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MONITORING WELL SAMPLING SUMMARY AT STUDY AREA 2 MAIN BASE WITH  
TRANSMITTAL LETTER NTC ORLANDO FL  
10/8/1999  
TETRA TECH



TETRA TECH NUS, INC.

800 Oak Ridge  
(423) 483-9

00241

99-A180

October 8, 1999

Commanding Officer  
SOUTHNAVFACENGCOM  
ATTN: Ms. Barbara Nwokike, Code 1873  
P.O. Box 190010  
2155 Eagle Drive  
North Charleston, SC 29419-9010

Subject: Monitor Well Sampling at SA 2  
Main Base, NTC, Orlando

Dear Ms. Nwokike:

Enclosed is a report describing the sampling activities performed at SA 2 in July 1999. Groundwater elevation contour maps and the results of the sample analyses are presented in the report. The data were presented at the September OPT meeting in Orlando. The analytical results for the four domestic wells in the Azalea Park neighborhood were not available as of the date of this report.

If you have any questions please contact me at (423) 220-4730.

Sincerely,

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

SBM:ckf

Enclosure

c: Mr. Wayne Hansel, SOUTHNAVFACENGCOM  
Mr. David Grabka, FDEP  
Ms. Nancy Rodriguez, USEPA Region IV  
Mr. Allan Aikens, CH2M Hill  
Mr. Mike Campbell, Tetra Tech NUS  
Ms. Debbie Wroblewski, Tetra Tech NUS (Cover Letter Only)  
Mr. Mark Perry  
Mr. Rick Allen, Harding Lawson Associates  
File/Edb

## MONITOR WELL SAMPLING AT STUDY AREA 2

**Trip Dates:** July 13 – 16, 29, 1999

**Site Name:** Study Area 2  
Herndon Annex, Naval Training Center Orlando, Florida

**TO Manager:** Steve McCoy

**Field Team:** Gary Braganza, Field Operations Leader  
John Hofer  
David Fortune  
Paul Halverson

**Prepared by:** John Hofer

### 1. PURPOSE

Groundwater sampling at Study Area (SA) 2 was conducted to determine if constituent concentrations had decreased over time. The fieldwork was performed in accordance with the *Work Plan for <sup>Groundwater</sup> Quarterly Monitoring at Study Areas 2, 3, 52, and Operable Unit 3* (Tetra Tech NUS, July 1999), and the *Project Operations Plan* (POP) (ABB-ES, 1997).

### 2. ACTIVITIES

Tetra Tech NUS, Inc., mobilized to the field on July 12, 1999, to perform quarterly monitoring at SAs 2, 3, and 52, and Operable Unit (OU) 3. Work at SA 2 began on July 13 with a site reconnaissance. Nine wells were originally scheduled for sampling. Monitoring well OLD-02-04A was added to the sampling schedule during the Orlando Partnering Team meeting of July 19–20 for a total of ten wells. Groundwater levels were measured at SA 2 on July 13. Groundwater elevations for this field event and previous events are summarized in Table 1.

Groundwater sampling was conducted July 14–16 and 29. All wells were purged using the low-flow method described in the POP. The purpose of the low-flow purging was to reduce turbidity and the volume of purge water required to obtain a representative sample. Purging of the monitoring wells consisted of removing groundwater at a low-flow rate using a peristaltic pump. Water levels were monitored every 3 to 5 minutes to ensure that drawdown remained less than 0.3 feet, and field parameters were measured to determine when stabilization was achieved. The groundwater sample log sheets are included in Attachment A.

The use of the low-flow purging method was effective in reducing the turbidity of the groundwater samples. Turbidity readings were less than 10 Nephelometric Turbidity Units (NTUs) in all but the three samples from OLD-02-14C, -19C and -21C. The turbidity in these wells stabilized at 12, 50, and 32 NTUs, respectively.

Groundwater samples from SA 2 were analyzed for volatile organic compounds (VOCs) using Method 8260. All samples were placed in ice-cooled coolers and shipped overnight to Quanterra Environmental Services in North Canton, Ohio, for analysis. The positive detections are summarized in Table 2, and a complete listing of the validated analytical data is included as Table 3. Historical groundwater analytical data are presented in Table 4.

### 3. PROBLEMS ENCOUNTERED

No significant problems were encountered.

### 4. RESULTS

**Water Level Survey** - The water level survey at SA 2 was conducted on July 13, 1999. Groundwater elevation data for SA 2 are presented in Table 1. The water table and potentiometric surface configurations of the shallow and deep portions of the aquifer for the site are presented in Figures 1 and 2, 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 with the elevation of the drainage canal that runs along the eastern perimeter of the site indicates that the aquifer discharges into the canal. This is demonstrated by the northwestern trend in the potentiometric contours of the shallow zone beneath the Azalea Park neighborhood (see Figure 1). The effect of the canal is interpreted to be much less for the deep zone groundwater (see Figure 2) which may discharge to Lake Barton.

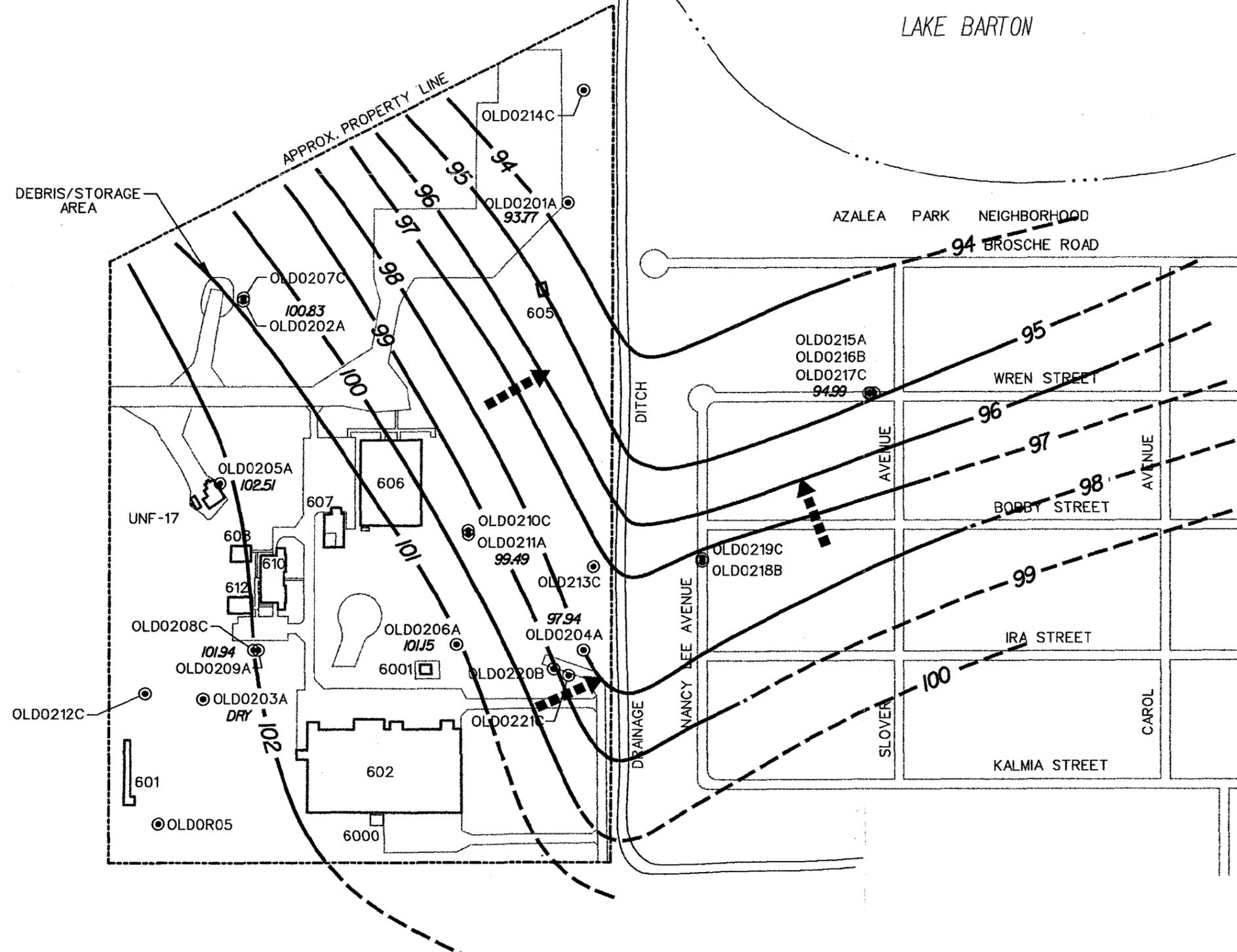
The potentiometric data also show a downward vertical gradient across much of the area mapped in Figures 1 and 2 that diminishes as flow approaches Lake Barton. The head differential between the shallow and deep monitoring wells ranges between 1 to 3 feet. An exception to this condition occurs locally in the vicinity of wells OLD0204A and OLD0220B where the vertical gradient is upward. These observations are consistent with the potentiometric data presented in the SA 2 Environmental Screening Report (HLA 1999).

**Data Validation** - All sample analyses were subjected to data validation in accordance with the guidance document *Navy Installation Restoration chemical Data Quality Assurance Manual* (June 1988). Qualification of the data was performed using the *USEPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (February 1994). The data validation evaluated data completeness, holding time compliance, calibration compliance, laboratory blank contamination, surrogate spike recovery, matrix spike recovery, blank spike recovery, internal standard response, sample quantitation, and detection limits. Qualifiers resulting from the validation process are shown with the analyte concentrations in Tables 2, 3, and 4.

**Analytical Results** - Table 2 presents a summary of the groundwater analytical results for SA 2. Shaded cells indicate concentrations above Florida Groundwater Cleanup Target Levels (GCTLs). The distribution of VOCs detected above the GCTLs is shown on Figure 3. Benzene was detected above its GCTL of 1 ug/L in samples collected from wells OLD-02-08, OLD-02-13, OLD-02-19, OLD-02-20, and OLD-02-21. No significant changes in benzene concentrations have occurred since the last samples were obtained in November/December 1998.

**FIGURES****No.**

- 1 Shallow Zone Water Table Elevation Map, July 13, 1999, Study Area 2
- 2 Deep Zone Potentiometric Surface Map, July 13, 1999, Study Area 2
- 3 Volatile Organic Concentrations Above Groundwater Screening Criteria for July 1999, Study Area 2



**LEGEND**

- MONITORING WELL
- GROUNDWATER ELEVATION<sup>1</sup>
- POTENTIOMETRIC SURFACE ISOCON<sup>1</sup> (DASHED WHERE APPROX.)
- GROUNDWATER FLOW DIRECTION (APPROX.)

<sup>1</sup> - ELEVATION IN FEET ABOVE MEAN SEA LEVEL

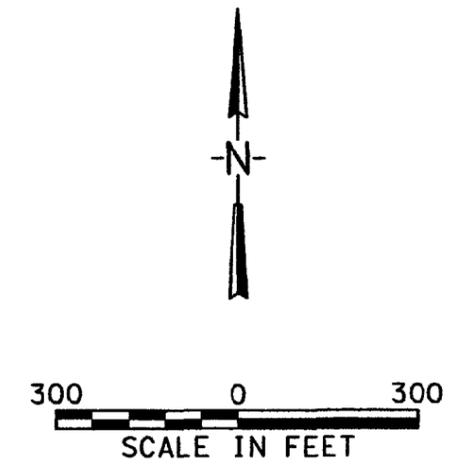


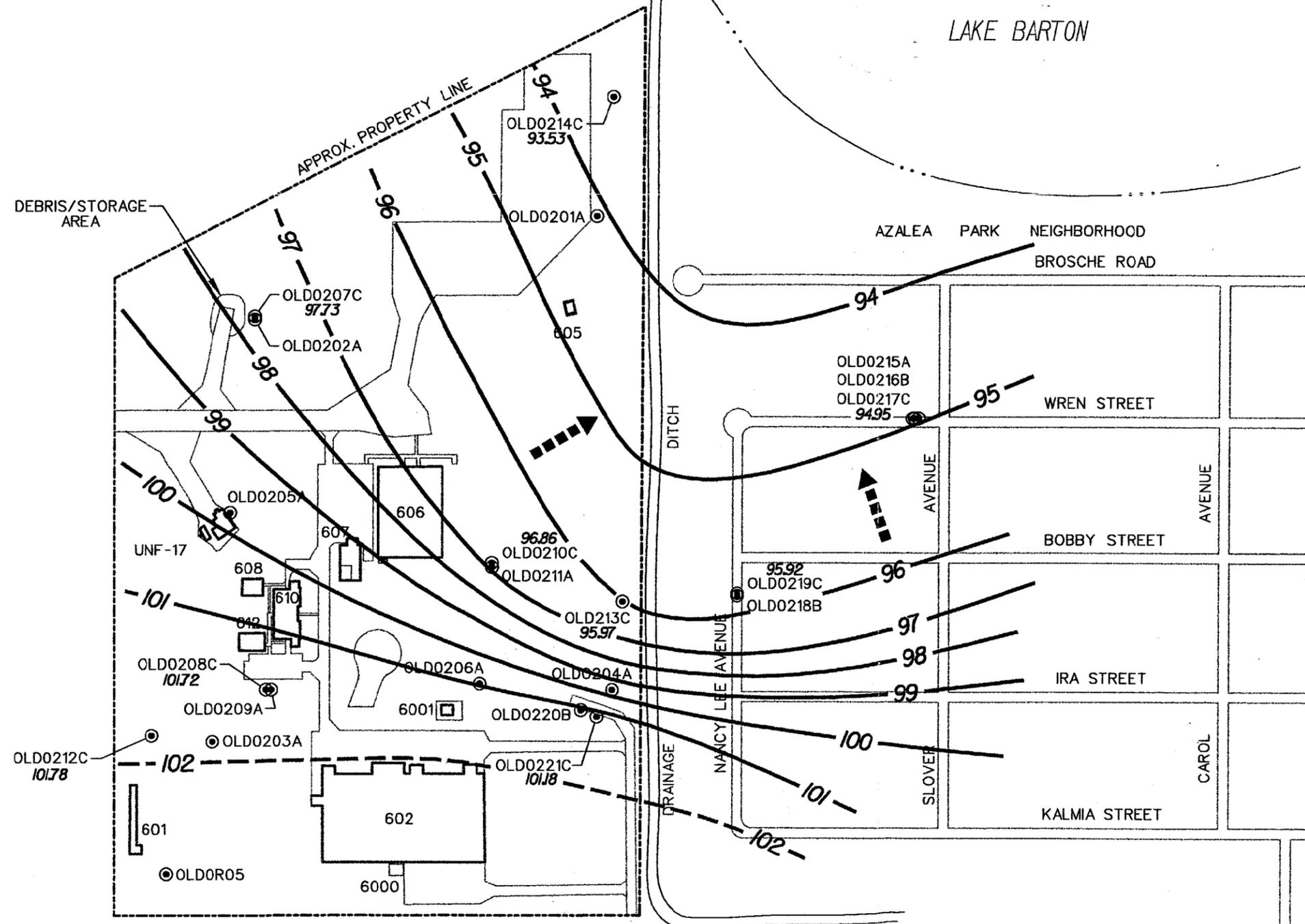
FIGURE 1



SHALLOW ZONE WATER TABLE  
 ELEVATION MAP - JULY 13, 1999  
 MONITORING REPORT  
 STUDY AREA 2 - HERNDON ANNEX  
 NAVAL TRAINING CENTER  
 ORLANDO, FLORIDA

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**LEGEND**

- MONITORING WELL
- GROUNDWATER ELEVATION<sup>1</sup> 94.95
- POTENTIOMETRIC SURFACE ISOCON<sup>1</sup>  
(DASHED WHERE APPROX.)
- GROUNDWATER FLOW  
DIRECTION (APPROX.)

1 - ELEVATION IN FEET ABOVE MEAN SEA LEVEL

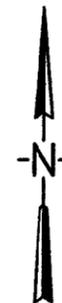


FIGURE 2

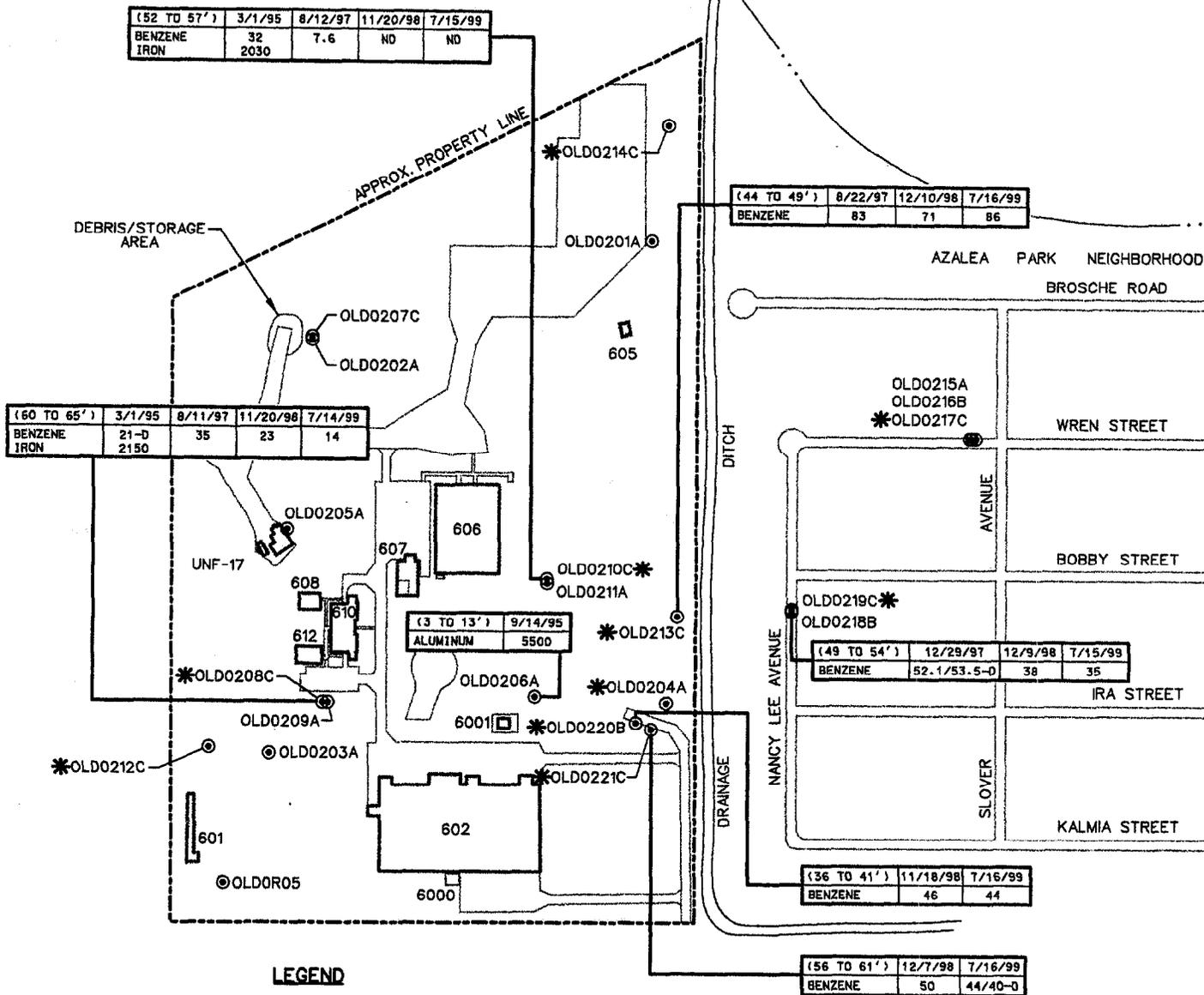


DEEP ZONE POTENTIOMETRIC  
SURFACE MAP - JULY 13, 1999  
MONITORING REPORT  
STUDY AREA 2 - HERNDON ANNEX

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

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LAKE BARTON



**LEGEND**

ASTERISK INDICATES MONITORING WELLS SAMPLED

\*OLD0210C

SAMPLE DEPTH SAMPLE COLLECTION DATE

(56 TO 61')	12/7/98	7/16/99
BENZENE	50	44/40-D

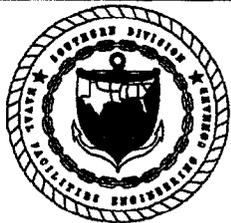
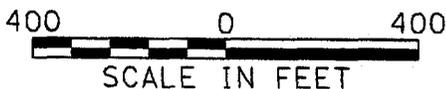
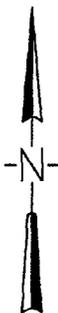
ANALYTE ANALYTE CONCENTRATION<sup>1</sup>

NOT DETECTED ND  
DUPLICATE D

<sup>1</sup>-BENZENE CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)

**NOTE:**

DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT EXCEEDANCES.



**FIGURE 3**  
**GROUNDWATER CONCENTRATIONS**  
**JULY 1999**  
**QUARTERLY MONITORING REPORT**  
**STUDY AREA 2 - HERNDON ANNEX**

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

## TABLES

**No.**

- 1 Water-Level Elevations Summary, Study Area 2
- 2 Summary of Positive Detections in Groundwater, Study Area 2
- 3 Study Area 2 Validated Groundwater Results
- 4 Historical Groundwater Analytical Results, Study Area 2

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TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY  
STUDY AREA 2

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

PAGE 1 OF 1

Well	Top of Casing Elevation	2/19/98		12/16/98		7/13/99	
		Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
Shallow							
OLD-02-01A	104.70	9.57	95.13	11.15	93.55	10.93	93.77
OLD-02-02A	111.27	7.27	104.00	9.97	101.30	10.44	100.83
OLD-02-03A	117.45	8.31	109.14	DRY	DRY	DRY	DRY
OLD-02-04A	110.03	10.24	99.79	12.40	97.63	12.09	97.94
OLD-02-05A	112.89	6.84	106.05	10.67	102.22	10.38	102.51
OLD-02-06A	109.17	4.55	104.62	7.75	101.42	8.02	101.15
OLD-02-09A	112.34	6.30	106.04	9.80	102.54	10.40	101.94
OLD-02-11A	107.14	4.27	102.87	7.45	99.69	7.65	99.49
OLD-02-15A	100.05	3.22	96.83	5.85	94.20	5.06	94.99
Intermediate							
OLD-02-16B	99.97	3.14	96.83	5.78	94.19	4.99	94.98
OLD-02-18B	102.17	3.20	98.97	6.60	95.57	5.81	96.36
OLD-02-20B	108.26	not installed		7.78	100.48	7.95	100.31
Deep							
OLD-02-07C	111.52	11.56	99.96	13.42	98.10	13.79	97.73
OLD-02-08C	112.31	7.10	105.21	10.01	102.30	10.59	101.72
OLD-02-10C	106.90	7.80	99.10	10.08	96.82	10.04	96.86
OLD-02-12C	116.04	10.88	105.16	NM	NM	14.26	101.78
OLD-02-13C	104.72	7.00	97.72	8.97	95.75	8.75	95.97
OLD-02-14C	102.74	8.32	94.42	9.38	93.36	9.21	93.53
OLD-02-17C	99.82	3.34	96.48	8.60	91.22	4.87	94.95
OLD-02-19C	102.32	7.21	95.11	6.77	95.55	6.40	95.92
OLD-02-21C	108.56	not installed		7.00	101.56	7.38	101.18

BTOC - Below top of casing  
AMSL - Above mean sea level  
NM - Not measured

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TABLE 2

**SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
STUDY AREA 2**

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA  
PAGE 1 OF 2

Well ID		OLD-02-04A	OLD-02-08C	OLD-02-10C	OLD-02-12C	OLD-02-13C	OLD-02-14C
Sample ID	GCTL <sup>(a)</sup>	NTC02G00410	NTC02G00810	NTC02G01010	NTC02G01210	NTC02G01310	NTC02G01410
Lab ID	CRITERIA	A9G300236002	A9G150151003	A9G190102003	A9G150151002	A9G190102008	A9G190102002
Sample Date	mg/L	7/29/99	7/14/99	7/15/99	7/14/99	7/16/99	7/14/99
<b>Volatile Organics (mg/L)</b>							
BENZENE	1		14			86	
CIS-1,2-DICHLOROETHENE	70		0.61J	0.46J		4.1	0.21J
ETHYLBENZENE	30					1.3J	
TRICHLOROETHENE	3					0.98J	
XYLENES, TOTAL	20						

CTO 0024

09/28/99

TABLE 2

**SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
STUDY AREA 2**

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA  
PAGE 2 OF 2

Well ID		OLD-02-17C	OLD-02-19C	OLD-02-20B	OLD-02-21C	OLD-02-21C
Sample ID	GCTL <sup>(a)</sup>	NTC02G01710	NTC02G01910	NTC02G02010	NTC02G02110	NTC02G02110D
Lab ID	CRITERIA	A9G190102004	A9G190102005	A9G190102006	A9G190102007	A9G190102009
Sample Date	UG/L	7/15/99	7/15/99	7/16/99	7/16/99	7/16/99
<b>Volatile Organics (ug/L)</b>						
BENZENE	1		35	44	40	40
CIS-1,2-DICHLOROETHENE	70		1.5	3.3	3	3.1
ETHYLBENZENE	30		0.44J	0.58J	0.47J	0.48J
TRICHLOROETHENE	3			1.3J	1.9	1.8
XYLENES, TOTAL	20		1.5			

## Footnotes:

GCTL - Groundwater Cleanup Target Level

(a) - GCTL from Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-785,  
F.A.C. (Florida Department of Environmental Protection, 1998)

Shaded - Exceeds GCTL

Empty cells indicate non-detects

TABLE 3

VALIDATED GROUNDWATER RESULTS  
STUDY AREA 2NAVAL TRAINING CENTER  
ORLANDO, FL  
PAGE 1 OF 1

SAMPLE ID	NTC02G00410	NTC02G00810	NTC02G01010	NTC02G01210	NTC02G01310	NTC02G01410	NTC02G01710	NTC02G01910	NTC02G02010	NTC02G02110	NTC02G02110-D
LAB ID	A9G300236002	A9G150151003	A9G190102003	A9G150151002	A9G190102008	A9G190102002	A9G190102004	A9G190102005	A9G190102006	A9G190102007	A9G190102009
SAMPLE DATE	7/29/99	7/14/99	7/15/99	7/14/99	7/16/99	7/15/99	7/15/99	7/15/99	7/16/99	7/16/99	7/16/99
<b>VOLATILE ORGANICS (µg/L)</b>											
1,1,1-TRICHLOROETHANE	1 UJ	1 U	1 UJ	1 U	3.3 UJ	1 UJ	1 UJ	1 UJ	2 UJ	1 UJ	1 UJ
1,1,2,2-TETRACHLOROETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
1,1,2-TRICHLOROETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
1,1-DICHLOROETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
1,1-DICHLOROETHENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
1,2-DICHLOROETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
1,2-DICHLOROPROPANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
2-BUTANONE	10 U	10 UR	10 UJ	10 UR	33 UJ	10 UJ	10 UJ	10 UJ	20 UJ	10 UJ	10 UJ
2-HEXANONE	10 U	10 U	10 UJ	10 U	33 UJ	10 UJ	10 UJ	10 UJ	20 UJ	10 UJ	10 UJ
4-METHYL-2-PENTANONE	10 UJ	10 U	10 UJ	10 U	33 UJ	10 UJ	10 UJ	10 UJ	20 UJ	10 UJ	10 UJ
ACETONE	10 UJ	10 UR	10 UJ	10 UR	33 UJ	10 UJ	10 UJ	10 UJ	20 UJ	10 UJ	10 UJ
BENZENE	1 U	14	1 U	1 U	86	1 U	1 U	35	44	40	40
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
BROMOFORM	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
BROMOMETHANE	1 UJ	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CARBON DISULFIDE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CARBON TETRACHLORIDE	1 UJ	1 U	1 UJ	1 U	3.3 UJ	1 UJ	1 UJ	1 UJ	2 UJ	1 UJ	1 UJ
CHLOROENZENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CHLOROETHANE	1 UJ	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CHLOROFORM	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CHLOROMETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	1 U	-0.61 J	0.46 J	1 U	4.1	0.21 J	1 U	1.5	3.3	3	3.1
CIS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
DIBROMOCHLOROMETHANE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
ETHYLBENZENE	1 U	1 U	1 U	1 U	1.3 J	1 U	1 U	0.44 J	0.58 J	0.47 J	0.48 J
METHYLENE CHLORIDE	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	1 U	2 U	1 U	1 U
STYRENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
TETRACHLOROETHENE	1 UJ	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
TOLUENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
TRICHLOROETHENE	1 U	1 U	1 U	1 U	0.98 J	1 U	1 U	1 U	1.3 J	1.9	1.8
VINYL CHLORIDE	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1 U	2 U	1 U	1 U
XYLENES, TOTAL	1 U	1 U	1 U	1 U	3.3 U	1 U	1 U	1.5	2 U	1 U	1 U

µg/L - micrograms per liter

U - The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit. The number preceding the U qualifier is the reported sample quantitation limit.

J - The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.

UJ - The analyte/compound was not detected above the reported sample quantitation limit. The reported quantitation limit, however, is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte/compound in the sample.

R - The sample results are rejected during data validation because of serious deficiencies in meeting quality control criteria.

UR - A combination of the U and R data qualifiers. The analyte was not detected and the result was rejected.

TABLE 4  
 HISTORICAL GROUNDWATER DETECTIONS  
 STUDY AREA 2

NAVAL TRAINING CENTER  
 ORLANDO, FLORIDA

PAGE 1 OF 9

Sample ID	GCTL Criteria (µg/L)	NTC	02G00101	02G00102	02G00102	02G00103	02G00201	02G00201-D	02G00202	02G00203
Lab ID		Background	G5782001	G7818003	C127447002	A8L090188007	G5782002	G5782003	G7818002	A8L090188008
Sample Date		Screening	9/14/94	6/14/95	8/8/97	12/8/98	9/14/94	9/14/94	6/14/95	12/8/98
<b>Volatiles (µg/L)</b>										
1,2,4-Trimethylbenzene	10									
1,3,5-Trimethylbenzene	10									
2-Butanone	4,200									
4-Isopropyltoluene										
Benzene	1									
Bromodichloromethane	91									
Chloroform	5.7		0.3 J							
Chloromethane	2.7									
cis-1,2-Dichloroethene	70									
Ethane										
Ethylbenzene	30									
Isopropylbenzene	0.8									
m-Xylene & p-Xylene										
Methane						2.2				21
Methylene chloride	5					1.3 J				1.4 J
o-Xylene										
Trichloroethene	3									
Xylene (total)	20									
<b>Semivolatiles (µg/L)</b>										
bis(2-Ethylhexyl)phthalate	6		NA	4		NA	NA	NA		NA
o-Dichlorobenzene									4	
Phenanthrene	210									
Phenol	10									
<b>Inorganics (µg/L)</b>										
Aluminum	200	4,067		1590						
Antimony	6	4.1							76.2 B	
Arsenic	50	5.0							2.6 B	
Barium	2,000	31.4		18.3 B						
Beryllium	4	N/A								
Calcium		36,830		21000					37300	
Chromium	100	7.8		3.2 B						
Copper	1,000	5.4		9.1 B						
Iron	300	1,227		267					13.8 B	
Lead	15	4.0								
Magnesium		4,560		358 B					856 B	
Manganese	50	17.0		18.5						
Mercury	2	0.12								
Potassium		5,400		2390 B					904 B	
Selenium	50	9.7								
Sodium	160,000	18,222		1660 B					4040 B	
Vanadium	49	20.6							2.5 B	
Zinc	5,000	4.0								
<b>Misc (mg/L)</b>										
Total Organic Carbon			NA	NA	NA	4	NA	NA	NA	9
<b>Radionuclides (pCi/L)</b>										
Gross Alpha	13.0			4.4					1.1	
Gross Beta	9.5			5.3						



TABLE 4  
 HISTORICAL GROUNDWATER DETECTIONS  
 STUDY AREA 2

NAVAL TRAINING CENTER  
 ORLANDO, FLORIDA

PAGE 3 OF 9

Sample ID	GCTL Criteria (µg/L)	NTC	02G00601	02G00602	02G00603	02G00701	02G00703	02G00801	02G00802	02G00803	02G00810
Lab ID		Background	G5781002	C127435003	A8K210147004	G7063009	A8L150167002	G6991001	C127484001	A8K230141005	A9G150151003
Sample Date		Screening	9/14/94	8/7/97	11/19/98	3/10/95	12/11/98	3/1/95	8/11/97	11/20/98	7/14/99
<b>Volatiles (µg/L)</b>											
1,2,4-Trimethylbenzene	10								1.9	1.8 J	
1,3,5-Trimethylbenzene	10								0.8		
2-Butanone	4,200										
4-Isopropyltoluene											
Benzene	1								35	23	14
Bromodichloromethane	91										
Chloroform	5.7										
Chloromethane	2.7										
cis-1,2-Dichloroethene	70							1	0.83	0.65 J	0.61 J
Ethane										0.61	
Ethylbenzene	30							0.6 J			
Isopropylbenzene	0.8										
m-Xylene & p-Xylene											
Methane					19		20				
Methylene chloride	5				3.7 J		1.5 J				
o-Xylene											
Trichloroethene	3										
Xylene (total)	20					0.2 J					
<b>Semivolatiles (µg/L)</b>											
bis(2-Ethylhexyl)phthalate	6			NA	NA		NA		NA	NA	NA
o-Dichlorobenzene											
Phenanthrene	210										
Phenol	10							2 J			
<b>Inorganics (µg/L)</b>											
Aluminum	200	4,067	5500				466		2930		
Antimony	6	4.1									
Arsenic	50	5.0					9.4 B				
Barium	2,000	31.4	8.2 B				36.6 B		49.7 B		
Beryllium	4	N/A	0.21 J								
Calcium		36,830	35700				14700		4920 B		
Chromium	100	7.8	11.9						4.4 B		
Copper	1,000	5.4	6.3 B								
Iron	300	1,227	159			1450			2150		
Lead	15	4.0	3.7								
Magnesium		4,560	545 B				3430 B		5220		
Manganese	50	17.0	1.5 B				140		18.2		
Mercury	2	0.12	0.18 B								
Potassium		5,400	2620 B				884 B		1300 B		
Selenium	50	9.7	2.4 J								
Sodium	160,000	18,222	2750 B			8610			5460		
Vanadium	49	20.6	23.6 B								
Zinc	5,000	4.0				8.4 B			5.1 B		
<b>Misc (mg/L)</b>											
Total Organic Carbon			NA	NA		5	NA	2	NA	NA	5
<b>Radionuclides (pCi/L)</b>											
Gross Alpha	13.0						4		8		
Gross Beta	9.5						4.3		6.4		

TABLE 4

HISTORICAL GROUNDWATER DETECTIONS  
STUDY AREA 2

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

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#10C #10C #10C #10C

Sample ID	GCTL Criteria (µg/L)	NTC	02G00901	02G00902	02G00903	02G01001	02G01002	02G01003	02G01010	02G01101	02G01102
Lab ID		Background	G6991002	C127435001	A8K230141004	G6991003	C127504001	A8K230141001	A9G190102003	G6991004	C127447001
Sample Date		Screening	3/1/95	8/7/97	11/20/98	3/1/95	8/12/97	11/20/98	7/14/99	3/1/95	8/8/97
<b>Volatiles (µg/L)</b>											
1,2,4-Trimethylbenzene	10										
1,3,5-Trimethylbenzene	10						0.73				
2-Butanone	4,200										
4-Isopropyltoluene											
Benzene	1						7.6				
Bromodichloromethane	91										
Chloroform	5.7										
Chloromethane	2.7										
cis-1,2-Dichloroethene	70					1			0.46 J		
Ethane											
Ethylbenzene	30										
Isopropylbenzene	0.8										
m-Xylene & p-Xylene											
Methane					3.8			1.2			
Methylene chloride	5							0.5 J			
o-Xylene											
Trichloroethene	3										
Xylene (total)	20										
<b>Semivolatiles (µg/L)</b>											
bis(2-Ethylhexyl)phthalate	6										
o-Dichlorobenzene											
Phenanthrene	210									2 J	
Phenol	10					7 J					
<b>Inorganics (µg/L)</b>											
Aluminum	200	4,067	1080				1460				294
Antimony	6	4.1	3.7 J				3.4 B				
Arsenic	50	5.0									
Barium	2,000	31.4	10 B				43.3 B			7.4 B	
Beryllium	4	N/A					0.37 B				
Calcium		36,830	38100				15000			16300	
Chromium	100	7.8					2.5 B				
Copper	1,000	5.4	21.6 B								
Iron	300	1,227	60.4 B			2030				332	
Lead	15	4.0									
Magnesium		4,560	2030 B				7400			1580 B	
Manganese	50	17.0	23.8			21.8				15.6	
Mercury	2	0.12	0.19 B								
Potassium		5,400	1190 B				1840 B			1830 B	
Selenium	50	9.7									
Sodium	160,000	18,222	2680 B				7600			2790 B	
Vanadium	49	20.6					3.8 B				
Zinc	5,000	4.0	2.6 B				4.8 B			6 B	
<b>Misc (mg/L)</b>											
Total Organic Carbon			NA	NA		16	NA	NA	7	NA	NA
<b>Radionuclides (pCi/L)</b>											
Gross Alpha	13.0		2.3				10.4				1.3
Gross Beta	9.5		5.4				7.3				3.7







TABLE 4

HISTORICAL GROUNDWATER DETECTIONS  
STUDY AREA 2

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

PAGE 8 OF 9

Sample ID	GCTL Criteria (µg/L)	NTC	02G02101	02G02101D	02G02110	02G02110-D
Lab ID		Background	A8L090188002	A8L090188002	A9G190102007	A9G190102009
Sample Date		Screening	12/7/98	12/7/98	7/16/99	7/16/99
<b>Volatiles (µg/L)</b>						
1,2,4-Trimethylbenzene	10					
1,3,5-Trimethylbenzene	10		4.5 J	3.4 J		
2-Butanone	4,200					
4-Isopropyltoluene						
Benzene	1		50	56	40	40
Bromodichloromethane	91					
Chloroform	5.7					
Chloromethane	2.7					
cis-1,2-Dichloroethene	70		3.7	4	3	3.1
Ethane			1.3	1.2		
Ethylbenzene	30		1 J	1 J	0.47 J	0.48 J
Isopropylbenzene	0.8					
m-Xylene & p-Xylene						
Methane						
Methylene chloride	5		0.74 J	0.65 J		
o-Xylene						
Trichloroethene	3		1.5 J	1.6 J	1.9	1.8
Xylene (total)	20					
<b>Semivolatiles (µg/L)</b>						
bis(2-Ethylhexyl)phthalate	6		NA	NA	NA	NA
o-Dichlorobenzene						
Phenanthrene	210					
Phenol	10					
<b>Inorganics (µg/L)</b>						
Aluminum	200	4,067				
Antimony	6	4.1				
Arsenic	50	5.0				
Barium	2,000	31.4				
Beryllium	4	N/A				
Calcium		36,830				
Chromium	100	7.8				
Copper	1,000	5.4				
Iron	300	1,227				
Lead	15	4.0				
Magnesium		4,560				
Manganese	50	17.0				
Mercury	2	0.12				
Potassium		5,400				
Selenium	50	9.7				
Sodium	160,000	18,222				
Vanadium	49	20.6				
Zinc	5,000	4.0				
<b>Misc (mg/L)</b>						
Total Organic Carbon			7	7	NA	NA
<b>Radionuclides (pCi/L)</b>						
Gross Alpha	13.0					
Gross Beta	9.5					

**TABLE 4**  
**HISTORICAL GROUNDWATER DETECTIONS**  
**STUDY ARE 2**

**NAVAL TRAINING CENTER**  
**ORLANDO, FLORIDA**

**PAGE 9 OF 9**

- GCTL - Groundwater Cleanup Target Level
- J - Estimated concentration
- B - Reported concentration is between the instrument detection limit and contract required detection limit
- µg/L - micrograms per liter
- pCi/L - picocuries per liter
- N/A - Not Available or Not Applicable

**ATTACHMENT A**

**GROUNDWATER SAMPLE LOG SHEETS**

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC Orlando/GW - Study Area 52 Sample ID No.: NTC 02600410  
 Project No.: 7457 Sample Location: 20LD 0204A  
 Sampled By: BRB-PH  
 C.O.C. No.: \_\_\_\_\_  
 Type of Sample: \_\_\_\_\_  
 Domestic Well Data  
 Monitoring Well Data  
 Other Well Type: \_\_\_\_\_  
 QA Sample Type: \_\_\_\_\_  
 Low Concentration  
 High Concentration

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
072999	Initial	6.72	234	27.35	8.3	2.12	-68.4	12.20	100mL
Method: P-P Low Flow	0.15	6.13	182	28.19	8.2	1.53	-41.0	12.23	100
Monitor Reading (ppm): 0	0.15	6.08	168	28.22	6.7	1.29	-30.5	12.23	100
Well Casing Diameter: 2"	0.15	6.11	169	28.13	4.3	1.19	-31.0	12.23	100
Well Casing Material: PVC	0.15	6.12	166	28.22	4.2	1.12	-36.9	12.23	100
Total Well Depth (TD): 15.14	0.15	6.07	166	28.06	3.5	.97	-42.1	12.23	100
Static Water Level (WL): 1220	0.15	6.04	165	28.19	3.7	.94	-42.4	12.23	100
One Casing Volume (gal/L):	0.15								
Start Purge (hrs): 0845									
End Purge (hrs): 0950									
Total Purge Time (min): 65									
Total Vol. Purged (gal/L): 680.00									

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		R/TOC	ml/min
072999	Clear	6.04	165	28.18	3.6	.95	-42.3	12.23	N/A
1000									
Method: T-32 EVACUATION									

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOC'S	HCL	3 40ML VIALS	<input checked="" type="checkbox"/>

OBSERVATIONS/NOTES

Circle if Applicable: MS/MSD Duplicate ID No.: \_\_\_\_\_ Signature(s): 

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC Orlando/Study Area 2  
 Project No.: 7457  
 Sample ID No.: NTC02G00810  
 Sample Location: OLD-02-08C  
 Sampled By: D. Fortune J. Hofer  
 C.O.C. No.: 12476  
 Domestic Well Data  
 Monitoring Well Data  
 Other Well Type: \_\_\_\_\_  
 QA Sample Type: \_\_\_\_\_  
 Type of Sample:  
 Low Concentration  
 High Concentration

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/14/99	500	4.26	260	26.13	160	1.1	20.6	10.69	200
Method: peristaltic									
Monitor Reading (ppm): 0	1400	3.79	246	26.30	80	0.6	20.6	10.69	200
Well Casing Diameter: 2	2200	3.62	246	26.22	25	1.3	10.0	10.69	200
Well Casing Material: PVC	3000	3.53	245	26.17	13	2.2	5.3	10.69	200
Total Well Depth (TD): 68.1	4000	3.53	246	26.09	8.6	4.1	4.1	10.69	200
Static Water Level (WL): 10.60	5000	3.43	250	26.00	6.4	4.3	4.3	10.69	200
One Casing Volume (gal/L):	6000	3.59	255	26.09	5.6	4.4	-2.2	10.69	200
Start Purge (hrs): 1.35	7000	3.68	259	25.99	6.0	4.3	-10.0	10.69	200
End Purge (hrs): 1.49	8000	3.72	261	26.08	5.0	4.5	-9.5	10.69	200
Total Purge Time (min): 749	9000	3.70	266	25.68	4.5	3.9	-9.1	10.69	200
Total Vol. Purged (gal/L): 11.4	10000	3.69	265	25.94	3.8	4.0	-7.9	10.69	200
	11,000								
	9,900	3.78	266	26.17	3.7	4.3	-15.3	10.69	200
	10,400	3.99	266	26.18	4.3	4.7	-19.6	10.69	200
	10,900	3.91	267	26.19	0.0	4.4	-18.5	10.69	200
	11,400	3.93	267	26.09	4.0	4.4	-23.3	10.69	200
				26.0					

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		ft BTOC	ml/min
7/14/99	Clear	3.92	267	26.02	4.0	4.5	-22.4	10.69	NA

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	40 ml glass	X

OBSERVATIONS / NOTES

500ml breakers  
 III III III I

Circle if Applicable: MS/MSD Duplicate ID No.: \_\_\_\_\_ Signature(s): [Signature]

# GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NTC Orlando/Study Area 2	Sample ID No.:	NTC02G01010
Project No.:	7457	Sample Location:	010-02-10C
<input type="checkbox"/> Domestic Well Data		Sampled By:	JH DE
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	12772
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/15/99	Initial	10.76	407	25.39	80	11.6	-100.5	10.08	130
Method: peristaltic	1000	10.98	454	25.29	40	10.5	-108.4	10.08	130
Monitor Reading (ppm): 0	1500	10.89	384	25.27	27	9.1	-107.4	10.08	140
Well Casing Diameter: 2	2000	10.31	273	25.25	27	7.9	-108.3	10.08	140
Well Casing Material: PVC	2500	9.77	261	25.18	16	7.5	-111.0	10.08	140
Total Well Depth (TD): 52.65	3000	9.57	260	25.22	12	6.4	-125.4	10.08	140
Static Water Level (WL): 10.03	3500	9.22	263	25.17	9.7	6.0	-135.3	10.08	140
One Casing Volume (gal/L):	4000	8.44	259	25.23	7.2	6.5	-144.1	10.08	140
Start Purge (hrs): 1045	4500	7.74	254	25.25	6.3	6.3	-125.0	10.08	140
End Purge (hrs): 1157	5000	7.39	250	25.19	5.1	6.0	-124.7	10.08	140
Total Purge Time (min): 72	5500	7.32	245	25.16	5.3	6.6	-124.4	10.08	140
Total Vol. Purged (gal/L): 12.5	6000	7.86	239	25.20	4.7	5.7	-116.0	10.08	140
	6500	6.83	237	25.22	4.1	5.6	-110.2	10.08	150
	7000	6.73	234	25.18	3.4	5.5	-119.3	10.08	150
	7500	6.57	230	25.15	2.5	5.4	-107.1	10.08	150
	8000	6.36	227	25.22	3.1	5.5	-105.3	10.08	150
	8500	6.33	222	25.15	3.8	5.4	-101.7	10.08	150
	9000	6.26	220	25.24	2.6	5.5	-108.2	10.08	150
	9500	6.17	218	25.21	2.6	5.3	-104.7	10.08	150
	10000	6.17	219	25.15	2.8	5.2	-106.0	10.08	150
	10500	6.11	216	25.22	2.6	5.2	-107.8	10.08	150

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		ft BTOC	ml/min
7/15/99	2000	6.17	216	25.22	2.6	5.2	-107.8	10.08	150
Method:									

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	40 ml glass	X

OBSERVATIONS / NOTES

Circle if Applicable:		Signature(s): 
MS/MSD	Duplicate ID No.:	

### GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	<u>NTC Orlando/Study Area 2</u>	Sample ID No.:	<u><del>NTC02601210</del></u>
Project No.:	<u>7457</u>	Sample Location:	<u>OLD-02-12C</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>J. Hofer D. Fortune</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	<u>12476</u>
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

**PURGE DATA**

Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
<u>7/14/99</u>	<u>1000</u>	<u>4.98</u>	<u>198</u>	<u>24.54</u>	<u>3.8</u>	<u>7.7</u>	<u>79.3</u>	<u>14.32</u>	<u>400 ml/min</u>
Method: <u>peristaltic pump</u>	<u>2800</u>	<u>4.37</u>	<u>194</u>	<u>24.51</u>	<u>3.9</u>	<u>6.2</u>	<u>78.9</u>	<u>14.33</u>	<u>300 ml/min</u>
Monitor Reading (ppm): <u>0</u>	<u>3000</u>	<u>4.23</u>	<u>195</u>	<u>25.08</u>	<u>4.0</u>	<u>6.3</u>	<u>66.2</u>	<u>14.31</u>	<u>300</u>
Well Casing Diameter: <u>2</u>	<u>4000</u>	<u>4.26</u>	<u>195</u>	<u>24.80</u>	<u>4.6</u>	<u>6.1</u>	<u>61.5</u>	<u>14.31</u>	<u>200</u>
Well Casing Material: <u>PVC</u>	<u>4800</u>	<u>4.30</u>	<u>194</u>	<u>24.83</u>	<u>4.6</u>	<u>5.6</u>	<u>50.0</u>	<u>14.31</u>	<u>200</u>
Total Well Depth (TD): <u>59.1</u>	<u>6000</u>	<u>4.29</u>	<u>193</u>	<u>24.83</u>	<u>5.7</u>	<u>5.2</u>	<u>34.1</u>	<u>14.31</u>	<u>200</u>
Static Water Level (WL): <u>14.29</u>	<u>7000</u>	<u>4.26</u>	<u>193</u>	<u>24.74</u>	<u>5.3</u>	<u>5.2</u>	<u>21.0</u>	<u>14.31</u>	<u>200</u>
One Casing Volume (gal/L): <u>8.4</u>	<u>8000</u>	<u>4.19</u>	<u>192</u>	<u>24.78</u>	<u>5.6</u>	<u>4.6</u>	<u>12.6</u>	<u>14.31</u>	<u>200</u>
Start Purge (hrs): <u>0850</u>	<u>9000</u>	<u>4.25</u>	<u>191</u>	<u>24.77</u>	<u>4.9</u>	<u>3.7</u>	<u>4.1</u>	<u>14.31</u>	<u>200</u>
End Purge (hrs): <u>0944</u>	<u>10000</u>	<u>4.25</u>	<u>191</u>	<u>24.82</u>	<u>4.4</u>	<u>4.4</u>	<u>-2.1</u>	<u>14.31</u>	<u>200</u>
Total Purge Time (min): <u>54</u>	<u>11000</u>	<u>4.32</u>	<u>190</u>	<u>24.86</u>	<u>4.2</u>	<u>4.5</u>	<u>-1.2</u>	<u>14.31</u>	<u>200</u>
Total Vol. Purged (gal): <u>12</u>	<u>12000</u>	<u>4.30</u>	<u>189</u>	<u>24.97</u>	<u>4.3</u>	<u>4.4</u>	<u>-0.7</u>	<u>14.31</u>	<u>200</u>

**SAMPLING DATA**

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		R BTOC	ml/min
<u>7/14/99</u>	<u>Clear</u>	<u>4.36</u>	<u>189</u>	<u>24.97</u>	<u>4.3</u>	<u>4.4</u>	<u>-0.7</u>	<u>14.31</u>	<u>NA</u>

**SAMPLE COLLECTION INFORMATION**

Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	<u>3</u> 40 ml glass	<u>X</u>

**OBSERVATIONS / NOTES**

Circle if Applicable:		Signature(s): 
MS/MSD	Duplicate ID No.:	

# GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC Orlando/Study Area 2  
 Project No.: 7457

Sample ID No.: NTC02601310  
 Sample Location: 2LD-02-13C

- Domestic Well Data
- Monitoring Well Data
- Other Well Type: \_\_\_\_\_
- QA Sample Type: \_\_\_\_\_

Sampled By: DE JH  
 C.O.C. No.: 12472  
 Type of Sample:  
 Low Concentration  
 High Concentration

### PURGE DATA

Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/14/99									
Method: <u>peristaltic pump</u>	<u>Initial</u>				<u>90</u>				<u>400</u>
Monitor Reading (ppm): <u>0</u>	<u>1700</u>				<u>95</u>				<u>400</u>
Well Casing Diameter: <u>2"</u>	<u>2170</u>	<u>3.71</u>	<u>83</u>	<u>25.06</u>	<u>100</u>	<u>4.2</u>	<u>2.1</u>	<u>8.72</u>	<u>130</u>
Well Casing Material: <u>PVC</u>	<u>3770</u>	<u>3.75</u>	<u>84</u>	<u>25.35</u>	<u>65</u>	<u>4.2</u>	<u>1.3</u>	<u>8.75</u>	<u>130</u>
Total Well Depth (TD): <u>49.48</u>	<u>2600</u>	<u>3.80</u>	<u>84</u>	<u>25.19</u>	<u>260</u>	<u>5.1</u>	<u>-0.09</u>	<u>8.78</u>	<u>130</u>
Static Water Level (WL): <u>8.75</u>	<u>3050</u>	<u>5.85</u>	<u>84</u>	<u>25.21</u>	<u>40</u>	<u>5.2</u>	<u>-3.4</u>	<u>8.78</u>	<u>130</u>
One Casing Volume (gal/L):	<u>2150</u>	<u>2.96</u>	<u>85</u>	<u>25.35</u>	<u>30</u>	<u>5.2</u>	<u>-0.8</u>	<u>8.79</u>	<u>130</u>
Start Purge (hrs): <u>4:10</u>	<u>3900</u>	<u>4.07</u>	<u>86</u>	<u>25.31</u>	<u>29</u>	<u>5.4</u>	<u>-1.4</u>	<u>8.79</u>	<u>130</u>
End Purge (hrs): <u>15:25</u>	<u>4250</u>	<u>4.07</u>	<u>84</u>	<u>25.35</u>	<u>21</u>	<u>5.1</u>	<u>-1.7</u>	<u>8.79</u>	<u>130</u>
Total Purge Time (min): <u>71</u>	<u>4850</u>	<u>4.29</u>	<u>85</u>	<u>25.35</u>	<u>20</u>	<u>5.0</u>	<u>-2.0</u>	<u>8.79</u>	<u>130</u>
Total Vol. Purged (gal/L): <u>7.5</u>	<u>5350</u>	<u>4.40</u>	<u>83</u>	<u>25.15</u>	<u>16</u>	<u>5.1</u>	<u>-2.3</u>	<u>8.78</u>	<u>130</u>
	<u>5800</u>	<u>4.29</u>	<u>84</u>	<u>25.03</u>	<u>18</u>	<u>5.0</u>	<u>-2.9</u>	<u>8.79</u>	<u>130</u>
	<u>6150</u>	<u>4.23</u>	<u>83</u>	<u>25.14</u>	<u>14</u>	<u>5.0</u>	<u>-2.6</u>	<u>8.78</u>	<u>130</u>
	<u>6700</u>	<u>4.25</u>	<u>84</u>	<u>25.73</u>	<u>11</u>	<u>5.0</u>	<u>-2.3</u>	<u>8.78</u>	<u>130</u>
	<u>7200</u>	<u>4.51</u>	<u>84</u>	<u>25.17</u>	<u>8.6</u>	<u>5.0</u>	<u>-3.1</u>	<u>8.79</u>	<u>130</u>
	<u>7150</u>	<u>4.53</u>	<u>84</u>	<u>25.16</u>	<u>9.1</u>	<u>5.0</u>	<u>-3.0</u>	<u>8.78</u>	<u>130</u>
	<u>7500</u>	<u>4.54</u>	<u>85</u>	<u>25.12</u>	<u>8.9</u>	<u>5.0</u>	<u>-3.2</u>	<u>8.78</u>	<u>130</u>

### SAMPLING DATA

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		ft BTOC	ml/min
7/14/99		<u>4.54</u>	<u>85</u>	<u>25.17</u>	<u>8.9</u>	<u>5.0</u>	<u>-3.2</u>	<u>8.78</u>	<u>NA</u>

### SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	40 ml glass	<input checked="" type="checkbox"/>

### OBSERVATIONS / NOTES

Circle if Applicable: MS/MSD      Duplicate ID No.:	Signature(s): 
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### GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NTC Orlando/Study Area 2	Sample ID No.:	1/TC0201410
Project No.:	7457	Sample Location:	OLD-02-14C
<input type="checkbox"/> Domestic Well Data		Sampled By:	JH DE
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	12472
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO%	ORP	DTW	Flow
7/14/99	1500	3.03	127	26.88	150	4.4	34.4	9.30	200
Method: peristaltic									
Monitor Reading (ppm): 0	2500	3.14	125	26.96	100	4.7	23.1	9.30	275
Well Casing Diameter: 2	3500	3.10	125	26.78	110	4.0	23.6	9.30	200
Well Casing Material: PVC	4500	3.23	121	26.78	100	4.3	18.3	9.30	200
Total Well Depth (TD): 47	5500	3.61	123	27.18	100	5.4	-3.7	9.29	100
Static Water Level (WL): 9.24	6000	4.07	124	27.34	110	6.1	-24.7	9.28	100
One Casing Volume (gal/L): 2	<del>6500</del>	<del>4.07</del>	<del>124</del>	<del>27.34</del>	<del>110</del>	<del>6.1</del>	<del>-24.7</del>		<del>100</del>
Start Purge (hrs): 1550	<del>7000</del>	3.17	118	26.43	110	3.7	16.9	9.41	
End Purge (hrs): 0652	8000	3.15	114	26.44	45	2.4	+15.5	9.41	
Total Purge Time (min): 80	<del>9500</del>				45				
Total Vol. Purged (gal/L): 28	10500	3.44	113	26.43	40	2.4	-1.7	9.41	
	1638	4.17	114	26.97	45	3.6	-30.9	9.29	100
7/15/99 0912	2000	4.79	70	26.36	90	6.1	-24.0	9.35	400
0916	3500	4.69	67	26.36	36	5.4	-25.6	9.34	700
0920	5000	4.62	67	26.37	25	4.9	-31.9	9.34	400
0924	6500	4.72	66	26.37	20	4.7	-30.7	9.34	400
0928	8000	4.77	66	26.36	22	5.0	-30.8	9.34	400
0932	9500	4.79	66	26.38	18	4.5	-33.6	9.34	375
0936	11000	4.82	66	26.39	20	4.4	-39.4	9.34	375
0940	12500	4.75	65	26.39	16	4.6	-39.4	9.34	375
0944	14000	4.84	65	26.40	15	4.4	-38.8	9.34	375
0948	15500	4.85	65	26.40	17	4.4	-39.3	9.34	375
0951	17000	4.86	64	26.41	17	4.6	-39.2	9.34	375

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		R BTOC	ml/min
7/15/99	3100	4.86	64	26.41	17	4.6	-39.2	9.34	N/A
Method:									

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	3 40 ml glass	X

OBSERVATIONS / NOTES

Thunderstorms on 7/14/99 stopped purging, left side.  
Resumed purging on 7/15/99

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

### GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NTC Orlando/Study Area 2	Sample ID No.:	NTC 02601710
Project No.:	7457	Sample Location:	OLD-02-17C
<input type="checkbox"/> Domestic Well Data		Sampled By:	M BY
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	12472
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/15/99	Initial	5.77	281	28.21	65	11.0	-14.0	5.18	130
Method: Low Flow/Perc	1900	5.90	283	28.29	30	10.9	-19.1	5.18	130
Monitor Reading (ppm):	2200	5.90	277	28.33	16	10.2	-23.5	5.18	130
Well Casing Diameter: 2"	2750	5.81	261	28.20	9.0	9.6	-51.0	5.18	125
Well Casing Material: PVC	3000	5.69	246	28.32	4.8	11.3	-63.2	5.18	125
Total Well Depth (TD): 49.23	3500	5.62	240	28.21	3.9	9.1	-68.1	5.18	125
Static Water Level (WL): 4'	4000	5.69	234	28.10	3.4	8.6	-67.4	5.19	125
One Casing Volume(gal/L):	4500	5.76	231	28.13	2.9	8.5	-67.9	5.19	125
Start Purge (hrs): 1345	5000	5.69	229	28.08	2.6	8.2	-75.9	5.19	125
End Purge (hrs): 1432	5500	5.70	222	28.12	2.5	8.0	-76.0	5.19	125
Total Purge Time (min): 47	6000	5.63	226	28.06	2.8	7.8	-73.8	5.19	125
Total Vol. Purged (gal/L): 6									

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		ft BTOC	ml/min
7/15/99	Clear	5.63	226	28.06	2.8	7.8	-73.8	5.19	125
1436									
Method: pipette									

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	3 40 ml glass	X

OBSERVATIONS / NOTES

Circle if Applicable:		Signature(s): 
MS/MSD	Duplicate ID No.:	

### GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NTC Orlando/Study Area 2	Sample ID No.:	NTC02601910
Project No.:	7457	Sample Location:	OLD-02-19C
<input type="checkbox"/> Domestic Well Data		Sampled By:	J. Hofer, D. Fortune
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	12472
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/15/99	Initial	4.41	65	26.93	>100	15.9	13.0	6.50	190
Method: peristaltic	1500	4.13	65	26.79	71000	13.6	12.5	6.52	190
Monitor Reading (ppm): 0	21500	4.13	65	26.10	850	9.8	4.2	6.53	300
Well Casing Diameter: 2	22500	4.05	65	26.01	500	8.4	1.5	6.53	260
Well Casing Material: PVC	3500	4.25	63	25.93	220	8.1	-10.1	6.53	260
Total Well Depth (TD): 52.16	4500	4.10	64	25.81	190	7.0	-10.6	6.53	260
Static Water Level (WL): 6.45	5500	4.12	64	25.81	160	6.7	-12.4	6.53	260
One Casing Volume (gal/L):	6500	4.16	64	25.76	130	6.5	-16.6	6.53	260
Start Purge (hrs): 1546	8000	4.10	63	25.41	120	5.4	-17.0	6.56	400
End Purge (hrs): 1759	8500	LOWERED FLOW RATE TO 150 ML/MIN							
Total Purge Time (min): 133	9000	4.22	64	25.91	120	7.4	-22.4	6.51	150
Total Vol. Purged (gal/L): 275	9500	4.59	63	26.28	110	7.3	-38.7	6.50	160
	10000	4.47	64	25.98	110	7.8	-35.2	6.50	160
	10500	4.47	63	25.50	110	5.7	-31.2	6.51	250
	12000	4.41	62	25.46	95	5.5	-28.9	6.51	250
	13000	4.46	62	25.43	80	5.2	-29.5	6.51	250
	14000	4.43	62	25.41	75	5.6	-31.5	6.51	200
	15000	4.57	62	25.41	75	5.1	-36.5	6.51	260
	16000	4.54	62	25.44	115	5.0	-35.0	6.51	260
	17000	4.66	63	25.43	55	4.9	-40.5	6.51	260
	18000	4.70	63	25.41	55	5.0	-42.1	6.51	260
	19000	4.76	63	25.41	55	5.0	-45.8	6.51	260
	20000	4.84	62	25.40	55	4.9	-47.6	6.51	260

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		r BTOC	ml/min
7/15/99	1100	4.47	62	25.43	50	7.8	-50.2	6.54	174
Method: peristaltic									

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	40 ml glass	

OBSERVATIONS / NOTES

Circle if Applicable: <input checked="" type="checkbox"/> MS/MSD      Duplicate ID No.:	Signature(s): 
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### GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NTC Orlando/Study Area 2  
 Project No.: 7457

Domestic Well Data  
 Monitoring Well Data  
 Other Well Type: \_\_\_\_\_  
 QA Sample Type: \_\_\_\_\_

Sample ID No.: NTC02G02010  
 Sample Location: OLD-02-20B  
 Sampled By: DLF JH  
 C.O.C. No.: 12472  
 Type of Sample:  
 Low Concentration  
 High Concentration

PURGE DATA									
Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow
7/16/14	Initial	3.84	101	26.26	0.90	14.6	5.0	8.25	~90
Method: <u>low flow / Peristaltic</u>	Final	3.85	99	26.26	0.30	12.6	1.0	8.22	~90
Monitor Reading (ppm):	2220	3.96	98	26.27	0.20	11.6	-8.1	8.22	~90
Well Casing Diameter: <u>2"</u>	2250	4.05	98	26.30	0.90	11.0	-11.5	8.22	~90
Well Casing Material: <u>PVC</u>	2900	4.09	97	26.29	0.25	10.5	-13.1	8.22	~90
Total Well Depth (TD):	3250	4.17	96	26.28	0.10	9.9	-18.0	8.23	~90
Static Water Level (WL): <u>87.41</u>	3600	4.21	95	26.28	0.30	9.7	-19.7	8.25	~90
One Casing Volume (gal/L):	4000	4.22	95	26.29	0.35	9.7	-21.7	8.25	~100
Start Purge (hrs): <u>0857</u>	4400	4.29	94	26.28	0.10	7.9	-24.8	8.25	~100
End Purge (hrs): <u>1001</u>	4700	4.30	93	26.28	0.15	7.4	-26.8	8.26	~100
Total Purge Time (min): <u>64</u>	5200	4.31	92	26.26	0.25	6.8	-27.8	8.25	~100
Total Vol. Purged (gal/L): <u>6.4</u>	5500	4.33	91	26.31	0.05	6.2	-29.7	8.25	~100
	6000	4.34	90	26.28	0.35	5.7	-30.1	8.25	~100
	6350	4.32	91	26.41	0.05	5.5	-29.5	8.24	~100
	(collected sample @ 1007)								

SAMPLING DATA									
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:			mS/cm	°C	NTU	mg/L		ft BTOC	ml/min
7/16/14	100	4.31	91	26.41	0.05	5.5	-29.5	8.24	N/A

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	40 ml glass	X

**OBSERVATIONS / NOTES**

Circle if Applicable: MS/MSD <input type="checkbox"/> Duplicate ID No.: _____	Signature(s): 
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### GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NTC Orlando/Study Area 2	Sample ID No.:	NTC02G02110
Project No.:	7457	Sample Location:	OLD-02-21C
<input type="checkbox"/> Domestic Well Data		Sampled By:	DLF, JA
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	12472
<input type="checkbox"/> Other Well Type:		Type of Sample:	Groundwater
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

**PURGE DATA**

Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	DTW	Flow	Time
7/16/99	Initial 1500	4.52	132	26.37	140	6.7	-30.5	7.50	~100	105
Method: Low Flow / Peristaltic	2000	4.55	133	26.34	75	6.2	-32.0	7.49	~120	110
Monitor Reading (ppm):	2250	4.60	133	26.36	55	5.8	-34.0	7.52	~140	110
Well Casing Diameter: 2"	3000	4.64	133	26.58	50	5.6	-37.0	7.54	~105	110
Well Casing Material: PVC	3500	4.75	130	26.75	50	5.7	-42.1	7.55	~105	115
Total Well Depth (TD): 60.21	3900	4.82	131	27.00	45	5.9	-47.1	7.53	~105	115
Static Water Level (WL): 7.33	4300	5.04	131	26.82	65	5.8	-56.3	7.51	~105	112
One Casing Volume (gal/L):	4750	5.14	128	26.77	55	5.9	-59.3	7.49	~105	112
Start Purge (hrs): 1041	5100	5.10	128	26.78	45	5.3	-59.9	7.49	~105	113
End Purge (hrs): 1222	5500	5.12	128	26.81	40	5.1	-60.7	7.55	~105	113
Total Purge Time (min): 101	5900	5.21	128	26.71	37	4.4	-62.7	7.58	~105	114
Total Vol. Purged (gal/L): 9.5	6400	5.25	127	26.72	34	4.4	-62.8	7.58	~105	114
	6800	5.10	127	26.81	34	4.4	-60.8	7.54	~105	115
	7300	5.10	127	26.82	32	4.3	-60.4	7.51	~105	115
	7650	5.16	126	26.96	32	4.2	-63.8	7.53	~105	120
	8000	5.19	124	26.95	32	4.5	-65.5	7.59	~105	120
	8400	5.19	125	27.03	30	4.0	-65.7	7.62	~105	120
	8800	5.19	125	27.03	29	3.4	-66.1	7.59	~105	121
	9250	5.17	124	26.84	31	3.7	-65.7	7.55	~105	121
	9500	5.14	124	26.90	32	3.6	-65.0	7.54	~105	122
SAMPLE COLLECTED @ 1230										

**SAMPLING DATA**

Date:	7/16/99	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow
Time:	1230			mS/cm	°C	NTU	mg/L		R BTOC	ml/min
Method:	Straw	Clear	5.14	124	26.90	32	3.6	-65.0	7.54	NA

**SAMPLE COLLECTION INFORMATION**

Analysis	Preservative	Container Requirements	Collected
VOCs (Method 8260)	HCl	6 40 ml glass	X

**OBSERVATIONS / NOTES**

Circle if Applicable: MS/MSD <input type="checkbox"/> Duplicate ID No.: NTC02DP0001	Signature(s): 
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