	H

nsample	17SB240204
samp_date	3/9/02
lab_id	0203230-06
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	300	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	150	UJ	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB260204
samp_date	3/9/02
lab_id	0203230-12
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	UJ	H
AROCLOR-1221	280	UJ	H
AROCLOR-1232	130	UJ	H
AROCLOR-1242	130	UJ	H
AROCLOR-1248	130	UJ	H
AROCLOR-1254	130	UJ	H
AROCLOR-1260	330	J	H

nsample	17SB290204
samp_date	3/9/02
lab_id	0203230-20
qc_type	NM
units	UG/KG
Pct_Solids	78
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	320	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	150	UJ	H

nsample	17SB430204
samp_date	3/9/02
lab_id	0203230-16
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	280	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	140	UJ	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS090002
samp_date	3/9/02
lab_id	0203230-03
qc_type	NM
units	UG/KG
Pct_Solids	78
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	320	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	180	J	H

nsample	17SS110002
samp_date	3/9/02
lab_id	0203230-08
qc_type	NM
units	UG/KG
Pct_Solids	81
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	310	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	1200	J	H

nsample	17SS120002
samp_date	3/9/02
lab_id	0203230-13
qc_type	NM
units	UG/KG
Pct_Solids	93
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	UJ	H
AROCLOR-1221	270	UJ	H
AROCLOR-1232	130	UJ	H
AROCLOR-1242	130	UJ	H
AROCLOR-1248	130	UJ	H
AROCLOR-1254	130	UJ	H
AROCLOR-1260	1800	J	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS130002
samp_date	3/9/02
lab_id	0203230-17
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	290	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	820	J	H

nsample	17SS240002
samp_date	3/9/02
lab_id	0203230-05
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	290	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	440	J	GH

nsample	17SS260002
samp_date	3/9/02
lab_id	0203230-11
qc_type	NM
units	UG/KG
Pct_Solids	91
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	UJ	H
AROCLOR-1221	270	UJ	H
AROCLOR-1232	130	UJ	H
AROCLOR-1242	130	UJ	H
AROCLOR-1248	130	UJ	H
AROCLOR-1254	130	UJ	H
AROCLOR-1260	600	J	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS290002
samp_date	3/9/02
lab_id	0203230-19
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	300	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	140	UJ	H

nsample	17SS430002
samp_date	3/9/02
lab_id	0203230-15
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	310	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	870	J	H

nsample	FD03090203
samp_date	3/9/02
lab_id	0203230-02
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	17SB220204

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	UJ	H
AROCLOR-1221	300	UJ	H
AROCLOR-1232	140	UJ	H
AROCLOR-1242	140	UJ	H
AROCLOR-1248	140	UJ	H
AROCLOR-1254	140	UJ	H
AROCLOR-1260	140	UJ	H

PROJ_NO: 4070

SDG: T20505 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	FD03090204
samp_date	3/9/02
lab_id	0203230-07
qc_type	NM
units	UG/KG
Pct_Solids	79
DUP_OF:	17SS240002

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	UJ	H
AROCLOR-1221	320	UJ	H
AROCLOR-1232	150	UJ	H
AROCLOR-1242	150	UJ	H
AROCLOR-1248	150	UJ	H
AROCLOR-1254	150	UJ	H
AROCLOR-1260	1200	J	GHU

nsample	FD03090205
samp_date	3/9/02
lab_id	0203230-10
qc_type	NM
units	UG/KG
Pct_Solids	94
DUP_OF:	17SB110204

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	UJ	H
AROCLOR-1221	270	UJ	H
AROCLOR-1232	130	UJ	H
AROCLOR-1242	130	UJ	H
AROCLOR-1248	130	UJ	H
AROCLOR-1254	130	UJ	H
AROCLOR-1260	130	UJ	H

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. BASINSKI**	**DATE:**	**April 22, 2002**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- PCB CTO 205, NSWC CRANE SDG T20501**		
SAMPLES:	20 / Solid		

17SB100204	17SB190204	17SB200204	17SB310204
17SB320204	17SB330204	17SB350204	17SB420204
17SS060002	17SS100002	17SS190002	17SS200002
17SS310002	17SS320002	17SS330002	17SS350002
17SS420002	FD03080201	FD03080202	FD03080203

OVERVIEW

The sample set for CTO 205 NSWC Crane, SDG T20501 consists of twenty (20) solid environmental samples. The samples were analyzed for polychlorinated biphenyls (PCBs). Three (3) field duplicate pairs were included in this SDG: FD03080201 / 17SS190002, FD03080202 / 17SS420002, FD03080203 / 17SS330002.

The samples were collected by TetraTech NUS on March 8, 2002 and analyzed by Laucks Testing Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted using SW-846 Method 8082. The data contained in this SDG were validated with regard to the following parameters:

*	• Data completeness
*	• Holding times
	• Initial/continuing calibrations
*	• Laboratory method blank results
*	• Surrogate Recoveries
*	• Blank Spike/Blank Spike Duplicate Results
*	• Matrix Spike/Matrix Spike Duplicate Results
*	• Field Duplicate Precision
*	• Compound Quantitation
*	• Compound Identification
*	• Detection Limits

The symbol (*) indicates that quality control criteria were not met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

PCBs

The continuing calibration analyzed on 3/20/02 @11:58 had a percent difference (%D) greater than the 15% quality control criteria for Aroclor-1016 on the DB-XLB column. . No qualifications were made on this basis since the exceedance was only on one column.

Aroclor-1260 exceeded linear calibration range for samples 17SS100002 and 17SS420002. Positive results from the dilution analysis were transposed onto the undiluted analysis and reviewed by the validator.

Field duplicate imprecision (RPD >50%) was noted in the duplicate pair 17SS420002 / FD03080202. Positive and non-detected results were qualified "J" and "UJ" respectively.

Additional Comments: None.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Aroclor-1016 and Aroclor-1260 exceeded the continuing calibration %D criteria.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), EPA Region V Validation Guidelines (08/93), and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Edward Sedlmyer
Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB100204
samp_date	3/8/02
lab_id	0203227-11
qc_type	NM
units	UG/KG
Pct_Solids	91
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

nsample	17SB190204
samp_date	3/8/02
lab_id	0203227-09
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB200204
samp_date	3/8/02
lab_id	0203227-06
qc_type	NM
units	UG/KG
Pct_Solids	81
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB310204
samp_date	3/8/02
lab_id	0203227-02
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB320204
samp_date	3/8/02
lab_id	0203227-04
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB330204
samp_date	3/8/02
lab_id	0203227-18
qc_type	NM
units	UG/KG
Pct_Solids	78
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	320	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB350204
samp_date	3/8/02
lab_id	0203227-16
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB420204
samp_date	3/8/02
lab_id	0203227-13
qc_type	NM
units	UG/KG
Pct_Solids	93
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

nsample	17SS060002
samp_date	3/8/02
lab_id	0203227-20
qc_type	NM
units	UG/KG
Pct_Solids	77
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	160	U	
AROCLOR-1221	320	U	
AROCLOR-1232	160	U	
AROCLOR-1242	160	U	
AROCLOR-1248	160	U	
AROCLOR-1254	160	U	
AROCLOR-1260	160	U	

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS100002
samp_date	3/8/02
lab_id	0203227-10
qc_type	NM
units	UG/KG
Pct_Solids	93
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	120000		

nsample	17SS190002
samp_date	3/8/02
lab_id	0203227-08
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS200002
samp_date	3/8/02
lab_id	0203227-05
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	320		

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS310002
samp_date	3/8/02
lab_id	0203227-01
qc_type	NM
units	UG/KG
Pct_Solids	83
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SS320002
samp_date	3/8/02
lab_id	0203227-03
qc_type	NM
units	UG/KG
Pct_Solids	79
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	320	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS330002
samp_date	3/8/02
lab_id	0203227-17
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	890		

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS350002
samp_date	3/8/02
lab_id	0203227-15
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS420002
samp_date	3/8/02
lab_id	0203227-12
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	140000	J	G

nsample	FD03080201
samp_date	3/8/02
lab_id	0203227-07
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	17SS190002

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

PROJ_NO: 4070

SDG: T20501 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	FD03080202
samp_date	3/8/02
lab_id	0203227-14
qc_type	NM
units	UG/KG
Pct_Solids	93
DUP_OF:	17SS420002

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	UJ	G

nsample	FD03080203
samp_date	3/8/02
lab_id	0203227-19
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	17SS330002

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	660		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. BASINSKI**	**DATE:**	**April 22, 2002**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- PCB CTO 205, NSWC CRANE SDG T20503**		
SAMPLES:	20 / Solid		

17SB070204	17SB080204	17SB210204	17SB360204
17SB370204	17SB380204	17SB390204	17SB400204
17SB410204	17SS070002	17SS210002	17SS220002
17SS360002	17SS370002	17SS380002	17SS390002
17SS400002	17SS410002	FD03090201	FD03090202

OVERVIEW

The sample set for CTO 205 NSWC Crane, SDG T20503 consists of twenty (20) solid environmental samples. The samples were analyzed for polychlorinated biphenyls (PCBs). Two (2) field duplicate pairs were included in this SDG: FD03090201 / 17SB410204, FD03090202 / 17SS370002.

The samples were collected by TetraTech NUS on March 8 and 9, 2002 and analyzed by Laucks Testing Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted using SW-846 Method 8082. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data completeness
*	•	Holding times
	•	Initial/continuing calibrations
*	•	Laboratory method blank results
*	•	Surrogate Recoveries
*	•	Blank Spike/Blank Spike Duplicate Results
*	•	Matrix Spike/Matrix Spike Duplicate Results
*	•	Field Duplicate Imprecision
*	•	Compound Quantitation
*	•	Compound Identification
*	•	Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

PCBs

The continuing calibration analyzed on 3/22/02 @13:45 had a percent difference (%D) greater than the 15% quality control criteria for Aroclor-1016 on the DB-XLB column. No qualifications were made on this basis because Aroclor-1016 was compliant on the DB-35ms column.

Aroclor-1260 exceeded the linear calibration range for samples 17SS400002 and 17SS210002. Positive results from the dilution analyses were transposed onto the undiluted analysis and verified by the validator.

Additional Comments: None.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Aroclor-1016 exceeded the continuing calibration %D criteria.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), EPA Region V Validation Guidelines (08/93), and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Edward Sedlmyer
Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB070204
samp_date	3/8/02
lab_id	0203229-03
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB080204
samp_date	3/8/02
lab_id	0203229-01
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB210204
samp_date	3/9/02
lab_id	0203229-19
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB360204
samp_date	3/9/02
lab_id	0203229-15
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB370204
samp_date	3/9/02
lab_id	0203229-11
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	430		

nsample	17SB380204
samp_date	3/8/02
lab_id	0203229-05
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	1600		

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB390204
samp_date	3/9/02
lab_id	0203229-17
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB400204
samp_date	3/9/02
lab_id	0203229-09
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB410204
samp_date	3/9/02
lab_id	0203229-07
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS070002
samp_date	3/8/02
lab_id	0203229-02
qc_type	NM
units	UG/KG
Pct_Solids	89
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

nsample	17SS210002
samp_date	3/9/02
lab_id	0203229-18
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	3400		

nsample	17SS220002
samp_date	3/9/02
lab_id	0203229-20
qc_type	NM
units	UG/KG
Pct_Solids	82
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	300	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	1300		

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS360002
samp_date	3/9/02
lab_id	0203229-14
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SS370002
samp_date	3/9/02
lab_id	0203229-10
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	1600		

nsample	17SS380002
samp_date	3/8/02
lab_id	0203229-04
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	280		

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS390002
samp_date	3/9/02
lab_id	0203229-16
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	420		

nsample	17SS400002
samp_date	3/9/02
lab_id	0203229-08
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	11000		

nsample	17SS410002
samp_date	3/9/02
lab_id	0203229-06
qc_type	NM
units	UG/KG
Pct_Solids	91
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	360		

PROJ_NO: 4070

SDG: T20503 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	FD03090201
samp_date	3/9/02
lab_id	0203229-13
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	17SB410204

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	FD03090202
samp_date	3/9/02
lab_id	0203229-12
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	17SS370002

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	1100		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. BASINSKI**	**DATE:**	**APRIL 22, 2002**
FROM:	**BERNARD F. SPADA III**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION – PCB CTO 205, NSWC CRANE SDG T20502**		
SAMPLES:	19 / Soil / PCB		

17SB010204	17SB020204	17SB050204
17SB060204	17SB230204	17SB250204
17SB270204	17SB280204	17SB300204
17SS010002	17SS020002	17SS050002
17SS080002	17SS230002	17SS250002
17SS270002	17SS280002	17SS300002
FD03080204		

OVERVIEW

The sample set for CTO 205; NSWC Crane, SDG T20502 consists of eighteen (18) environmental soil samples and one (1) field duplicate. All samples were analyzed for polychlorinated biphenyls (PCB). The duplicate pair included in this SDG is FD03080204 and 17SB300204.

The samples were collected by TetraTech NUS on March 8th, 2002 and analyzed by Laucks Testing Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8082 analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial and continuing calibration
* • Blank results
* • Surrogate spike recoveries
* • Blank Spike/Blank Spike Duplicate Results
* • Matrix Spike/Matrix Spike Duplicate Results
* • Field Duplicate Precision
* • Compound Quantitation
* • Compound Identification
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

PCB

None.

Notes

The continuing calibration analyzed on March 20 at 11:58 exceeded the 15%D quality control criteria for Aroclor 1016 and Aroclor 1260 on the DB-XLB column. No action was taken because the DB-35ms column was compliant.

The continuing calibration analyzed on March 20 at 20:19 exceeded the 15%D quality control criteria for Aroclor 1016 on the DB-XLB column. No action was taken because the DB-35ms column was compliant.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation as modified by EPA Region V (8/93) and the NFESC guidelines "Navy IRCDQM" (Sept 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Bernard F Spada III

Tetra Tech NUS

Bernard F Spada III
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
N01 = Internal Standard Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB010204
samp_date	3/8/02
lab_id	0203228-07
qc_type	NM
units	UG/KG
Pct_Solids	72
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	170	U	
AROCLOR-1221	350	U	
AROCLOR-1232	170	U	
AROCLOR-1242	170	U	
AROCLOR-1248	170	U	
AROCLOR-1254	170	U	
AROCLOR-1260	170	U	

nsample	17SB020204
samp_date	3/8/02
lab_id	0203228-05
qc_type	NM
units	UG/KG
Pct_Solids	89
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

nsample	17SB050204
samp_date	3/8/02
lab_id	0203228-03
qc_type	NM
units	UG/KG
Pct_Solids	90
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	280	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	130	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB060204
samp_date	3/8/02
lab_id	0203228-01
qc_type	NM
units	UG/KG
Pct_Solids	85
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB230204
samp_date	3/8/02
lab_id	0203228-18
qc_type	NM
units	UG/KG
Pct_Solids	81
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB250204
samp_date	3/8/02
lab_id	0203228-16
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SB270204
samp_date	3/8/02
lab_id	0203228-14
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SB280204
samp_date	3/8/02
lab_id	0203228-10
qc_type	NM
units	UG/KG
Pct_Solids	88
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	280	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SB300204
samp_date	3/8/02
lab_id	0203228-12
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS010002
samp_date	3/8/02
lab_id	0203228-06
qc_type	NM
units	UG/KG
Pct_Solids	77
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	160	U	
AROCLOR-1221	320	U	
AROCLOR-1232	160	U	
AROCLOR-1242	160	U	
AROCLOR-1248	160	U	
AROCLOR-1254	160	U	
AROCLOR-1260	160	U	

nsample	17SS020002
samp_date	3/8/02
lab_id	0203228-04
qc_type	NM
units	UG/KG
Pct_Solids	80
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	310	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

nsample	17SS050002
samp_date	3/8/02
lab_id	0203228-02
qc_type	NM
units	UG/KG
Pct_Solids	78
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	150	U	
AROCLOR-1221	320	U	
AROCLOR-1232	150	U	
AROCLOR-1242	150	U	
AROCLOR-1248	150	U	
AROCLOR-1254	150	U	
AROCLOR-1260	150	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS080002
samp_date	3/8/02
lab_id	0203228-19
qc_type	NM
units	UG/KG
Pct_Solids	91
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	130	U	
AROCLOR-1221	270	U	
AROCLOR-1232	130	U	
AROCLOR-1242	130	U	
AROCLOR-1248	130	U	
AROCLOR-1254	130	U	
AROCLOR-1260	830		

nsample	17SS230002
samp_date	3/8/02
lab_id	0203228-17
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	240		

nsample	17SS250002
samp_date	3/8/02
lab_id	0203228-15
qc_type	NM
units	UG/KG
Pct_Solids	83
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	17SS270002
samp_date	3/8/02
lab_id	0203228-13
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SS280002
samp_date	3/8/02
lab_id	0203228-09
qc_type	NM
units	UG/KG
Pct_Solids	84
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

nsample	17SS300002
samp_date	3/8/02
lab_id	0203228-11
qc_type	NM
units	UG/KG
Pct_Solids	83
DUP_OF:	

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	300	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

PROJ_NO: 4070

SDG: T20502 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	FD03080204
samp_date	3/8/02
lab_id	0203228-08
qc_type	NM
units	UG/KG
Pct_Solids	87
DUP_OF:	17SB300204

Parameter	Result	ValQual	QualCode
AROCLOR-1016	140	U	
AROCLOR-1221	290	U	
AROCLOR-1232	140	U	
AROCLOR-1242	140	U	
AROCLOR-1248	140	U	
AROCLOR-1254	140	U	
AROCLOR-1260	140	U	

APPENDIX J

ANALYTICAL DATABASE

APPENDIX J

SURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITORBURIAL/POLE YARD
NSWC CRANE
CRANE INDIANA

Location:	17SB01	17SB02	17SB03	17SB04	17SB05	17SB06	17SB07	17SB08	17SB09	17SB10	17SB11	17SB12
Sample Identification:	17SS010002	17SS020002	17SS030002	17SS040002	17SS050002	17SS060002	17SS070002	17SS080002	17SS090002	17SS100002	17SS110002	17SS120002
Depth (feet):	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Date of Collection:	3/8/2002	3/8/2002	3/10/2002	3/10/2002	3/8/2002	3/8/2002	3/8/2002	3/8/2002	3/9/2002	3/8/2002	3/9/2002	3/9/2002
Polychlorinated Biphenyls (PCBs) (mg/kg)												
AROCLOR-1016	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.15 UJ	0.13 UJ
AROCLOR-1221	0.32 U	0.31 U	0.32 U	0.31 U	0.32 U	0.32 U	0.28 U	0.27 U	0.32 UJ	0.27 U	0.31 UJ	0.27 UJ
AROCLOR-1232	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.15 UJ	0.13 UJ
AROCLOR-1242	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.15 UJ	0.13 UJ
AROCLOR-1248	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.15 UJ	0.13 UJ
AROCLOR-1254	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.15 UJ	0.13 UJ
AROCLOR-1260	0.16 U	0.15 U	0.15 U	0.15 U	0.15 U	0.16 U	0.13 U	0.83	0.18 J	120	1.2 J	1.8 J

APPENDIX J

SURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITORBURIAL/POLE YARD
NSWC CRANE
CRANE INDIANA

Location:	17SB13	17SB14	17SB15	17SB16	17SB17	17SB18	17SB19	17SB20	17SB21	17SB22	17SB23	17SB24
Sample Identification:	17SS130002	17SS140002	17SS150002	17SS160002	17SS170002	17SS180002	17SS190002	17SS200002	17SS210002	17SS220002	17SS230002	17SS240002
Depth (feet):	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Date of Collection:	3/9/2002	3/9/2002	3/10/2002	3/10/2002	3/10/2002	3/10/2002	3/8/2002	3/8/2002	3/9/2002	3/9/2002	3/8/2002	3/9/2002
Polychlorinated Biphenyls												
AROCLOR-1016	0.14 UJ	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 UJ
AROCLOR-1221	0.29 UJ	0.29 U	0.28 U	0.28 U	0.29 U	0.3 U	0.31 U	0.29 U	0.28 U	0.3 U	0.3 U	0.29 UJ
AROCLOR-1232	0.14 UJ	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 UJ
AROCLOR-1242	0.14 UJ	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 UJ
AROCLOR-1248	0.14 UJ	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 UJ
AROCLOR-1254	0.14 UJ	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.14 UJ
AROCLOR-1260	0.82 J	20	4.4	0.17	0.14 U	0.15 U	0.15 U	0.32	3.4	1.3	0.24	0.44 J

APPENDIX J

SURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITORBURIAL/POLE YARD
NSWC CRANE
CRANE INDIANA

Location:	17SB25	17SB26	17SB27	17SB28	17SB29	17SB30	17SB31	17SB32	17SB33	17SB34	17SB35	17SB36
Sample Identification:	17SS250002	17SS260002	17SS270002	17SS280002	17SS290002	17SS300002	17SS310002	17SS320002	17SS330002	17SS340002	17SS350002	17SS360002
Depth (feet):	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Date of Collection:	3/8/2002	3/9/2002	3/8/2002	3/8/2002	3/9/2002	3/8/2002	3/8/2002	3/8/2002	3/8/2002	3/10/2002	3/8/2002	3/9/2002
Polychlorinated Biphenyls												
AROCLOR-1016	0.14 U	0.13 UJ	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.14 U
AROCLOR-1221	0.3 U	0.27 UJ	0.29 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.32 U	0.29 U	0.31 U	0.31 U	0.29 U
AROCLOR-1232	0.14 U	0.13 UJ	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.14 U
AROCLOR-1242	0.14 U	0.13 UJ	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.14 U
AROCLOR-1248	0.14 U	0.13 UJ	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.14 U
AROCLOR-1254	0.14 U	0.13 UJ	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.14 U
AROCLOR-1260	0.14 U	0.6 J	0.14 U	0.14 U	0.14 UJ	0.14 U	0.14 U	0.15 U	0.89	0.15 U	0.15 U	0.14 U

APPENDIX J

SURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITORBURIAL/POLE YARD
NSWC CRANE
CRANE INDIANA

Location:	17SB37	17SB38	17SB39	17SB40	17SB41	17SB42	17SB43	17SB44	CSS01	CSS02	CSS03	CSS04
Sample Identification:	17SS370002	17SS380002	17SS390002	17SS400002	17SS410002	17SS420002	17SS430002	17SS440002	CSS01	CSS02	CSS03	CSS04
Depth (feet):	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Date of Collection:	3/9/2002	3/8/2002	3/9/2002	3/9/2002	3/9/2002	3/8/2002	3/9/2002	3/10/2002	3/1/2001	3/1/2001	3/1/2001	3/1/2001
Polychlorinated Biphenyls												
AROCLOR-1016	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1221	0.28 U	0.29 U	0.29 U	0.28 U	0.27 U	0.28 U	0.31 UJ	0.27 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1232	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1242	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1248	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1254	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.13 U	0.15 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1260	1.6	0.28	0.42	11	0.36	140 J	0.87 J	0.13 U	17	7.3	0.11	0.067

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SURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITORBURIAL/POLE YARD
NSWC CRANE
CRANE INDIANA

Location:	CSS05	CSS06	GSS01	GSS02	GSS03	GSS04	GSS05	GSS06	GSS07	GSS08
Sample Identification:	CSS05	CSS06	GSS01	GSS02	GSS03	GSS04	GSS05	GSS06	GSS07	GSS08
Depth (feet):	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
Date of Collection:	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001	3/1/2001
Polychlorinated Biphenyls										
AROCLOR-1016	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1221	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1232	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1242	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1248	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1254	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1260	11	0.83	0.05 U	0.65	1.7	180	96	170	0.12	0.05 U

Aroclor = PCB

U - Indicates that the chemical was not detected at the numerical detection limit (sample-specific quantitation limit) noted. Nondetected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ - Indicates that the chemical was not detected. However, the detection limit (sample-specific quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

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

APPENDIX J

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Location:	17SB01	17SB02	17SB03	17SB04	17SB05	17SB06	17SB07	17SB08	17SB09	17SB10	17SB11	17SB12
Sample Identification	17SB010204	17SB020204	17SB030204	17SB040204	17SB050204	17SB060204	17SB070204	17SB080204	17SB090204	17SB100204	17SB110204	17SB120204
Depth (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/08/02	03/08/02	03/10/02	03/10/02	03/08/02	03/08/02	03/08/02	03/08/02	03/09/02	03/08/02	03/09/02	03/09/02
Polychlorinated Biphenyls (PCBs) (mg/kg)												
AROCLOR-1016	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
AROCLOR-1221	0.35 U	0.28 U	0.3 U	0.3 U	0.28 U	0.29 U	0.29 U	0.31 U	0.3 UJ	0.27 U	0.29 UJ	0.27 UJ
AROCLOR-1232	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
AROCLOR-1242	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
AROCLOR-1248	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
AROCLOR-1254	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ
AROCLOR-1260	0.17 U	0.13 U	0.15 U	0.14 U	0.13 U	0.14 U	0.14 U	0.15 U	0.14 UJ	0.13 U	0.14 UJ	0.13 UJ

APPENDIX J

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Location:	17SB13	17SB14	17SB15	17SB16	17SB17	17SB18	17SB19	17SB20	17SB21	17SB22	17SB23	17SB24
Sample Identification	17SB130204	17SB140204	17SB150204	17SB160204	17SB170204	17SB180204	17SB190204	17SB200204	17SB210204	17SB220204	17SB230204	17SB240204
Depth (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/09/02	03/09/02	03/10/02	03/10/02	03/10/02	03/10/02	03/08/02	03/08/02	03/09/02	03/09/02	03/08/02	03/09/02
Polychlorinated Biphe												
AROCLOR-1016	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
AROCLOR-1221	0.29 UJ	0.28 U	0.3 U	0.31 U	0.29 U	0.28 U	0.31 U	0.31 U	0.29 U	0.3 UJ	0.31 U	0.3 UJ
AROCLOR-1232	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
AROCLOR-1242	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
AROCLOR-1248	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
AROCLOR-1254	0.14 UJ	0.13 U	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ
AROCLOR-1260	0.2 J	0.69	0.14 U	0.15 U	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 UJ	0.15 U	0.15 UJ

APPENDIX J

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Location:	17SB25	17SB26	17SB27	17SB28	17SB29	17SB30	17SB31	17SB32	17SB33	17SB34	17SB35	17SB36
Sample Identification	17SB250204	17SB260204	17SB270204	17SB280204	17SB290204	17SB300204	17SB310204	17SB320204	17SB330204	17SB340204	17SB350204	17SB360204
Depth (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/08/02	03/09/02	03/08/02	03/08/02	03/09/02	03/08/02	03/08/02	03/08/02	03/08/02	03/10/02	03/08/02	03/09/02
Polychlorinated Biph												
AROCLOR-1016	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
AROCLOR-1221	0.29 U	0.28 UJ	0.31 U	0.28 U	0.32 UJ	0.29 U	0.29 U	0.3 U	0.32 U	0.3 U	0.28 U	0.29 U
AROCLOR-1232	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
AROCLOR-1242	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
AROCLOR-1248	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
AROCLOR-1254	0.14 U	0.13 UJ	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U
AROCLOR-1260	0.14 U	0.33 J	0.15 U	0.14 U	0.15 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.14 U	0.14 U

APPENDIX J

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Location:	17SB37	17SB38	17SB39	17SB40	17SB41	17SB42	17SB43	17SB44	CSS01	CSS02	CSS03	CSS04
Sample Identification	17SB370204	17SB380204	17SB390204	17SB400204	17SB410204	17SB420204	17SB430204	17SB440204	CSUB01	CSUB02	CSUB03	CSUB04
Depth (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/09/02	03/08/02	03/09/02	03/09/02	03/09/02	03/08/02	03/09/02	03/10/02	03/01/01	03/01/01	03/01/01	03/01/01
Polychlorinated Biph												
AROCLOR-1016	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1221	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.27 U	0.28 UJ	0.28 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1232	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1242	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1248	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1254	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.13 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1260	0.43	1.6	0.14 U	0.14 U	0.14 U	0.13 U	0.14 UJ	0.26	9.3	37	0.05 U	0.05 U

APPENDIX J

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 17 - PCB CAPACITOR BURIAL/POLE YARD
NSWC CRANE
CRANE, INDIANA

Location:	CSS05	CSS06	GSS01	GSS02	GSS03	GSS04	GSS05	GSS06	GSS07	GSS08
Sample Identification	CSUB05	CSUB06	GSUB01	GSUB02	GSUB03	GSUB04	GSUB05	GSUB06	GSUB07	GSUB08
Depth (feet):	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4	2 - 4
Date of Collection:	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01	03/01/01
Polychlorinated Biph										
AROCLOR-1016	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1221	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1232	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1242	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	15	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1248	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1254	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1260	*67*	*0.29*	*0.05 U*	*0.2*	*1.5*	*3*	*210*	*0.35*	*0.084*	*0.05 U*

Aroclor = PCB

U - Indicates that the chemical was not detected at the numerical detection limit (sample-specific quantitation limit) noted. Nondetected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ - Indicates that the chemical was not detected. However, the detection limit (sample-specific quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

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

APPENDIX K

SOIL VOLUME CALCULATION

CLIENT:	NSWC Crane	JOB NUMBER:	4070 KY0090100
SUBJECT:	Volume of PCB Contamination, SWMU 17 - PCB Capacitor Burial/Pole Yard		
BASED ON:	Figures 3-4 and 3-5	DRAWING NUMBER:	
BY: JLM Date: 6-11-02	CHECKED BY: KAL Date: 6/11/02	APPROVED BY:	DATE:

OBJECTIVE:

To calculate the volume of PCBs exceeding 1 and 25 ppm in surface soil and subsurface soil.

APPROACH:

1. Measure the delineated areas of PCB contamination on Figures 3-4 and 3-5 using a planimeter.
2. Calculate the total volume of PCB contamination in surface soil (0' - 2') and subsurface soil (2' - 4').

CALCULATIONS:

1. Surface Soil

Drawing Scale : 1 inch = 60 feet Excavation Depth : 2 feet (0' - 2')

1 ppm				
Location	**Area (sl)**	**Area (sf)**	**Volume (cf)**	**Volume (cy)**
1A	0.0775	279	558	21
1B	1.4338	5,162	10,323	382
1C	2.7203	9,793	19,586	725
1D	0.6200	2,232	4,464	165
1E	0.0698	251	502	19
			Total =	**1,312** cy

25 ppm				
Location	**Area (sl)**	**Area (sf)**	**Volume (cf)**	**Volume (cy)**
25A	0.0155	56	112	4
25B	0.0310	112	223	8
25C	0.0078	28	56	2
25D	0.6200	2,232	4,464	165
25E	0.3178	1,144	2,288	85
			Total =	**265** cy

Note: Figure 3-4 contains labels for the location designations (e.g., 1A through 1E) as they correspond to these calculations.

CLIENT:	NSWC Crane	JOB NUMBER:	4070 KY0090100
SUBJECT:	Volume of PCB Contamination, SWMU 17 - PCB Capacitor Burial/Pole Yard		
BASED ON:	Figures 3-4 and 3-5	DRAWING NUMBER:	
BY: JLM Date: 6-11-02	CHECKED BY: Date:	APPROVED BY:	DATE:

2. Subsurface Soil

Drawing Scale : 1 inch = 60 feet Excavation Depth : 2 feet (2'-4')

1 ppm				
Location	**Area (si)**	**Area (sf)**	**Volume (cf)**	**Volume (cy)**
A	0.0388	140	279	10

CONCLUSIONS:

The following is a summary table of the PCB contamination volume in surface soil and subsurface soil at SWMU 17 - PCB Capacitor Burial/Pole Yard.

Depth	**PCB Limit (ppm)**	**Volume (cy)**
Surface Soil	1 & 25	1,312
Subsurface Soil	1	10
	TOTAL =	**1,323** **cy**