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INITIAL TREATABILITY STUDY REPORT 1 FOR STUDY AREA 2 WITH TRANSMITTAL LETTER NTC ORLANDO FL
7/3/2001
TETRA TECH

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0701-A071

July 3, 2001

Commander, Southern Division
Naval Facilities Engineering Command
Attn: Ms. Barbara Nwokike, Code 1873
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0151

Subject: Treatability Study Report No. 1
Study Area 2, Naval Training Center, Orlando

Dear Ms. Nwokike:

Enclosed is the initial Treatability Study report which describes the ORC® injection at SA 2 and the results from groundwater sampling conducted from April 30 through May 2, 2001. The results for this sampling event and previous data for the site are summarized in the attached tables and figures. The report of microbiological studies, microwell boring logs, well completion sheets, and field monitoring forms are included in Appendices A through C, respectively.

The next groundwater sampling for the Treatability Study will be conducted in July 2001 and the results will be issued in September 2001. If you have any questions, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

SBM:ckf

Enclosure

c: Mr. Rick Allen, Harding ESE
Mr. David Grabka, FDEP
Mr. Wayne Hansel, Southern Division
Ms. Nancy Rodriguez, USEPA Region IV
Mr. Steve Tsangaris, CH2M Hill
Dr. Rick Arnseth, Tetra Tech NUS
Ms. Teresa Grayson, Tetra Tech NUS
Mr. Mark Perry, Tetra Tech NUS (unbound)
Mr. Steve Ruffing, Tetra Tech NUS
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)
File/db

TREATABILITY STUDY – INJECTION OF OXYGEN RELEASE COMPOUND® STUDY AREA 2, NAVAL TRAINING CENTER, ORLANDO

Report Title:	Test Report No. 1 – Injection of Oxygen Release Compound® and 1st Quarter Sampling Results
Prepared by:	Ms. Teresa Grayson, Lead Engineer Mr. Ches Lyon
Period of Performance:	October 2000 – June 2001
Contract:	No. N62467-94-D-0888 Contract Task Order No. 0151
SOUTHDIV RPM:	Ms. Barbara Nwokike
TtNUS TO Manager:	Mr. Steven B. McCoy, P.E.
Submittal Date:	July 3, 2001

1. INTRODUCTION

A pilot-scale treatability study has been initiated at Study Area 2 (SA 2) at the Naval Training Center (NTC), Orlando, Florida. The objective of the study is to determine the effectiveness of Oxygen Release Compound (ORC®) in reducing the groundwater contaminant concentrations in the source area. This report presents the details of the field activities performed to implement the treatability study and the results of the first quarterly groundwater monitoring event. Figure 1 shows the location of SA 2 in relation to other areas of NTC and other major features in Orlando.

2. SITE BACKGROUND

Harding Lawson Associates (HLA) completed a site screening investigation in 1998 at the Navy's Herndon Annex property designated as SA 2 (HLA, 1999). The results of screening activities showed no benzene contamination in groundwater samples collected at depths up to 40 feet below ground surface (bgs). However, a groundwater plume contaminated with benzene exists in the southeastern corner of Herndon Annex at depths ranging from 40 to 62 feet bgs.

Tetra Tech NUS (TtNUS) performs quarterly sampling at SA 2 and the adjacent neighborhood, Azelea Park, to evaluate trends in the groundwater quality. Observed benzene concentrations have remained essentially unchanged with the exception of minor seasonal variations. Two previously used wells located immediately west of the source area were destroyed during recent construction activities by the City of Orlando, including

one well (OLD-02-10C) that was planned for use in the treatability study. Five of the permanent wells screened in the zone of concern are included in the study and are addressed below.

In March 2000, TtNUS evaluated natural attenuation data to determine if subsurface conditions were conducive to natural biodegradation. The evaluation concluded that increased dissolved oxygen is needed to create aerobic conditions required for biodegradation of benzene. The lack of dissolved oxygen is attributed to the depth of the benzene plume.

TtNUS recommended ORC® injection to supply additional dissolved oxygen to the groundwater. This strategy relies on the release of dissolved oxygen to increase the microbial activity, thereby increasing contaminant destruction through aerobic respiration. The injection was recently performed as a treatability study, with ORC® injected into the portion of the aquifer with the highest benzene concentrations. Figure 2 shows the approximate boundary of the treated zone.

3. MICROBIOLOGICAL TESTING

3.1 Test Description

The primary goal of the ORC® injection is to add dissolved oxygen to the groundwater to stimulate the activity of aerobic microorganisms and facilitate the destruction of the organic compound benzene. The assumption in most ORC® injections is that the activity of microorganisms present in the aquifer is limited by the lack of available oxygen. However, the microorganisms have other nutrient requirements that may limit their activity even in the presence of abundant oxygen. A laboratory-scale treatability study was performed on a groundwater sample from the core of the proposed treatment area (well OLD-02-13C) to identify any other limiting factors for the ambient microorganisms prior to implementing the ORC® injection.

Tests on the initial water sample included:

- Total heterotrophs plate count – a measure of microorganisms present in the sample that utilize organic material for growth.

- Total degraders plate count – a measure of aerobic microorganisms present and capable of degrading petroleum hydrocarbon contaminants.

- Select degraders plate count – a more specific measure of aerobic microorganisms present and capable of degrading volatile organic compounds (VOCs).

- Nutrient supplement respirometer tests – tests in which samples were spiked with individual nutrients (i.e., nitrogen and phosphorous) and one combination to evaluate the need for additional nutrients during the full-scale ORC® injection.

3.2 Laboratory Test Results

The table below presents the results of the plate counts conducted by Dr. Neal Guentzel of the University of Texas at San Antonio. The plate counts indicated that the ambient microbial population is very low, but should be adequate to support the ORC® injection project. The higher numbers of degraders relative to total heterotrophs indicates that the ambient microbial population has been selected for microorganisms that can degrade the contaminants present in the groundwater.

RESULTS OF MICROBIAL PLATE COUNTS	
TEST	**RESULT***
Total Heterotrophs Plate Count	110 CFU/mL
Total Degraders Plate Count	207 CFU/mL
Select Degraders Plate Count	303 CFU/mL

*Colony Forming Units per Milliliter

The results of the nutrient supplement respirometer tests show that the rate of oxygen use by the microbes is approximately equal for all tests. The oxygen uptake rate is proportional to the rate of contaminant degradation. The addition of nutrients did not result in a significant increase in the rate of oxygen consumption. These results indicate that the availability of nutrients is not a limiting factor to the destruction of organic compounds and that the addition of nutrients is not required to encourage microbial growth and the accompanying degradation of benzene at SA 2. A copy of Dr. Guentzel's letter report is included in Appendix A.

4. FIELD ACTIVITIES

Initial field activities began on December 6, 2000, with brush clearing. The area identified for the treatability study was lightly wooded with thick underbrush. Dease Trucking cleared the brush under a subcontract with TtNUS. No trees were removed from the site.

TtNUS personnel marked approximately 300 injection points with pin flags and spray paint on December 11 and 12, 2000. Proposed injection point locations are shown on Figure 3. A grid pattern for the points consisted of 13 north-south lines spaced 20 feet apart. Each north-south line consisted of varying numbers

of points spaced 15 feet apart. An area of approximately 200 feet by 50 feet of concrete located in the central-eastern portion of the treatability study area appears to be a former airplane apron. The points located in this area were marked with spray paint, as were the points located on the road. Design of the injection point array was based on site-specific data including depth of the treatment zone and groundwater velocity, and recommendations from the ORC® vendor. The ORC® treatment area is designed to encompass the part of SA 2 in which the benzene concentration in groundwater equals or exceeds 70 µg/L. This area has been termed the "source" area.

Field personnel also marked locations for 15 microwells to be installed in three groups of five wells. TtNUS personnel will evaluate groundwater samples from these wells in addition to the five permanent monitoring wells (OLD-02-08C, OLD-02-13C, OLD-02-19C, OLD-02-20B, and OLD-02-21C) to assess changes in concentrations of benzene, dissolved oxygen, iron, manganese, and other parameters during the study.

4.1 DPT/ORC® Injection

The installation of ORC® injection points and microwells using direct push technology (DPT) was completed in three separate field events, beginning with equipment mobilization on December 12, 2000, and ending with demobilization on February 26, 2001. Within the source area, the depth interval with the highest dissolved benzene concentration is centered around 45 feet bgs based on prior site investigations (HLA, 1999). The design specified ORC® injection at an interval of 55 to 35 feet bgs to span the zone of maximum benzene concentration. DPT crews and equipment from Precision Sampling, Inc. (Precision) of Ocee, Florida, performed the work under TtNUS supervision.

For each milligram of degradable hydrocarbon present, approximately 3 mg of oxygen are required for aerobic biological degradation. Other natural processes deplete additional oxygen. ORC® has 10 percent available O_2; therefore, 33 mg of MgO_2 (the active ingredient in the ORC®) are required for each mg of hydrocarbon destroyed (in addition to any oxygen demand for other processes), assuming 100 percent conversion efficiency. A minimum of 1 pound of ORC® per linear vertical foot of contamination per injection point is recommended by the manufacturer of ORC® to ensure adequate dispersion of oxygen within the aquifer. ORC® injected as a slurry mixed with water at a rate of 1 pound per linear vertical foot of contaminant translates to 20 pounds per hole, assuming a vertical thickness of contamination of 20 feet (55 to 35 feet bgs).

The ORC® injection must provide sufficient oxygen to consume all readily oxidized materials within a representative aquifer volume. A representative volume of the aquifer with the highest recently measured benzene (80 µg/L) and methane (1274 µg/L) concentrations will consume less than 200 grams of the

900 grams of oxygen produced by each injection point. The unknown quantity of natural organic carbon in the aquifer matrix will consume additional dissolved oxygen. Based on literature values and the assumption that all of the total organic carbon (TOC) can be readily oxidized, the dissolved oxygen will be consumed within each representative volume.

Data from the ORC® vendor suggest that ORC® will release approximately 10 percent of its available oxygen within the first 2 weeks of injection and the remaining 90 percent of available oxygen will be released relatively uniformly for a total of approximately 180 days. Using the slowest groundwater velocity data, groundwater will travel approximately 21 feet in 180 days. Injection points were placed on 15-foot centers in a series of barriers spaced 20 feet apart across the area identified as the potential source area. The points were also staggered on each barrier to increase oxygen dispersion within the aquifer. Placing the series of oxygen barriers 20 feet apart should allow oxygenated groundwater to reach the next barrier prior to depletion under optimum conditions.

DPT was used to push to a depth of 55 feet bgs, and the ORC® slurry was injected at a uniform rate across the 55 to 35 feet bgs interval as the drill rods were pulled out. No soil sampling was conducted. There were 155 DPT/ORC® injection points completed from December 13 through December 20, 2000. Complications encountered during the December field event included sand infiltrating the drill rods making injection of the ORC® slurry impossible, broken and/or cracked drill rods, a broken hydraulic line on one rig, and underground utilities. Precision personnel found that filling the rods with potable water before knocking out the expendable drive tip eliminated sand infiltration. Rod breakage was reduced as Precision personnel gained experience with the hard pan encountered at approximately 20 feet bgs in several locations beneath the site. Precision personnel repaired the broken hydraulic line quickly, using surface vegetation litter to absorb the small quantity of spilled hydraulic fluid. The litter was collected and placed in a waste drum for disposal.

A 50 percent solids slurry was found to be appropriate and was used for each of the ORC® injection locations (20 pounds of ORC® mixed with 2.38 gallons of water. The ORC® powder was delivered in 5-gallon buckets containing 30 pounds of ORC®. Although only 20 pounds of ORC® was required for each location, for ease in mixing 30-pound buckets were mixed with 3.5 gallons of water and 2/3 of each bucket was injected per boring. Personnel mixed the slurry in small batches because it must be used immediately after preparation. After injection was complete in each boring and the drill rods were removed, the boring was allowed to collapse naturally and was later filled with bentonite grout to the surface as needed.

The second field event took place from January 8 through January 23, 2001. During this time 134 DPT/ORC® injection points were completed and 15 microwells were installed and developed. The DPT

rigs were unable to complete borings at six locations attempted (G9, G23, L2, L4, L6, and K7) due to dense hard pan encountered at 20 to 25 feet bgs. Points K53 and M51 were omitted from the proposed locations due to their proximity to underground utilities.

The following precautions were taken during the third field event to complete points G9, G23, L2, L4, L6, and K7.

- The DPT crew hand augered to a depth of approximately 6 feet bgs.
- The DPT crew probed for one additional foot before beginning to push with the rig.
- The DPT crew gently pushed the rod string approximately one rod length (3 feet) into the soil before using the rig's hydraulic hammer.

Some injection points were moved slightly from the proposed locations for one or more of the following reasons:

- The two easternmost lines of injection points were too close to the security fence for safe operation of the DPT rigs.
- Some points were too close to trees.
- Some points were too close to underground utilities.

Points L2, L4, L6, and K7 were successfully installed during the third field event on February 26, 2001. Point G9 met refusal and point G23 was not installed due to heaving sands at that location. Figure 4 shows the final installed locations of all ORC® injection points.

4.2 Microwell Installation and Development

Fifteen microwells were installed from January 10 through 14, 2001. Precision constructed the microwells of 0.75-inch diameter Schedule 40 polyvinyl chloride (PVC) risers and 1.5- by 0.75-inch prepacked screens, with the screened interval extending from 45 to 50 feet bgs. Well screens were factory slotted to 0.010-in size. The filter pack, constructed of clean silica sand of U.S. Standard Sieve Size No. 20 to 30 extended approximately 0.5 foot below the bottom of the screen and approximately 0.5 foot above the top of the well screen. A minimum 1-foot-thick layer of fine sand (uniformly graded clean silica sand of U.S. Standard Sieve Size No. 30 to 65) was placed on top of the filter pack. The Precision crew backfilled the remaining annulus above the fine sand layer to the surface with a 10:1 cement/bentonite grout. Each microwell was finished

with a flush-mounted, steel protective box in a 2- by 2-foot concrete pad. Well completion logs are included in Appendix B. Microwell locations are shown on Figure 4.

Each microwell was developed using a peristaltic pump as specified in the Project Operations Plan (POP) (ABB-ES, 1997). Approximately 5 gallons of development water is usually sufficient for small microwells, but personnel found the development water at Site SA 2 to be very turbid. Approximately 25 gallons was removed from each microwell and stored in new drums.

Microwell OLD-02-28C would not produce water. Several drill rods had been lost and left in place at this location, and it was assumed that the rods may have interfered with well development. Therefore, the well was properly abandoned and reinstalled approximately 2 feet east of the original installation location. The reinstalled well was properly developed after installation.

4.3 Groundwater Sampling

Four quarters of groundwater samples will be collected from 5 selected existing monitoring wells and 15 recently installed microwells. Groundwater quality trends will be evaluated for VOCs and natural attenuation parameters. A final treatability study report will be prepared after the first year of sampling and any conclusions from the study will be discussed. Section 5 presents the results of the first quarterly sampling event of the ORC® treatability study at SA 2.

TtNUS, Inc., conducted first quarter groundwater sampling at SA 2 in April-May 2001. The fieldwork was performed in accordance with the *Work Plan for the Treatability Study at Study Area 2* (Tetra Tech NUS, 2000e), and the POP (ABB-ES, 1997). Treatability study groundwater sampling was coordinated with routine quarterly sampling at other sites at NTC Orlando for cost effectiveness.

Groundwater sampling at SA 2 began on April 26, 2001. Five existing wells (OLD-02-08C, OLD-02-13C, OLD-02-19C, OLD-02-20B, and OLD-02-21C) and 15 microwells were purged and sampled with a peristaltic pump using the low-flow method described in the POP. Purging of the wells consisted of removing groundwater at a rate of approximately 100 mL/min until field parameters, which include temperature, pH, conductivity, turbidity, dissolved oxygen, and oxidation reduction potential, had stabilized. In the existing wells, water levels were continuously monitored to limit drawdown to less than 0.3 foot. Measurement of drawdown in the microwells during purging was not possible due to the diameter of the microwells. Groundwater sample log sheets are included in Appendix C.

The groundwater samples from SA 2 were analyzed for the parameters listed in the table below. Samples for VOC analyses were collected using the tube evacuation method.

FIXED BASE LABORATORY ANALYSES	
Parameter	**Analytical Method**
Target Compound List Volatile Organic Compounds	SW-846 5030B/8260B
Iron and Manganese	SW-846 6010B
Dissolved Organic Carbon	USEPA 415.1
Nitrate, Nitrite, and Sulfate	USEPA 300

All samples were placed in ice-chilled coolers and shipped overnight to Katahdin Analytical Services in Westbrook, Maine, for analysis.

TtNUS personnel placed small vapor strippers in the tubing used for collecting groundwater samples. Following approximately 25 minutes of stripper operation, personnel collected vapor samples and injected them into small, evacuated vials. VaporTech Services, Inc. in Valencia, Pennsylvania, analyzed the vapor samples for carbon dioxide, hydrogen, methane, and oxygen using modified Kerr Laboratory Standard Operating Procedure RSK-175.

TtNUS personnel used field kits manufactured by CHEMetrics, Inc., and The Hach Company to measure the parameters shown in the table below. Oxidation reduction potential was determined from the Horiba U-22 flow-through cell during purging.

FIELD ANALYSES	
Parameter	**Field Test Kit**
Dissolved Oxygen	CHEMetrics K-7501/7512
Carbon Dioxide	CHEMetrics K-1910/1920/1925
Alkalinity	CHEMetrics K-9810/9815/9820
Ferrous Iron	Hach IR-18C
Hydrogen Sulfide	Hach HS-C
Oxidation Reduction Potential	Horiba U-22

4.4 Investigation-Derived Waste Management and Surveying

Florida Environmental Compliance Corporation (FECC) removed drums containing well development water and one drum containing a small amount of sand stained with spilled hydraulic fluid from the site following ORC® injection activities. FECC moved the drums to an approved storage space in Area C and, following testing of the contents, properly disposed of the drums and contents. Decontamination fluids were allowed to evaporate. TtNUS staff placed the decontamination pad materials and other disposable waste materials in an approved waste container in Area C.

TtNUS personnel used a global positioning system to determine the horizontal and vertical locations of ORC® injection points, microwells, nearby monitoring wells, and important physical features such as the security fence, gates, and roads. Under subcontract to TtNUS, registered surveyors from Harding Lawson Regional Engineers, Planners, and Surveyors, Inc., surveyed the microwell horizontal locations and top of casing elevations.

5. RESULTS OF FIRST QUARTER GROUNDWATER SAMPLING

5.1 Water Level Survey Results

The water level survey at SA 2 was conducted on April 30, 2001, and the groundwater elevation data are presented in Table 1. Figures 5 and 6 show the potentiometric surface configuration of the shallow and deep portions of the aquifer, respectively.

Groundwater in the surficial aquifer generally flows to the north-northeast toward Lake Barton. Comparison of the elevation of the potentiometric surface both in the shallow and deep monitoring wells suggests flow is influenced by the presence of Lake Barton. Discharge of shallow zone groundwater to the drainage ditch has been identified in previous potentiometric maps (Tetra Tech NUS, 1999, 2000a, 2000b, 2000c, 2000d, 2001a, and 2001b) but is not obvious in Figure 5. The effect of the canal is interpreted to be much less for the deep zone groundwater (Figure 6) which may discharge to Lake Barton.

The potentiometric data also show a downward vertical gradient across much of the area mapped in Figures 5 and 6 that diminishes as flow approaches Lake Barton. The head differential between the shallow and deep monitoring wells exceeds 2 feet at some locations. An exception to this condition occurs locally in the vicinity of wells OLD-02-04A, OLD-02-20B, and OLD-02-21C (next to the drainage canal) where the vertical gradient is upward, which is consistent with groundwater discharging into the canal.

5.2 Data Validation

Qualification of the data was performed using the *USEPA Contract Laboratory Program: National Functional Guidelines for Organic Data Review* (USEPA, 1999). The data validation evaluated data completeness, holding time compliance, calibration compliance, laboratory blank contamination, and detection limits. Limited data validation was performed primarily to eliminate false positives and false negatives. Qualifiers resulting from the validation process are shown with the analyte concentrations in Tables 2, 3, and 4.

5.3 Analytical Results

Table 2 presents a summary of groundwater positive detections for SA 2 for the first quarter monitoring event. Historical groundwater analytical data are presented in Table 3, historical benzene groundwater exceedances are presented in Figure 7, and a complete listing of the validated analytical data for April/May 2001 is included in Table 4. Shaded cells indicate analyte concentrations meeting or exceeding the Florida Groundwater Cleanup Target Levels (GCTLs) (FDEP, 1999). Analytical results from the 15 microwells will be used to help evaluate the impact of the ORC® treatment in reducing benzene concentrations in the aquifer. The ORC® injections closest to the microwells were installed January 9-10, 2001. The first samples from the microwells were collected April 30 – May 3, 2001. Groundwater flow in the aquifer from early January to early May should transport any impacts from the ORC® 10-12 feet downgradient, impacting the closest (approximately 7 feet downgradient) microwells.

Historical analytical benzene data for existing groundwater monitoring wells are presented in Figure 7. Results from the late April/early May 2001 sampling round are consistent with prior analytical results for these wells. Benzene concentrations in the monitoring wells in the area of the treatability study range from 41 to 62 ppb during the last sampling round. The screened lengths for these permanent monitoring wells are consistent with those of the microwells (5 feet), but the center of the screened interval varies from 39 to 59 feet bgs. Based on data from prior site screening investigations the screen interval from 45 to 50 feet bgs may have the highest dissolved concentrations.

Analytical data for benzene indicate elevated concentrations from many of the microwells (Figure 8). Other exceedances were observed for trichloroethene, tetrachloroethene, xylenes, iron, and manganese in the microwell samples (Table 2). However, these parameters will not be evaluated in this treatability study. Closer examination of the benzene results suggests that the highest concentrations tend to occur in microwells closest to the ORC® injection points with many of the lower concentrations (within a microwell group) observed in the more downgradient microwells. The benzene concentrations observed are often higher than those observed in recent samples from established monitoring wells (Figures 7

and 8). The highest observed benzene concentrations (140-160 μg/L) are in the northeastern microwell cluster (OLD-02-33C-37C), whereas the lowest concentration range (34-95 μg/L) is in the southwestern microwell cluster (OLD-02-23C-27C). The lower concentration range for benzene in cluster OLD-02-23C-27C is consistent with its location in the lower concentration, trailing edge of the historical plume. The higher concentrations of benzene that are observed in the eastern clusters are consistent with their locations near the high concentration core of the historical plume. The magnitude of the benzene concentrations may indicate that the core of the contaminant plume is centered at 45-50 feet bgs.

The magnitude of the benzene concentrations, with concentrations often higher than recent measurements from monitoring wells, also suggests that the ORC® treatment has stimulated biological activity in the aquifer. One of the first observed manifestations of increased biological activity is an initial spike in contaminant concentrations ascribed to increased production of biosurfactants that mobilize sorbed organics from aquifer surfaces. Following the initial flush of contaminants into the dissolved phase, increased biological activity will oxidize the dissolved organics.

Field analyses were performed for dissolved oxygen, dissolved carbon dioxide, ferrous iron, and hydrogen sulfide. In addition, redox potential was determined in the field. The results of the field analyses are summarized in Table 5. Field alkalinity measurements were attempted on the first few samples until it became apparent that, at ambient groundwater pH, alkalinity would be undetectable. Several of the field parameters were also analyzed in the laboratory (e.g., dissolved oxygen, dissolved carbon dioxide, ferrous iron).

Other evidence for the influence of the ORC® on the aquifer is ambiguous. Dissolved oxygen concentrations (Table 5) are still low (consistently below 1 mg/L) and will probably remain low while biological activity is stimulated. Dissolved carbon dioxide concentrations do not show a pattern yet with concentrations ranging from 66.3 to 101.6 mg/L (Table 2). Carbon dioxide concentrations may increase as biological oxidation of contaminants continues. Dissolved methane concentrations remain elevated with the highest concentrations in the two eastern clusters. Oxidation of the dissolved methane will compete with benzene for dissolved oxygen.

The concentrations of other oxidation state indicators within the aquifer, such as dissolved sulfate, dissolved iron, manganese, and hydrogen sulfide (Tables 2 and 5) may not begin to reflect the addition of oxygen until the concentrations of more reduced species, such as methane, are significantly decreased. At this time these dissolved species do not show any clear pattern.

The next quarterly groundwater monitoring event is scheduled for the week of July 9, 2001. The second quarterly treatability study report will be prepared and submitted September 26, 2001.

6. REFERENCES

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Tetra Tech NUS, Inc., 1999. *Monitor Well Sampling at Study Area 2.* Document No. R4709992, September 28.

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Tetra Tech NUS, Inc., 2001a. *Groundwater Sampling at Study Area 2.* Document No. R470101012, January 25.

Tetra Tech NUS, Inc., 2001b. *Groundwater Sampling at Study Area 2.* Document No. R470401003, May 11.

USEPA, 1999. *USEPA Contract Laboratory Program: National Functional Guidelines for Organic Data Review.* EPA/540/R-99/008, Office of Solid Waste and Emergency Response, Washington, D.C., October.

TABLES

No.	1	Water-Level Elevations Summary
	2	Positive Detections in Groundwater
	3	Historical Detections In Groundwater
	4	Validated Groundwater Analytical Results
	5	Field Analytical Data

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TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY, STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Screen Interval (BGS)	Well Type	TOC Elevation (AMSL)	7/13/99		10/23/99		1/19/00		4/11/00		7/17/00		10/18/00		1/24/01		4/30/01	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-02-01A	7-17	2" well	104.70	10.93	93.77	10.38	94.32	11.14	93.56	11.59	93.11	11.57	93.13	10.62	94.08	11.53	93.17	11.42	93.28
OLD-02-02A	3-13	2" well	111.27	10.44	100.83	8.40	102.87	9.76	101.51	10.93	100.34	11.09	100.18	10.52	100.75	DRY	DRY	DRY	DRY
OLD-02-03A	3-13	2" well	117.45	DRY	DRY	8.27	109.18	12.47	104.98	12.55	104.90	12.45	105.00	12.59	104.86	NM	NM	12.65	104.80
OLD-02-04A	5-15	2" well	110.03	12.09	97.94	10.53	99.50	11.99	98.04	12.75	97.28	12.87	97.16	12.82	97.21	13.27	96.76	10.04	99.99
OLD-02-05A	3-13	2" well	112.89	10.38	102.51	8.13	104.76	10.24	102.65	11.55	101.34	11.90	100.99	11.27	101.62	11.53	101.36	11.58	101.31
OLD-02-06A	3-13	2" well	109.17	8.02	101.15	5.45	103.72	7.36	101.81	8.86	100.31	9.34	99.83	8.23	100.94	9.80	99.37	9.39	99.78
OLD-02-07C	57-62	2" well	111.52	13.79	97.73	13.00	98.52	13.59	97.93	14.47	97.05	14.56	96.96	14.11	97.41	14.89	96.63	14.75	96.77
OLD-02-08C	60-65	2" well	112.31	10.59	101.72	7.83	104.48	9.72	102.59	11.37	100.94	11.84	100.47	10.79	101.52	12.31	100.00	11.95	100.36
OLD-02-09A	5-15	2" well	112.34	10.40	101.94	7.48	104.86	9.41	102.93	11.02	101.32	11.71	100.63	10.69	101.65	12.20	100.14	11.81	100.53
OLD-02-10C	52-57	2" well	106.90	10.04	96.86	8.71	98.19	9.91	96.99	10.90	96.00	11.06	95.84	10.63	96.27	11.33	95.57	destroyed	destroyed
OLD-02-11A	5-15	2" well	107.14	7.65	99.49	5.23	101.91	7.09	100.05	8.40	98.74	9.01	98.13	8.17	98.97	9.24	97.90	destroyed	destroyed
OLD-02-12C	53-58	2" well	116.04	14.26	101.78	11.59	104.45	13.45	102.59	15.12	100.92	15.55	100.49	14.52	101.52	15.59	100.45	15.68	100.36
OLD-02-13C	44-49	2" well	104.72	8.75	95.97	7.53	97.19	8.80	95.92	9.59	95.13	9.66	95.06	9.43	95.29	9.94	94.78	9.74	94.98
OLD-02-14C	41-46	2" well	102.74	9.21	93.53	8.88	93.86	9.37	93.37	9.78	92.96	9.82	92.92	9.38	93.36	9.69	93.05	9.61	93.13
OLD-02-15A	10-15	2" well	100.05	5.06	94.99	3.58	96.47	5.50	94.55	6.42	93.63	6.25	93.80	5.74	94.31	6.47	93.58	6.17	93.88
OLD-02-16B	28-33	2" well	99.97	4.99	94.98	3.52	96.45	5.31	94.66	6.35	93.62	6.13	93.84	5.67	94.30	6.40	93.57	6.21	93.76
OLD-02-17C	45-50	2" well	99.82	4.87	94.95	3.59	96.23	5.15	94.67	5.83	93.99	6.05	93.77	5.64	94.18	6.28	93.54	6.50	93.32
OLD-02-18B	29-34	2" well	102.17	5.81	96.36	5.19	96.98	6.24	95.93	7.30	94.87	6.85	95.32	7.10	95.07	7.28	94.89	7.35	94.82
OLD-02-19C	49-54	2" well	102.32	6.40	95.92	5.26	97.06	6.53	95.79	6.65	95.67	7.34	94.98	6.67	95.65	7.66	94.66	7.42	94.90
OLD-02-20B	36-41	2" well	108.26	7.95	100.31	6.04	102.22	7.30	100.96	8.56	99.70	8.93	99.33	8.27	99.99	9.37	98.89	9.00	99.26
OLD-02-21C	56-61	2" well	108.56	7.38	101.18	5.97	102.59	6.54	102.02	8.02	100.54	8.41	100.15	7.72	100.84	8.94	99.62	8.52	100.04
OLD-02-23C	45-50	¾" µ well	109.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	10.45*	98.86
OLD-02-24C	45-50	¾" µ well	109.52	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	10.51	99.01
OLD-02-25C	45-50	¾" µ well	109.70	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	10.70	99.00
OLD-02-26C	45-50	¾" µ well	109.42	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	10.42	99.00
OLD-02-27C	45-50	¾" µ well	110.37	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	11.35	99.02
OLD-02-28C	45-50	¾" µ well	108.23	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	10.24	97.99
OLD-02-29C	45-50	¾" µ well	108.70	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	13.62	95.08
OLD-02-30C	45-50	¾" µ well	108.99	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	14.45	94.54
OLD-02-31C	45-50	¾" µ well	108.81	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	13.84	94.97
OLD-02-32C	45-50	¾" µ well	108.96	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NM	NM
OLD-02-33C	45-50	¾" µ well	103.87	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	9.80	94.07
OLD-02-34C	45-50	¾" µ well	103.73	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	9.65	94.08
OLD-02-35C	45-50	¾" µ well	103.62	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	9.54	94.08
OLD-02-36C	45-50	¾" µ well	103.55	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	9.52	94.03
OLD-02-37C	45-50	¾" µ well	103.45	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	9.38	94.07

Notes:
All measurements are in units of feet.
AMSL - Above mean sea level
BGS - Below ground surface
BTOC - Below top of casing
NM - Not measured
NI - Not installed
TOC - Top of casing
* - measured May 1, 2001

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TABLE 2

POSITIVE DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-08C	OLD-02-13C	OLD-02-19C	OLD-02-20B		OLD-02-21C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G08C17	NTC02G13C17	NTC02G19C17	NTC02G20B17	NTC02G20B17-D	NTC02G21C17
LAB ID				WR1409-001	WR1409-002	WR1503-008	WR1475-008	NTC02GD0217	WR1475-009
SAMPLE DATE				4/30/01	4/30/01	5/3/01	5/2/01	5/3/01	5/2/01
Volatiles (µg/L)								NA	
2-Hexanone	591-78-6	280							
4-Methyl-2-Pentanone	108-10-1	560							
Benzene	71-43-2	1		1	62	31	41		55
Carbon Disulfide	75-15-0	700					0.4 J		
cis-1,2-Dichloroethene	156-59-2	70			3	1 J	2 J		4
Ethylbenzene	100-41-4	30			0.8 J				
Tetrachloroethene	127-18-4	3							
Toluene	108-88-3	40							
Trichloroethene	79-01-6	3			0.6 J		2		2
Xylenes, Total	1330-20-7	20			2				
Volatiles Gaseous (µg/L)									
Ethane	74-84-0	*		0.29	0.41	0.17	0.29	0.73	0.33
Ethene	74-85-1	*			0.08		0.07	0.06	0.31
Methane	72-82-8	*		251.4	637.1	97.6	649.3	888.5	497.9
Inorganics (µg/L)								NA	
Iron	7439-89-6	300	1227	882	243	371	1050		394
Manganese	7439-96-5	50	17	5.8	2.8	4	5.1		6.1
Misc. (mg/L)									
Carbon Dioxide	124-38-9	*		65.3	69.4	47.8	95	90.2	81.5
Dissolved Organic Carbon		*		21	2	3	5.7		6
Hydrogen (nm/L)	1333-74-0	*			0.9	1.5	1.1	1.4	1.2
Nitrate	14797-55-8	10,000					0.2		0.08
Nitrogen	7727-37-9	*		10.3	7.3	8.6	10.7	8.6	10.2
Oxygen	7782-44-7	*		0.4		0.63	0.58	1.2	0.25
Sulfate	14808-79-8	250,000		36 J	3		41 J		69 J

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TABLE 2

POSITIVE DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-23C	OLD-02-24C	OLD-02-25C	OLD-02-26C	OLD-02-27C	OLD-02-28C	OLD-02-29C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G23C17	NTC02G24C17	NTC02G25C17	NTC02G26C17	NTC02G27C17	NTC02G28C17	NTC02G29C17
LAB ID				WR1452-002	WR1452-003	WR1452-004	WR1452-005	WR1452-006	WR1475-005	WR1475-006
SAMPLE DATE				5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/2/01	5/2/01
Volatiles (μg/L)										
2-Hexanone	591-78-6	280								
4-Methyl-2-Pentanone	108-10-1	560								
Benzene	71-43-2	1		60	34	95	57	62	92	130
Carbon Disulfide	75-15-0	700				0.8 J			5	5
cis-1,2-Dichloroethene	156-59-2	70		4	2	7	4	4	8	9
Ethylbenzene	100-41-4	30		2	0.7 J	4	2	2	8	10
Tetrachloroethene	127-18-4	3		1	3		0.5 J	0.4 J		
Toluene	108-88-3	40								0.4 J
Trichloroethene	79-01-6	3			3					2
Xylenes, Total	1330-20-7	20				2 J			12	33
Volatiles Gaseous (μg/L)										
Ethane	74-84-0	*		0.36	0.31	0.28	0.38	0.34	0.42	0.94
Ethene	74-85-1	*		0.57	0.88	0.4	0.13	0.25	0.09	0.17
Methane	72-82-8	*		910.4	812.8	878.7	644.4	661.5	734.7	1410.8
Inorganics (μg/L)										
Iron	7439-89-6	300	1227	7080	1090	2540	3980	3140	979	761
Manganese	7439-96-5	50	17	53.8		23.4	32.5	24.2	9.4	7.7
Misc. (mg/L)										
Carbon Dioxide	124-38-9	*		90.6	101.6	90.1	87.3	86.8	91.2	100.2
Dissolved Organic Carbon		*		5.2	3	5.7	5.3	8.7	9.9	14
Hydrogen (nm/L)	1333-74-0	*		1.6	1.5	1.9	1.3	1.5	1.4	1.9
Nitrate	14797-55-8	10,000								
Nitrogen	7727-37-9	*		11.3	10.6	9.3	9.1	8.2	8.7	11.7
Oxygen	7782-44-7	*		0.35	0.54	0.27	0.31	0.41	0.47	0.16
Sulfate	14808-79-8	250,000		15	36	8.3	24	20	11	5

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TABLE 2

POSITIVE DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-30C		OLD-02-31C	OLD-02-32C	OLD-02-33C	OLD-02-34C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G30C17	NTC02G30C17-D	NTC02G31C17	NTC02G32C17	NTC02G33C17	NTC02G34C17
LAB ID				WR1475-004	WR1475-007	WR1475-002	WR1475-003	WR1503-003	WR1503-002
SAMPLE DATE				5/2/01	5/2/01	5/2/01	5/2/01	5/3/01	5/3/01
Volatiles (µg/L)									
2-Hexanone	591-78-6	280							
4-Methyl-2-Pentanone	108-10-1	560				3 J	2 J		
Benzene	71-43-2	1		120	110	130	130	140	140
Carbon Disulfide	75-15-0	700				4	1		
cis-1,2-Dichloroethene	156-59-2	70		8	8	9	9	6	7
Ethylbenzene	100-41-4	30		6	6	10	9	5	5
Tetrachloroethene	127-18-4	3							
Toluene	108-88-3	40			0.4 J	0.5 J	0.5 J		
Trichloroethene	79-01-6	3					2	2	2
Xylenes, Total	1330-20-7	20		20	21	32	26		
Volatiles Gaseous (µg/L)									
Ethane	74-84-0	*		0.21	0.54	0.71	0.84	0.77	0.7
Ethene	74-85-1	*		0.05	0.08	0.21	0.07	0.04	0.08
Methane	72-82-8	*		368.6	932.4	991	1203.3	1054.5	922.6
Inorganics (µg/L)									
Iron	7439-89-6	300	1227	500	521	1160	300	450	463
Manganese	7439-96-5	50	17	5.4	5.4	10.8	3.6	5.8	5.5
Misc. (mg/L)									
Carbon Dioxide	124-38-9	*		66.3	99.7	90.7	97.4	90.9	86.1
Dissolved Organic Carbon		*		8.6	11	13	5	6	6
Hydrogen (nm/L)	1333-74-0	*		1.3	1.4	1.3	1.3	1.2	1.1
Nitrate	14797-55-8	10,000							
Nitrogen	7727-37-9	*		4.7	7.8	7.8	9	9.9	8.3
Oxygen	7782-44-7	*		0.76	0.28	0.54	0.31	0.24	0.3
Sulfate	14808-79-8	250,000		8.3	8.4	5.2	5.4	12	7.9

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TABLE 2

POSITIVE DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-35C	OLD-02-36C	OLD-02-37C	
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G35C17	NTC02G36C17	NTC02G37C17	NTC02G37C17-D
LAB ID				WR1503-004	WR1503-005	WR1503-006	WR1503-007
SAMPLE DATE				5/3/01	5/3/01	5/3/01	5/3/01
Volatiles (μg/L)							
2-Hexanone	591-78-6	280			5		
4-Methyl-2-Pentanone	108-10-1	560					
Benzene	71-43-2	1		150	160	150	150
Carbon Disulfide	75-15-0	700		2	2	2	2
cis-1,2-Dichloroethene	156-59-2	70		7	8	7	7
Ethylbenzene	100-41-4	30		7	7	7	6
Tetrachloroethene	127-18-4	3					
Toluene	108-88-3	40					
Trichloroethene	79-01-6	3		2	2	2	2
Xylenes, Total	1330-20-7	20					
Volatiles Gaseous (μg/L)							NA
Ethane	74-84-0	*		0.84	0.81	0.82	
Ethene	74-85-1	*		0.06	0.07	0.41	
Methane	72-82-8	*		1130.1	1042.2	1061.8	
Inorganics (μg/L)							
Iron	7439-89-6	300	1227	685	681	371	366
Manganese	7439-96-5	50	17	7.3	7.6	4.6	4.3
Misc. (mg/L)							
Carbon Dioxide	124-38-9	*		94.6	92.7	90.9	NA
Dissolved Organic Carbon		*		6	5	7	7
Hydrogen (nm/L)	1333-74-0	*		1.3	1	1.2	NA
Nitrate	14797-55-8	10,000					NA
Nitrogen	7727-37-9	*		10.3	9.4	9	NA
Oxygen	7782-44-7	*		0.44	0.39	0.45	NA
Sulfate	14808-79-8	250,000		16	13	6	6.3

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TABLE 2

POSITIVE DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Footnotes:

[a] For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Analytes with no GCTL are not considered to have exceedances.

[b] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].

[c] Background Screening Value Level (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

* - Indicates the criterion or screening value not available.

Empty cells indicate non-detects.

"J" - qualifier indicates an estimated value.

NA - Not analyzed.

Only chemicals detected in at least one sample are shown.

Values in shaded cells meet or exceed the GCTL.

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-08C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G00801	02G00802	02G00803	02G00810	NTC02G08C11	NTC02G08C11-D	NTC02G08C12
LAB ID				G6991001	C127484001	A8K230141005	A9G150151003	A9J270191002	A9J270191003	A0A240125006
SAMPLE DATE				3/1/95	8/11/97	11/20/98	7/14/99	10/26/99	10/26/99	1/20/00
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10			1.9	1.8 J				
1,3,5-Trimethylbenzene[d]	108-67-8	10			0.8					
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1			35	23	14	18	18	19
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700								0.61 J
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		1	0.83	0.65 J	0.61 J	0.86 J	0.77 J	0.69 J
Ethylbenzene	100-41-4	30		0.6 J		0.61				0.073 J
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3								
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (µg/L)				NA	NA	NA	NA	NA	NA	NA
Ethane	74-84-0	*								
Ethene	74-85-1	*								
Methane	72-82-8	*								
Semivolatiles (µg/L)					NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10		2 J						

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-08C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G00801	02G00802	02G00803	02G00810	NTC02G08C11	NTC02G08C11-D	NTC02G08C12
LAB ID				G6991001	C127484001	A8K230141005	A9G150151003	A9J270191002	A9J270191003	A0A240125006
SAMPLE DATE				3/1/95	8/11/97	11/20/98	7/14/99	10/26/99	10/26/99	1/20/00
Inorganics (μg/L)					NA	NA	NA	NA	NA	NA
Aluminium	7429-90-5	200	4067	2930						
Antimony	7440-36-0	6	4.1							
Arsenic	7440-38-2	50	5							
Barium	7440-39-3	2000	31.4	49.7 B						
Beryllium	7440-41-7	4	*							
Calcium	7440-70-2	*	36830	4920 B						
Chromium	7440-47-3	100	7.8	4.4 B						
Copper	7440-50-8	1000	5.4							
Iron	7439-89-6	300	1227	2150						
Iron (Dissolved)	7439-89-6	300	1227	NA						
Lead	7439-92-1	15	4							
Magnesium	7439-95-4	*	4560	5220						
Manganese	7439-96-5	50	17	18.2						
Manganese (Dissolved)	7439-96-5	50	17	NA						
Mercury	7439-97-6	2	0.12							
Potassium	7440-09-7	*	5400	1300 B						
Selenium	7782-49-2	50	9.7							
Sodium	7440-23-5	160000	18222	5460						
Vanadium	7440-62-2	49	20.6							
Zinc	7440-66-6	5000	4	5.1 B						
Radionuclides (pCi/L)					NA	NA	NA	NA	NA	NA
gross Alpha		13		8						
gross Beta		9.5		6.4						
Misc. (mg/L)				NA	NA		NA	NA	NA	NA
Carbon Dioxide	124-38-9	*				NA				
Dissolved Organic Carbon		*				NA				
Hydrogen (nm/L)	1333-74-0	*				NA				
Nitrate	14797-55-8	10,000				NA				
Nitrogen	7727-37-9	*				NA				
Oxygen	7782-44-7	*				NA				
Sulfate	14808-79-8	250,000				NA				
Total Organic Carbon		*				5				

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-08C					OLD-02-13C	
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G08C13	NTC02G08C14	NTC02G08C15	NTC02G08C16	NTC02G08C17	02G01301	02G01302
LAB ID				A0D130261008	A0G190137010	A0J200234002	WR0258-5	WR1409-001	C127723004	A8L110189007
SAMPLE DATE				4/12/00	7/18/00	10/19/00	1/24/01	4/30/01	8/22/97	12/10/98
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10							1.2	
1,3,5-Trimethylbenzene[d]	108-67-8	10								1.6 J
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1		49	20	21	[illegible]	[illegible]	83	71
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700								
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		2.8	1	0.14 J	2		4.1	3.3
Ethylbenzene	100-41-4	30		0.37 J					1.9	0.5 J
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								0.62 J
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3		0.45 J					0.98	
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (µg/L)				NA	NA	NA	NA		NA	
Ethane	74-84-0	*						0.29		1.4
Ethene	74-85-1	*								
Methane	72-82-8	*						251.4		
Semivolatiles (µg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-08C					OLD-02-13C	
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G08C13	NTC02G08C14	NTC02G08C15	NTC02G08C16	NTC02G08C17	02G01301	02G01302
LAB ID				A0D130261008	A0G190137010	A0J200234002	WR0258-5	WR1409-001	C127723004	A8L110189007
SAMPLE DATE				4/12/00	7/18/00	10/19/00	1/24/01	4/30/01	8/22/97	12/10/98
Inorganics (μg/L)				NA	NA	NA	NA		NA	NA
Aluminium	7429-90-5	200	4067							
Antimony	7440-36-0	6	4.1							
Arsenic	7440-38-2	50	5							
Barium	7440-39-3	2000	31.4							
Beryllium	7440-41-7	4	*							
Calcium	7440-70-2	*	36830							
Chromium	7440-47-3	100	7.8							
Copper	7440-50-8	1000	5.4							
Iron	7439-89-6	300	1227							
Iron (Dissolved)	7439-89-6	300	1227					882		
Lead	7439-92-1	15	4							
Magnesium	7439-95-4	*	4560							
Manganese	7439-96-5	50	17							
Manganese (Dissolved)	7439-96-5	50	17					5.8		
Mercury	7439-97-6	2	0.12							
Potassium	7440-09-7	*	5400							
Selenium	7782-49-2	50	9.7							
Sodium	7440-23-5	160000	18222							
Vanadium	7440-62-2	49	20.6							
Zinc	7440-66-6	5000	4							
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)				NA	NA	NA	NA		NA	
Carbon Dioxide	124-38-9	*						65.3		NA
Dissolved Organic Carbon		*						21		NA
Hydrogen (nm/L)	1333-74-0	*						NA		NA
Nitrate	14797-55-8	10,000								NA
Nitrogen	7727-37-9	*						10.3		NA
Oxygen	7782-44-7	*						0.4		NA
Sulfate	14808-79-8	250,000						36 J		NA
Total Organic Carbon		*						NA		3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-13C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G01310	NTC02G13C11	NTC02G13C12	NTC02G13C13	NTC02G13C14	NTC02G13C14-D	NTC02G13C15
LAB ID				A9G190102008	A9J260203010	A0A240127001	A0D130261006	A0G190137011	A0G190137013	A0J200234007
SAMPLE DATE				7/16/99	10/25/99	1/21/00	4/12/00	7/18/00	7/18/00	10/19/00
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10								
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1		86	83	87	23	2.1 J	97 J	87
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700								
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		4.1	5.2	4.3 J	1	1.1 J	5.3 J	4.2
Ethylbenzene	100-41-4	30		1.3 J	1.3 J	1.5 J		0.34 J	1.8 J	
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3		0.98 J	0.68 J	0.84 J			0.99 J	0.94 J
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (µg/L)				NA	NA	NA	NA	NA	NA	NA
Ethane	74-84-0	*								
Ethene	74-85-1	*								
Methane	72-82-8	*								
Semivolatiles (µg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-13C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G01310	NTC02G13C11	NTC02G13C12	NTC02G13C13	NTC02G13C14	NTC02G13C14-D	NTC02G13C15
LAB ID				A9G190102008	A9J260203010	A0A240127001	A0D130261006	A0G190137011	A0G190137013	A0J200234007
SAMPLE DATE				7/16/99	10/25/99	1/21/00	4/12/00	7/18/00	7/18/00	10/19/00
Inorganics (μg/L)				NA		NA	NA	NA	NA	NA
Aluminium	7429-90-5	200	4067		NA					
Antimony	7440-36-0	6	4.1		NA					
Arsenic	7440-38-2	50	5		NA					
Barium	7440-39-3	2000	31.4		NA					
Beryllium	7440-41-7	4	*		NA					
Calcium	7440-70-2	*	36830		NA					
Chromium	7440-47-3	100	7.8		NA					
Copper	7440-50-8	1000	5.4		NA					
Iron	7439-89-6	300	1227		NA					
Iron (Dissolved)	7439-89-6	300	1227		320					
Lead	7439-92-1	15	4		NA					
Magnesium	7439-95-4	*	4560		NA					
Manganese	7439-96-5	50	17		NA					
Manganese (Dissolved)	7439-96-5	50	17		NA					
Mercury	7439-97-6	2	0.12		NA					
Potassium	7440-09-7	*	5400		NA					
Selenium	7782-49-2	50	9.7		NA					
Sodium	7440-23-5	160000	18222		NA					
Vanadium	7440-62-2	49	20.6		NA					
Zinc	7440-66-6	5000	4		NA					
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)				NA	NA	NA	NA	NA	NA	NA
Carbon Dioxide	124-38-9	*								
Dissolved Organic Carbon		*								
Hydrogen (nm/L)	1333-74-0	*								
Nitrate	14797-55-8	10,000								
Nitrogen	7727-37-9	*								
Oxygen	7782-44-7	*								
Sulfate	14808-79-8	250,000								
Total Organic Carbon		*								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-13C		OLD-02-19C				
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G13C16	NTC02G13C17	02G01901	02G01901D	02G01902	02G01910	NTC02G19C11
LAB ID				WR0258-8	WR1409-002	OTCW3*6	OTCW3*7	A8L110189006	A9G190102005	A9J300125002
SAMPLE DATE				1/24/01	4/30/01	12/29/97	12/29/97	12/9/98	7/15/99	10/27/99
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10								
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1		37	62	52.1	53.5	38	35	
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700								
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		3	3	1.75	1.68	1.9 J	1.5	
Ethylbenzene	100-41-4	30		0.6 J	0.8 J	0.7	0.66	0.67 J	0.44 J	
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*						1.5 J		
Methylene Chloride	75-09-2	5						0.69 J		
o-Xylene(d)		*						0.61 J		
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3			0.6 J					
Xylenes, Total	1330-20-7	20		0.6 J	2	2.94	2.8		1.5	
Volatiles Gaseous (µg/L)				NA		NA	NA		NA	NA
Ethane	74-84-0	*			0.41			0.74		
Ethene	74-85-1	*			0.08					
Methane	72-82-8	*			637.1					
Semivolatiles (µg/L)				NA	NA	NA	NA		NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-13C		OLD-02-19C				
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G13C16	NTC02G13C17	02G01901	02G01901D	02G01902	02G01910	NTC02G19C11
LAB ID				WR0258-8	WR1409-002	OTCW3*6	OTCW3*7	A8L110189006	A9G190102005	A9J300125002
SAMPLE DATE				1/24/01	4/30/01	12/29/97	12/29/97	12/9/98	7/15/99	10/27/99
Inorganics (μg/L)				NA		NA	NA	NA	NA	
Aluminium	7429-90-5	200	4067		NA					NA
Antimony	7440-36-0	6	4.1		NA					NA
Arsenic	7440-38-2	50	5		NA					NA
Barium	7440-39-3	2000	31.4		NA					NA
Beryllium	7440-41-7	4	*		NA					NA
Calcium	7440-70-2	*	36830		NA					NA
Chromium	7440-47-3	100	7.8		NA					NA
Copper	7440-50-8	1000	5.4		NA					NA
Iron	7439-89-6	300	1227		NA					NA
Iron (Dissolved)	7439-89-6	300	1227		243					1930
Lead	7439-92-1	15	4		NA					NA
Magnesium	7439-95-4	*	4560		NA					NA
Manganese	7439-96-5	50	17		NA					NA
Manganese (Dissolved)	7439-96-5	50	17		2.8					NA
Mercury	7439-97-6	2	0.12		NA					NA
Potassium	7440-09-7	*	5400		NA					NA
Selenium	7782-49-2	50	9.7		NA					NA
Sodium	7440-23-5	160000	18222		NA					NA
Vanadium	7440-62-2	49	20.6		NA					NA
Zinc	7440-66-6	5000	4		NA					NA
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)				NA		NA	NA		NA	NA
Carbon Dioxide	124-38-9	*			69.4			NA		
Dissolved Organic Carbon		*			2			NA		
Hydrogen (nm/L)	1333-74-0	*			0.9			NA		
Nitrate	14797-55-8	10,000						NA		
Nitrogen	7727-37-9	*			7.3			NA		
Oxygen	7782-44-7	*						NA		
Sulfate	14808-79-8	250,000			3			NA		
Total Organic Carbon		*						2		

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-19C					
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G19C12	NTC02G19C13	NTC02G19C14	NTC02G19C15	NTC02G19C16	NTC02G19C17
LAB ID				A0A240125019	A0D130261007	A0G190137007	A0J200234009	WR0258-9	WR1503-008
SAMPLE DATE				1/21/00	4/12/00	7/17/00	10/19/00	1/25/01	5/3/01
Volatiles (μg/L)									
1,2-Dichloroethane	107-06-3	3							
1,2,4-Trimethylbenzene[d]	95-63-6	10							
1,3,5-Trimethylbenzene[d]	108-67-8	10							
2-Butanone	78-93-3	4200							
2-Hexanone	591-78-6	280							
4-Isopropyltoluene[d]	99-87-6	*							
4-Methyl-2-Pentanone	108-10-1	560							
Acetone	67-64-1	700							
Benzene	71-43-2	1		33	31	29		39	31
Bromodichloromethane	75-27-4	0.6							
Carbon Disulfide	75-15-0	700		0.4 J					
Chloroform	67-66-3	5.7							
Chloromethane	74-87-3	2.7							
cis-1,2-Dichloroethene	156-59-2	70		1.3	1.4	1.4		2	1 J
Ethylbenzene	100-41-4	30		0.38 J	0.45 J	0.4 J		0.6 J	
Isopropylbenzene[d]	98-82-8	0.8							
m-Xylene & p-Xylene[d]		*							
Methylene Chloride	75-09-2	5							
o-Xylene(d)		*							
Tetrachloroethene	127-18-4	3							
Toluene	108-88-3	40							
Trichloroethene	79-01-6	3							
Xylenes, Total	1330-20-7	20		1.4	1.7	1.6		2	
Volatiles Gaseous (μg/L)				NA	NA	NA	NA	NA	
Ethane	74-84-0	*							0.17
Ethene	74-85-1	*							
Methane	72-82-8	*							97.6
Semivolatiles (μg/L)				NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6							
o-Dichlorobenzene		*							
Phenanthrene	85-01-8	210							
Phenol	108-95-2	10							

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-19C					
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G19C12	NTC02G19C13	NTC02G19C14	NTC02G19C15	NTC02G19C16	NTC02G19C17
LAB ID				A0A240125019	A0D130261007	A0G190137007	A0J200234009	WR0258-9	WR1503-008
SAMPLE DATE				1/21/00	4/12/00	7/17/00	10/19/00	1/25/01	5/3/01
Inorganics (μg/L)				NA	NA	NA	NA	NA	
Aluminium	7429-90-5	200	4067						
Antimony	7440-36-0	6	4.1						NA
Arsenic	7440-38-2	50	5						NA
Barium	7440-39-3	2000	31.4						NA
Beryllium	7440-41-7	4	*						NA
Calcium	7440-70-2	*	36830						NA
Chromium	7440-47-3	100	7.8						NA
Copper	7440-50-8	1000	5.4						NA
Iron	7439-89-6	300	1227						NA
Iron (Dissolved)	7439-89-6	300	1227						371
Lead	7439-92-1	15	4						NA
Magnesium	7439-95-4	*	4560						NA
Manganese	7439-96-5	50	17						NA
Manganese (Dissolved)	7439-96-5	50	17						4
Mercury	7439-97-6	2	0.12						NA
Potassium	7440-09-7	*	5400						NA
Selenium	7782-49-2	50	9.7						NA
Sodium	7440-23-5	160000	18222						NA
Vanadium	7440-62-2	49	20.6						NA
Zinc	7440-66-6	5000	4						NA
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA
gross Alpha		13							
gross Beta		9.5							
Misc. (mg/L)				NA	NA	NA	NA	NA	
Carbon Dioxide	124-38-9	*							47.8
Dissolved Organic Carbon		*							3
Hydrogen (nm/L)	1333-74-0	*							1.5
Nitrate	14797-55-8	10,000							
Nitrogen	7727-37-9	*							8.6
Oxygen	7782-44-7	*							0.63
Sulfate	14808-79-8	250,000							
Total Organic Carbon		*							

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-20B						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G02001	02G02010	NTC02G20B11	NTC02G20B12	NTC02G20B13	NTC02G20B14	NTC02G20B15
LAB ID				A8K210147002	A9G190102006	A9J260203006	A0A240125009	A0D130261001	A0G190137004	A0J200234005
SAMPLE DATE				11/18/98	7/16/99	10/25/99	1/20/00	4/11/00	7/17/00	10/19/00
Volatiles (μg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10		2.9 J						
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700							2.6 J	
Benzene	71-43-2	1		46	44	38	41	40	32	42
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700					0.4 J			
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		3.7 J	3.3	3	2.5	2.5	2.1	2.7
Ethylbenzene	100-41-4	30			0.58 J	0.57 J	0.48 J	0.64 J	0.49 J	0.58 J
Isopropylbenzene[d]	98-82-8	0.8		13 J						
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5		1 J						
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3		1.1 J	1.3 J	1.4 J	1.8	1.7	1.7	1.4 J
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (μg/L)					NA	NA	NA	NA	NA	NA
Ethane	74-84-0	*		0.68						
Ethene	74-85-1	*								
Methane	72-82-8	*								
Semivolatiles (μg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-20B						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	02G02001	02G02010	NTC02G20B11	NTC02G20B12	NTC02G20B13	NTC02G20B14	NTC02G20B15
LAB ID				A8K210147002	A9G190102006	A9J260203006	A0A240125009	A0D130261001	A0G190137004	A0J200234005
SAMPLE DATE				11/18/98	7/16/99	10/25/99	1/20/00	4/11/00	7/17/00	10/19/00
Inorganics (μg/L)				NA	NA	NA	NA	NA	NA	NA
Aluminium	7429-90-5	200	4067							
Antimony	7440-36-0	6	4.1							
Arsenic	7440-38-2	50	5							
Barium	7440-39-3	2000	31.4							
Beryllium	7440-41-7	4	*							
Calcium	7440-70-2	*	36830							
Chromium	7440-47-3	100	7.8							
Copper	7440-50-8	1000	5.4							
Iron	7439-89-6	300	1227							
Iron (Dissolved)	7439-89-6	300	1227							
Lead	7439-92-1	15	4							
Magnesium	7439-95-4	*	4560							
Manganese	7439-96-5	50	17							
Manganese (Dissolved)	7439-96-5	50	17							
Mercury	7439-97-6	2	0.12							
Potassium	7440-09-7	*	5400							
Selenium	7782-49-2	50	9.7							
Sodium	7440-23-5	160000	18222							
Vanadium	7440-62-2	49	20.6							
Zinc	7440-66-6	5000	4							
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)					NA	NA	NA	NA	NA	NA
Carbon Dioxide	124-38-9	*		NA						
Dissolved Organic Carbon		*		NA						
Hydrogen (nm/L)	1333-74-0	*		NA						
Nitrate	14797-55-8	10,000		NA						
Nitrogen	7727-37-9	*		NA						
Oxygen	7782-44-7	*		NA						
Sulfate	14808-79-8	250,000		NA						
Total Organic Carbon		*		4						

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-20B			OLD-02-21C			
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G20B16	NTC02G20B17	NTC02G20B17-D	02G02101	02G02101D	02G02110	02G02110-D
LAB ID				WR0258-2	WR1475-008	NTC02GD0217	A8L090188002	A8L090188002	A9G190102007	A9G190102009
SAMPLE DATE				1/24/01	5/2/01	5/3/01	12/7/98	12/7/98	7/16/99	7/16/99
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10					4.5 J	3.4 J		
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1		50	41		50	56	40	40
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700			0.4 J					
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		3	2 J		3.7	4	3	3.1
Ethylbenzene	100-41-4	30		0.7 J			1 J	1 J	0.47 J	0.48 J
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5					0.74 J	0.65 J		
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3		2	2		1.5 J	1.6 J	1.9	1.8
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (µg/L)				NA					NA	NA
Ethane	74-84-0	*			0.29	0.73	1.3	1.2		
Ethene	74-85-1	*			0.07	0.06				
Methane	72-82-8	*			649.3	888.5				
Semivolatiles (µg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-20B			OLD-02-21C			
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G20B16	NTC02G20B17	NTC02G20B17-D	02G02101	02G02101D	02G02110	02G02110-D
LAB ID				WR0258-2	WR1475-008	NTC02GD0217	A8L090188002	A8L090188002	A9G190102007	A9G190102009
SAMPLE DATE				1/24/01	5/2/01	5/3/01	12/7/98	12/7/98	7/16/99	7/16/99
Inorganics (µg/L)				NA		NA	NA	NA	NA	NA
Aluminium	7429-90-5	200	4067		NA					
Antimony	7440-36-0	6	4.1		NA					
Arsenic	7440-38-2	50	5		NA					
Barium	7440-39-3	2000	31.4		NA					
Beryllium	7440-41-7	4	*		NA					
Calcium	7440-70-2	*	36830		NA					
Chromium	7440-47-3	100	7.8		NA					
Copper	7440-50-8	1000	5.4		NA					
Iron	7439-89-6	300	1227		NA					
Iron (Dissolved)	7439-89-6	300	1227		1050					
Lead	7439-92-1	15	4		NA					
Magnesium	7439-95-4	*	4560		NA					
Manganese	7439-96-5	50	17		NA					
Manganese (Dissolved)	7439-96-5	50	17		5.1					
Mercury	7439-97-6	2	0.12		NA					
Potassium	7440-09-7	*	5400		NA					
Selenium	7782-49-2	50	9.7		NA					
Sodium	7440-23-5	160000	18222		NA					
Vanadium	7440-62-2	49	20.6		NA					
Zinc	7440-66-6	5000	4		NA					
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)				NA					NA	NA
Carbon Dioxide	124-38-9	*			95	90.2	NA	NA		
Dissolved Organic Carbon		*			5.7		NA	NA		
Hydrogen (nm/L)	1333-74-0	*			1.1	1.4	NA	NA		
Nitrate	14797-55-8	10,000			0.2		NA	NA		
Nitrogen	7727-37-9	*			10.7	8.6	NA	NA		
Oxygen	7782-44-7	*			0.58	1.2	NA	NA		
Sulfate	14808-79-8	250,000			41 J		NA	NA		
Total Organic Carbon		*					7	7		

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-21C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G21C11	NTC02G21C12	NTC02G21C13	NTC02G21C14	NTC02G21C15	NTC02G21C16	NTC02G21C17
LAB ID				A9J260203007	A0A240125007	A0D130261002	A0G190137006	A0J200234008	WR0258-6	WR1475-009
SAMPLE DATE				10/25/99	1/20/00	4/11/00	7/17/00	10/19/00	1/24/01	5/2/01
Volatiles (μg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10								
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700					2.1 J		4 J	
Benzene	71-43-2	1		34	40	63	50	53	66	55
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700			0.62 J					
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		2.7	2.5	5.4	4.4	4.4	7	4
Ethylbenzene	100-41-4	30		0.37 J	0.24 J	0.66 J	0.53 J		0.8 J	
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3			0.22 J					
Toluene	108-88-3	40								
Trichloroethene	79-01-6	3		1.9	1.8	0.91 J	1.3 J	0.89 J		2
Xylenes, Total	1330-20-7	20								
Volatiles Gaseous (μg/L)				NA	NA	NA	NA	NA	NA	
Ethane	74-84-0	*								0.33
Ethene	74-85-1	*								0.31
Methane	72-82-8	*								497.9
Semivolatiles (μg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-21C						
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G21C11	NTC02G21C12	NTC02G21C13	NTC02G21C14	NTC02G21C15	NTC02G21C16	NTC02G21C17
LAB ID				A9J260203007	A0A240125007	A0D130261002	A0G190137006	A0J200234008	WR0258-6	WR1475-009
SAMPLE DATE				10/25/99	1/20/00	4/11/00	7/17/00	10/19/00	1/24/01	5/2/01
Inorganics (µg/L)				NA	NA	NA	NA	NA	NA	
Aluminium	7429-90-5	200	4067							NA
Antimony	7440-36-0	6	4.1							NA
Arsenic	7440-38-2	50	5							NA
Barium	7440-39-3	2000	31.4							NA
Beryllium	7440-41-7	4	*							NA
Calcium	7440-70-2	*	36830							NA
Chromium	7440-47-3	100	7.8							NA
Copper	7440-50-8	1000	5.4							NA
Iron	7439-89-6	300	1227							NA
Iron (Dissolved)	7439-89-6	300	1227							394
Lead	7439-92-1	15	4							NA
Magnesium	7439-95-4	*	4560							NA
Manganese	7439-96-5	50	17							NA
Manganese (Dissolved)	7439-96-5	50	17							6.1
Mercury	7439-97-6	2	0.12							NA
Potassium	7440-09-7	*	5400							NA
Selenium	7782-49-2	50	9.7							NA
Sodium	7440-23-5	160000	18222							NA
Vanadium	7440-62-2	49	20.6							NA
Zinc	7440-66-6	5000	4							NA
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)				NA	NA	NA	NA	NA	NA	
Carbon Dioxide	124-38-9	*								81.5
Dissolved Organic Carbon		*								6
Hydrogen (nm/L)	1333-74-0	*								1.2
Nitrate	14797-55-8	10,000								0.08
Nitrogen	7727-37-9	*								10.2
Oxygen	7782-44-7	*								0.25
Sulfate	14808-79-8	250,000								69 J
Total Organic Carbon		*								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-23C	OLD-02-24C	OLD-02-25C	OLD-02-26C	OLD-02-27C	OLD-02-28C	OLD-02-29C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G23C17	NTC02G24C17	NTC02G25C17	NTC02G26C17	NTC02G27C17	NTC02G28C17	NTC02G29C17
LAB ID				WR1452-002	WR1452-003	WR1452-004	WR1452-005	WR1452-006	WR1475-005	WR1475-006
SAMPLE DATE				5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/2/01	5/2/01
Volatiles (μg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10								
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560								
Acetone	67-64-1	700								
Benzene	71-43-2	1		60	34	95	57	62	92	130
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700				0.8 J			5	5
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		4	2	7	4	4	8	9
Ethylbenzene	100-41-4	30		2	0.7 J	4	2	2	8	10
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3		1	3		0.5 J	0.4 J		
Toluene	108-88-3	40								0.4 J
Trichloroethene	79-01-6	3			3					2
Xylenes, Total	1330-20-7	20				2 J			12	33
Volatiles Gaseous (μg/L)										
Ethane	74-84-0	*		0.36	0.31	0.28	0.38	0.34	0.42	0.94
Ethene	74-85-1	*		0.57	0.88	0.4	0.13	0.25	0.09	0.17
Methane	72-82-8	*		910.4	812.8	878.7	644.4	661.5	734.7	1410.8
Semivolatiles (μg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-23C	OLD-02-24C	OLD-02-25C	OLD-02-26C	OLD-02-27C	OLD-02-28C	OLD-02-29C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G23C17	NTC02G24C17	NTC02G25C17	NTC02G26C17	NTC02G27C17	NTC02G28C17	NTC02G29C17
LAB ID				WR1452-002	WR1452-003	WR1452-004	WR1452-005	WR1452-006	WR1475-005	WR1475-006
SAMPLE DATE				5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/2/01	5/2/01
Inorganics (μg/L)										
Aluminium	7429-90-5	200	4067	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	6	4.1	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	50	5	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	2000	31.4	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	4	*	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	*	36830	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	100	7.8	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	1000	5.4	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	300	1227	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	7439-89-6	300	1227	7080	1090	2540	3980	3140	979	761
Lead	7439-92-1	15	4	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	*	4560	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	50	17	NA	NA	NA	NA	NA	NA	NA
Manganese (Dissolved)	7439-96-5	50	17	53.8		23.4	32.5	24.2	9.4	7.7
Mercury	7439-97-6	2	0.12	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	*	5400	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	50	9.7	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	160000	18222	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	49	20.6	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	5000	4	NA	NA	NA	NA	NA	NA	NA
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)										
Carbon Dioxide	124-38-9	*		90.6	101.6	90.1	87.3	86.8	91.2	100.2
Dissolved Organic Carbon		*		5.2	3	5.7	5.3	8.7	9.9	14
Hydrogen (nm/L)	1333-74-0	*		1.6	1.5	1.9	1.3	1.5	1.4	1.9
Nitrate	14797-55-8	10,000								
Nitrogen	7727-37-9	*		11.3	10.6	9.3	9.1	8.2	8.7	11.7
Oxygen	7782-44-7	*		0.35	0.54	0.27	0.31	0.41	0.47	0.16
Sulfate	14808-79-8	250,000		15	36	8.3	24	20	11	5
Total Organic Carbon		*								

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-30C		OLD-02-31C	OLD-02-32C	OLD-02-33C	OLD-02-34C	OLD-02-35C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G30C17	NTC02G30C17-D	NTC02G31C17	NTC02G32C17	NTC02G33C17	NTC02G34C17	NTC02G35C17
LAB ID				WR1475-004	WR1475-007	WR1475-002	WR1475-003	WR1503-003	WR1503-002	WR1503-004
SAMPLE DATE				5/2/01	5/2/01	5/2/01	5/2/01	5/3/01	5/3/01	5/3/01
Volatiles (µg/L)										
1,2-Dichloroethane	107-06-3	3								
1,2,4-Trimethylbenzene[d]	95-63-6	10								
1,3,5-Trimethylbenzene[d]	108-67-8	10								
2-Butanone	78-93-3	4200								
2-Hexanone	591-78-6	280								
4-Isopropyltoluene[d]	99-87-6	*								
4-Methyl-2-Pentanone	108-10-1	560				3 J	2 J			
Acetone	67-64-1	700								
Benzene	71-43-2	1		120	110	130	130	140	140	150
Bromodichloromethane	75-27-4	0.6								
Carbon Disulfide	75-15-0	700				4	1			2
Chloroform	67-66-3	5.7								
Chloromethane	74-87-3	2.7								
cis-1,2-Dichloroethene	156-59-2	70		8	8	9	9	6	7	7
Ethylbenzene	100-41-4	30		6	6	10	9	5	5	7
Isopropylbenzene[d]	98-82-8	0.8								
m-Xylene & p-Xylene[d]		*								
Methylene Chloride	75-09-2	5								
o-Xylene(d)		*								
Tetrachloroethene	127-18-4	3								
Toluene	108-88-3	40			0.4 J	0.5 J	0.5 J			
Trichloroethene	79-01-6	3					2	2	2	2
Xylenes, Total	1330-20-7	20		20	21	32	26			
Volatiles Gaseous (µg/L)										
Ethane	74-84-0	*		0.21	0.54	0.71	0.84	0.77	0.7	0.84
Ethene	74-85-1	*		0.05	0.08	0.21	0.07	0.04	0.08	0.06
Methane	72-82-8	*		368.6	932.4	991	1203.3	1054.5	922.6	1130.1
Semivolatiles (µg/L)				NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6								
o-Dichlorobenzene		*								
Phenanthrene	85-01-8	210								
Phenol	108-95-2	10								

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HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-30C		OLD-02-31C	OLD-02-32C	OLD-02-33C	OLD-02-34C	OLD-02-35C
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G30C17	NTC02G30C17-D	NTC02G31C17	NTC02G32C17	NTC02G33C17	NTC02G34C17	NTC02G35C17
LAB ID				WR1475-004	WR1475-007	WR1475-002	WR1475-003	WR1503-003	WR1503-002	WR1503-004
SAMPLE DATE				5/2/01	5/2/01	5/2/01	5/2/01	5/3/01	5/3/01	5/3/01
Inorganics (μg/L)										
Aluminium	7429-90-5	200	4067	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	6	4.1	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	50	5	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	2000	31.4	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	4	*	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	*	36830	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	100	7.8	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	1000	5.4	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	300	1227	NA	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	7439-89-6	300	1227	500	521	1160	300	450	463	685
Lead	7439-92-1	15	4	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	*	4560	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	50	17	NA	NA	NA	NA	NA	NA	NA
Manganese (Dissolved)	7439-96-5	50	17	5.4	5.4	10.8	3.6	5.8	5.5	7.3
Mercury	7439-97-6	2	0.12	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	*	5400	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	50	9.7	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	160000	18222	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	49	20.6	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	5000	4	NA	NA	NA	NA	NA	NA	NA
Radionuclides (pCi/L)				NA	NA	NA	NA	NA	NA	NA
gross Alpha		13								
gross Beta		9.5								
Misc. (mg/L)										
Carbon Dioxide	124-38-9	*		66.3	99.7	90.7	97.4	90.9	86.1	94.6
Dissolved Organic Carbon		*		8.6	11	13	5	6	6	6
Hydrogen (nm/L)	1333-74-0	*		1.3	1.4	1.3	1.3	1.2	1.1	1.3
Nitrate	14797-55-8	10,000								
Nitrogen	7727-37-9	*		4.7	7.8	7.8	9	9.9	8.3	10.3
Oxygen	7782-44-7	*		0.76	0.28	0.54	0.31	0.24	0.3	0.44
Sulfate	14808-79-8	250,000		8.3	8.4	5.2	5.4	12	7.9	16
Total Organic Carbon		*								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-36C	OLD-02-37C	
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G36C17	NTC02G37C17	NTC02G37C17-D
LAB ID				WR1503-005	WR1503-006	WR1503-007
SAMPLE DATE				5/3/01	5/3/01	5/3/01
Volatiles (µg/L)						
1,2-Dichloroethane	107-06-3	3				
1,2,4-Trimethylbenzene[d]	95-63-6	10				
1,3,5-Trimethylbenzene[d]	108-67-8	10				
2-Butanone	78-93-3	4200				
2-Hexanone	591-78-6	280		5		
4-Isopropyltoluene[d]	99-87-6	*				
4-Methyl-2-Pentanone	108-10-1	560				
Acetone	67-64-1	700				
Benzene	71-43-2	1		160	150	150
Bromodichloromethane	75-27-4	0.6				
Carbon Disulfide	75-15-0	700		2	2	2
Chloroform	67-66-3	5.7				
Chloromethane	74-87-3	2.7				
cis-1,2-Dichloroethene	156-59-2	70		8	7	7
Ethylbenzene	100-41-4	30		7	7	6
Isopropylbenzene[d]	98-82-8	0.8				
m-Xylene & p-Xylene[d]		*				
Methylene Chloride	75-09-2	5				
o-Xylene(d)		*				
Tetrachloroethene	127-18-4	3				
Toluene	108-88-3	40				
Trichloroethene	79-01-6	3		2	2	2
Xylenes, Total	1330-20-7	20				
Volatiles Gaseous (µg/L)						NA
Ethane	74-84-0	*		0.81	0.82	
Ethene	74-85-1	*		0.07	0.41	
Methane	72-82-8	*		1042.2	1061.8	
Semivolatiles (µg/L)				NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	6				
o-Dichlorobenzene		*				
Phenanthrene	85-01-8	210				
Phenol	108-95-2	10				

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria[a]		OLD-02-36C	OLD-02-37C	
SAMPLE ID		Florida GCTL[b]	NTC BGSV[c]	NTC02G36C17	NTC02G37C17	NTC02G37C17-D
LAB ID				WR1503-005	WR1503-006	WR1503-007
SAMPLE DATE				5/3/01	5/3/01	5/3/01
Inorganics (μg/L)						
Aluminium	7429-90-5	200	4067	NA	NA	NA
Antimony	7440-36-0	6	4.1	NA	NA	NA
Arsenic	7440-38-2	50	5	NA	NA	NA
Barium	7440-39-3	2000	31.4	NA	NA	NA
Beryllium	7440-41-7	4	*	NA	NA	NA
Calcium	7440-70-2	*	36830	NA	NA	NA
Chromium	7440-47-3	100	7.8	NA	NA	NA
Copper	7440-50-8	1000	5.4	NA	NA	NA
Iron	7439-89-6	300	1227	NA	NA	NA
Iron (Dissolved)	7439-89-6	300	1227	681	371	366
Lead	7439-92-1	15	4	NA	NA	NA
Magnesium	7439-95-4	*	4560	NA	NA	NA
Manganese	7439-96-5	50	17	NA	NA	NA
Manganese (Dissolved)	7439-96-5	50	17	7.6	4.6	4.3
Mercury	7439-97-6	2	0.12	NA	NA	NA
Potassium	7440-09-7	*	5400	NA	NA	NA
Selenium	7782-49-2	50	9.7	NA	NA	NA
Sodium	7440-23-5	160000	18222	NA	NA	NA
Vanadium	7440-62-2	49	20.6	NA	NA	NA
Zinc	7440-66-6	5000	4	NA	NA	NA
Radionuclides (pCi/L)				NA	NA	NA
gross Alpha		13				
gross Beta		9.5				
Misc. (mg/L)						
Carbon Dioxide	124-38-9	*		92.7	90.9	
Dissolved Organic Carbon		*		5	7	7
Hydrogen (nm/L)	1333-74-0	*		1	1.2	
Nitrate	14797-55-8	10,000				
Nitrogen	7727-37-9	*		9.4	9	
Oxygen	7782-44-7	*		0.39	0.45	
Sulfate	14808-79-8	250,000		13	6	6.3
Total Organic Carbon		*				

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TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Footnotes:

[a] For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Analytes with no GCTL are not considered to have exceedances.

[b] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].

[c] Background Screening Value Level (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

[d] Analyte not analyzed for in samples collected after 12/98.

* Indicates the criteria or screening value not available.

"B" qualifier for inorganic analytes indicates a value between the detection limit and the reporting limit.

"D" qualifier indicates a diluted sample.

Empty cells indicate non-detects.

"J" qualifier indicates an estimated value.

NA – Not analyzed.

Only chemicals detected in at least one sample are shown.

Values in shaded cells meet or exceed the screening criteria.

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria [a]		OLD-02-08C	OLD-02-13C	OLD-02-19C	OLD-02-20B	
SAMPLE ID		Florida GCTL [b]	NTC BGSV[c]	NTC02G08C17	NTC02G13C17	NTC02G19C17	NTC02G20B17	NTC02G20B17-D
LAB ID				WR1409-001	WR1409-002	WR1503-008	WR1475-008	NTC02GD0217
SAMPLE DATE				4/30/01	4/30/01	5/3/01	5/2/01	5/3/01
Volatiles (µg/L)								
1,1,1-Trichloroethane	71-55-6	200		1 U	1 U	1 U	1 U	
1,1,2,2-Tetrachloroethane	79-34-5	0.2		1 U	1 U	1 U	1 U	
1,1,2-Trichloroethane	79-00-5	5		1 U	1 U	1 U	1 U	
1,1-Dichloroethane	75-34-3	70		1 U	1 U	1 U	1 U	
1,1-Dichloroethene	75-35-4	7		1 U	1 U	1 U	1 U	
1,2-Dichloroethane	107-06-2	3		1 U	1 U	1 U	1 U	
1,2-Dichloropropane	78-87-5	5		1 U	1 U	1 U	1 U	
2-Butanone	78-93-3	4200		5 U	5 U	5 U	5 U	
2-Hexanone	591-78-6	280		4 U	4 U	4 U	4 U	
4-Methyl-2-Pentanone	108-10-1	560		3 U	3 U	3 U	3 U	
Acetone	67-64-1	700		8 U	5 U	5 U	3 U	
Benzene	71-43-2	1		1	62	31	41	
Bromodichloromethane	75-27-4	0.6		1 U	1 U	1 U	1 U	
Bromoform	75-25-2	4.4		1 U	1 U	1 U	1 U	
Bromomethane	74-83-9	9.8		2 U	2 U	2 U	2 U	
Carbon Disulfide	75-15-0	700		1 U	1 U	1 U	0.4 J	
Carbon Tetrachloride	56-23-5	3		1 U	1 U	1 U	1 U	
Chlorobenzene	108-90-7	100		1 U	1 U	1 U	1 U	
Chlorodibromomethane	124-48-1	0.4		1 U	1 U	1 U	1 U	
Chloroethane	75-00-3	12		2 U	2 U	2 U	2 U	
Chloroform	67-66-3	5.7		1 U	1 U	1 U	1 U	
Chloromethane	74-87-3	2.7		2 U	2 U	2 U	2 U	
cis-1,2-Dichloroethene	156-59-2	70		2 U	3	1 J	2 J	
cis-1,3-Dichloropropene	10061-01-5	*		1 U	1 U	1 U	1 U	
Ethylbenzene	100-41-4	30		1 U	0.8 J	1 U	1 U	
Methylene Chloride	75-09-2	5		1 U	1 U	1 U	1 U	
Styrene	100-42-5	100		1 U	1 U	1 U	1 U	
Tetrachloroethene	127-18-4	3		1 U	1 U	1 U	1 U	
Toluene	108-88-3	40		1 U	1 U	1 U	1 U	
Trans-1,2-Dichloroethene	156-60-5	100		2 U	2 U	2 U	2 U	
Trans-1,3-Dichloropropene	10061-02-6	*		1 U	1 U	1 U	1 U	
Trichloroethene	79-01-6	3		1 U	0.6 J	1 U	2	
Vinyl Chloride	75-01-4	1		2 U	2 U	2 U	2 U	
Xylenes, Total	1330-20-7	20		1 U	2	1 U	1 U	
Volatiles Gaseous (µg/L)								
Ethane	74-84-0	*		0.29	0.41	0.17	0.29	0.73
Ethene	74-85-1	*		0.01 U	0.08	0.01 U	0.07	0.06
Methane	72-82-8	*		251.4	637.1	97.6	649.3	888.5
Inorganics (µg/L)								
Iron	7439-89-6	300	1227	882	243	371	1050	
Manganese	7439-96-5	50	17	5.8	2.8	4	5.1	
Misc. (mg/L)								
Alkalinity	000-01-1	*		20 U	20 U			
Carbon Dioxide	124-38-9	*		65.3	69.4	47.8	95	90.2
Dissolved Organic Carbon		*		21	2	3	5.7	
Hydrogen (mn/L)	1333-74-0	*			0.9	1.5	1.1	1.4
Nitrate	14797-55-8	10,000		0.05 U	0.05 U	0.05 U	0.2	
Nitrite	14797-65-0	*		0.05 U	0.05 U	0.05 U	0.05 U	
Nitrogen	7727-37-9	*		10.3	7.3	8.6	10.7	8.6
Oxygen	7782-44-7	*		0.4	0.15 U	0.63	0.58	1.2
Sulfate	14808-79-8	250,000		36 J	3	1 U	41 J	

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria [a]		OLD-02-21C	OLD-02-23C	OLD-02-24C	OLD-02-25C	OLD-02-26C
SAMPLE ID		Florida GCTL [b]	NTC BGSV[c]	NTC02G21C17	NTC02G23C17	NTC02G24C17	NTC02G25C17	NTC02G26C17
LAB ID				WR1475-009	WR1452-002	WR1452-003	WR1452-004	WR1452-005
SAMPLE DATE				5/2/01	5/1/01	5/1/01	5/1/01	5/1/01
Volatiles (µg/L)								
1,1,1-Trichloroethane	71-55-6	200		1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	0.2		1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	5		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	70		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	7		1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	3		1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	5		1 U	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	4200		5 U	5 U	5 U	5 U	5 U
2-Hexanone	591-78-6	280		4 U	4 U	4 U	4 U	4 U
4-Methyl-2-Pentanone	108-10-1	560		3 U	3 U	3 U	3 U	3 U
Acetone	67-64-1	700		5 U	5 U	5 U	5 U	5 U
Benzene	71-43-2	1		55	60	34	95	57
Bromodichloromethane	75-27-4	0.6		1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	4.4		1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	9.8		2 U	2 U	2 U	2 U	2 U
Carbon Disulfide	75-15-0	700		1 U	1 U	1 U	0.8 J	1 U
Carbon Tetrachloride	56-23-5	3		1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	100		1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	124-48-1	0.4		1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	12		2 U	2 U	2 U	2 U	2 U
Chloroform	67-66-3	5.7		1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	2.7		2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	156-59-2	70		4	4	2	7	4
cis-1,3-Dichloropropene	10061-01-5	*		1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	30		1 U	2	0.7 J	4	2
Methylene Chloride	75-09-2	5		1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	100		1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	3		1 U	1	3	1 U	0.5 J
Toluene	108-88-3	40		1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	156-60-5	100		2 U	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	10061-02-6	*		1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	3		2	1 U	3	1 U	1 U
Vinyl Chloride	75-01-4	1		2 U	2 U	2 U	2 U	2 U
Xylenes, Total	1330-20-7	20		1 U	5 U	5 U	2 J	5 U
Volatiles Gaseous (µg/L)								
Ethane	74-84-0	*		0.33	0.36	0.31	0.28	0.38
Ethene	74-85-1	*		0.31	0.57	0.88	0.4	0.13
Methane	72-82-8	*		497.9	910.4	812.8	878.7	644.4
Inorganics (µg/L)								
Iron	7439-89-6	300	1227	394	7080	1090	2540	3980
Manganese	7439-96-5	50	17	6.1	53.8	6.7 U	23.4	32.5
Misc. (mg/L)								
Alkalinity	000-01-1	*			20 UJ	20 UJ		
Carbon Dioxide	124-38-9	*		81.5	90.6	101.6	90.1	87.3
Dissolved Organic Carbon		*		6	5.2	3	5.7	5.3
Hydrogen (mn/L)	1333-74-0	*		1.2	1.6	1.5	1.9	1.3
Nitrate	14797-55-8	10,000		0.08	0.05 U	0.05 U	0.05 U	0.05 U
Nitrite	14797-65-0	*		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrogen	7727-37-9	*		10.2	11.3	10.6	9.3	9.1
Oxygen	7782-44-7	*		0.25	0.35	0.54	0.27	0.31
Sulfate	14808-79-8	250,000		69 J	15	36	8.3	24

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria [a]		OLD-02-27C	OLD-02-28C	OLD-02-29C	OLD-02-30C	
SAMPLE ID		Florida GCTL [b]	NTC BGSV[c]	NTC02G27C17	NTC02G28C17	NTC02G29C17	NTC02G30C17	NTC02G30C17-D
LAB ID				WR1452-006	WR1475-005	WR1475-006	WR1475-004	WR1475-007
SAMPLE DATE				5/1/01	5/2/01	5/2/01	5/2/01	5/2/01
Volatiles (µg/L)								
1,1,1-Trichloroethane	71-55-6	200		1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	0.2		1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	5		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	70		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	7		1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	3		1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	5		1 U	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	4200		5 U	5 U	5 U	5 U	5 U
2-Hexanone	591-78-6	280		4 U	4 U	4 U	4 U	4 U
4-Methyl-2-Pentanone	108-10-1	560		3 U	3 U	3 U	3 U	3 U
Acetone	67-64-1	700		5 U	5 U	5 U	5 U	5 U
Benzene	71-43-2	1		62	92	130	120	110
Bromodichloromethane	75-27-4	0.6		1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	4.4		1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	9.8		2 U	2 U	2 U	2 U	2 U
Carbon Disulfide	75-15-0	700		1 U	5	5	1 U	1 U
Carbon Tetrachloride	56-23-5	3		1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	100		1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	124-48-1	0.4		1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	12		2 U	2 U	2 U	2 U	2 U
Chloroform	67-66-3	5.7		1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	2.7		2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	156-59-2	70		4	8	9	8	8
cis-1,3-Dichloropropene	10061-01-5	*		1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	30		2	8	10	6	6
Methylene Chloride	75-09-2	5		1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	100		1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	3		0.4 J	1 U	1 U	1 U	1 U
Toluene	108-88-3	40		1 U	1 U	0.4 J	1 U	0.4 J
Trans-1,2-Dichloroethene	156-60-5	100		2 U	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	10061-02-6	*		1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	3		1 U	1 U	2	1 U	1 U
Vinyl Chloride	75-01-4	1		2 U	2 U	2 U	2 U	2 U
Xylenes, Total	1330-20-7	20		5 U	12	33	20	21
Volatiles Gaseous (µg/L)								
Ethane	74-84-0	*		0.34	0.42	0.94	0.21	0.54
Ethene	74-85-1	*		0.25	0.09	0.17	0.05	0.08
Methane	72-82-8	*		661.5	734.7	1410.8	368.6	932.4
Inorganics (µg/L)								
Iron	7439-89-6	300	1227	3140	979	761	500	521
Manganese	7439-96-5	50	17	24.2	9.4	7.7	5.4	5.4
Misc. (mg/L)								
Alkalinity	000-01-1	*						
Carbon Dioxide	124-38-9	*		86.8	91.2	100.2	66.3	99.7
Dissolved Organic Carbon		*		8.7	9.9	14	8.6	11
Hydrogen (mn/L)	1333-74-0	*		1.5	1.4	1.9	1.3	1.4
Nitrate	14797-55-8	10,000		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrite	14797-65-0	*		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrogen	7727-37-9	*		8.2	8.7	11.7	4.7	7.8
Oxygen	7782-44-7	*		0.41	0.47	0.16	0.76	0.28
Sulfate	14808-79-8	250,000		20	11	5	8.3	8.4

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria [a]		OLD-02-31C	OLD-02-32C	OLD-02-33C	OLD-02-34C	OLD-02-35C
SAMPLE ID		Florida GCTL [b]	NTC BGSV[c]	NTC02G31C17	NTC02G32C17	NTC02G33C17	NTC02G34C17	NTC02G35C17
LAB ID				WR1475-002	WR1475-003	WR1503-003	WR1503-002	WR1503-004
SAMPLE DATE				5/2/01	5/2/01	5/3/01	5/3/01	5/3/01
Volatiles (µg/L)								
1,1,1-Trichloroethane	71-55-6	200		1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	0.2		1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	5		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	70		1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	7		1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	3		1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	5		1 U	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	4200		5 U	5 U	5 U	5 U	5 U
2-Hexanone	591-78-6	280		4 U	4 U	4 U	4 U	4 U
4-Methyl-2-Pentanone	108-10-1	560		3 J	2 J	3 U	3 U	3 U
Acetone	67-64-1	700		5 U	5 U	8 U	5 U	5 U
Benzene	71-43-2	1		130	130	140	140	150
Bromodichloromethane	75-27-4	0.6		1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	4.4		1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	9.8		2 U	2 U	2 U	2 U	2 U
Carbon Disulfide	75-15-0	700		4	1	1 U	1 U	2
Carbon Tetrachloride	56-23-5	3		1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	100		1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	124-48-1	0.4		1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	12		2 U	2 U	2 U	2 U	2 U
Chloroform	67-66-3	5.7		1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	2.7		2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	156-59-2	70		9	9	6	7	7
cis-1,3-Dichloropropene	10061-01-5	*		1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	30		10	9	5	5	7
Methylene Chloride	75-09-2	5		1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	100		1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	3		1 U	1 U	1 U	1 U	1 U
Toluene	108-88-3	40		0.5 J	0.5 J	1 U	1 U	1 U
Trans-1,2-Dichloroethene	156-60-5	100		2 U	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	10061-02-6	*		1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	3		1 U	2	2	2	2
Vinyl Chloride	75-01-4	1		2 U	2 U	2 U	2 U	2 U
Xylenes, Total	1330-20-7	20		32	26	1 U	1 U	1 U
Volatiles Gaseous (µg/L)								
Ethane	74-84-0	*		0.71	0.84	0.77	0.7	0.84
Ethene	74-85-1	*		0.21	0.07	0.04	0.08	0.06
Methane	72-82-8	*		991	1203.3	1054.5	922.6	1130.1
Inorganics (µg/L)								
Iron	7439-89-6	300	1227	1160	300	450	463	685
Manganese	7439-96-5	50	17	10.8	3.6	5.8	5.5	7.3
Misc. (mg/L)								
Alkalinity	000-01-1	*						
Carbon Dioxide	124-38-9	*		90.7	97.4	90.9	86.1	94.6
Dissolved Organic Carbon		*		13	5	6	6	6
Hydrogen (mn/L)	1333-74-0	*		1.3	1.3	1.2	1.1	1.3
Nitrate	14797-55-8	10,000		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrite	14797-65-0	*		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Nitrogen	7727-37-9	*		7.8	9	9.9	8.3	10.3
Oxygen	7782-44-7	*		0.54	0.31	0.24	0.3	0.44
Sulfate	14808-79-8	250,000		5.2	5.4	12	7.9	16

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION	CAS NUMBER	Screening Criteria [a]		OLD-02-36C	OLD-02-37C	
SAMPLE ID		Florida GCTL [b]	NTC BGSV[c]	NTC02G36C17	NTC02G37C17	NTC02G37C17-D
LAB ID				WR1503-005	WR1503-006	WR1503-007
SAMPLE DATE				5/3/01	5/3/01	5/3/01
Volatiles (µg/L)						
1,1,1-Trichloroethane	71-55-6	200		1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	0.2		1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	5		1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	70		1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	7		1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	3		1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	5		1 U	1 U	1 U
2-Butanone	78-93-3	4200		5 U	5 U	5 U
2-Hexanone	591-78-6	280		5	4 U	4 U
4-Methyl-2-Pentanone	108-10-1	560		3 U	3 U	3 U
Acetone	67-64-1	700		5 U	5 U	5 U
Benzene	71-43-2	1		160	150	150
Bromodichloromethane	75-27-4	0.6		1 U	1 U	1 U
Bromoform	75-25-2	4.4		1 U	1 U	1 U
Bromomethane	74-83-9	9.8		2 U	2 U	2 U
Carbon Disulfide	75-15-0	700		2	2	2
Carbon Tetrachloride	56-23-5	3		1 U	1 U	1 U
Chlorobenzene	108-90-7	100		1 U	1 U	1 U
Chlorodibromomethane	124-48-1	0.4		1 U	1 U	1 U
Chloroethane	75-00-3	12		2 U	2 U	2 U
Chloroform	67-66-3	5.7		1 U	1 U	1 U
Chloromethane	74-87-3	2.7		2 U	2 U	2 U
cis-1,2-Dichloroethene	156-59-2	70		8	7	7
cis-1,3-Dichloropropene	10061-01-5	*		1 U	1 U	1 U
Ethylbenzene	100-41-4	30		7	7	6
Methylene Chloride	75-09-2	5		1 U	1 U	1 U
Styrene	100-42-5	100		1 U	1 U	1 U
Tetrachloroethene	127-18-4	3		1 U	1 U	1 U
Toluene	108-88-3	40		1 U	1 U	1 U
Trans-1,2-Dichloroethene	156-60-5	100		2 U	2 U	2 U
Trans-1,3-Dichloropropene	10061-02-6	*		1 U	1 U	1 U
Trichloroethene	79-01-6	3		2	2	2
Vinyl Chloride	75-01-4	1		2 U	2 U	2 U
Xylenes, Total	1330-20-7	20		1 U	1 U	1 U
Volatiles Gaseous (µg/L)						
Ethane	74-84-0	*		0.81	0.82	
Ethene	74-85-1	*		0.07	0.41	
Methane	72-82-8	*		1042.2	1061.8	
Inorganics (µg/L)						
Iron	7439-89-6	300	1227	681	371	366
Manganese	7439-96-5	50	17	7.6	4.6	4.3
Misc. (mg/L)						
Alkalinity	000-01-1	*				
Carbon Dioxide	124-38-9	*		92.7	90.9	
Dissolved Organic Carbon		*		5	7	7
Hydrogen (mn/L)	1333-74-0	*		1	1.2	
Nitrate	14797-55-8	10,000		0.05 U	0.05 U	0.05 U
Nitrite	14797-65-0	*		0.05 U	0.05 U	0.05 U
Nitrogen	7727-37-9	*		9.4	9	
Oxygen	7782-44-7	*		0.39	0.45	
Sulfate	14808-79-8	250,000		13	6	6.3

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 2

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Footnotes:

[a] For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Analytes with no GCTL are not considered to have exceedances.

[b] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].

[c] Background Screening Value Level (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

* indicates the criterion or screening value not available.

"J"qualifier indicates an estimated value.

"R" qualifier indicates a rejected value.

"U" qualifier indictes a non-detect.

Empty cells indicate not analyzed.

Values in shaded cells meet or exceed the screening criteria.

TABLE 5

FIELD ANALYTICAL DATA
STUDY AREA 2

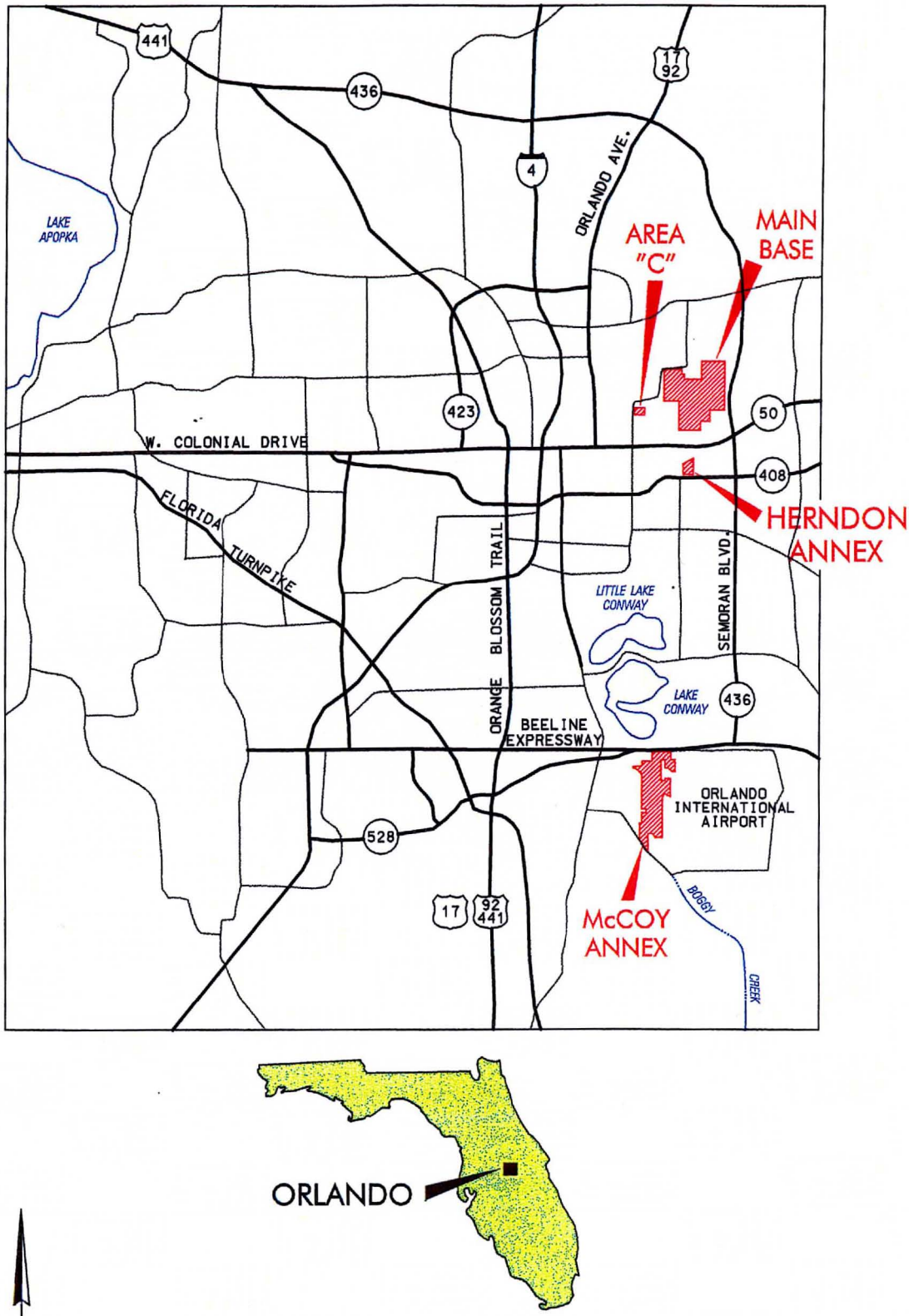
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Number	Date Sampled	Field Analyses					
		Dissolved Oxygen (mg/L)	Dissovled Oxygen (mg/L)*	Redox Potential (mV)	Carbon Dioxide (mg/L)	Ferrous Iron (mg/L)	Hydrogen Sulfide (mg/L)
OLD-02-08C	4/30/01	1.0	3.30	-8	42.0	1.6	1.30
OLD-02-13C	5/1/01	0.6	7.83	-56	49.0	0.6	1.25
OLD-02-19C	5/3/01	na	1.72	4.92	47.2	0.2	0.25
OLD-02-20B	5/1/01	0.6	0.99	-52	58.0	1.8	2.20
OLD-02-21C	5/1/01	1.0	2.37	-40	23.6	0.6	1.00
OLD-02-23C	5/1/01	1.0	2.10	-104	47.0	4.2	1.78
OLD-02-24C	5/1/01	0.8	0.66	-64	47.2	3.7	1.50
OLD-02-25C	5/1/01	0.8	0.55	-39	53.4	1.8	1.50
OLD-02-26C	5/1/01	0.4	2.12	-99	57.8	2.8	1.45
OLD-02-27C	5/1/01	0.6	0.82	-141	na	2.2	1.60
OLD-02-28C	5/2/01	0.4	1.25	-116	10.2	0.6	2.25
OLD-02-29C	5/2/01	0.6	0.44	-154	44.4	1.0	1.85
OLD-02-30C	5/2/01	1.0	0.48	-74	40.6	1.4	2.00
OLD-02-31C	5/2/01	1.0	4.31	-44	56.0	1.0	2.20
OLD-02-32C	5/2/01	1.0	1.84	-110	36.6	0.0	1.85
OLD-02-33C	5/3/01	1.5	2.57	-127	38.8	0.8	1.25
OLD-02-34C	5/3/01	0.6	1.20	-138	62.0	0.6	1.60
OLD-02-35C	5/3/01	1.0	0.95	-137	55.0	0.6	2.00
OLD-02-36C	5/3/01	1.0	0.52	-89	55.0	0.6	2.15
OLD-02-37C	5/3/01	0.4	0.20	-142	63.6	0.8	2.00

* Dissolved oxygen as measured by Horiba U-22 used during purging.

FIGURES

No.	1	Site Location Map
	2	Site Plan
	3	Site Plan with Proposed ORC® Injection Points
	4	ORC® Injection Point and Microwell Locations
	5	Groundwater Elevation Map Shallow Aquifer Zone
	6	Groundwater Elevation Map Deep Aquifer Zone
	7	Groundwater Exceedances for Benzene in Monitoring Wells
	8	Groundwater Exceedances for Benzene in Microwells



-N-

4 0 4

SCALE IN MILES

FIGURE 1

SITE LOCATION MAP
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

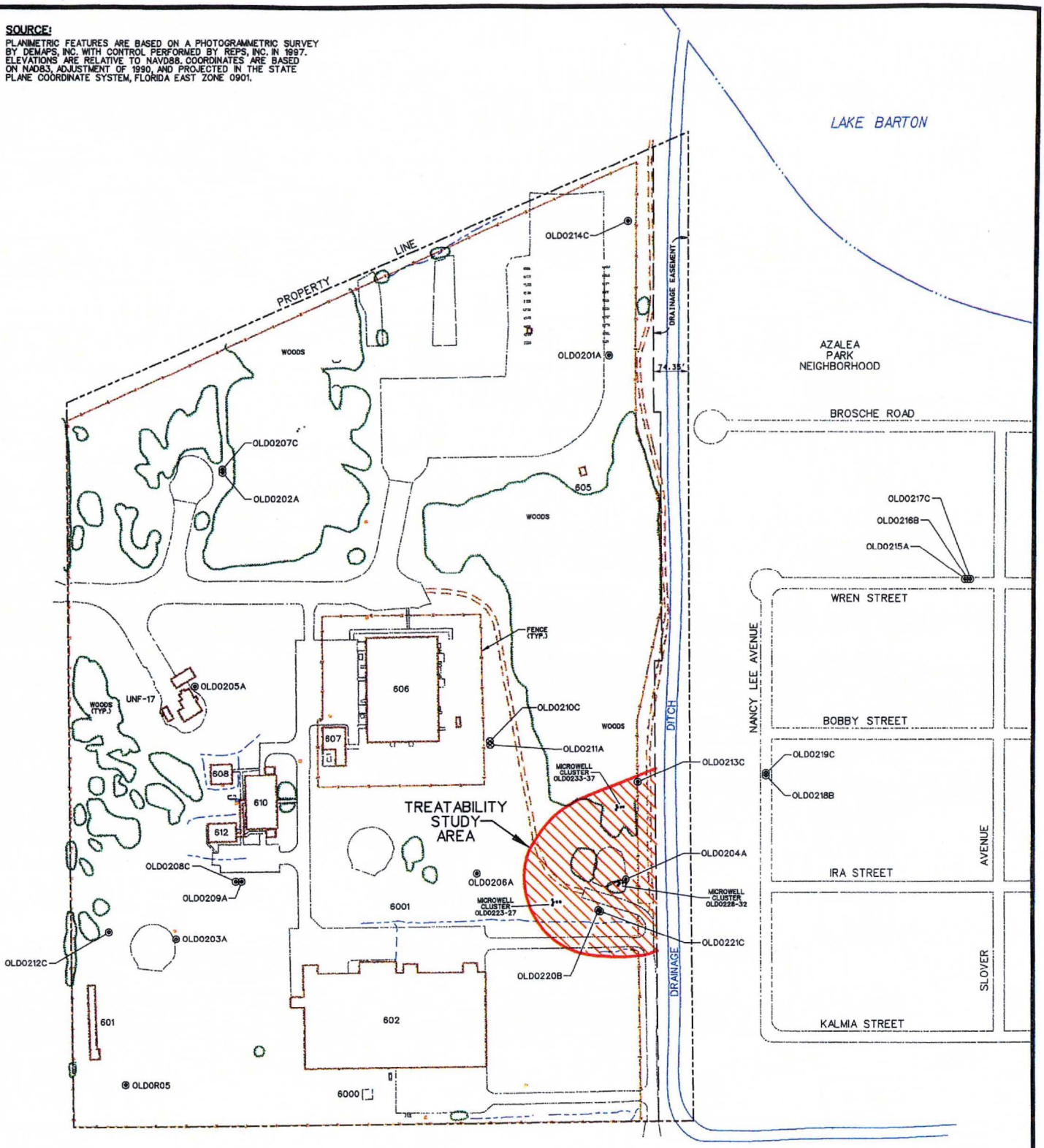
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n8-5x11v.dgn

CAD FILE NO./DATE: 3928A006.dgn/7-3-01

SOURCE:

PLANIMETRIC FEATURES ARE BASED ON A PHOTOGRAMMETRIC SURVEY BY DEMAPS, INC. WITH CONTROL PERFORMED BY REPS, INC. IN 1997. ELEVATIONS ARE RELATIVE TO NAVD88. COORDINATES ARE BASED ON NAD83, ADJUSTMENT OF 1990, AND PROJECTED IN THE STATE PLANE COORDINATE SYSTEM, FLORIDA EAST ZONE 0901.



LEGEND:

MONITORING WELL ⊙

DESTROYED WELL ⊗

MICROWELL •

N

150 0 150

SCALE IN FEET

FIGURE 2

SITE PLAN
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE: 3998A002.dgn/7-3-01

n17x22cv.dgn

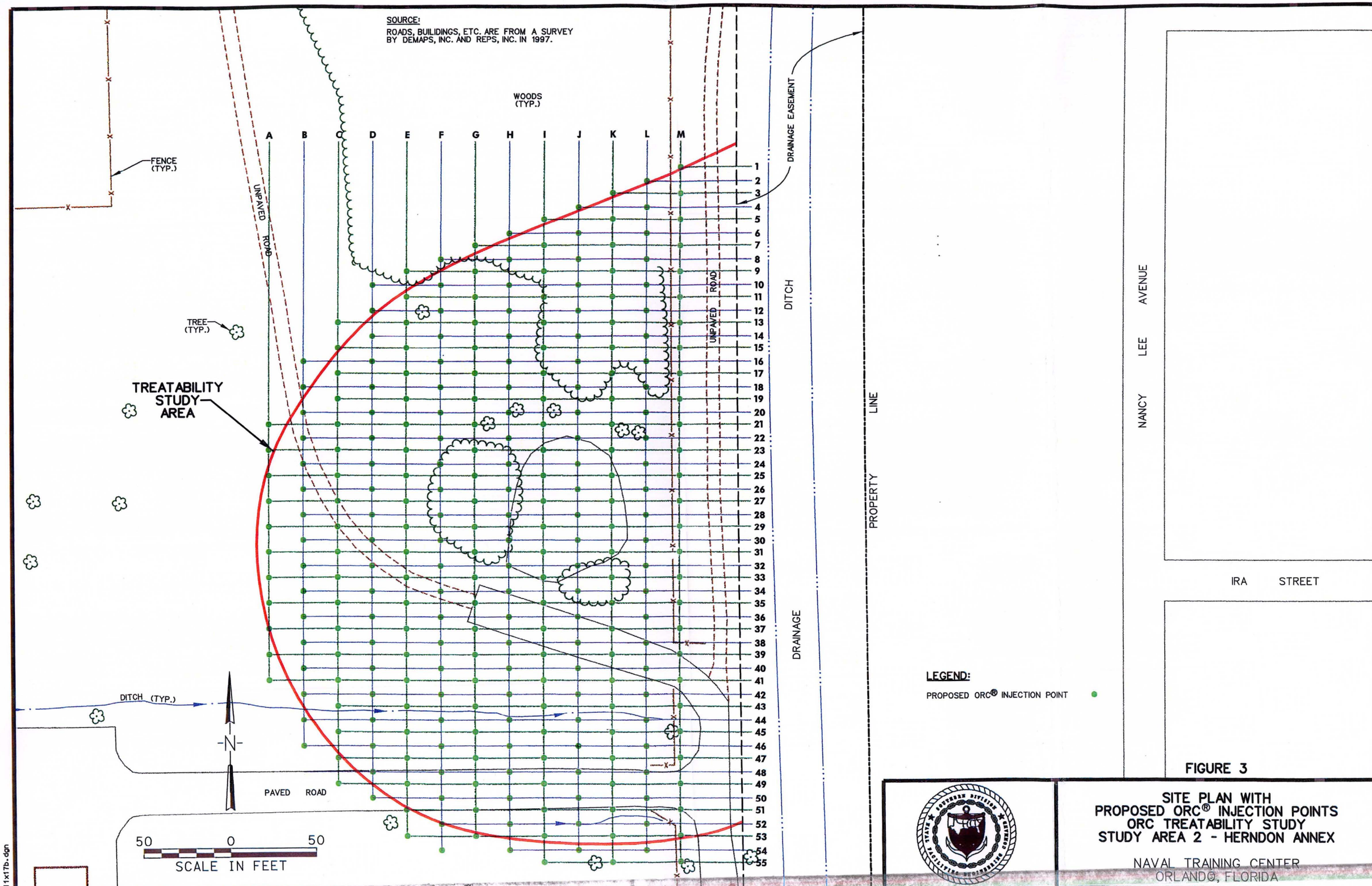


FIGURE 3

SITE PLAN WITH
PROPOSED ORC® INJECTION POINTS
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

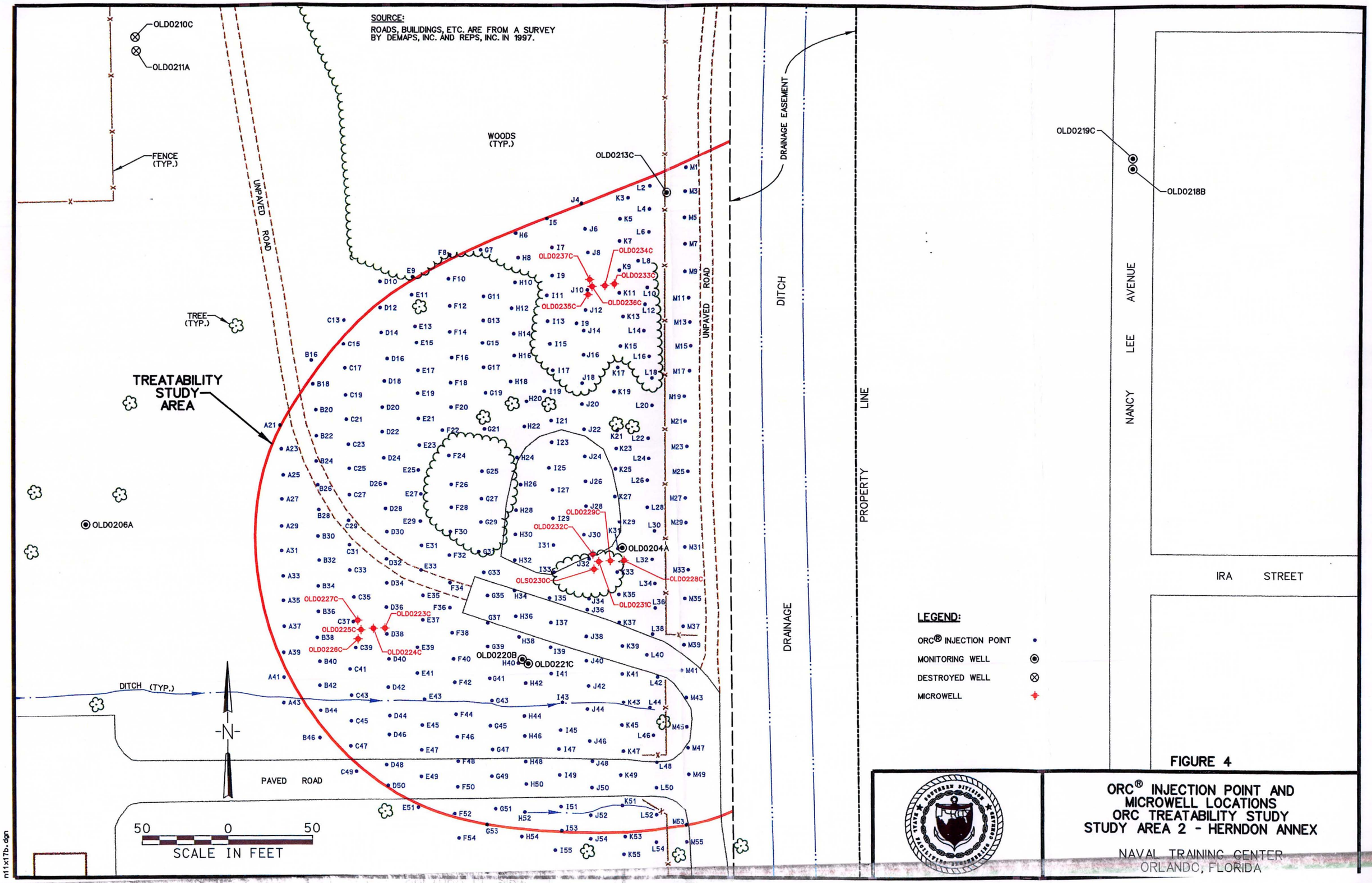
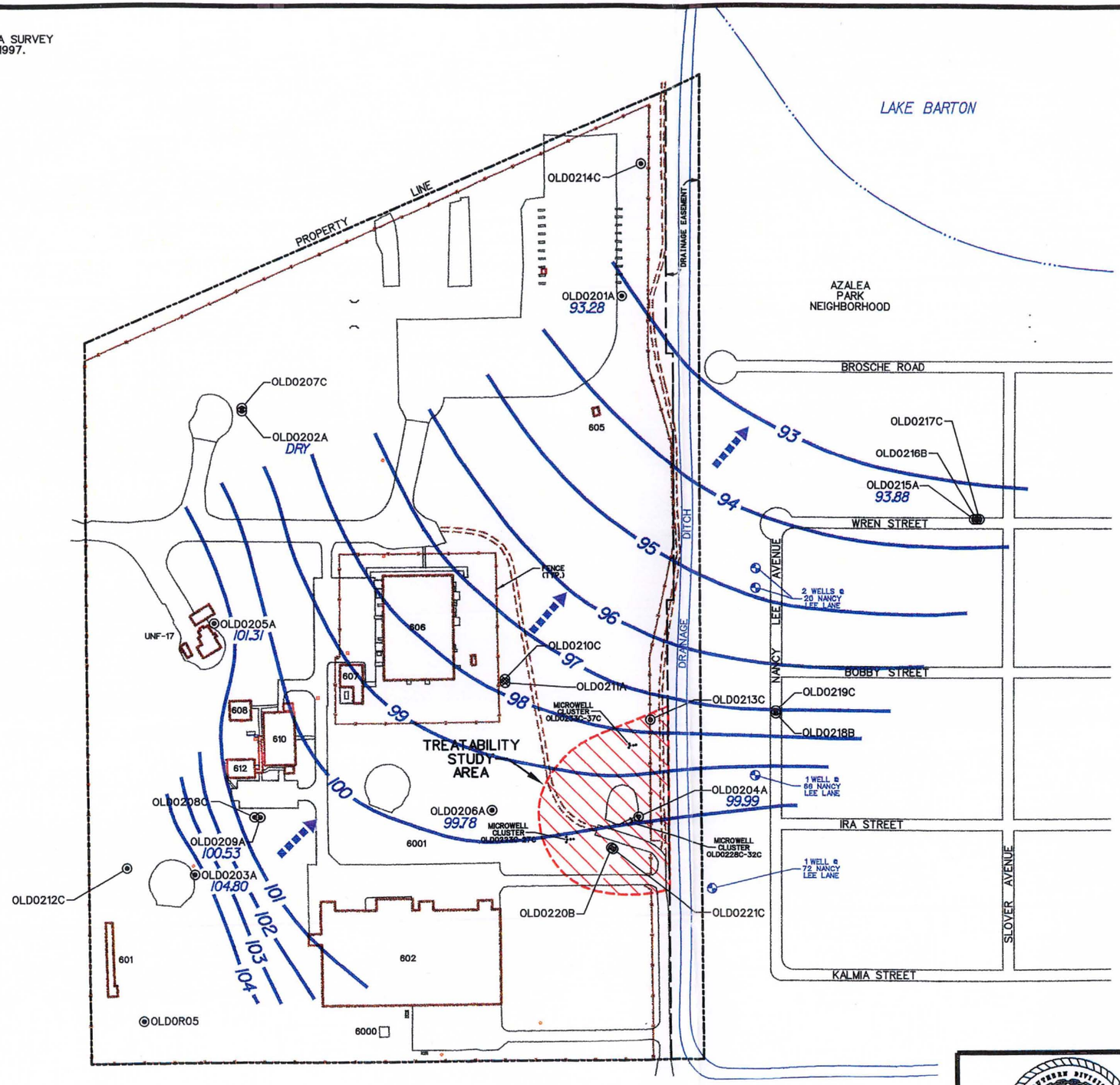


FIGURE 4

ORC® INJECTION POINT AND MICROWELL LOCATIONS
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

SOURCE:
ROADS, BUILIDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.



LEGEND:

MONITORING WELL

DESTROYED WELL

PRIVATE WATER WELL

GROUNDWATER ELEVATION [1] 93.88

POTENTIOMETRIC SURFACE ISOCON [1] (DASHED WHERE APPROX.)

GROUNDWATER FLOW DIRECTION (APPROX.)

1 - ELEVATION IN FEET ABOVE MEAN SEA LEVEL

-N-

250 0 250
SCALE IN FEET

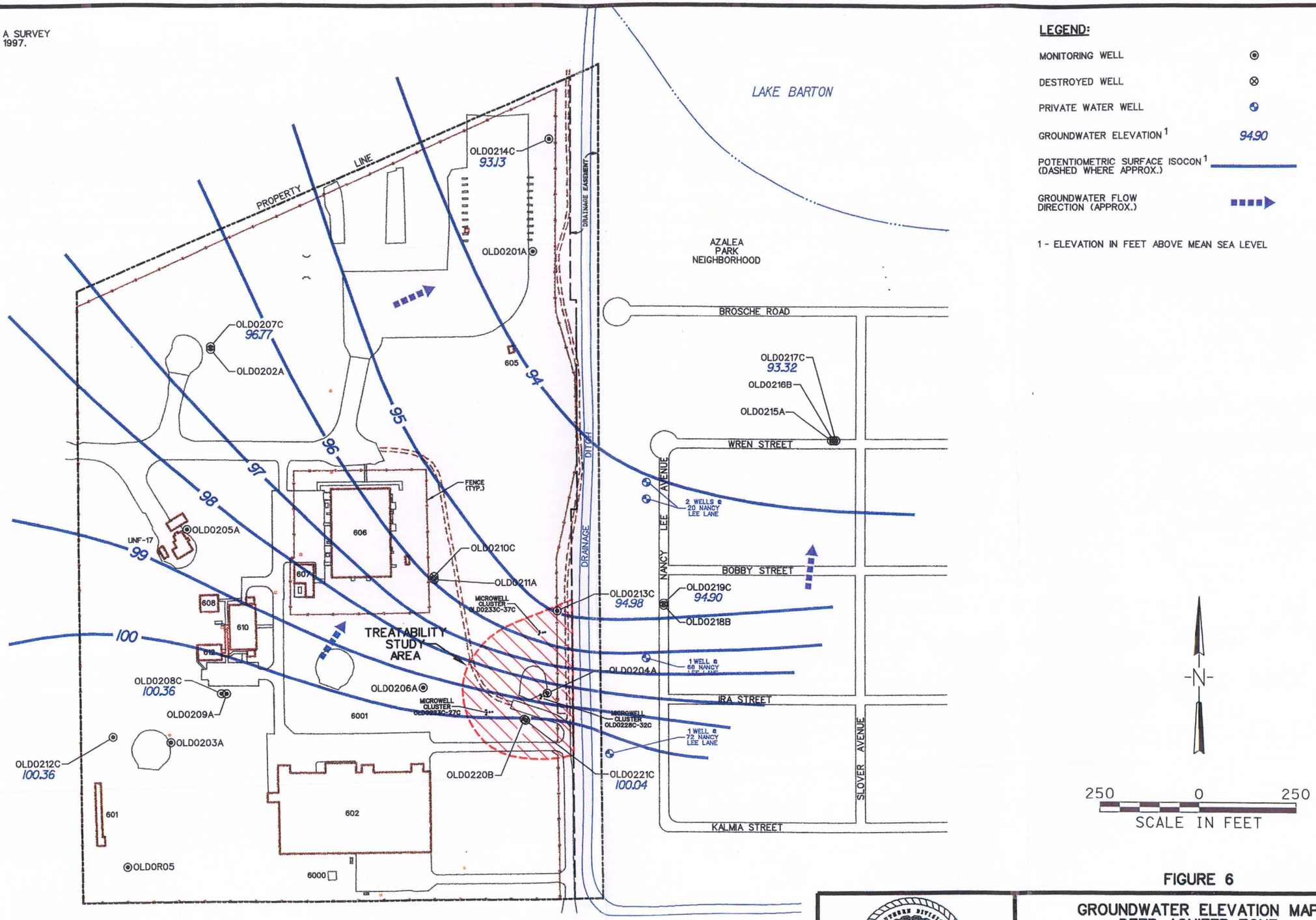
FIGURE 5

GROUNDWATER ELEVATION MAP
SHALLOW AQUIFER ZONE
APRIL 30, 2001
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

SOURCE:
ROADS, BUILIDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.



LEGEND:

MONITORING WELL	⊙
DESTROYED WELL	⊗
PRIVATE WATER WELL	
GROUNDWATER ELEVATION [1]	94.90
POTENTIOMETRIC SURFACE ISOCON [1] (DASHED WHERE APPROX.)	
GROUNDWATER FLOW DIRECTION (APPROX.)	

1 - ELEVATION IN FEET ABOVE MEAN SEA LEVEL

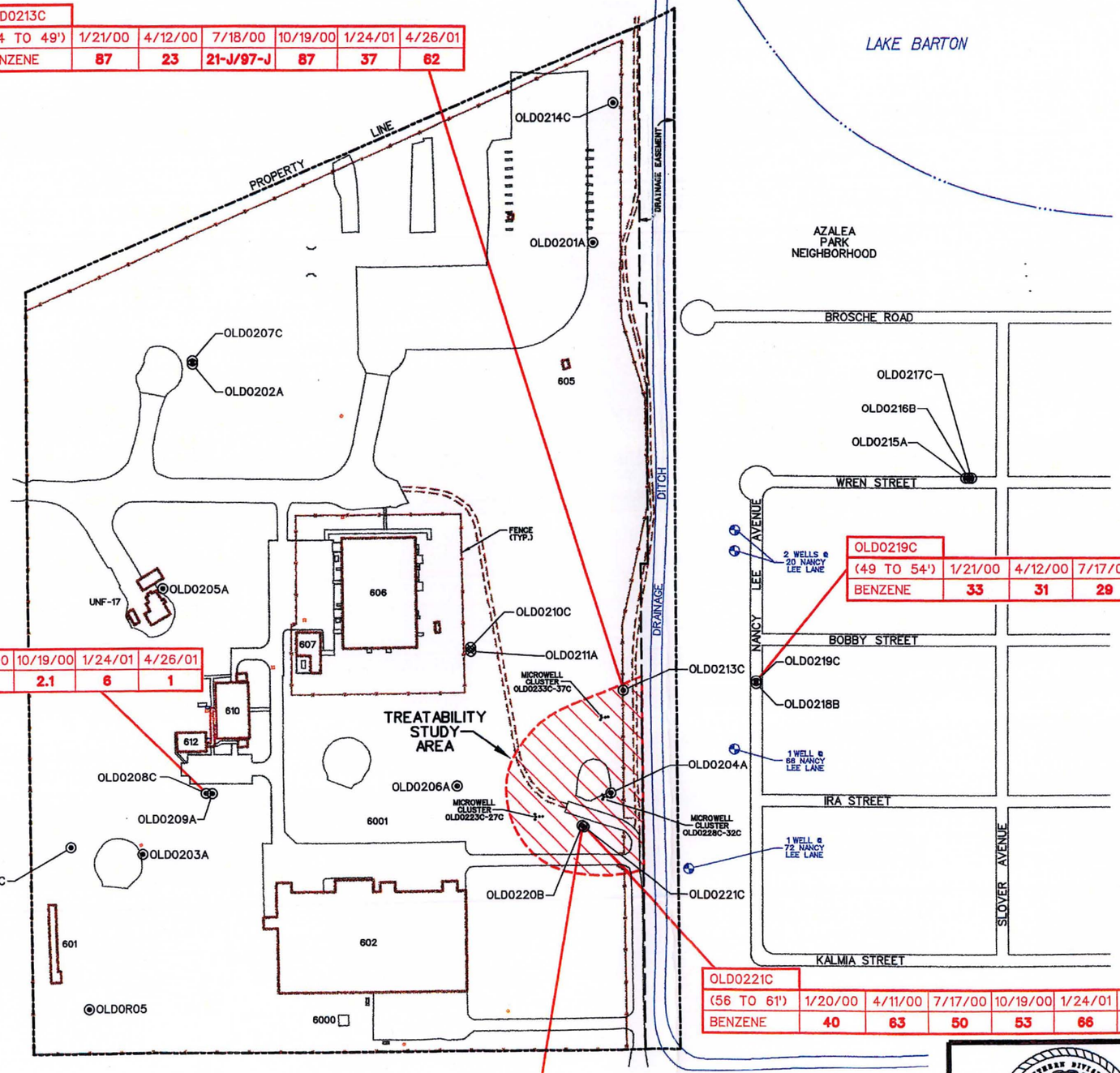
FIGURE 6

GROUNDWATER ELEVATION MAP
DEEP AQUIFER ZONE
APRIL 30, 2001
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

SOURCE:
ROADS, BUILIDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.



OLD0213C						
(44 TO 49')	1/21/00	4/12/00	7/18/00	10/19/00	1/24/01	4/26/01
BENZENE	**87**	**23**	**21-J/97-J**	**87**	**37**	**62**

OLD0208C						
(60 TO 65')	1/21/00	4/12/00	7/18/00	10/19/00	1/24/01	4/26/01
BENZENE	**19**	**49**	**20**	**2.1**	**6**	**1**

OLD0219C						
(49 TO 54')	1/21/00	4/12/00	7/17/00	10/19/00	1/25/01	4/26/01
BENZENE	**33**	**31**	**29**	<1	**39**	**31**

OLD0221C						
(56 TO 61')	1/20/00	4/11/00	7/17/00	10/19/00	1/24/01	4/26/01
BENZENE	**40**	**63**	**50**	**53**	**66**	**55**

OLD0220B						
(36 TO 41')	1/20/00	4/11/00	7/17/00	10/19/00	1/24/01	4/26/01
BENZENE	**41**	**40**	**32**	**42**	**50**	**41**

LEGEND:

MONITORING WELL ⊙

DESTROYED WELL ⊗

PRIVATE WATER WELL

OLD0219C	
(49 TO 54')	5/3/01
BENZENE	**31/28**

WELL ID — SAMPLE COLLECTION DATE — SCREEN INTERVAL TO NEAREST FOOT — ANALYTE — ANALYTE CONCENTRATION 1,2 — DUPLICATE SAMPLE

ESTIMATED VALUE J

1-GROUNDWATER CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERION

ANALYTE	GCTL[1]
BENZENE	1

GCTL-GROUNDWATER CLEANUP TARGET LEVEL

-N-

250 0 250
SCALE IN FEET

FIGURE 7

GROUNDWATER EXCEEDANCES FOR BENZENE IN MONITORING WELLS
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n11x17b.dgn

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY BY DEMAPS, INC. AND REPS, INC. IN 1997.

OLD0210C
OLD0211A
FENCE (TYP.)
TREE (TYP.)
UNPAVED ROAD
DRAINAGE EASEMENT
DITCH
DRAINAGE
OLD0213C
OLD0206A
OLD0204A
OLD0220B
OLD0221C
DITCH (TYP.)
PAVED ROAD

OLD0237C	
(45 TO 50')	5/3/01
BENZENE	150/150

OLD0234C	
(45 TO 50')	5/3/01
BENZENE	140

OLD0233C	
(45 TO 50')	5/3/01
BENZENE	140

OLD0236C	
(45 TO 50')	5/3/01
BENZENE	160

OLD0235C	
(45 TO 50')	5/3/01
BENZENE	150

OLD0229C	
(45 TO 50')	5/2/01
BENZENE	130

OLD0232C	
(45 TO 50')	5/2/01
BENZENE	130

OLD0228C	
(45 TO 50')	5/2/01
BENZENE	92

OLD0227C	
(45 TO 50')	5/1/01
BENZENE	62

OLD0223C	
(45 TO 50')	5/1/01
BENZENE	60

OLD0225C	
(45 TO 50')	5/1/01
BENZENE	95

OLD0230C	
(45 TO 50')	5/2/01
BENZENE	120/110

OLD0231C	
(45 TO 50')	5/2/01
BENZENE	130

OLD0226C	
(45 TO 50')	5/1/01
BENZENE	57

OLD0224C	
(45 TO 50')	5/1/01
BENZENE	34

LEGEND:

MONITORING WELL
DESTROYED WELL
MICROWELL

WELL ID — OLD0230C
SCREEN INTERVAL TO NEAREST FOOT — (45 TO 50')
SAMPLE COLLECTION DATE — 5/2/01
ANALYTE — BENZENE
ANALYTE CONCENTRATION [1,2] — 120/110
DUPLICATE SAMPLE

ESTIMATED VALUE J

1-GROUNDWATER CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL[1]
BENZENE	1

GCTL-GROUNDWATER CLEANUP TARGET LEVEL

N

30 0 30
SCALE IN FEET

FIGURE 8

GROUNDWATER EXCEEDANCES FOR BENZENE IN MICROWELLS
MAY 2001
ORC TREATABILITY STUDY
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

602

n1-22cv.dgn

APPENDIX A

MICROBIOLOGICAL TESTING REPORT

The University of Texas ★ San Antonio
Division of Life Sciences
UTSA

June 22, 2001

MEMORANDUM

TO: Mr. Mike Campbell, Tetra Tech

FROM: Dr. M. Neal Guentzel, University of Texas, San Antonio

RE: Testing of Benzene Contaminated Groundwater

This is a summary of the testing of benzene contaminated groundwater (Orlando, Florida) that we did for Tetra Tech. The results of our tests were sent to you in December, 2000.

Tests of three types were conducted. Microbiological testing was done for Total Heterotrophic Bacteria, General Hydrocarbon Degraders using Oil Agar, and for Aromatic Degraders using Phenanthrene Toluene Agar. Nutrient Supplementation (Nitrogen, Phosphorous, Nitrogen plus Phosphorous) Tests were done by respirometry. Oxygen Supplementation Tests were done by respirometry.

Microbiological testing showed that the aquifer water contained low levels of viable heterotrophic bacteria and bacterial degraders. Actual counts for the three different parameters tested ranged from 110 to 303 CFU/ml. Total Heterotrophs numbered 110 CFU/ml. General Hydrocarbon Degraders were 207 CFU/ml, whereas Aromatic Degraders were 303 CFU/ml.

In general, one would expect the population of total heterotrophic bacteria to exceed the population of degraders of any type, which was not the case. However, the total heterotrophic bacterial population is enumerated on an organic rich medium which might select against organisms enriched in an organic nutrient poor environment such as an aquifer. Also, the fact that the aquifer probably was contaminated with benzene and other hydrocarbons for a long duration selected for degraders.

The nutrient supplementation tests done by respirometry showed that the nutrients nitrogen and phosphorous were not limiting in the aquifer water. No differences were observed in the rates of metabolism as measured by oxygen uptake with no

6900 North Loop 1604 West • San Antonio, Texas 78249-0662 • (210) 458-4458 • (210) 458-5658 fax

addition, plus nitrogen (as 0.1% ammonium nitrate), plus phosphorous (as 0.1% mono & dibasic potassium phosphate), or plus nitrogen and phosphorous. Other than a utilizable carbon source and oxygen, these are the nutrients most likely to be growth limiting.

Additionally, the oxygen supplemention tests done by respirometry did not show any differences in the rates of oxygen uptake under the conditions tested (not stirred, stirred, plus magnesium peroxide not stirred, and plus magnesium peroxide stirred). This may be due to the low population of microorganisms that were observed in the aquifer water. The populations may be so small that one, a few, or even several doublings would not result in a measurable difference in the variables.

Rapid degradation of hydrocarbons typically is carried out by aerobic bacteria. However, little oxygen is present in groundwater and natural sources provide it at very low rates. The slow decomposition of magnesium peroxide if delivered in an adequate fashion should provide O_2 at a slow and sustained rate.

One would expect with time and oxygen supplementation provided by magnesium peroxide addition, that the concentrations of microorganisms including degraders would markedly increase. This increase in microbes would result in a elevated reduction in the rate of benzene degradation over "natural attenuation" (i.e. no intervention of any type).

Additional tests, if done at this time, ideally would show this marked increase in the microbial parameters as well as the effect of oxygen addition.

If there are any questions, please call me.

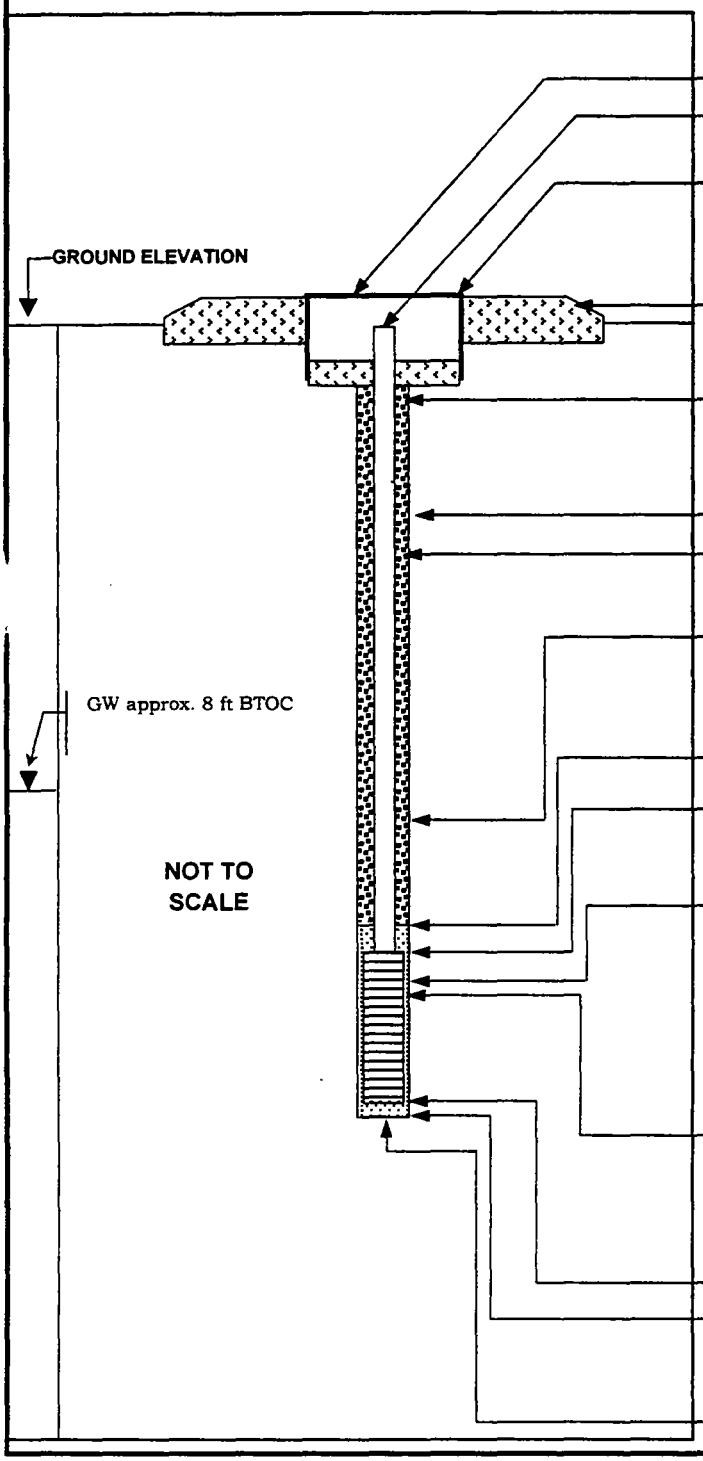
APPENDIX B

WELL COMPLETION LOGS

WELL NO.: OLD-02-23C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-23	METHOD:	
ELEVATION*	109.4 ft.	DATE	10-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 109.31 ft.

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

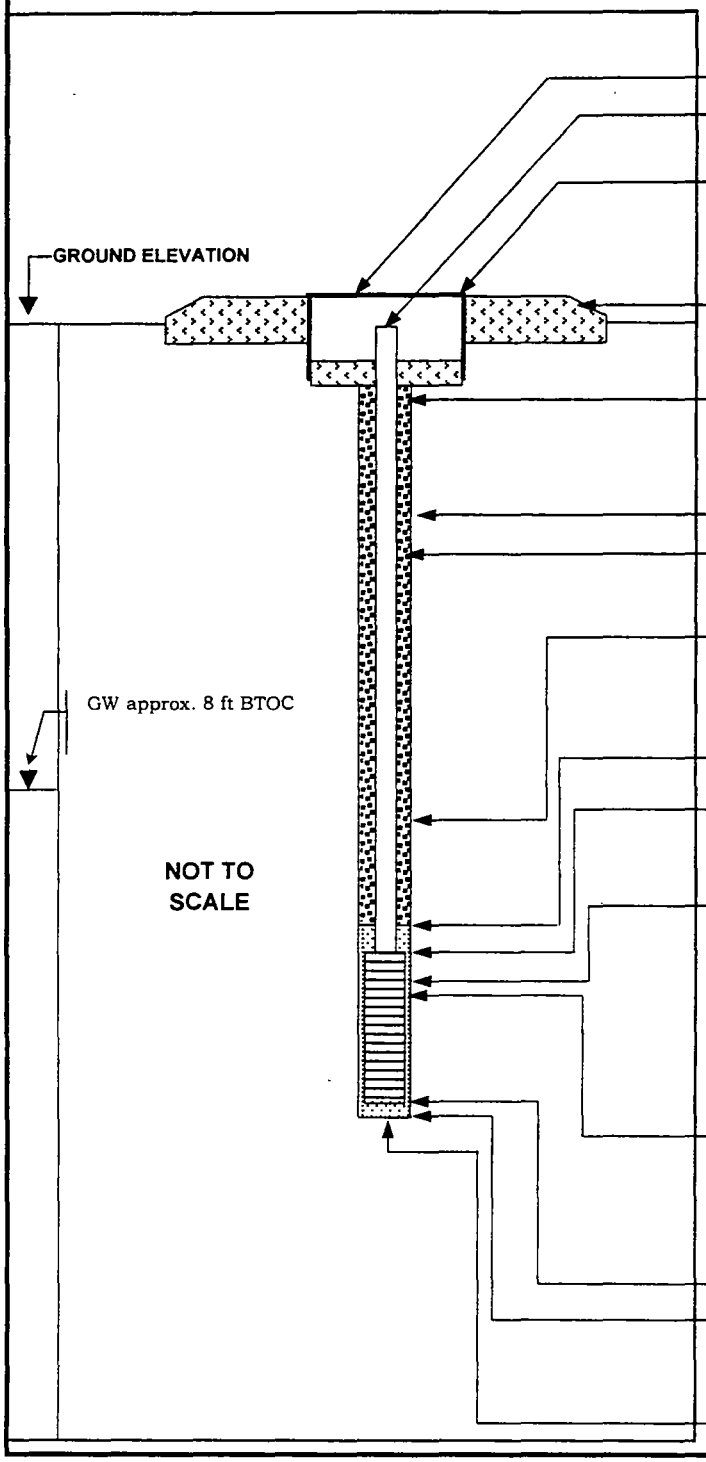
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-24C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-24	METHOD:	
ELEVATION*	109.6 ft.	DATE	10-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 109.52 ft

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

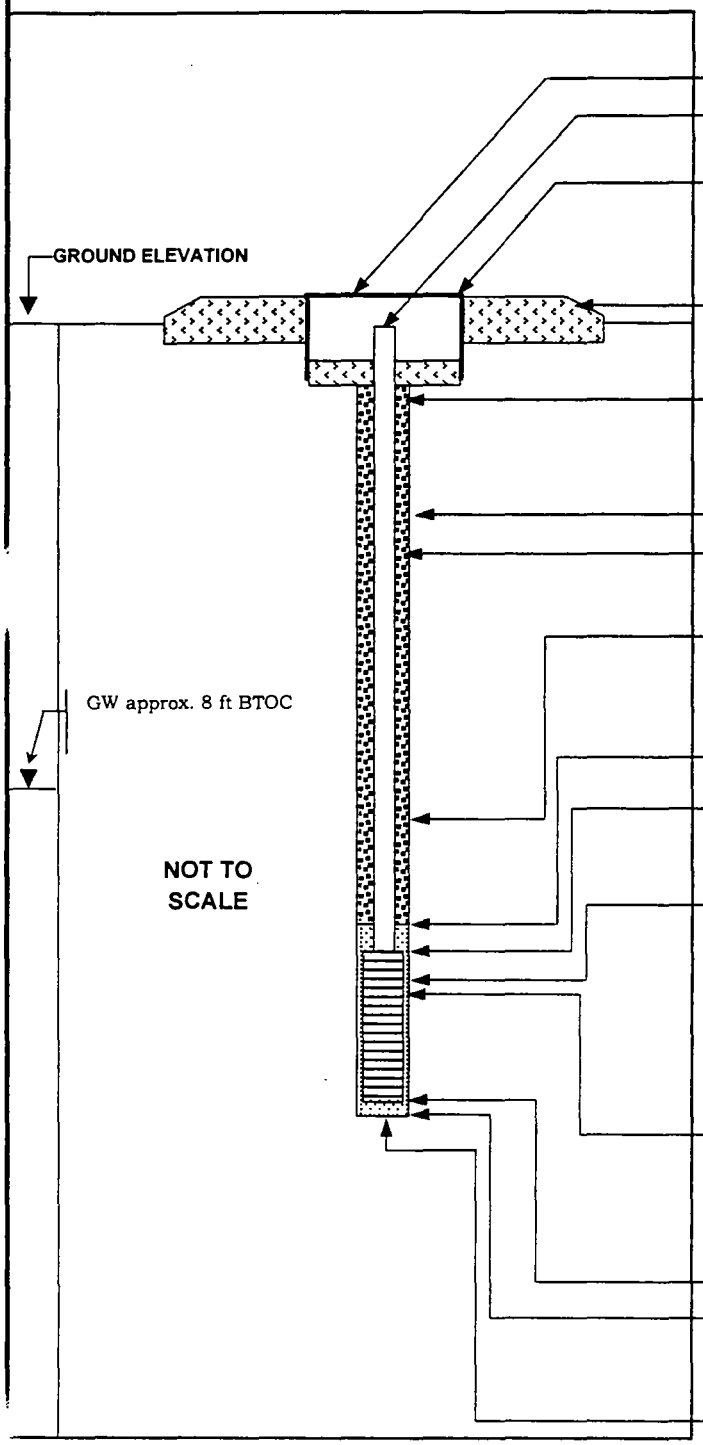
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-25C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-25	METHOD:	
ELEVATION*	109.9 ft.	DATE	16-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



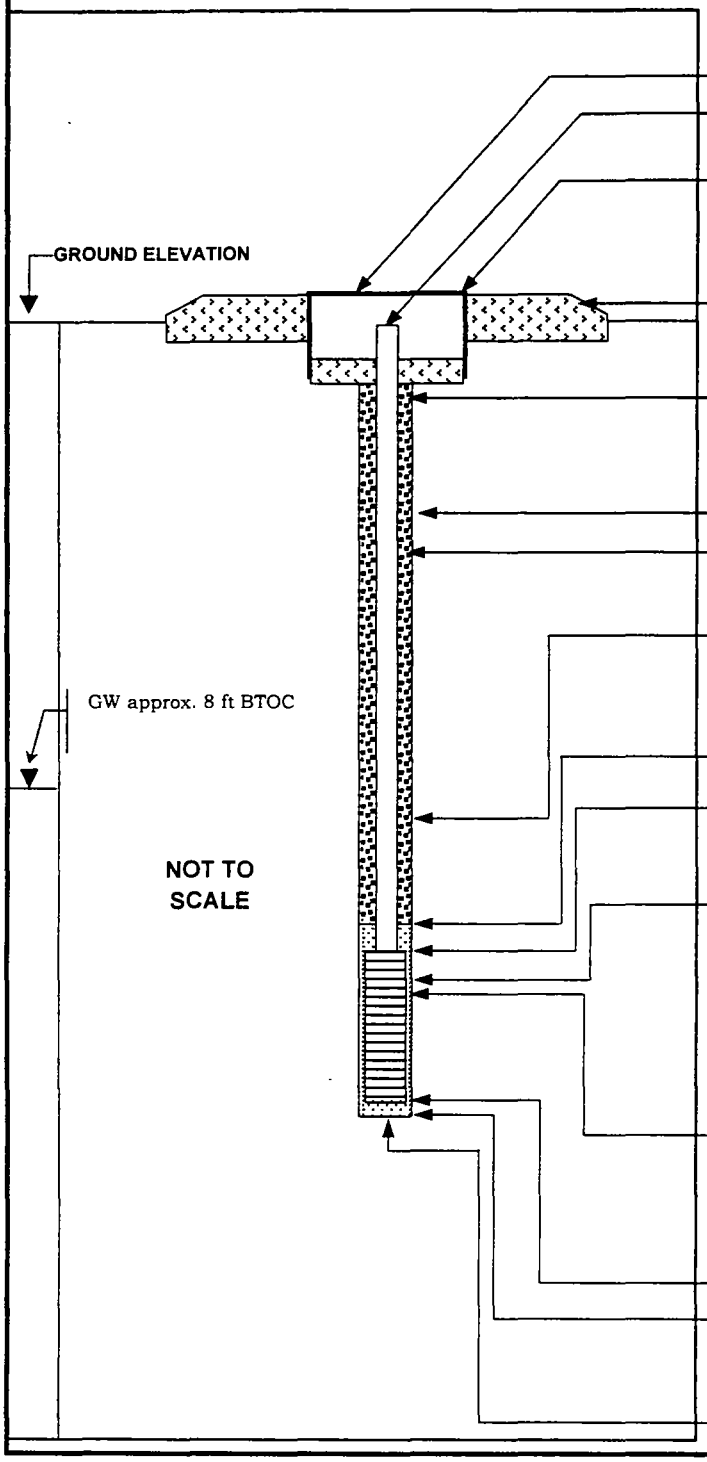
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	109.70 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-26C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-26	METHOD:	
ELEVATION*	109.5 ft.	DATE	12-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



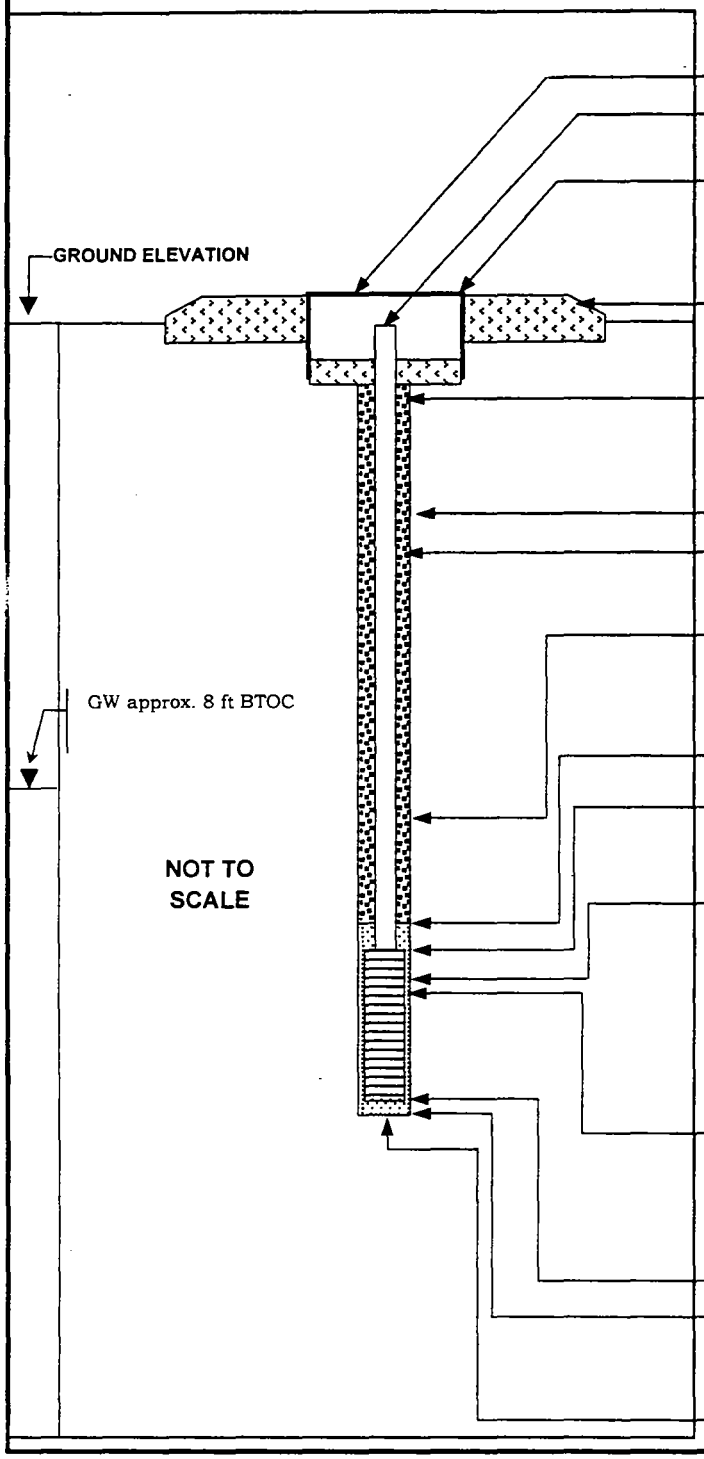
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	109.42 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-27C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-27	METHOD:	
ELEVATION*	110.4 ft.	DATE	12-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 110.37 ft.

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

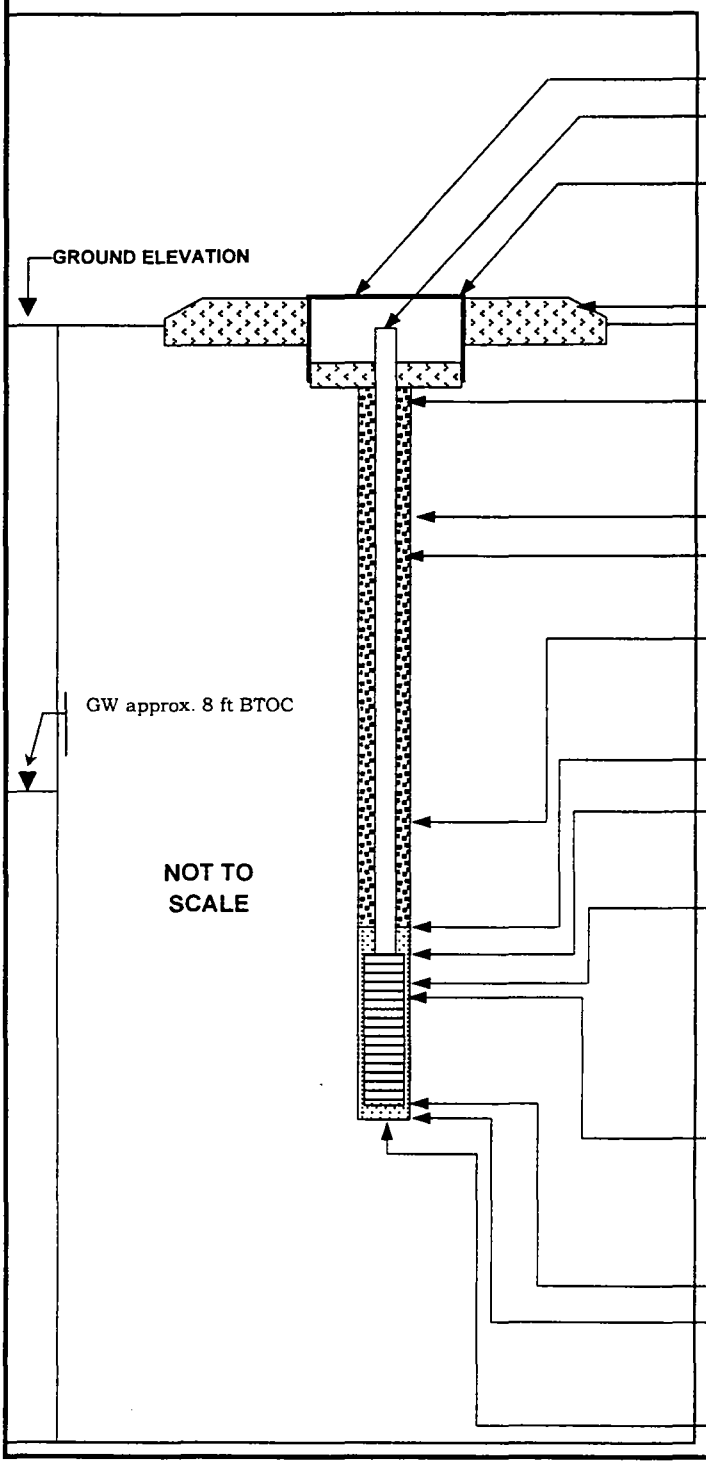
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-28C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-28	METHOD:	
ELEVATION*	108.6 ft.	DATE	22-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



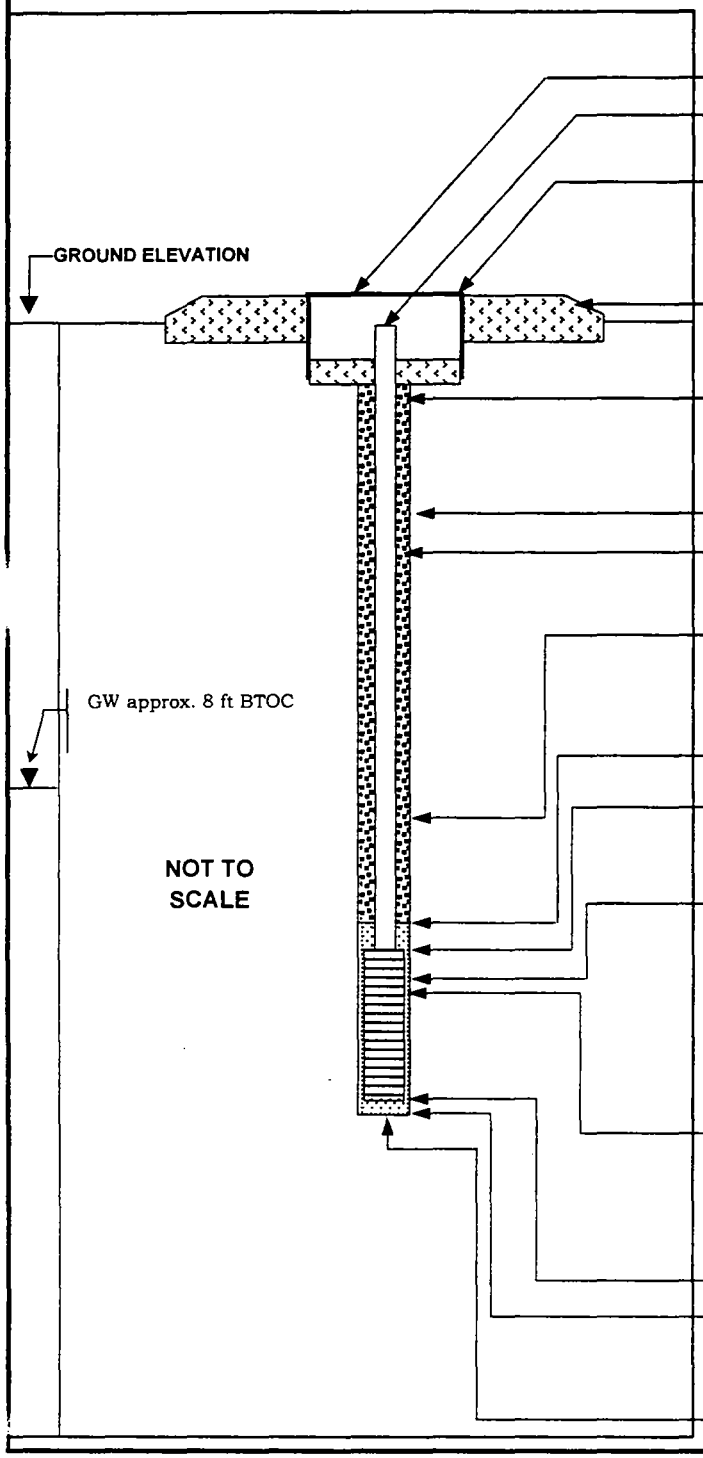
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	108.23 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-29C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-29	METHOD:	
ELEVATION*	108.8 ft.	DATE	13-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 108.70 ft.

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

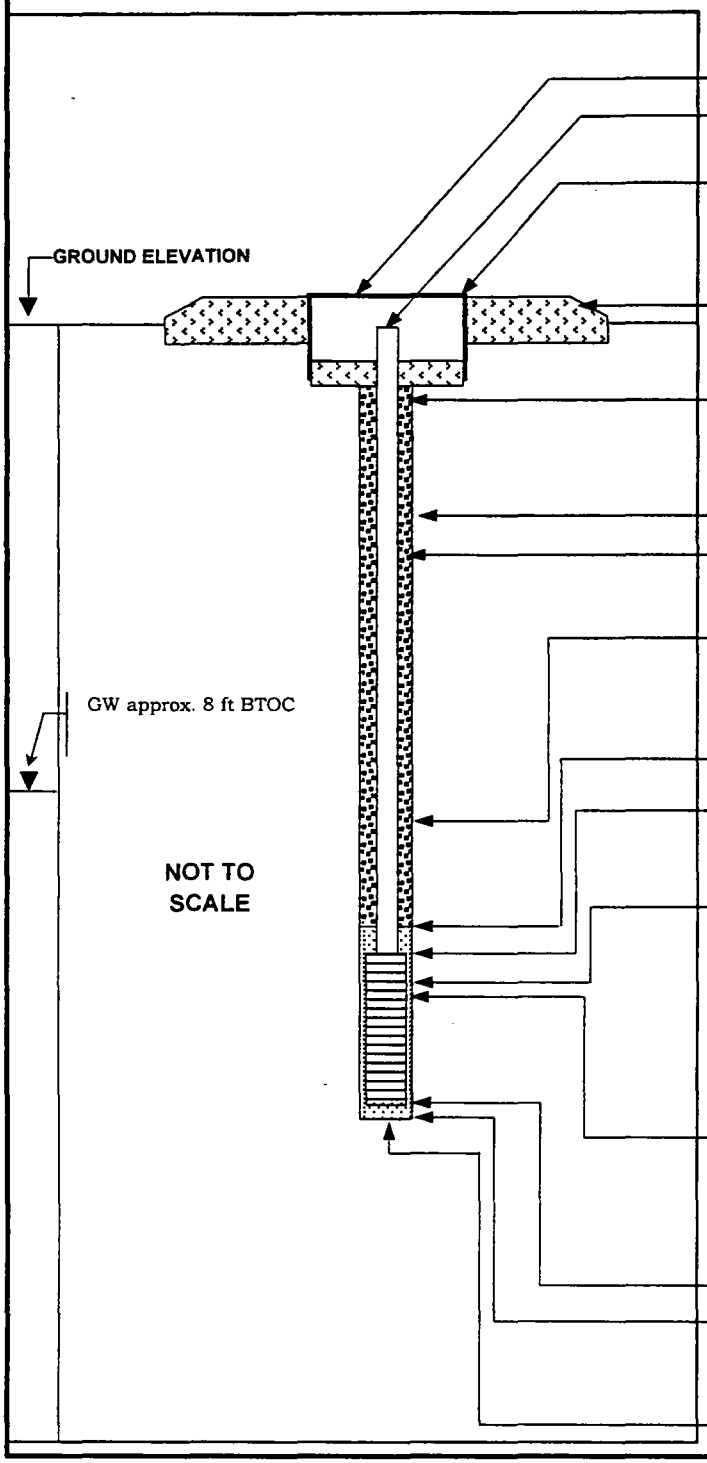
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-30C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-30	METHOD:	
ELEVATION*	109.0 ft.	DATE	13-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



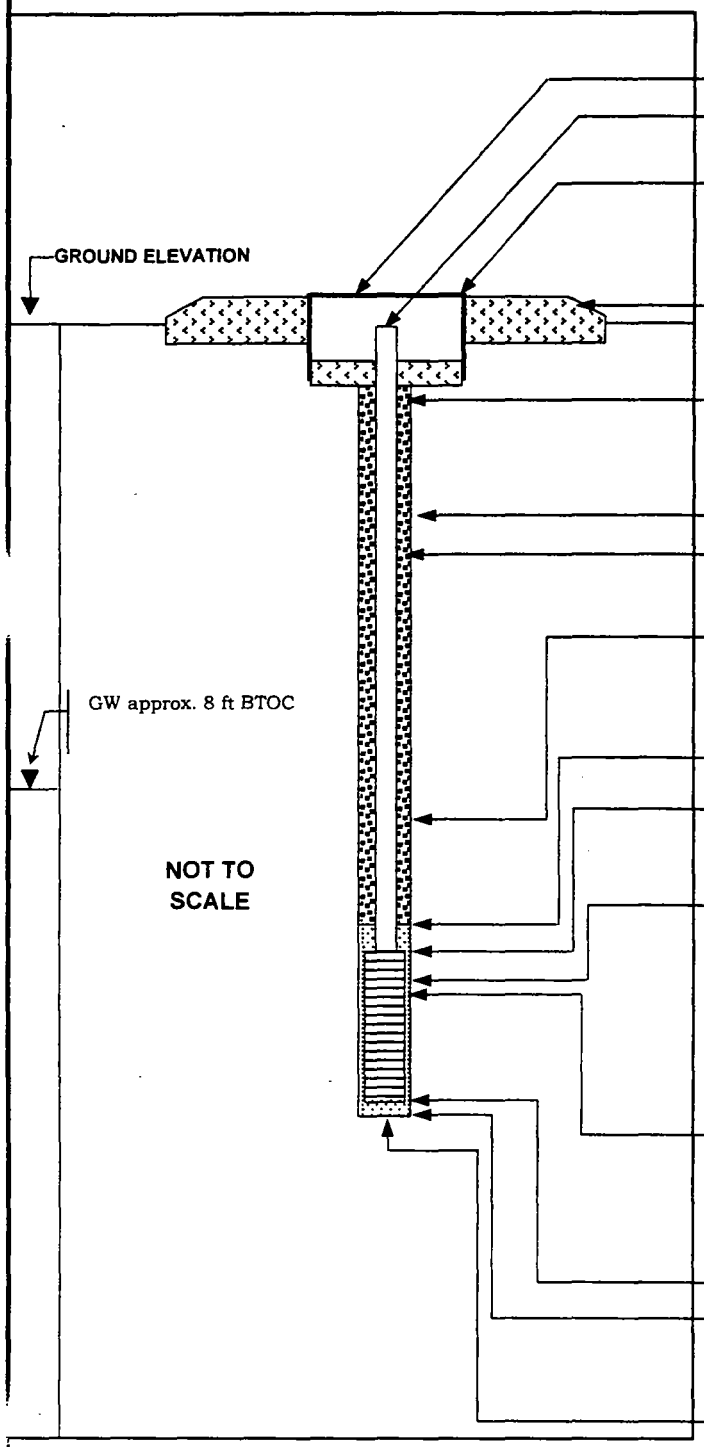
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	108.99 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-31C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-31	METHOD:	
ELEVATION*	109.1 ft.	DATE	13-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



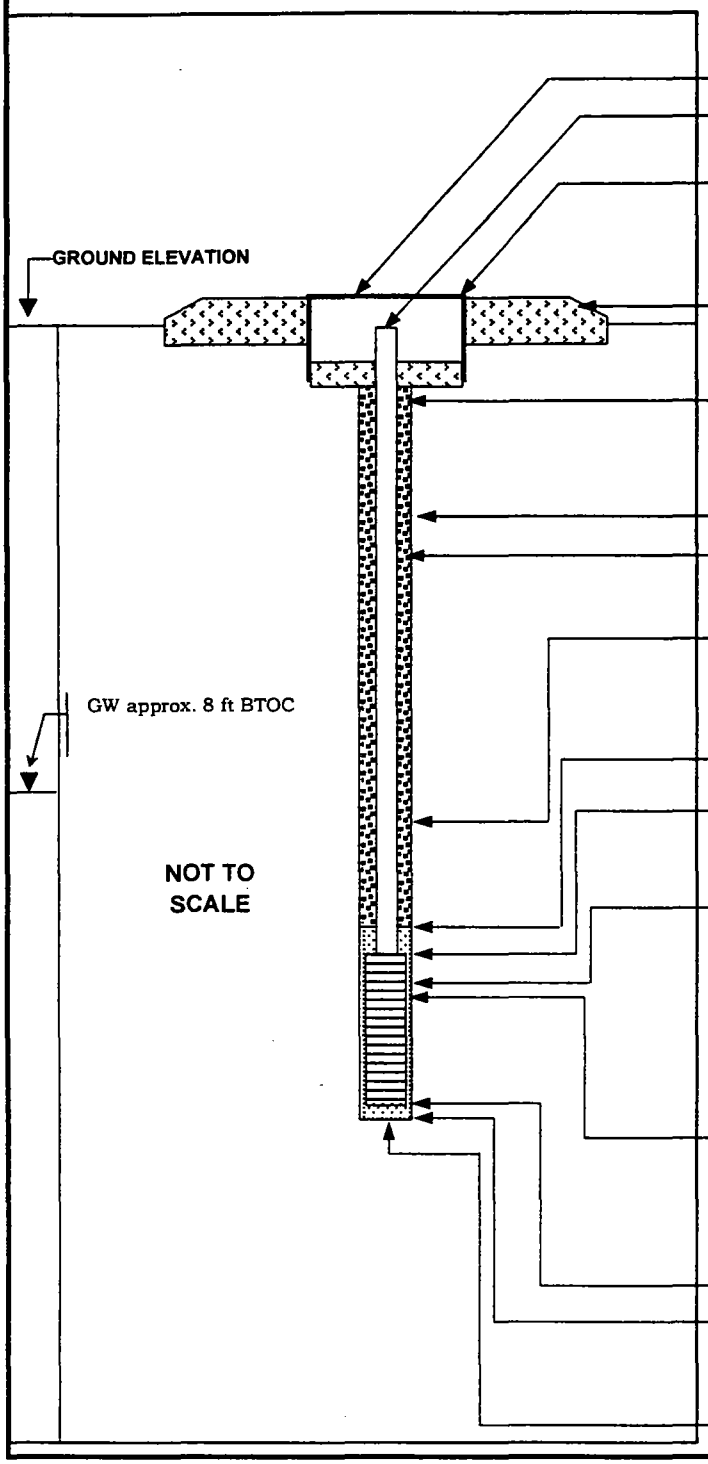
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	108.81 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-32C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-32	METHOD:	
ELEVATION*	109.1 ft.	DATE	14-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 108.96 ft.

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

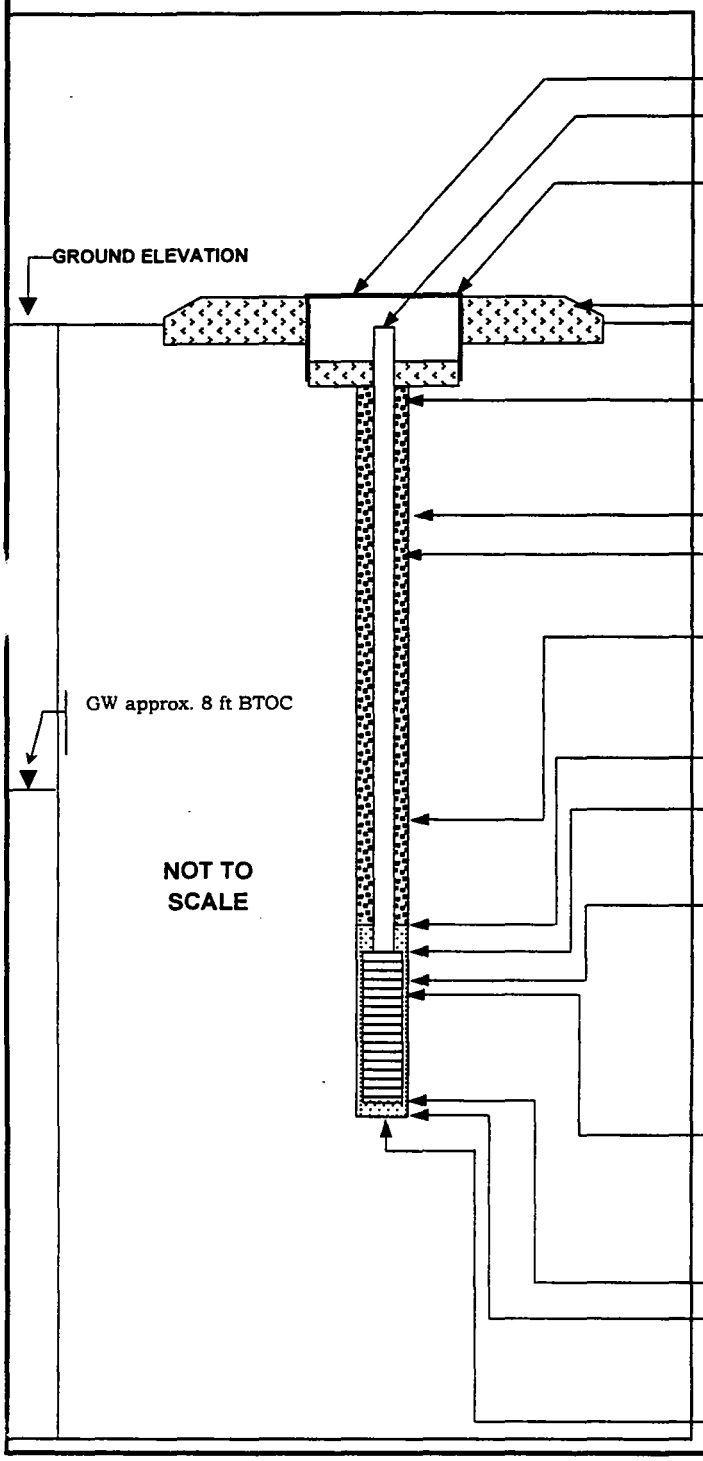
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-33C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-33	METHOD:	
ELEVATION*	104.0 ft.	DATE	14-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



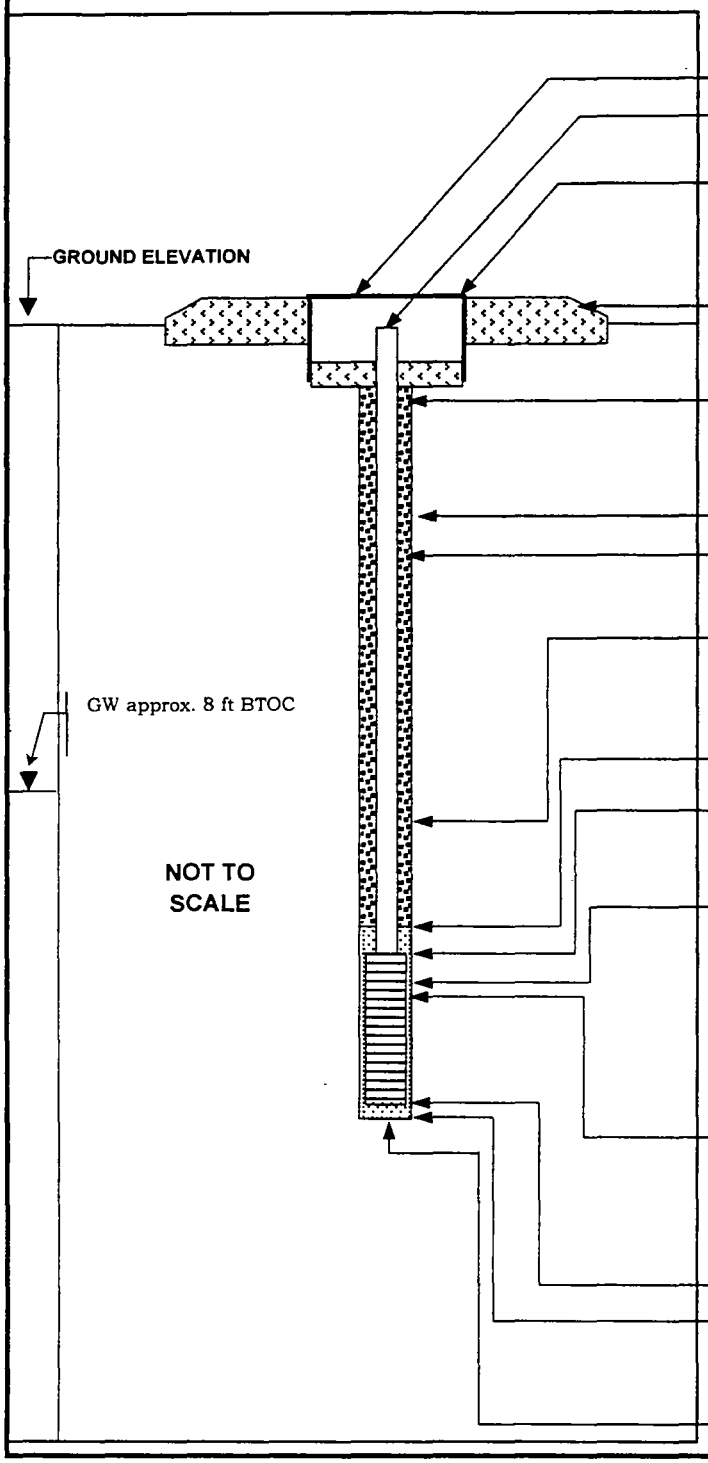
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	103.87 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-34C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-34	METHOD:	
ELEVATION*	103.7 ft.	DATE	14-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



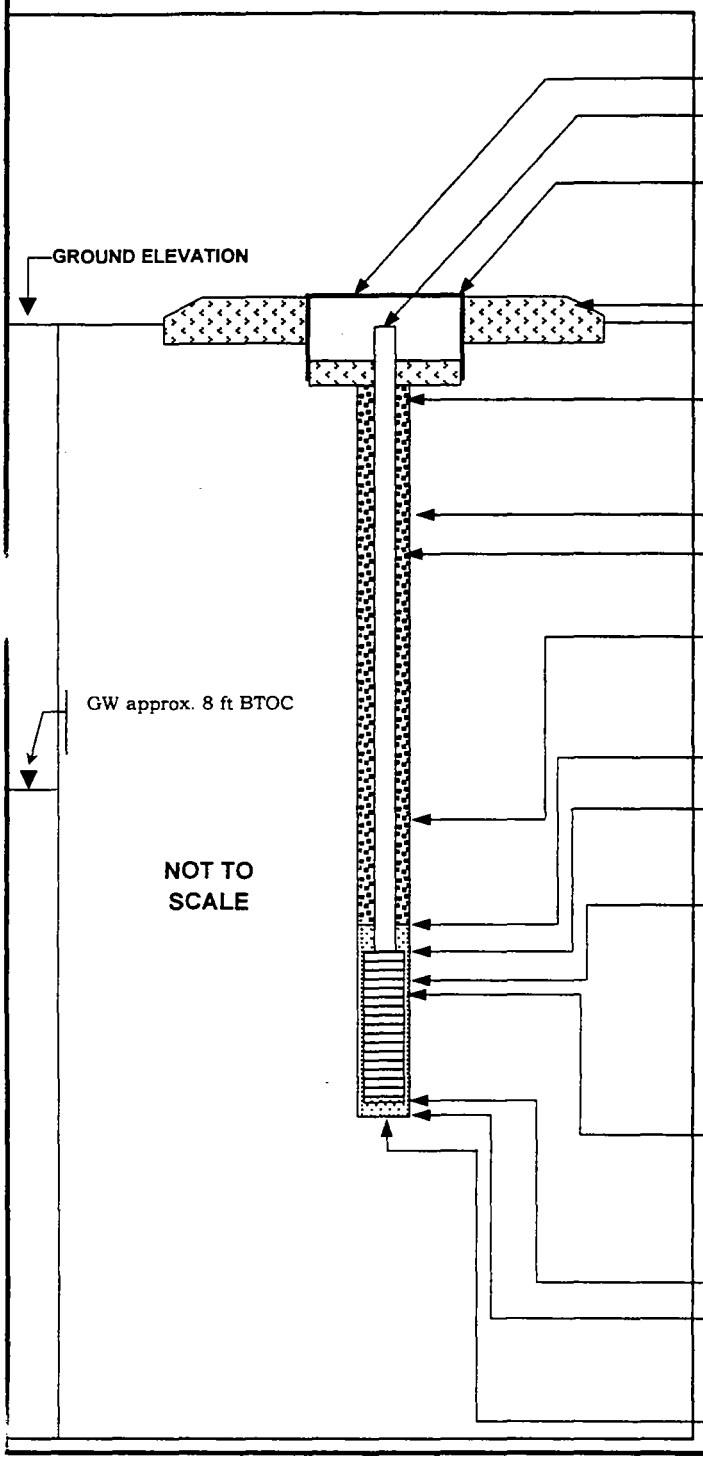
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	103.73 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-35C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-35	METHOD:	
ELEVATION*	103.5 ft.	DATE	15-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



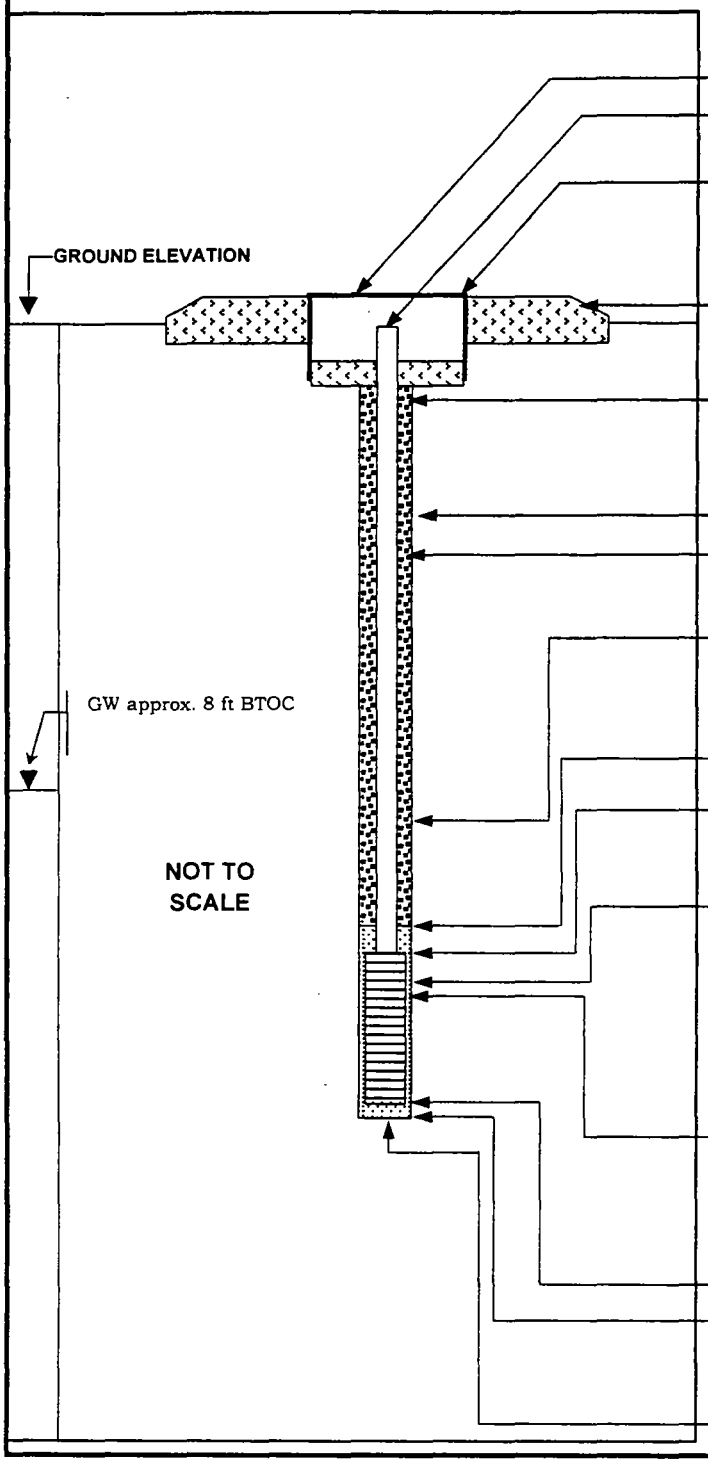
ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	103.62 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-36C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-36	METHOD:	
ELEVATION*	103.6 ft.	DATE	15-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:

ELEVATION OF TOP OF RISER PIPE: 103.55 ft.

I.D. OF DRIVE-OVER BOX: 8 in.

TYPE OF SURFACE CASING: cast iron w/ steel sides

TYPE OF SURFACE SEAL: concrete

RISER PIPE I.D.: 3/4 in.

TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 2 1/2 in.

TYPE OF SEAL: AquaGard bentonite grout

ELEVATION / DEPTH OF SEAL:

TYPE OF SEAL:

DEPTH - TOP OF SAND PACK: 44 ft

ELEVATION / DEPTH - TOP OF SCREEN: 45 ft

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE X LENGTH: 0.01 in. X 5 ft

O.D - I.D. OF SCREEN: 1 1/4 in. - 3/4 in.

TYPE OF SAND PACK: 35/60

ELEVATION / DEPTH TO BOTTOM OF SCREEN: 50 ft

ELEVATION / DEPTH TO BOTTOM OF SAND PACK: 50 ft

TYPE OF BACKFILL BELOW MONITORING WELL: fine sand

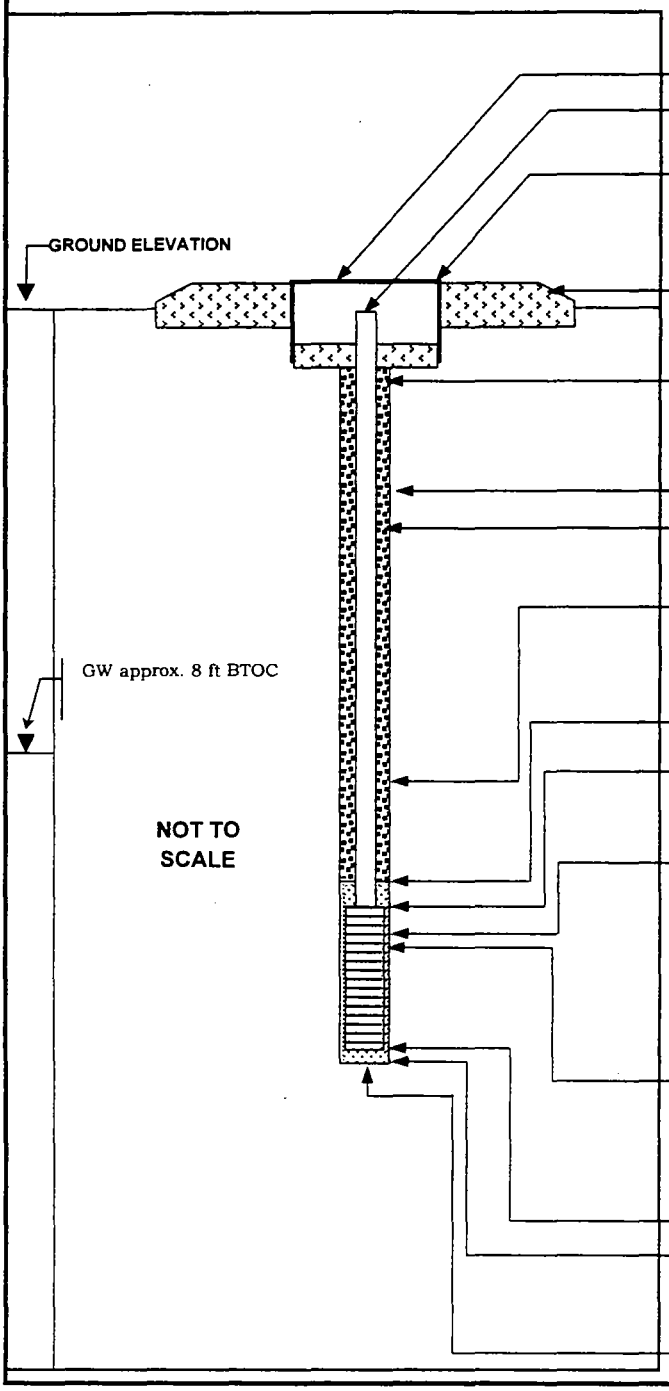
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE: 50 ft

*Ground elevation measured at south edge of concrete surface pad.

WELL NO.: OLD-02-37C

OVERBURDEN MONITORING WELL SHEET

PROJECT	NTC Orlando	LOCATION	SA 2 - Herndon Annex	DRILLER	John Malo
PROJECT NO.	3928	BORING	OLD-02-37	METHOD:	
ELEVATION*	103.6 ft.	DATE	15-Jan-01	DRILLING	DPT
FIELD GEOLOGIST	Skip Barton			DEVELOPMENT	peristaltic pump



ELEVATION OF TOP OF DRIVE-OVER BOX:	
ELEVATION OF TOP OF RISER PIPE:	103.45 ft.
I.D. OF DRIVE-OVER BOX:	8 in.
TYPE OF SURFACE CASING:	cast iron w/ steel sides
TYPE OF SURFACE SEAL:	concrete
RISER PIPE I.D.:	3/4 in.
TYPE OF RISER PIPE:	SCH 40 PVC
BOREHOLE DIAMETER:	2 1/2 in.
TYPE OF SEAL:	AquaGard bentonite grout
ELEVATION / DEPTH OF SEAL:	
TYPE OF SEAL:	
DEPTH - TOP OF SAND PACK:	44 ft
ELEVATION / DEPTH - TOP OF SCREEN:	45 ft
TYPE OF SCREEN:	SCH 40 PVC
SLOT SIZE X LENGTH:	0.01 in. X 5 ft
O.D - I.D. OF SCREEN:	1 1/4 in. - 3/4 in.
TYPE OF SAND PACK:	35/60
ELEVATION / DEPTH TO BOTTOM OF SCREEN:	50 ft
ELEVATION / DEPTH TO BOTTOM OF SAND PACK:	50 ft
TYPE OF BACKFILL BELOW MONITORING WELL:	fine sand
ELEVATION / DEPTH TO BOTTOM OF BOREHOLE:	50 ft

*Ground elevation measured at south edge of concrete surface pad.

APPENDIX C

GROUNDWATER SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NTC Orlando
Project No.: 3928
Location: SA2 - Herndon
Personnel: J. Bourgeois, J. Alexander
Weather Conditions: showers, hot
Measuring Device: wl indicator
Tidally Influenced: Yes ___ No ✓
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
0212c	4/30/01				15.68			
0208c					11.95			
0203A					12.65			
0206A					11.81			
~~0208c~~								on
~~0203A~~					~~12~~			✓
0205A					11.58			
0202A					still dry			
0207c					14.75			
0201A					11.42			
0214A					9.61			
0206A					9.39			
0227c					11.35			
0225c					10.70			
0226c					10.42			
0224c					10.51			
0220B					9.00			
0221c					8.52			
0204					10.04			
0231c					13.84			
0230c					14.45			
0229c					13.62			
0228c					10.24			
0235c					9.54			
0236c					9.52			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NTC Orlando
Project No.: 3928
Location: SA2 - Herndon
Personnel: J. Bourgeois, J. Alg[illegible]
Weather Conditions: showers, hot
Measuring Device: WL indicator
Tidally Influenced: Yes ___ No ✓
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
0237C	4/30/0				9.38			
0234C					9.65			
0233C					9.80			
0220B					9.13			
0221C					8.68			
0204					10.05			
0213C					9.74			
0219C					7.42			
0218B					7.35			
0215A					6.17			
0216B					6.21			
0217C					6.50			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 4-30-01

Project Site Name: NTC Orlando
Project No.: ~~7457-3928~~ 2948

Sample Location: ~~CLD~~ NTC 02-08C

[ ] Domestic Well Data

Flow-Thru Cell Make\Model: Horiba 4-22

Sample ID No.: NTC02N08C01

[X] Monitoring Well Data

Sampled By: JB, JA

Serial Nos.:

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1015	4.59	.132	24.1	10	6.28	213	12.15	300
1	0.041 / 0.155	1020	3.94	.131	24.0	10	6.58	251	"	"
2	0.163 / 0.617	1025	3.32	.130	24.0	10	5.98	279	"	"
4	0.653 / 2.47	1030	3.01	.130	24.1	10	5.58	293	"	"
6	1.469 / 5.56	1035	2.92	.129	24.1	10	5.32	290	"	"
8	2.611 / 9.88	1040	5.82	.129	24.2	1.7	4.90	138	"	"
10	4.08 / 15.44	1045	6.01	.127	24.2	1.4	4.83	66	"	"
	[1 gal. = 3.785 L]	1050	6.83	.127	24.3	0.95	4.31	36	"	"
		1055	6.90	.127	24.3	0.85	4.21	31	"	"
PID Reading (ppm): Ø		1100	7.14	.126	24.3	0.55	3.94	18	"	"
		1105	7.35	.125	24.3	0.65	3.62	6	"	"
		1110	7.58	.125	24.3	0.75	3.31	-7	"	"
Well Casing Diameter: 2"		1115	7.59	.125	24.3	0.90	3.30	-8	"	"
Total Well Depth: 55'										
Static Water Level: 11.95										
Tube Intake Depth: 15'										
Start Purge (hr): 1015										
End Purge (hr): 1115										
Total Purge Time (min): 60										
Total Vol. Purged: 18L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 4/30/01									
Time: 1115	clear	7.54	.125	24.3	0.90	3.30	-8	12.15	300

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL ~~Metals~~ Fe	6000/7000	HNO_3	1	~~1-liter~~	HDPE	X
~~TRPH~~ TOC	FL PRO	H_2SO_4	1	~~1-liter~~	amber glass	X

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SA2 TREATABILITY STUDY**

Sample ID No.: NTC02N08C01

Project No.: 3928

Sample Location: OLD NTC MW2

Sampled By: J. Alexander/J. Bourgeois

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLING DATA:

	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Date: 4/30/01								
Time: 1115	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method: purge		-8	.125	24.3	0.90	3.30	—	2.84

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 and 1-12 mg/L) Analysis Time: 1147

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: 1146

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _____mg/L

Notes: Alkalinity taken as lab sample

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1150

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☒	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
210	x 0.2	= 42 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SA2 TREATABILITY STUDY**

Sample ID No.: NTC02N08C01

Project No.: 3928

Sample Location: OLD MW8C

Sampled By: ~~JA~~ JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/l

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1223

Program/Module: 500nm 33

Concentration: 1.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: HACH color wheel/ midrange Analysis Time: 1237

Concentration: 1.30 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 4-30-01

Project Site Name: NTC Orlando
Project No.: ~~7547 7457 3928~~ 2948

Sample Location: NTC ~~OLD~~-02-13C

[ ] Domestic Well Data

Flow-Thru Cell Horiba U-22
Make\Model: _____

Sample ID No.: NTC02N13C01

[X] Monitoring Well Data

Sampled By: JB

Serial Nos.: _____

[ ] Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1615	5.80	.059	22.1	12	11.97	-16	9.85	300
1	0.041 / 0.155	1620	7.69	.058	22.0	13	5.01	-34	9.85	"
2	0.163 / 0.617	1625	8.07	.057	22.0	12	4.08	-39	9.85	"
4	0.653 / 2.47	1630	8.18	.056	22.0	3.8	3.60	-42	9.85	"
6	1.469 / 5.56	1635	8.22	.056	22.0	3.8	3.41	-42	9.85	"
8	2.611 / 9.88	1640	8.24	.056	22.0	3.8	3.40	-44	9.85	"
10	4.08 / 15.44	1645	8.24	.057	22.0	3.9	2.49	-44	9.85	"
	[1 gal. = 3.785 L]	1650	8.31	.057	21.9	3.8	3.21	-47	9.85	"
		1655	8.35	.056	21.9	3.8	4.36	-49	9.85	"
PID Reading (ppm): 0		1700	8.44	.056	21.9	3.7	4.44	-53	9.85	"
		1705	8.47	.056	21.8	3.6	5.78	-53	9.85	"
		1710	8.49	.056	21.8	3.6	6.54	-56	9.85	"
Well Casing Diameter: 2"		1715	8.49	.056	21.8	3.6	7.83	-56	9.85	"
Total Well Depth: 55'										
Static Water Level: 9.74										
Tube Intake Depth: 15'										
Start Purge (hr): 1615										
End Purge (hr): 1715										
Total Purge Time (min): 60										
Total Vol. Purged: 18L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 4-30-01									
Time: 1715	Clear	8.49	.056	21.8	3.6	7.83	-56	9.85	300

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): JA

Sample ID No.: NTC02N13C

Sample Location: OCD MW13

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 5-1-01	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Time:	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method:								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: _____

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
_____	x 0.01	=	mg/L
_____	x 0.02	=	mg/L

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity:

Analysis Time: _____

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _____mg/L

Notes: collected for LAB analysis

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: _____

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
_____	x 0.1	=	mg/L
245	x 0.2	= 49	mg/L
_____	x 1.0	=	mg/L
_____	x 2.0	=	mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02N13C01

Project No.: 3928

Sample Location: OLDMW13

Sampled By: ~~JA~~ JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: _____

Program/Module: 500nm 33

Concentration: 0.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: HACH Colorwheel (midrange) Analysis Time: _____

Concentration: 1.25 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date: 5/3/01

Page: 1 of 1

Project Site Name:
Project No.: 2948

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

LaMotte 2020
S/N 1729-1600

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.:

Sample Location: NTC02 OLDM19C

Sample ID No.: NTC02G19C17

Sampled By: CL

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1504	4.47	0.066	24.5	769/1023	2.55	-1	7.41	100
1	0.041	0.155	1509	5.15	0.069	24.5	430	1.61	-46	—	"
2	0.163	0.617	1514	5.16	0.070	24.3	210	2.03	-51	—	"
4	0.653	2.47	1519	5.17	0.069	24.3	150	1.92	-58	—	"
6	1.469	5.56	1524	5.15	0.068	24.2	71	1.96	-59	—	"
8	2.611	9.88	1529	5.11	0.068	24.1	55	1.91	-65	—	"
10	4.08	15.44	1534	5.11	0.070	24.0	55/8.1	1.46	-76	—	"
	[1 gal. = 3.785 L]		1539	5.11	0.067	24.0	56	1.48	-80	—	"
			1544	5.10	0.066	24.0	44	1.48	-82	—	"
PID Reading (ppm): Ø			1549	5.10	0.066	24.0	24	1.63	-75	—	"
			1554	5.10	0.066	23.9	22	1.46	-85	—	"
			1559	5.10	0.065	23.9	23/8.3	1.47	-86	—	"
Well Casing Diameter: 5"			1604	5.09	0.064	24.0	18	1.40	-88	—	"
Total Well Depth: ~60'			1609	5.09	0.063	23.9	18	1.49	-86	—	"
Static Water Level: 7.41			1614	5.06	0.063	24.0	19	1.60	-83	—	"
Tube Intake Depth: 56'			1619	5.00	0.063	24.0	21	1.72	-76	—	"
			1624	4.97	0.063	24.0	24	1.72	-74	—	"
Start Purge (hr): 1458			1629	4.92	0.063	24.0	25	1.72	-70	—	"
End Purge (hr): 1629											
Total Purge Time (min): 85											
Total Vol. Purged: 8.5L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: 1630	Clear	4.92	.063	24.0	25	1.72	-70	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = 0.4 CO_2 = 236 x 0.2
Alk = ND Fe = 0.2
HS = 0.25

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3428

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): SB

Sample ID No.: NTC02G19C17

Sample Location: NTC02 - 19C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 6/3/01								
Time: 1630								
Method: perm.		4.92	0.063	24.0	25	1.72		4.92

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1630

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: _____mg/L

Notes:

Alkalinity:

Analysis Time: 1632

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1638

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
236	x 0.2	= 47.2 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G19C17

Project No.: 3928

Sample Location: NTC02-19C

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1640

Program/Module: 500nm 33

Concentration: 0.2 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Color wheel Analysis Time: 1642

Concentration: 0.25 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/1/01

Project Site Name:
Project No.: 3528

Sample Location: OLD02203

[ ] Domestic Well Data

Flow-Thru Cell Make\Model: Horiba U-22

Sample ID No.: NTC02G20317

[X] Monitoring Well Data

Sampled By: JA

Serial Nos.:

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0856	3.67	0.176	24.4	1.57	2.09	366	–	100
1	0.041	0.155	0901	3.82	0.177	24.1	1.14	1.74	363	–	100
2	0.163	0.617	0906	3.86	0.177	24.4	1.50	1.26	287	–	100
4	0.653	2.47	0915	3.86	0.171	24.5	1.37	1.19	181	–	100
6	1.469	5.56	0922	3.89	0.173	24.6	1.26	1.06	130	–	100
8	2.611	9.88	~~0926~~	~~4.23~~	~~0.156~~	~~24.8~~	~~1.12~~	~~1.12~~	~~-7~~	–	~~100~~
10	4.08	15.44	0937	4.26	0.157	24.8	1.19	0.96	-13	–	100
	[1 gal. = 3.785 L]		0942	4.32	0.152	24.7	2.86	1.58	-32	–	100
			0959	4.38	0.146	25.2	1.26	1.05	-52	–	100
PID Reading (ppm): —			1004	4.56	0.148	25.1	1.91	1.07	-51	–	100
See GW level				~~4.94~~	~~0.085~~					–	
form			1012	4.59	0.149	25.5	1.86	0.95	-50	–	100
Well Casing Diameter: 2"			1017	4.33	0.149	25.5	1.43	0.83	-50	–	100
Total Well Depth: ~40'			1020	4.36	0.149	25.5	1.22	0.99	-52	–	100
Static Water Level: 9.15											
Tube Intake Depth: 38'											
Start Purge (hr): 0850											
End Purge (hr): 1020											
Total Purge Time (min): 90											
Total Vol. Purged: 9.0 l											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5 1 01									
Time: 1040	Clear	4.36	.149	25.5	1.22	.99	-52	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = ~~1.0~~ 0.6 Alk = ND
Fe = 1.8 HS: 2.2
CO_2 = 290 x 0.2 = 58.0

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	SA2 TREATABILITY STUDY	Sample ID No.:	NTC02G20B ~~NTC02G22C~~
Project No.:	3928	Sample Location:	~~OLD AREA~~ ZC
Sampled By:	JB	Duplicate:	☐
Field Analyst:	JA	Blank:	☐ NTC02G20B
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5-1-01								
Time: 1040								
Method: peristaltic		-52	0.149	25.5	1.22	0.79	—	4.3

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1040

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1044 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1050

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
290	x 0.2	= 58 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: UFC02G20R17

Project No.: 3928

Sample Location: OLD M22

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): ☑

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1055

Program/Module: 500nm 33

Concentration: 1.8 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 1056

Concentration: 2.2 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/1/01

Project Site Name:
Project No.: 3928

Sample Location: 04D0221C

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell
Make\Model: Horiba U-22

Serial Nos.:

Sample ID No.: NTC02G21C17

Sampled By: JA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0856	4.24	0.110	24.4	0.52	5.04	290	—	100
1	0.041 / 0.155	0902	4.25	0.104	24.5	0.29	3.24	289	—	100
2	0.163 / 0.617	0907	4.26	0.101	24.6	1.02	2.78	293	—	100
4	0.653 / 2.47	0923	4.37	0.099	24.8	0.75	3.71	190	—	100
6	1.469 / 5.56	0936	4.56	0.092	24.9	0.29	2.19	30	—	100
8	2.611 / 9.88	0942	4.59	0.091	25.0	0.67	4.53	17	—	100
10	4.08 / 15.44	0958	4.76	0.089	25.2	0.88	2.02	-33	—	100
	[1 gal. = 3.785 L]	1005	4.84	0.089	25.2	0.561	4.12	-36	—	100
		1015	4.75	0.089	25.5	0.82	2.13	-41	—	100
PID Reading (ppm): —		1010	4.76	0.089	25.5	~~0.82~~ NS	2.22	-36	—	100
See GW level		1021	4.86	0.089	25.5	0.91	2.32	-40	—	100
form										
Well Casing Diameter: 2"										
Total Well Depth: 61'										
Static Water Level: 8.67										
Tube Intake Depth: 58'										
Start Purge (hr): 0851										
End Purge (hr): ~~1054~~/1030										
Total Purge Time (min): 89										
Total Vol. Purged: 9.9 l										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/1/01									
Time: 1050	Clear	4.86	0.089	25.5	0.91	2.27	-40	NA	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = 1.0 Alk = ND
Fe = 0.6 HS = 1.00
∴ CO_2 = 118 x 0.2 = 23.6

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G21C17

Sample Location: BTC02 - MW21C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/01								
Time: 1050								
Method: peristaltic		-40	0.089	25.5	0.91	2.37	—	4.8

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 + 1-12 mg/L) Analysis Time: 1050

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1052

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1055

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
118	x 0.2	= 23.6 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): JA

Sample ID No.: NTC02G21C17

Sample Location: NTC02M21C

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1102

Program/Module: 500nm 33

Concentration: 0.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Colorwheel Analysis Time: 1103

Concentration: 1.00 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/1/09

Project Site Name: NTC Orlando
Project No.: ~~7547 2948~~

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.:

Sample Location: NTC ~~CLD~~ - C2-23
Sample ID No.: NTCC2G23C1T ~~NTCC2H023C1T~~
Sampled By: JB, JA
C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0800	4.24	.106	22.4	19	9.75	96	—	300
1	0.041	0.155	0805	6.17	.107	23.1	18	6.89	24	—	"
2	0.163	0.617	0810	7.38	.107	23.5	18	4.84	-13	—	"
4	0.653	2.47	0815	8.40	.119	23.8	16	3.78	-83	—	"
6	1.469	5.56	0820	8.87	.128	24.0	16	3.43	-97	—	"
8	2.611	9.88	0825	9.02	.128	23.9	15	3.20	-100	—	"
10	4.08	15.44	0830	9.05	.127	23.8	15	3.08	-102	—	"
	[1 gal. = 3.785 L]		0835	9.10	.122	23.9	52	2.88	-102	—	"
			0840	9.17	.121	23.7	100	2.69	-108	—	"
PID Reading (ppm): Ø			0845	9.14	.118	23.9	99	2.56	-102	—	"
			0850	9.07	.120	24.1	86	2.47	-100	—	"
			0855	9.05	.116	24.1	76	2.41	-99	—	"
Well Casing Diameter: .5"			0900	9.02	.115	24.2	72	2.37	-97	—	"
Total Well Depth: 55'			0905	8.99	.111	24.2	63	2.29	-95	—	"
Static Water Level: 10.45			0910	8.96	.109	24.2	60	2.31	-93	—	"
Tube Intake Depth: 13'			0915	8.93	.108	24.2	57	2.32	-91	—	"
			0920	8.91	.106	24.2	54	2.26	-90	—	"
Start Purge (hr): 0800			0925	8.93	.109	24.2	51	2.22	-96	—	"
End Purge (hr): 0930			0930	9.10	.102	24.0	51	2.10	-104	—	"
Total Purge Time (min): 90											
Total Vol. Purged: 90L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/1/09 ~~5/4/09~~									
Time: 1010	Clear	9.10	.102	24.0	51	2.10	-104	—	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02 G 23 C17

Project No.: 3928

Sample Location:

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLING DATA:

Date: 5	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time:								
Method:								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 0915

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
_____	x 0.01	=	mg/L
_____	x 0.02	=	mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: _____

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _____ mg/L

Notes: collected as lab samples

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1010

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
_____	x 0.1	=	mg/L
235	x 0.2	= 47	mg/L
_____	x 1.0	=	mg/L
_____	x 2.0	=	mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02923C17

Project No.: 3928

Sample Location: NTC02MW2

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1020

Program/Module: 500nm 33

Concentration: 4.2 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: H2S-WR midrange Analysis Time: 1028

Concentration: 1.78 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/1/01

Project Site Name: NTC Orlando
Project No.: ~~7547~~ 2948

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.:

Sample Location: NTC ~~OLD~~-02-24

Sample ID No.: ~~NTC02A02C7~~ NTC02G23C17

Sampled By: JB, JA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0805	5.58	.162	22.66	6.9	6.46	173	–	300
1	0.041 / 0.155	0810	5.40	.158	22.96	7.5	2.27	44	–	"
2	0.163 / 0.617	0815	5.35	.154	23.10	10	1.98	6	–	"
4	0.653 / 2.47	0820	5.25	.152	23.24	11	1.57	-17	–	"
6	1.469 / 5.56	0825	5.12	.144	23.22	8.4	1.24	-36	–	"
8	2.611 / 9.88	0830	5.04	.142	23.15	8.6	0.96	-44	–	"
10	4.08 / 15.44	0835	5.00	.141	23.21	8.8	0.95	-50	–	"
	[1 gal. = 3.785 L]	0840	4.94	.140	23.22	8.4	0.86	-55	–	"
		0845	4.92	.140	23.30	9.6	0.80	-56	–	"
PID Reading (ppm): Ø		0850	4.90	.139	23.55	9.7	0.66	-58	–	"
		0855	4.88	.139	23.64	9.5	0.68	-61	–	"
		0900	4.88	.139	23.68	9.5	0.68	-62	–	"
Well Casing Diameter: 5"		0905	4.86	.139	23.72	10.0	0.66	-64	–	"
Total Well Depth: 55'										
Static Water Level: 10.66										
Tube Intake Depth: 12'										
Start Purge (hr): 0805										
End Purge (hr): 0905										
Total Purge Time (min): 60										
Total Vol. Purged: 60L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/1/01 ~~5/1/02~~									
Time: 0905	Clear	4.86	.139	23.72	10.0	0.66	-64	–	600

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02 ~~0224~~ G 24C1.

Project No.: 3928

Sample Location: NTC02MW24C

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLING DATA:

Date: / Time:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Method:								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0 - 1 mg/L) Analysis Time: 0910

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
_____	x 0.01	=	mg/L
_____	x 0.02	=	mg/L

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity:

Analysis Time: _____

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _____ mg/L

Notes: collected as lab samples

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: ~ 0920

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
_____	x 0.1	=	mg/L
236	x 0.2	=	47.2 mg/L
_____	x 1.0	=	mg/L
_____	x 2.0	=	mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G2417

Project No.: 3928

Sample Location: NTC02MW24

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1025

Program/Module: 500nm 33

Concentration: 3.7 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: HS-WR midrange Analysis Time: 1029

Concentration: 1.50 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5-1-01

Project Site Name: NTC Orlando
Project No.: ~~7547~~ 2948

Sample Location: NTC ~~GP~~-02-25

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Horiba
Make\Model: U-22

Serial Nos.:

Sample ID No.: NTC02G25C17

Sampled By: JB, JA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1325	5.47	.083	24.95	31.6	6.09	19	—	100
1	0.041	0.155	1330	5.39	.077	24.74	2.8	1.76	-8	—	"
2	0.163	0.617	1335	5.34	.079	24.66	3.9	1.33	-22	—	"
4	0.653	2.47	1340	5.29	.082	24.66	170	0.85	-32	—	"
6	1.469	5.56	1345	5.31	.079	24.75	252.0	0.78	-40	—	"
8	2.611	9.88	1350	5.30	.075	24.82	248	0.72	-43	—	"
10	4.08	15.44	1355	5.19	.070	24.74	~~77.9~~	0.64	-39	—	"
	[1 gal. = 3.785 L]						199				
			1400	5.17	.069	24.90	198	0.70	-36	—	"
PID Reading (ppm): Ø			1405	5.16	.068	24.75	164	0.68	-34	—	"
			1410	5.15	.066	25.34	149	0.75	-30	—	"
			1415	5.18	.066	25.19	140	0.77	-31	—	"
Well Casing Diameter: .5"			1420	5.16	.066	24.84	125	0.74	-35	—	"
Total Well Depth: 53'			1425	5.17	.066	25.05	107.2	0.63	-38	—	"
Static Water Level: 10.83			1430	5.12	.065	24.65	122	0.61	-39	—	"
Tube Intake Depth: 53'			1435	5.15	.065	24.71	125	0.51	-42	—	"
			1440	5.10	.064	24.81	92.2	0.50	-41	—	"
Start Purge (hr): 1325			1445	5.10	.063	24.78	86.5	0.59	-37	—	"
End Purge (hr): 1455			1450	5.10	.062	24.79	89.5	0.61	-37	—	"
Total Purge Time (min): 90			1455	5.11	.061	24.83	96.1	0.55	-39	—	"
Total Vol. Purged: 9.0L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/1/01									
Time: 1450	Clear	5.11	.061	24.8	96.1	0.55	-39	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = 0.8 Alk = ND
Fe = 1.8
CO_2 = 267 × 0.2 = 53.4
HS = 1.50 midrange

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: UTC02G25C17

Sample Location: UTC02M25C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Date: 5-1-01								
Time: 1450	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method: purge		1-39	.061	24.83	96.1	0.55	—	5.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1450

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1456

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1457

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
267	x 0.2	= 53.4 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G25C1

Project No.: 3928

Sample Location: NTC02MW25

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm ~~41~~

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1502

Program/Module: 500nm 33

Concentration: 1.8 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Color wheel mid range Analysis Time: 1505

Concentration: 1.50 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5-1-01

Project Site Name: NTC Orlando
Project No.: 2948

[ ] Domestic Well Data.

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U22

Serial Nos.:

Sample Location: NTC ~~(CU)~~-02-26

Sample ID No.: NTC02G26C17

Sampled By: JB, JA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1340	6.20	.201	25.6	140	9.41	-43	–	100
1	0.041 / 0.155	1345	8.37	.188	24.6	250	6.04	-60	–	"
2	0.163 / 0.617	1350	8.63	.165	24.7	123	4.11	-75	–	"
4	0.653 / 2.47	1355	8.75	.144	24.6	77.4	3.21	-81	–	"
6	1.469 / 5.56	1400	8.80	.136	24.7	77.0	2.97	-84	–	"
8	2.611 / 9.88	1405	8.85	.134	24.6	58.4	2.83	-87	–	"
10	4.08 / 15.44	1410	8.88	.123	24.8	39.8	2.59	-89	–	"
	[1 gal. = 3.785 L]	1415	8.89	.120	24.4	35.1	2.53	-90	–	"
		1420	8.94	.118	24.7	25.9	2.42	-93	–	"
PID Reading (ppm): Ø		1425	8.94	.115	24.8	26.7	2.33	-91	–	"
		1430	8.96	.112	24.7	23.2	2.29	-94	–	"
		1435	8.97	.110	24.7	21.5	2.27	-93	–	"
Well Casing Diameter: .5"		1440	9.03	.107	24.7	22.2	2.20	-97	–	"
Total Well Depth: 53'		1445	9.03	.108	24.7	20.4	2.19	-98	–	"
Static Water Level: 10.56		1450	9.05	.106	24.5	17.3	2.18	-99	–	"
Tube Intake Depth: 53'		1455	9.05	.104	24.6	16.1	2.15	-99	–	"
		~~1400~~								
Start Purge (hr): 1340		1500	9.04	.103	24.7	15.1	2.13	-98	–	"
End Purge (hr): 1510		1505	9.04	.102	24.7	14.2	2.12	-99	–	"
Total Purge Time (min): 40		1510	9.05	.101	24.6	16.9	2.12	-99	–	"
Total Vol. Purged: 8.0L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/1/01									
Time: 1515	Clear	9.05	.101	24.6	16.9	2.12	-99	–	400

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = 0.4 Alk = ND
Fe = 2.8
CO_2 = 289 x 0.2 = 57.8
HS = 1.45 midrange

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): JA

Sample ID No.: NTC02926C17

Sample Location: MW26

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 5/1/01	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time:								
Method:		-99	.101	24.6	16.9			

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1515

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
_____	x 0.01	=	mg/L
_____	x 0.02	=	mg/L

CHEMetrics: 0.4 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1517

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1518

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
_____	x 0.1	=	mg/L
289	x 0.2	=	57.8 mg/L
_____	x 1.0	=	mg/L
_____	x 2.0	=	mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G26C1

Project No.: 3928

Sample Location: MW26

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1525

Program/Module: 500nm 33

Concentration: 2.8 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Color wheel midrange Analysis Time: 1526

Concentration: 1.45 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5-1-01

Project Site Name: 74572948
Project No.: NTC Orlando

Sample Location: NTC OLD-02-27C

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba-U22 Lamotte

Serial Nos.:

Sample ID No.: NTC02G27C17

Sampled By: SB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1325	5.45	0.147	24.8	0	2.36	-65	NA	100 ml/min
1	0.041	0.155	1329	4.94	0.145	24.9	4	1.37	-82	NA	100
2	0.153	0.617	1333	4.85	0.131	25.0	19	1.33	-89	NA	100
4	0.653	2.47	1337	4.78	0.126	24.9	28	1.45	-98	NA	"
6	1.469	5.56	1341	4.85	0.120	25.1	35	1.27	-102	NA	"
8	2.611	9.88	1346	4.82	0.120	25.6	47/28	1.02	-113	NA	"
10	4.08	15.44	1350	4.95	0.120	24.9	14.3	0.96	-114	NA	"
	[1 gal. = 3.785 L]		1400	5.06	0.111	24.9	11.0	0.71	-126	NA	"
			1413	5.16	0.103	25.4	12.8	0.93	-126	NA	"
PID Reading (ppm): —			1418	5.26	0.102	24.9	9.77	0.95	-136	NA	"
			1429	5.26	0.101	24.9	8.85	0.92	-132	NA	"
			1435	5.45	0.096	24.8	9.06	1.13	-138	NA	"
Well Casing Diameter: 0.5"			1443	5.41	0.097	24.8	9.82	1.01	-146	NA	"
Total Well Depth: 55'			1452	5.40	0.095	24.9	7.95	0.85	-147	NA	"
Static Water Level: 11.51			1457	5.37	0.095	25.1	~~13.2~~	0.82	-141	NA	"
Tube Intake Depth: 53'							8.9				
Start Purge (hr): 1315											
End Purge (hr): 1500											
Total Purge Time (min): 105											
Total Vol. Purged: 10.5 L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: ~~5/1~~ 5/1/01									
Time: 1555	Clear	5.37	.095	25.1	8.9	0.32	-141	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: DO = 0.6 Fe = 2.2
CO_2 = 205 x .2 = 41 Alk = ND
HS = 1.60

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02GZZ017

Sample Location: NTC02-MW27C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/1/07								
Time: 1555								
Method: Peristaltic		-141	0.095	25.1	8.9	0.82	—	5.3

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0 - 1 mg/L) Analysis Time: 1555

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
_____	x 0.01	=	mg/L
_____	x 0.02	=	mg/L

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity:

Analysis Time: 1557

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1604

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
_____	x 0.1	=	mg/L
_____	x 0.2	=	mg/L
_____	x 1.0	=	mg/L
_____	x 2.0	=	mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G27C17

Project No.: 3928

Sample Location: NTC02 MW27c

Sampled By: JB

Duplicate: ☐

Field Analyst: JB

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JB

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ JR-18C Color Wheel Other: _____ Analysis Time: 1610

Program/Module: 500nm 33

Concentration: 2.2 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: color wheel mid range Analysis Time: 1611

Concentration: 1.60 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/2/01

Project Site Name:
Project No.: 3928

Sample Location: NTC02-MW28C

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.:

Sample ID No.: NTC02G28C17

Sampled By: JA

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1450	5.49	0.099	27.3	999	2.37	-95	NA	100
1	0.041	0.155	1458	5.12	0.088	26.9	999	1.75	-90	NA	100
2	0.163	0.617	1507	4.97	0.082	26.4	643	3.95	-80	NA	100
4	0.653	2.47	1518	4.93	0.078	26.1	575/[illegible]	2.24	-83	NA	100
6	1.469	5.56	1523	4.80	0.078	26.6	348	1.15	-90	NA	100
8	2.611	9.88	1529	4.79	0.076	26.8	268	2.96	-89	NA	100
10	4.08	15.44	1535	4.83	0.077	26.5	299/96.0	1.83	-98	NA	100
	[1 gal. = 3.785 L]		1541	5.01	0.075	26.5	140/72.5	1.06	-110	NA	100
			1557	5.01	0.074	26.6	94.6	1.74	-110	NA	100
PID Reading (ppm): Ø			1605	5.04	0.073	26.3	82.6/[illegible]	1.33	-114	NA	100
			1610	5.06	0.073	26.2	70.4	0.85	-118	NA	100
			1620	4.98	0.072	25.7	64.7	1.34	-115	NA	100
Well Casing Diameter: 0.5"			1630	4.96	0.072	25.5	57.0/41.1	1.25	-116	NA	100
Total Well Depth: 55'											
Static Water Level: 10.24											
Tube Intake Depth: 52'											
Start Purge (hr): 1445											
End Purge (hr): 1630											
Total Purge Time (min): 90											
Total Vol. Purged: 9.0 l											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/2/01									
Time: 1635	clouds	4.96	0.072	25.5	41.1	1.25	-116	NA	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G28C17

Project No.: 3928

Sample Location: MW 28C

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials):

SAMPLING DATA:

Date: 5 2 01	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time:								
Method:	Stoddard							

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1622

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: ~~1.0~~ mg/L 0.4

Notes:

Alkalinity:

Analysis Time: 1648

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1716

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
201	x 0.2	= 40.2 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G 28C17

Project No.: 3928

Sample Location: MW28C

Sampled By: JBJ

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: 1.4 Analysis Time: 1726

Program/Module: 500nm 33

Concentration: 0.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 1729

Concentration: 2.25 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Mulitplication is correct for each *Multiplier* table: ☐

Final calulated concentration is within the appropriate *Range Used* block: ☐

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☐

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/2/01

Project Site Name: NTC Orlando
Project No.: ~~7547~~3928

Sample Location: NTC ~~OLD~~-02-29

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.:

Sample ID No.: NTC02929C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1452	4.96	0.080	25.8	990	1.08	-77		100
1	0.041	0.155	1457	4.57	0.077	25.7	990	0.83	-77	Turbo	
2	0.163	0.617	1502	4.53	0.068	25.8	990	0.78	-84	colloMate	
4	0.653	2.47	1507	4.49	0.070	25.8	940	0.66	-83	2020	
6	1.469	5.56	1512	4.52	0.064	25.8	800	0.64	-93	~~770~~	
8	2.611	9.88	1517	4.59	0.063	25.7	780	0.61	-100		
10	4.08	15.44	1522	4.67	0.062	25.7	580	0.59	-109		
	[1 gal. = 3.785 L]		1527	4.81	0.062	25.8	480	0.58	-121		
			1532	4.94	0.061	25.8	400	0.56	-128	284	
PID Reading (ppm): Ø			1537	5.08	0.059	26.1	350	0.56	-134		
			1542	5.15	0.058	26.0	310	0.53	-138		
			1547	5.21	0.059	26.2	240	0.51	-144		
Well Casing Diameter: 5"			1552	5.27	0.059	26.1	230	0.51	-149		
Total Well Depth: 55'			1557	5.31	0.060	26.1	220	0.47	-151	163	
Static Water Level: 13.62			1602	5.26	0.060	25.9	200	0.49	-150		
Tube Intake Depth: 52'			1607	5.31	0.059	25.8	190	0.46	-154	137	
			1612	5.25	0.059	25.8	190	0.44	-153		
Start Purge (hr): 1452			1617	5.23	0.059	25.7	170	0.42	-153	112	
End Purge (hr): 1632			1622	5.23	0.060	25.5	150	0.42	-155	99.9	
Total Purge Time (min): 100			1627	5.22	0.059	25.5	150	0.42	-155		
Total Vol. Purged: ~~2L~~ 1L			1632	5.20	0.058	25.6	~~150~~ 150	0.44	-154	91.9	

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/2/01									
Time: 1640	Clear	5.20	0.058	25.6	150	.44	-154	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G29C17

Project No.: 3928

Sample Location: MW29c

Sampled By: JS

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/2/01								
Time: 1640								
Method: peristaltic	Clear	-154	0.058	25.6	150	0.44	—	5.20

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0 - 1 mg/L) Analysis Time: 1623

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity:

Analysis Time: 1645

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1715

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
222	x 0.2	= 44.4 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G29C17

Project No.: 3928

Sample Location: MW29C

Sampled By: JS

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 17.28

Program/Module: 500nm 33

Concentration: 1.0 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 1730

Concentration: 1.85 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/2/01

Project Site Name: NTC Orlando
Project No.: ~~[illegible]~~ 3928

Sample Location: NTC ~~[illegible]~~-02-30

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Horiba
Make\Model: U-22
Serial Nos.: T005 2020

Sample ID No.: NTC02G30C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1420	5.34	.077	25.8	200	8.43	28	—	100
1	0.041	0.155	1425	5.17	.074	25.1	200	1.73	-27	—	"
2	0.163	0.617	1430	5.15	.074	25.2	210	1.35	-34	—	"
4	0.653	2.47	1435	5.11	.072	25.0	150	1.04	-45	—	"
6	1.469	5.56	1440	5.09	.072	24.9	150	0.87	-51	—	"
8	2.611	9.88	1445	5.08	.071	25.0	110	0.76	-53	—	"
10	4.08	15.44	1450	5.08	.071	25.1	90	0.74	-53	—	"
	[1 gal. = 3.785 L]		1455	5.08	.071	24.9	90	0.68	-60	—	"
			1500	5.07	.070	25.0	65	0.62	-60	—	"
PID Reading (ppm): Ø			1505	5.08	.071	24.9	~~64~~ 60	0.68	-64	—	"
			1510	5.07	.070	25.0	50	0.55	-65	—	"
Well Casing Diameter: 5"			1515	5.06	.070	24.9	45	0.58	-66	—	"
Total Well Depth: ~~55~~			1520	5.07	.070	24.9	40	0.56	-69	—	"
Static Water Level: 14.45			1525	5.07	.069	25.1	38	0.51	-66	—	"
Tube Intake Depth: 53			1530	5.07	.070	25.1	35	0.50	-68	—	"
			1535	5.07	.070	25.1	29	0.48	-72	—	"
Start Purge (hr): 1420			1540	5.08	.070	25.2	28	0.47	-72	—	"
End Purge (hr): 1550			1545	5.08	.070	25.2	29	0.47	-74	—	"
Total Purge Time (min): 90			1550	5.08	.070	25.2	26	0.48	-74	—	—
Total Vol. Purged: 9.0 L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/2/01									
Time: 1555	clear	5.08	.070	25.2	26	0.48	-74	—	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.: NTC02GD017

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G30C1+

Project No.: 3928

Sample Location:

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials):

SAMPLING DATA:

Date:	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Time:	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU
Method:								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1624

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: _____

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes: ~~[illegible]~~

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1700

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
203	x 0.2	= 40.6 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By:

Field Analyst:

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: NTC02G ~~28C~~ 30A

Sample Location: MW ~~28~~C 30A

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: ~~1726~~

Program/Module: 500nm 33

Concentration: 1.4 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: ~~1731~~

Concentration: 2.00 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/2/01

Project Site Name: NTC Orlando
Project No.: 7547

Sample Location: OLD-02-31

[ ] Domestic Well Data

Flow-Thru Cell Make\Model: Horiba U-22

Sample ID No.: NTC02631C17

[X] Monitoring Well Data

Sampled By: JB

Serial Nos.: T0052020

[ ] Other Well Type:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0840	3.94	.080	23.7	8	9.54	113	—	100
1	0.041 / 0.155	0845	5.23	.091	23.6	13.4	9.15	27	—	100
2	0.163 / 0.617	0850	5.34	.106	24.0	23	2.34	-21	—	"
4	0.653 / 2.47	0855	5.41	.102	24.3	30	1.43	-51	—	"
6	1.469 / 5.56	0900	5.36	.082	24.3	29	1.24	-62	—	"
8	2.611 / 9.88	0905	5.27	.074	24.3	240	1.11	-65	—	"
10	4.08 / 15.44	0910	5.25	.073	24.4	250	1.04	-66	—	"
	[1 gal. = 3.785 L]	0915	5.24	.070	24.4	250	.93	-66	—	"
		0920	5.24	.069	24.5	210	.98	-64	—	"
PID Reading (ppm):	Ø	0925	5.25	.069	24.6	170	1.00	-63	—	"
		0930	5.26	.068	24.5	170	1.02	-64	—	"
		0935	5.25	.068	24.6	140	.81	-65	—	"
Well Casing Diameter:	1.5"	0940	5.25	.068	24.6	120	.77	-67	—	"
Total Well Depth:	55'	0945	5.25	.068	24.6	120	5.10	-62	—	"
Static Water Level:	13.84	0950	5.25	.068	24.7	110	5.36	-64	—	"
Tube Intake Depth:	53'	~~1000~~								
		0955	5.25	.068	24.7	85	4.97	-66	—	"
Start Purge (hr):	0840	1000	5.27	.067	25.0	85	4.77	-51	—	"
End Purge (hr):	1010	1005	5.26	.068	25.0	70	4.47	-51	—	"
Total Purge Time (min):	90	1010	5.27	.068	25.1	70	4.31	-44	—	"
Total Vol. Purged:	9.0L									

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/2/01									
Time: 1010	Clear	5.27	.067	25.1	70	4.31	-44	—	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G31C

Sample Location: NTC02MW31C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5 2 01								
Time: 1010								
Method: peristaltic		-46	.068	23.7	20	4.31	—	5.2

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1136

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: _____

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1127

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
280	x 0.2	= 56 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G 31-1

Project No.: 3928

Sample Location: NTC02G31C17

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ ~~IB-18C Color Wheel~~ Other: _____ Analysis Time: 1155

Program/Module: 500nm 33

Concentration: 1.0 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: color wheel Analysis Time: 1208

Concentration: 2.20 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/2/01

Project Site Name: NTC Orlando
Project No.: ~~9547~~ 3928

Sample Location: ~~OLD~~ NTC C2-32

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.: 7006202 1

Sample ID No.: NTC02G32C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0845	5.67	.085	23.8	9	4.73	46	–	100
1	0.041 / 0.155	0850	6.73	.076	24.2	16	4.48	21	–	100
2	0.163 / 0.617	0855	7.87	.080	24.5	15	3.30	-51	–	"
4	0.653 / 2.47	0900	8.49	.072	24.5	38	2.88	-76	–	"
6	1.469 / 5.56	0905	8.74	.070	24.6	21	2.75	-85	–	"
8	2.611 / 9.88	0910	8.84	.070	24.6	14	2.61	-90	–	"
10	4.08 / 15.44	0915	8.97	.068	24.6	17	2.44	-95	–	"
	[1 gal. = 3.785 L]	0920	9.05	.068	24.7	15	2.42	-100	–	"
		0925	9.09	.066	24.8	15	2.30	-102	–	"
PID Reading (ppm): Ø		0930	9.13	.065	24.8	15	2.23	-104	–	"
		0935	9.20	.066	24.8	13	2.19	-108	–	"
		0940	9.21	.066	24.8	12	2.19	-109	–	"
Well Casing Diameter: .5"		0945	9.20	.065	24.8	11	2.23	-108	–	"
Total Well Depth: 55'		0950	9.22	.065	24.9	12	2.17	-109	–	"
Static Water Level:		~~1000~~								
Tube Intake Depth: 53'		0955	9.25	.065	24.8	9.8	2.02	-112	–	"
		1000	9.21	.065	25.3	9.7	2.02	-106	–	"
Start Purge (hr): 0845		1005	9.22	.065	25.1	10	1.92	-110	–	"
End Purge (hr): 1015		1010	9.22	.065	25.2	9.4	1.95	-110	–	"
Total Purge Time (min): 70		1015	9.22	.065	25.6	9.3	1.84	-110	–	"
Total Vol. Purged: 9.0L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/2/01									
Time: 1015	Clear	9.22	.065	25.6	9.3	1.84	-110	–	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: ~~[illegible]~~ = 188 x 0.2 = 36.6
DO = 1.0 ~~[illegible]~~
HS = 1.95
FL - 0.0

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G32C, 7

Sample Location: NTC02 32C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	p (S
Date: 5 2 01								
Time:								
Method:		-110	.065	25.6	9.3	1.84		8.

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 & 1-12 mg/L) Analysis Time: 1135

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1144

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1125

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
183	x 0.2	= 36.6 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **SA2 TREATABILITY STUDY**

Sample ID No.: NTC02G 32 C1

Project No.: 3928

Sample Location: NTC02MW32

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1201

Program/Module: 500nm 33

Concentration: 0.0 mg/L

Filtered: ☐

Notes: v. slight orange tint but colorwheel reads zero.

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Colorwheel Analysis Time: 1210

Concentration: 1.85 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/3/01

Project Site Name: NTC Orlando
Project No.: ~~7547 7457~~ 3928

Sample Location: NTC OLD-02-33

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.: T0062021

Sample ID No.: NTC02G53C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0905	5.51	.151	22.8	31	15.0	-32	—	100
1	0.041 / 0.155	0910	8.77	.140	22.9	1100	9.91	-87	—	"
2	0.163 / 0.617	0915	9.06	.107	23.1	730	4.41	-95	—	"
4	0.653 / 2.47	0920	9.22	.104	23.2	490	4.01	-100	—	"
6	1.469 / 5.56	0925	9.32	.103	23.1	300	3.67	-105	—	"
8	2.611 / 9.88	0930	9.41	.103	23.1	190	3.38	-110	—	"
10	4.08 / 15.44	0935	9.47	.101	23.2	150	3.19	-114	—	"
	[1 gal. = 3.785 L]	0940	9.52	.101	23.2	130	3.00	-116	—	"
		0945	9.53	.100	23.2	105	2.94	-117	—	"
PID Reading (ppm): 0		0950	9.55	.100	23.2	98	2.89	-118	—	"
		0955	9.58	.099	23.1	50	2.84	-119	—	"
		1000	9.21	.075	23.6	40	1.36	-135	—	"
Well Casing Diameter: .5"		1005	9.59	.085	23.2	35	1.11	-130	—	"
Total Well Depth: 55'		1010	9.66	.097	23.1	29	2.64	-124	—	"
Static Water Level: 9.95'		1015	9.63	.097	23.2	29	2.63	-122	—	"
Tube Intake Depth: 53'		1020	9.63	.096	23.3	26	2.59	-122	—	"
		1025	9.70	.096	23.1	23	2.54	-128	—	"
Start Purge (hr): 0905		1030	9.69	.096	23.1	22	2.57	-126	—	"
End Purge (hr): 1035		1035	9.69	.096	23.1	20	2.57	-127	—	"
Total Purge Time (min): 90										
Total Vol. Purged: 9.0 L										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: 1055	Clear	9.69	.096	23.1	20	2.57	-127	—	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: CO_2 = 194 ± 0.2 DO = 1.5
Fe = 0.8 HS = 1.25
Alk = ND

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: TB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G33C1

Sample Location: NTC02-MW33

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/3/01								
Time: 1055								
Method:	C/	-127	.096	23.1	20	2.57		9.[illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 1056

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.5 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: _____ Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: _____

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
194	x 0.2	= 38.8 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: _____ Digits Required: 1st.: _____ 2nd.: _____ 3rd.: _____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02633C1+

Project No.: 3928

Sample Location: NTC02 - MW3.

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm ~~41~~

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1112

Program/Module: 500nm 33

Concentration: 0.8 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: colorwheel Analysis Time: 1114

Concentration: 1.25 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☐

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/3/01

Project Site Name: NTC Orlando
Project No.: ~~7757~~ 3928

Sample Location: ~~GLD~~ NTC-02-34

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.: 9012113

Sample ID No.: NTC02G34C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0900	5.23	.100	23.3	95	9.15	-53	–	100
1	0.041	0.155	0905	5.24	.088	23.5	95	4.14	-91	–	"
2	0.163	0.617	0910	5.23	.081	23.6	220	2.27	-121	–	"
4	0.653	2.47	0915	5.21	.082	23.7	225	1.84	-131	–	"
6	1.469	5.56	0920	5.20	.078	23.8	213	1.68	-135	–	"
8	2.611	9.88	0925	5.21	.081	23.7	100	0.89	-144	–	"
10	4.08	15.44	0930	5.21	.079	23.7	66.3	0.92	-146	–	"
	[1 gal. = 3.785 L]		0935	5.22	.078	23.7	47.3	0.84	-149	–	"
			0940	5.22	.077	23.6	49.2	0.81	-148	–	"
PID Reading (ppm): Ø			0945	5.21	.077	23.6	45.2	1.05	-144	–	"
			0950	5.21	.077	23.6	45.9	1.06	-144	–	"
			0955	5.22	.076	23.6	55	1.10	-145	–	"
Well Casing Diameter: 4"			1000	5.21	.075	23.6	35	1.31	-137	–	"
Total Well Depth: 55'			1005	5.20	.075	23.6	54	1.30	-138	–	"
Static Water Level: 9.83			1010	5.22	.074	23.6	33	1.29	-141	–	"
Tube Intake Depth: 53'			1015	5.19	.074	23.6	32	1.25	-140	–	"
			1020	5.18	.074	23.8	30	1.26	-136	–	"
Start Purge (hr): 0900			1025	5.23	.074	23.6	30	1.21	-143	–	"
End Purge (hr): 1030			1030	5.19	.074	23.6	28	1.20	-138	–	"
Total Purge Time (min): 90											
Total Vol. Purged: 9.0 L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: 1040	Clear	5.18	.074	23.6	28	1.20	-138	–	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:
CO_2 = 310 x 0.2 DO = 0.6
Fe = 0.6 ~~HS~~ = 1.4
Alk = ND

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G34C1X

Sample Location: NTC02 MW34

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/3/01								
Time: 1040								
Method: peristaltic	Cl.	-138	.024	23.6	28	1.20	–	5.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1040

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1043

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1045

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☑	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
310	x 0.2	= 62 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____ mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: UTC02G34C17

Project No.: 3928

Sample Location: NTC02

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1050

Program/Module: 500nm 33

Concentration: 0.60 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: colorwheel Analysis Time: 1053

Concentration: 1.60 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/3/01

Project Site Name:
Project No.: 3928

Sample Location: NK MW 35C

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba u-22

Serial Nos.: 922001

Sample ID No.: NTC02G35C17

Sampled By:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0946	5.70	0.126	23.7	990	2.59	-107	—	100
1	0.041 / 0.155	0951	5.60	0.117	23.7	990	1.36	-110	—	turbid
2	0.163 / 0.617	0958	5.36	0.106	23.8	944	1.66	-102	—	
4	0.653 / 2.47	1005	5.38	0.100	23.8	453	1.53	-104	—	
6	1.469 / 5.56	1013	5.27	0.095	23.8		1.24	-114	—	
8	2.611 / 9.88	1018	5.26	0.093	23.8	420	1.56	-120		
10	4.08 / 15.44	1023	5.23	0.093	23.8	360	1.42	-124		
	[1 gal. = 3.785 L]	1028	5.25	0.094	23.8	330	1.64	-129		
		1033	5.26	0.094	23.8	270	1.47	-130		
PID Reading (ppm): Ø		1038	5.26	0.093	23.8	230	1.51	-130		
		1043	5.26	0.092	23.8	230	1.43	-130		
		1048	5.24	0.092	23.7	220	1.31	-127		
Well Casing Diameter: 2.5"		1053	5.25	0.093	23.7	200	1.31	-125		
Total Well Depth: 55'		1058	4.86	0.092	23.4	170	1.22	-112		
Static Water Level: 9.74		1103	5.10	0.091	23.4	200	1.04	-135		
Tube Intake Depth: 52'		1108	5.24	0.091	23.4	190	0.93	-137		
		~~1110~~								
Start Purge (hr): 0940										
End Purge (hr): 1110										
Total Purge Time (min): 90										
Total Vol. Purged: 9.02										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: 1115	Clear	5.24	.091	23.4	190	.93	-137	-	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments: CO_2 = 275 x 0.2 Fe = ~~0.06~~ 0.6 mg/L
DO = 1.0 HS = 2.00
A/E = ND

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G35C1

Project No.: 3928

Sample Location: MW35C

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): [illegible]

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 5/3/01								
Time: 1115								
Method: Peristaltic		-137	0.091	23.4	190	0.93	—	5.[illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 1-12 mg/L) Analysis Time: 1115

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 100 or 100 mg/L) Analysis Time: 1112

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1121

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
275	x 0.2	= 55 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G35L1

Project No.: 3978

Sample Location: MW35C

Sampled By: JAB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1122

Program/Module: 500nm 33

Concentration: 0.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: colorwheel Analysis Time: 1127

Concentration: 2.00 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 5/3/01

Project Site Name:
Project No.: 3928

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Make\Model: Horiba-U22

Serial Nos.: T0052020

Sample Location: 02MW 36C

Sample ID No.: NTC02G36C17

Sampled By:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	0947	5.44	0.082	22.96	4.4	4.10	-47	—	100
1	0.041 / 0.155	0952	5.32	0.086	22.92	12.3	2.00	-54	—	100
2	0.163 / 0.617	0959	5.17	0.108	22.96	190.0	2.20	-61	—	100
4	0.653 / 2.47	1006	5.16	0.109	23.01	173	3.10	-60	—	100
6	1.469 / 5.56	1013	5.11	0.109	23.02	105.1	2.21	-60	—	100
8	2.611 / 9.88	1018	5.05	0.107	22.88	58.5	1.41	-70		
10	4.08 / 15.44	1023	5.09	0.107	22.87	52.2	0.98	-74		
	[1 gal. = 3.785 L]	1028	5.07	0.106	22.91	46.0	0.92	-75		
		1033	5.08	0.106	22.94	41.9	0.81	-77		
PID Reading (ppm):		1038	5.07	0.106	22.90	31.8	0.83	-77		
		1043	5.07	0.105	22.88	24.7	0.79	-79		
		1048	5.06	0.106	22.88	20.0	0.82	-75		
Well Casing Diameter: 0.5"		1053	5.06	0.104	22.82	22.7	0.79	-80		
Total Well Depth: 55'		1058	5.08	0.103	22.71	13.5	0.79	-83		
Static Water Level: 9.67		1103	5.07	0.102	22.70	14.5	0.69	-87		
Tube Intake Depth: 52'		1108	5.08	0.102	22.71	14.2	0.53	-89		
Start Purge (hr): 0941										
End Purge (hr): 1111										
Total Purge Time (min): 90										
Total Vol. Purged: 9.02										

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: ~~1100~~ 1120	Clear	5.08	.102	22.7	14.	.53	-89	—	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:
CO_2 = 225 X0.2 Fe = 0.6
DO = 1.0 HS = 2.15
Alk = ND

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G36C

Sample Location: NTC02 36C

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	p (S
Date: 5/3/01								
Time: 1120								
Method: peristaltic		-89	0.102	22.71	14.2	0.52	—	5.

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) 0-1 Analysis Time: 1120

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: ~~1-12~~ mg/L) 10-500 Analysis Time: 1124

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ~~1.0~~ mg/L

Notes: ND

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1126

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
225	x 0.2	= 55 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: SA2 TREATABILITY STUDY

Project No.: 3928

Sampled By: JB

Field Analyst: JA

Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NTC02G36C1

Sample Location: NTC02MW36C

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____

Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1130

Program/Module: 500nm 33

Concentration: 0.6 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Color wheel midrange Analysis Time: 1140

Concentration: 2.15 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Mulitplication is correct for each *Multiplier* table: ☒

Final calulated concentration is within the appropriate *Range Used* block: ☒

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☒

Title block is initialized by person who performed the QA/QC Ckecklist: ☒

Tetra Tech NUS

Groundwater Purging and Sampling Log

Date 5/3/01

Project Site Name: NTC Orlando
Project No.: ~~7547~~ 3928

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

Flow-Thru Cell Horiba
Make\Model: U-22

Serial Nos.:

Sample Location: NTC ~~OLD~~ 02-37

Sample ID No.: NTC02G37C17

Sampled By: JB

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1445	5.16	.048	23.1	999	8.31	-10	—	100
1	0.041	0.155	1450	5.16	.059	23.2	999	9.29	-22	—	"
2	0.163	0.617	1455	5.08	.058	23.4	999	2.35	-70	—	"
4	0.653	2.47	1500	5.04	.059	23.4	999	1.74	-86	—	"
6	1.469	5.56	1505	5.04	.059	23.4	999	1.41	-102	—	"
8	2.611	9.88	1510	5.04	.059	23.5	750	3.17	-90	—	"
10	4.08	15.44	1515	5.04	.059	23.4	750	4.74	-105	—	"
	[1 gal. = 3.785 L]		1520	5.04	.062	23.4	625	2.31	-111	—	"
			1525	5.04	.062	23.2	470	1.11	-120	—	"
PID Reading (ppm): Ø			1530	5.04	.062	23.2	325	0.82	-134	—	"
			1535	5.02	.061	23.2	301	1.29	-121	—	"
			1540	5.02	.061	23.2	300	1.14	-124	—	"
Well Casing Diameter: .5"			1545	5.02	.060	23.0	240	1.10	-128	—	"
Total Well Depth: 55'			1550	5.02	.060	22.8	210	1.08	-132	—	"
Static Water Level: 9.38			1555	5.00	.062	22.8	166	1.74	-110	—	"
Tube Intake Depth: 53'			1600	5.04	.064	22.7	152	0.90	-127	—	"
			1605	5.03	.063	22.8	127	0.78	-138	—	"
Start Purge (hr): 1445			1610	5.04	.060	22.8	90	0.95	-138	—	"
End Purge (hr): 1615			1615	5.04	.060	22.7	75	0.70	-142	—	"
Total Purge Time (min): 90											
Total Vol. Purged: 9.0L											

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 5/3/01									
Time: 1620	Clear	5.04	.060	22.7	75	0.70	-142	—	"

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
TRPH	FL PRO	H_2SO_4	1	1-liter	amber glass	

ADDITIONAL INFORMATION

Comments:
DO: 0.4
CO_2 = 318 × 0.2
Alk = ND
Fe = 0.8

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.: NTC02GD0217

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY
Project No.: 3928
Sampled By: JB
Field Analyst: JA
Field Form Checked as per QA/QC Checklist (initials): [illegible]

Sample ID No.: NT02G37617
Sample Location: MW37c
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	p (S
Date: 5/3/01								
Time: 1620								
Method: peristaltic		-142	.060	22.7	75	0.20	—	5.

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: ~~0.4~~ 0-1 mg/L) Analysis Time: 1610

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 0.4 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1611

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ND mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____mg/L) Analysis Time: 1615

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☒	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
_____	x 0.1	= mg/L
318	x 0.2	= 63.6 mg/L
_____	x 1.0	= mg/L
_____	x 2.0	= mg/L

CHEMetrics: _____mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: SA2 TREATABILITY STUDY

Sample ID No.: NTC02G37C1

Project No.: 3928

Sample Location: MW37C

Sampled By: JB

Duplicate: ☐

Field Analyst: JA

Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: _____

Program/Module: 525nm 41

Concentration: _____ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IB-18C Color Wheel Other: 0 Analysis Time: _____

Program/Module: 500nm 33

Concentration: 0.8 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: color wheel mid range Analysis Time: _____

Concentration: 2.00 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☑

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

ANALYTICAL SERVICES

Tel: (207) 874-2400
Fax: (207) 775-4029

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page ____

Client	Contact	Phone #	Fax #
TetraTech NUS, Inc.	Mike Campbell	865 483 9900	( )

Address	City	State	Zip Code
	Oak Ridge	TN	

Purchase Order #	Proj. Name / No.	Katahdin Quote #
	NTC Orlando #3928	

Bill (if different than above) ---

Address -

Sampler (Print / Sign) Jason Bourgeois

Copies To:

LAB USE ONLY

WORK ORDER #:

KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N DOC (w/H2SO4)	Filt. ☐Y☐N Metals, dissolved	Filt. ☐Y☐N Nitrite, Sulfate, Nitrate	Filt. ☐Y☐N Alkalinity	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	NTC02N08C01	4/30/01 1115	GW	4	1	1	1	1					
	NTC02N13C01	4/30/01 1715	GW	4	1	1	1	1					
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COMMENTS

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[signature]	4/30/01 1830				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signatu

FORMSOURCE INC. ☎ (877) 782-3311

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

CUSTOMER

KAS-COC1 (R.0900)

ANALYTICAL SERVICES

Tel: (207) 874-2400
Fax: (207) 775-4029

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page 1 of

Client: Tetra Tech NUS INC.	Contact: Mike Campbell	Phone #: 865 [illegible]	Fax #: 865 [illegible]
Address: 800 Oak Ridge Turnpike	City: Oak Ridge	State: TN	Zip Code: 37[illegible]
Purchase Order #	Proj. Name / No.: NTC Orlando [illegible]	Katahdin Quote #	
Bill (if different than above)	Address		
Sampler (Print / Sign): [illegible]		Copies To:	

LAB USE ONLY

WORK ORDER #:

KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N VOC (HCL)	Filt. ☐Y☐N Dissolved Metals (HNO3)	Filt. ☐Y☐N Nitrate Nitrite	Filt. ☐Y☐N [illegible]	Filt. ☐Y☐N TCL VOC (HCL)	Filt. ☐Y☐N PAH (None)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	NTCC2TE017 ~~NTCC2TE017~~	6-1-01 0700	H2O	2					2				
	NTCC2G23C17	6-1-01 1010		7	1	1	1	1	3				
	NTCC2G24C17	1905		7	1	1	1	1	3				
	NTCC2G25C17	1450		6	1	1	1		3				
	NTCC2G26C17	1515		6	1	1	1		3				
	NTCC2G27C17	1555		6	1	1	1		3				
	NTCC4G6C01	1130		1						1			
		/											
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signa
[illegible]	6-1-01 1100	[illegible] X			
Relinquished By: (Signature)	**Date / Time**	**Received By: (Signature)**	**Relinquished By: (Signature)**	**Date / Time**	**Received By:**

FORMSOURCE INC (877) 782-3311

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

CUSTOMER

KAS-COC1 (R.0900)

ANALYTICAL SERVICES

Tel: (207) 874-2400
Fax: (207) 775-4029

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page 1 of

Client	Contact	Phone #	Fax #
Tetra Tech NUS Inc.	Mike Campbell	865X123900	865X123

Address: 800 Oak Ridge Turnpike City: Oak Ridge State: TN Zip Code: 37830

Purchase Order # | Proj. Name / No. | Katahdin Quote #

Bill (if different than above) | Address

Sampler (Print / Sign): Jeff Alexander / Tason Bourgeois

Copies To:

LAB USE ONLY WORK ORDER #:

KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N: DOC H2SO4	Filt. ☐Y☐N: Mn, Fe Dissolved (HNO3)	Filt. ☐Y☐N: Nitrite, Nitrate, Sulfate	Filt. ☐Y☐N: TCL VOCs (HCl)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	NTC02B0117	05201 /	H2O	2				2					
	NTC02G31C17	050201/1010	GW	6	1	1	1	3					
	NTC02G32C17	050201/1015	GW	6	1	1	1	3					
	TC02G20B17	" /1040	GW	*63	1	1	1	—					
	TC02G21C17	" /1050	GW	3	1	1	1	—					
	NTC02G30C17	" /1555	GW	6	1	1	1	3					
	NTC02G28C17	" /1635	GW	6	1	1	1	3					
	NTC02G29C17	" /1640	GW	6	1	1	1	3					
	NTC02GD0117	" /0000	GW	6	1	1	1	3					
		/											
		/											
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Sig
[signature]	5/2/01 1915				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Sig

FORMSOURCE INC. (877) 782-3311

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

CUSTOMER

KAS-COC1 (R.0900)

ANALYTICAL SERVICES

Tel: (207) 874-2400
Fax: (207) 775-4029

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page 1 of

Client: Tetra Tech NUS, Inc. | Contact: Mike Campbell | Phone #: 865 483 9400 | Fax #: 865 483 2

Address: 800 Oak Ridge Rd. | City: Oak Ridge | State: TN | Zip Code: 37

Purchase Order # | Proj. Name / No.: NTC Orlando 3928 | Katahdin Quote #

Bill (if different than above) - | Address -

Sampler (Print / Sign): J.H. Alexander | Copies To:

LAB USE ONLY | WORK ORDER #: | KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N H2SO4 DOC	Filt. ☐Y☐N HNO3 Metals (HNO3)	Filt. ☐Y☐N Nitrite, Nitrate Sulfate	Filt. ☐Y☐N TCL VOC (HCl)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	NTC02TB0217	5/3/01 /						2		TRIP BLANK			
	NTC02G34C17	1040	GW		1	1	1	3					
	NTC02G33C17	1055	GW		1	1	1	3					
	NTC02G35C17	1115	GW		1	1	1	3					
	NTC02G36C17	1120	GW		1	1	1	3					
	NTC02G37C17	1620	GW		3	3	3	9		MS/MSD			
	NTC02G14C17	1630	GW		1	1	1						
	NTC02GD0217	1000	GW		1	1	1	3					
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[illegible]	5/3/01 1345				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By:

FORMSOURCE INC. (877) 782-3311

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

CUSTOMER

KAS-COC1 (R.0900)

CHAI. .F-CUSTODY RECORD

VAPORTECH Services, Inc.

1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

Company Name: TetraTech NUS, Inc.
Address: 1401 Oven Park Dr. Ste 102
City: Tallahassee State: FL Zip: 32304
Proj. Manager: Mike Campbell
Proj. Location: NTC Orlando
Proj. Number: 3128
Phone #: 850 385 9899 Fax #: 850 385 9860

Sampler's signature :

Analysis Options: Enter letters in Requested Analysis columns below.

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 -C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p -Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-DCE, 1,1- DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, Chloroform 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene (PCE)

Collection Date	Collection Time	Number of Containers	Sample Type	Sample Identification	Requested Analysis				(Other)	Remarks
4/30/01	1715	3		NTC02N13C01	A	B	E			
4/30/01	1115	3		NTC02N08C01	A	B	E			

Results to :

Invoice to :

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
	TTNUS	43001	1900				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY - Submitter

CHAIN-OF-CUSTODY RECORD

VAPORTECH Services, Inc.

1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

Company Name: Jacobs Tech NUS Inc.
Address: 700 Oak Ridge Tnpk A-600
City: Oak Ridge **State:** TN **Zip:** 37830
Proj. Manager: Mike Campbell
Proj. Location: NTC ORLANDO
Proj. Number: 3928
Phone #: 865-483-9900 **Fax #:** 865-483-2014

Sampler's signature :

Analysis Options: Enter letters in Requested Analysis columns below.

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 -C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p -Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-DCE, 1,1- DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, Chloroform 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene (PCE)

Collection Date	Collection Time	Number of Containers	Sample Type	Sample Identification	Requested Analysis				(Other)	Remarks
5-1-01	1010	3	H2O/Gas	NTC026-23C17	A	B	E			
↓	0905	3	↓	NTC026-24C17	A	B	E			
↓	1450	3	↓	NTC026-25C17	A	B	E			
↓	1515	3	↓	NTC026-26C17	A	B	E			
↓	1555	3	↓	NTC026-27C17	A	B	E			

Results to :

Invoice to :

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
	TTNUS	5-1-01	1900				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

CHAI F-CUSTODY RECORD

VAPORTECH Services, Inc.

1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

Company Name: Tetra Tech NUS Inc.
Address: 800 Oak Ridge
City: Oak Ridge State: TN Zip: 37830
Proj. Manager: Steve McCuy
Proj. Location: NTC Orlando Herndon
Proj. Number: ~~832~~ 3928
Phone #: 865 4839900 Fax #: 865 483 2014

Sampler's signature :

Analysis Options: Enter letters in Requested Analysis columns below.

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 -C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p -Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-DCE, 1,1- DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, Chloroform 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene (PCE)

Collection Date	Collection Time	Number of Containers	Sample Type	Sample Identification	Requested Analysis				(Other)	Remarks
5/2/01	1010			NTC02G31C17	A	B	E			
	1015			NTC02G32C17	A	B	E			
	1040			NTC02G20B17	A	B	E			
	1050			NTC02G21C17	A	B	E			
	1555			NTC02G30C17	A	B	E			
	1635			NTC02G28C17	A	B	E			
	1640			NTC02G29C17	A	B	E			
	0000			NTC02GD0117	A	B	E			

Results to :

Invoice to :

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
	Tetra Tech NUS	5/2/01	1930				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

CHAIN-OF-CUSTODY RECORD

VAPORTECH Services, Inc.

1158 Pittsburgh Road • Suite 201 • Valencia, PA 16059
Tel: 724-898-2622 • Fax: 724-898-2633

Company Name: Tetra Tech NUS, Inc.
Address: 800 Oak Ridge
City: Oak Ridge State: TN Zip: 37830
Proj. Manager: Steve McCuy
Proj. Location: NTC Orlando Herndon
Proj. Number: 3928
Phone #: 8654839900 Fax #: 8654832014

Sampler's signature :

Analysis Options: Enter letters in Requested Analysis columns below.

A	Light Hydrocarbons	F	BTEX
B	Permanent Gases	G	BTEX & C5 - C10
C	Methane	H	TPH (C4 -C12 range)
D	Methane, Ethane, Ethylene	I	Chlorinated Hydrocarbons
E	Hydrogen	J	624 Compound List

Light Hydrocarbons: Methane, Ethane, Ethylene, Propane, Propylene, iso-Butane, n-Butane
Permanent Gases: Carbon Dioxide, Oxygen, Nitrogen, Methane, Carbon Monoxide
BTEX: Benzene, Toluene, Ethyl Benzene, m & p -Xylene, o-Xylene
C5-C10: Pentane, Hexane, Heptane, Octane, Nonane, Decane
Chlorinated HC: 1,1-DCE, 1,1- DCA, Methylene Chloride, trans-1,2-DCE, cis-1,2-DCE, Chloroform 1,1,1-TCA, Carbon Tetrachloride, Trichloroethylene (TCE), Tetrachloroethylene (PCE)

Collection Date	Collection Time	Number of Containers	Sample Type	Sample Identification	Requested Analysis				(Other)	Remarks
5/3/01	1040			NTC02G34C17	A	B	E			
	1055			NTC02G33C17	A	B	E			
	1115			NTC02G35C17	A	B	E			
	1120			NTC02G36C17	A	B	E			
	1620			NTC02G37C17	A	B	E			Extra volume for MS/MSD
	1630			NTC02G19C17	A	B	E			
↓	0000			NTC02GD0217	A	B	E			

Results to :

Invoice to :

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
[signature]	5/3/01	1845					
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return. YELLOW COPY : Laboratory PINK COPY : Submitter

Katahdin
ANALYTICAL SERVICES
340 County Road No 5
P.O. Box 720
Westbrook, ME 04092
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: TRA Tech NUS Inc
Contact: Mike Campbell
Phone #: (865) 483-9900
Fax #: (865) 483-2214
Address: 200 Oak Ridge Turnpike STE 400
City: Oak Ridge
State: TN
Zip Code: 37830
Purchase Order #: --
Proj. Name / No.: NTC Orlando 7457
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): BR Baker
Copies To:

LAB USE ONLY
WORK ORDER #:
KATAHDIN PROJECT MANAGER:
REMARKS:
SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C: ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	TCL VOCs 8260B	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N
	NTC TB 042601	042601/0900		3	X										
	NTC 02G04A17	/1405	GW	3	X										
	NTC 02G08C17	/1135		3	X										
	02G12C17	/1040		3	X										
	NTC 02G13C17	/1542		3	X										
	NTC 02G04A17 MS/MSD	/1405		6	X										
	NTC 02G17C17	/1535		3	X										
	NTC 02G19C17	/1410		3	X										
	NTC 02G20B17	/1[illegible]		3	X										
	NTC 02G21C17	/1050		3	X										
	NTC 02D5000	/0000		3	X										
		/													
		/													
		/													
		/													
		/													

COMMENTS
FEDEX # 822637369674

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	042601 1200				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

FORMSOURCE INC. (877) 782-3311

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

CUSTOMER

KAS-COC1 (R.0900)