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NAVSTA NEWPORT RI
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Soil Pre-Design Investigation Report Addendum

for

Old Fire Fighting Training Area
Naval Station Newport
Newport, Rhode Island

Engineering Field Activity Northeast
Naval Facilities Engineering Command

Contract Number N62472-03-D-0057
Contract Task Order 8

November 2005

TETRA TECH NUS, INC.

W5205357F

SOIL PRE-DESIGN INVESTIGATION REPORT ADDENDUM

FOR

OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT

Submitted to:
Environmental Branch, (Code EV2)
Engineering Field Activity, Northeast
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop # 82
Lester, Pennsylvania 19113-2090

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

Contract Number N62472-03-D-0057
Contract Task Order 8

November 2005

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1.0 INTRODUCTION

This document is a summary of a Supplemental Soil Investigation (SSI) conducted at the Old Firefighting Training Area, Site 09 (OFFTA), in March 2005. The SSI was conducted for two purposes: First, to provide additional soil analytical data in areas between existing borings and other subsurface explorations that were conducted as part of the Remedial Investigation and Pre-Design Investigation. Second, to install groundwater monitoring points in the western portion of the site, where no groundwater monitoring wells have previously been located.

This document has been prepared to serve as Addendum to the final Pre-Design Investigation Report, prepared by Tetra Tech NUS, Inc. April 2005 (W5204308F).

2.0 SAMPLE STATION SELECTION

Additional borings were requested by USEPA after review of the Draft Soil Pre-Design Investigation Report dated July 15, 2004. These additional borings were proposed in a Technical Memorandum for Supplemental Soil Investigation. Comments to the Technical Memorandum were received and responded to between March 18 and March 30, 2004. Final boring locations were selected as described below:

SUMMARY OF SOIL BORINGS
SUPPLEMENTAL SOIL INVESTIGATION, OFFTA
APRIL 2005

Location	Justification / Purpose
SB 501	Between SB 414 and 425, to provide additional data coverage.
SB 502, SB 503	Under western portion of the central mound, now removed from the site to provide additional data.
SB 504	At northeast corner of central mound, to provide data at depth below other stations in this area
SB 505	Between SB402 and SB403, alongside of the storm drain line for outfall 075
SB 506	Between SB 406 and SB 410, to provide additional data coverage.
SB 507	Between SB 401 and SB 409 to provide additional data coverage
SB 508	Between SB 400 and SB 408 to provide additional data coverage
SB 509	Between SB 409 and SB 419 to provide additional data coverage
SB 510, SB 511, SB 512, and SB 513	At south western corner of the temporary parking lot, to provide additional data coverage in the area of the former baseball field, backstop and along Taylor Drive.

Additional piezometers were installed in the western section of the site, in the area of the small mounds. Previously, no groundwater measurement points were located west of MW-4S. These piezometers will be used in the future to monitor water table elevations to help determine possible depths of remedial actions in this area.

3.0 SOIL SAMPLING AND ANALYSIS

A total of 21 samples were collected from 10 borings located throughout the site, identified as Borings SB-501 through SB-513 above. Samples were not collected from SB-507, -508, and -510. Borings conducted at these locations did not provide recovery. Refer to boring log sheets attached to this summary report. Locations of borings installed as part of the SSI are presented on Figure 1. Boring logs and sampling paperwork are provided as Attachment A.

Soils collected were similar to those evaluated in the Soil Pre-Design Investigation report. Soil staining and petroleum odors were noted in soils collected from all borings except SB-501 and SB-503. Based on observations of staining and odors, and based on headspace screening analysis results presented on the boring logs, the most obvious oil impacted soil was found within the vertical position of 4-8 feet below ground surface at these locations. It is noted that odors and staining were present in the last sample collected from several borings, indicating that staining may penetrate further than the 10 foot interval tested as part of this effort, however, headspace readings are highest in the 4-8 foot depth range. These observations are consistent with previous findings of the Soil Pre-Design Investigation.

The concentrations exceeding the PRGs and all TPH values are depicted on Table 1, attached to this summary report. A complete set of analytical results for samples collected during the SSI is provided as Attachment B. The in-text table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in all 21 samples. TPH was measured as DRO and GRO, and results were combined to provide approximate TPH concentration.

PRG EXCEEDANCE SUMMARY
SUPPLEMENTAL SOIL INVESTIGATION, OFFTA
APRIL 2005

Parameter	No. Samples above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)anthracene	4/21	1100- 14,000 µg/kg	900 µg/kg
Benzo(a)pyrene	5/21	620-10000 µg/kg	400 µg/kg
Benzo(b)fluoranthene	4/21	1200 – 14,000 µg/kg	900 µg/kg
Benzo(g,h,l)perylene	3/21	1800-4000 µg/kg	800 µg/kg
Benzo(k)fluoranthene	3/21	1300-4200 µg/kg	900 µg/kg
Chrysene	5/21	470-9500 µg/kg	400 µg/kg
Indeno(1,2,3-cd)pyrene	3/21	1800-4000 µg/kg	900 µg/kg
TPH	17/21	752-40270 mg/kg	500 mg/kg
Lead	3/21	413 - 2020 mg/kg	150 mg/kg
Arsenic	7/21	7.3 – 36.4 mg/kg	7.0 mg/kg
Beryllium	1/21	1.1 mg/kg	0.4 mg/kg
Manganese	3/21	472 – 1020 mg/kg	390 mg/kg

As noted by the table above, and Table 1 attached, TPH was detected at a high concentration of over 40,000 mg/kg at Station SB-505, at 6-8 feet below ground surface, which is the approximate position of the water table in this area. This station is located in close proximity to stations TP-15, MW-102 and SB-429, all of which have shown high concentrations of petroleum during previous sampling events. The highest concentrations of PAHs were also detected at this location at a depth of 4 – 6 feet.

Additionally, elevated concentrations of lighter PAH fractions (methylnaphthalene) were detected in SB-511, which have not been seen in prior sampling in this area. PRGs are not defined for these lighter PAHs.

The PRG for lead was exceeded in two borings, SB-502, located under the central mound and SB-505, located as described above. PRGs for arsenic, manganese, and beryllium were exceeded, but did not show a particular spatial pattern. This is consistent with the findings described in Section 5.2 of the Soil Pre-Design Investigation report.

Figures 4-6, 4-7, and 4-8 of the Soil Pre-Design Investigation have been revised to include borings installed as part of the SSI and the data showing the PRGs which were exceeded. Revised figures are provided as Attachment C to this summary report.

4.0 PIEZOMETER INSTALLATION

Three piezometers were installed as a part of the Supplemental Soil Investigation. The piezometers were installed using DPT techniques, leaving 1 inch ID pre-pack well screens installed to intersect the water table aquifer. Well construction logs are presented as Attachment D to this summary report. Locations of piezometers are provided on revised Figure 4-6 (Attachment C).

After installation, piezometers were developed to establish a hydraulic connection with the surrounding groundwater. Field data sheets are presented in Attachment D to this summary report. No groundwater samples were collected from these piezometers.

Piezometers will be used with previously existing wells to help determine high and low water table prior to scoping remedial actions at the site.

TABLE

TABLE 1

SUBSURFACE SOIL ANALYTICAL RESULTS, SUPPLEMENTAL SOIL INVESTIGATION
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB-501	SB-502			SB-503		SB-504		SB-505		SB-506		
Sample Number		OFF-SB-501	OFF-SB-502	OFF-SB-502	OFF-SB-502	OFF-SB-503	OFF-SB-503	OFF-SB-504	OFF-SB-504	OFF-SB-505	OFF-SB-505	OFF-SB-506	OFF-SB-506	OFF-SB-506
Depth BGS		4.0-5.5	4.0-6.0	4.0-6.0	6.0-8.0	8.0-10.0	4.0-6.0	8.0-10.0	4.0-6.0	4.0-6.0	6.0-8.0	4.0-6.0	4.0-6.0	6.0-8.0
Sample Date		20050404	20050404	20050404	20050404	20050404	20050404	20050405	20050405	20050405	20050405	20050405	20050405	20050405
QC Identifier		None	Field Dup.	Field Dup.	None	None	None	None	None	None	None	Field Dup.	Field Dup.	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
BENZO(A)ANTHRACENE	900	3.4 U	570	160	180	50	5300 D	1100	110	14000 D	9300 D	150	160	160
BENZO(A)PYRENE	400	3.4 U	620	210	120	48	3600	970	97	10000 D	7200 D	93	130	77
BENZO(B)FLUORANTHENE	900	3.4 U	690	230	160	54	4500 D	1200	110	14000 D	9300 D	130	140	83
BENZO(G,H,I)PERYLENE	800	3.4 U	470	260	110	25	1800	550	55	4000 D	3800	64	77	45
BENZO(K)FLUORANTHENE	900	3.4 U	200	72	50	20 U	1300	400	39	4200 D	2400	46	66	37 U
CHRYSENE	400	3.4 U	470	150	200	56	3500	690	81	9500 D	6100 D	160	160 B	140
DIBENZO(A,H)ANTHRACENE	400	3.4 U	40 U	41 U	47 U	20 U	38 U	41 U	3.6 U	39 U	57 U	40 U	38 U	37 U
INDENO(1,2,3-CD)PYRENE	900	3.4 U	420	220	90	20 U	1800	470	48	4000 D	3800	55	79	43
TAL Metal Analysis (MG/KG)														
ANTIMONY	10	0.74 BN	1.2 N	0.94 BN	NA	NA	0.21 BN	NA	0.2 BN	0.46 BN	NA	0.45 BN	0.39 BN	NA
ARSENIC	7	13.4 *E	9.9 *E	11.8 *E	NA	NA	4.7 *E	NA	5.9 *E	7.8 *E	NA	7.3 *E	5.6 *E	NA
BERYLLIUM	0.4	0.22	0.18	0.22	NA	NA	0.15	NA	0.18	0.22	NA	0.2	0.21	NA
LEAD	150	12.5 E	1500 E	2020 E	NA	NA	37.4 E	NA	38.9 E	413 E	NA	54.8 E	43.1 E	NA
MANGANESE	390	1020 *E	232 *E	297 *E	NA	NA	284 *E	NA	472 *E	196 *E	NA	271 *E	247 *E	NA
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	12 U	752	1110	9110	133.7	135.5	3761	31.3	3064	40270	6920	7790	1377

TABLE 1

SUBSURFACE SOIL ANALYTICAL RESULTS, SUPPLEMENTAL SOIL INVESTIGATION
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB-509		SB-511		SB-512		SB-513	
Sample Number		OFF-SB-509	OFF-SB-509	OFF-SB-511	OFF-SB-511	OFF-SB-512	OFF-SB-512	OFF-SB-513	OFF-SB-513
Depth BGS		8.0-10.0	4.0-6.0	4.0-6.0	6.0-8.0	4.0-6.0	6.0-8.0	4.0-6.0	6.0-8.0
Sample Date		20050405	20050405	20050405	20050405	20050405	20050405	20050405	20050405
QC Identifier		None	None	None	None	None	None	None	None
Criteria	PRG								
Low Concentration PAH (SIM) Analysis (UG/KG)									
BENZO(A)ANTHRACENE	900	53	120	390	100	65	130	120	72
BENZO(A)PYRENE	400	38 U	43	230	42	37 U	80 U	85	39 U
BENZO(B)FLUORANTHENE	900	38 U	49	250	49	37 U	80 U	99	39 U
BENZO(G,H,I)PERYLENE	800	38 U	38 U	120	38 U	37 U	80 U	65	39 U
BENZO(K)FLUORANTHENE	900	38 U	38 U	98	38 U	37 U	80 U	40 U	39 U
CHRYSENE	400	64	100	320	94	43	120	100	70 B
DIBENZO(A,H)ANTHRACENE	400	38 U	38 U	37 U	38 U	37 U	80 U	40 U	39 U
INDENO(1,2,3-CD)PYRENE	900	38 U	38 U	120	38 U	37 U	80 U	50	39 U
TAL Metal Analysis (MG/KG)									
ANTIMONY	10	NA	2.7 N	0.45 BN	NA	0.88 BN	NA	0.47 BN	NA
ARSENIC	7	NA	36.4 *E	5.4 *E	NA	6.5 *E	NA	8.5 *E	NA
BERYLLIUM	0.4	NA	1.1	0.23	NA	0.31	NA	0.31	NA
LEAD	150	NA	35.2 E	34.7 E	NA	16.4 E	NA	44.3 E	NA
MANGANESE	390	NA	145 *E	312 *E	NA	986 *E	NA	256 *E	NA
Total Petroleum Hydrocarbon Analysis (MG/KG)									
Total Petroleum Hydrocarbons	500	5080	7860	17420	7240	6220	9760	7120	6750

Notes:
BGS = Below Ground Surface
B - present in blank
U - Not detected
R - Rejected
NA - Not Analyzed
*, D - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

ATTACHMENT A

BORING LOGS, SOIL SAMPLE COLLECTION RECORDS

BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 501
START DATE: April 4, 2005
COMPLETION: DATE: April 4, 2005
MON. WELL NO.: NA
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							GRASS SURFACE			
		2.6	OFF-SB-501-0004			BROWN TO	LOAM/TOPSOIL ~0.5'. SILTY, F-MED. SAND.	FILL	FILL incl.	FID=0.0
2				FILL		OLIVE GRAY	SAND. MOSTLY F-C SAND, SOME SUBANG. GRAVEL/FILL FRAG'S, FEW SILT.	SW	BRICK & CONCRETE FRAGS.	PID=0.0
						BRICK-RED	BRICK FRAG'S @ ~3.5' BGS			
4		4.0	S-1 1310							
		1.5	OFF-SB-501-0406			GRAY	S-2A=0.4' - SIMILAR TO ABOVE S-2B=1.1' - PUDDINGSTONE. FRACTURED.		DAMP/WET	FID=0.0
6		1.5	S-2 1315	BEDROCK			CONGLOMERATE. PARTICLES TO COARSE GRAVEL SIZE SUBROUNDED-ROUNDED.	BEDROCK	DRY	PID=0.0
				EDBC @ 5.5' BGS			REFUSAL @ 5.5'			
8										
10										

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO-CORE DPT
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS: EDGE OF BUSHES NEAR EAST END SITE.

BORING NO.:

Tetra Tech NUS, Inc.

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Ttnus Form 0018

BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 502
START DATE: April 4, 2005
COMPLETION: DATE: April 4, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							EXPOSED FILL SURFACE			
		2.7	OFF-SB-502-0004	FILL		BROWN & BLACK	FILL. F-C SAND, SOME GRAVEL,	FILL/SW	WET TO SATURATED.	FID - 0.0
2						MINOR BRICK RED	TRACE SILT. FILL INC. BRICK, COAL, CONCRETE FRAGS.			PID - 0.0
		4.0	S-1 1405			GRAY	CONCRETE IN NOSE.			
		1.2	OFF-SB-502-0406 DUP01-C1430			BROWN & BLACK	SIMILAR TO ABOVE. FILL			FID - 0.0
6		2.0	S-2 1410							PID - 36.1 *
		1.4	OFF-SB-502-0608			BLACK	SAND & GRAVEL. F-C SAND AND F-C SUBANG. GRAVEL LOOSE. HEAVY PET. CONTAMINATION.	SW/GW	HEAVY OIL ODOR, STAIN, SHEEN & FREE LNAPL DROPS	FID - 69.7
8		2.0	S-3 1415							PID - 147 *
		1.8	OFF-SB-502-0810				S-4A = 1.2' - SIMILAR TO ABOVE. GRAVEL IS RAUNDED & LOOSE.			PID - 24.8
10		2.0	S-4 1420			LT. BROWN	S-4B = 0.6' - SILTY, FINE SAND. MOSTLY FINE POORLY GRADED SAND, SOME SILT, TRACE SUBANG. GRAVEL.			PID - 111
							EOB @ 10' BGS. NO REFUSAL.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO-CORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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Ttnus Form 0018

BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 503
START DATE: April 4, 2005
COMPLETION: DATE: April 4, 2005
MON. WELL NO.: NA
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0				ASPHALT			ASPHALT SURFACE (PREV. BELLATH MOUND)			
		2.6	OFF-SB-503-0004			BLACK STAIN	4" ASPHALT. 6"-ROAD-BASE F-C SAND.	SW	DRY. FILL.	FID-12.2
2				FILL		BROWN + GRAY	FILL. GRAVELLY, SAND. MOSTLY F-C SAND, SOME F-C GRAVEL (SUBANG.) TRACE SILT. TRACE BRICK, & CONCRETE	FILL/SW		PID-3.3
			~~0400~~ CTD							
4		4.0	S-1 1500							
		1.2	OFF-SB-503-0406						SATURATED NO PET. ODOR OR SHEEN NOTED.	FID-412 *
6		2.0	S-2 1505							PID-314
		1.4	OFF-SB-503-0608				S-3A-0.4'-SIMILAR TO ABOVE.			
				ORG. SILT.		DARK GRAY	S-3B-1.0'-ORGANIC SILT. MOSTLY SILT, SOME FINE SAND, SOME CLAY, TRACE ROOT FIBERS.	OL		FID-343.6
8		2.0	S-3 1510							PID-77.8
		1.2	OFF-SB-503-0810	GRADATIONAL CONTACT			GRADES INTO SAND.			FID-853
10		2.0	S-4 1515			BROWN	MOSTLY F-C SAND, SOME SILT.	SW		PID 155 *
							EOB @ 10' BLS. NO REFUSAL.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO CORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 504
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							EXPOSED SOIL SURFACE.			
		3.2	OFF-SB-504-0004	LOAM		BROWN	FILL. TOPSOIL ~3"	SM		FID - 0.0
				FILL		MIXED	SILTY, F-C SAND, SOME GRAVEL	SW/	DAMP	
2						GRAY + BROWN	INC. CONCRETE FRAGMENTS	FILL		PID - 3.2
4		4.0	S-1 0755						SATURATED @ 4'	
		1.5	OFF-SB-504-0406							FID - 0.0
6		2.0	S-2 0800							PID - 12.1 *
		1.2	OFF-SB-504-0608	ORG. SILT		REDDISH BROWN	S-3A-0.2'-SIMILAR TO ABOVE			FID - 20.5
							S-3B-0.7'-ORGANIC SILT. MOSTLY SILT, SOME FINE SAND, TRACE CLAY, FEW ROOTS	OL		PID - 221
8		2.0	S-3 0805	PET. CONTAM.		BLACK	S-3C-0.3'-GRAVEL, SUBANG-SUBROUND, FEW SAND	GP	HEAVY PET. ODOR, STAINING	
		1.4	OFF-SB-504-0810	SAND + GRAVEL			SAND + GRAVEL. F-C WELL GRADED SAND, F-C SUBANG. GRAVEL	SW/GW		FID - 1.8
10		2.0	S-4 0810				TRACE CERAMIC PLATE/CUP FRAG.			PID - 336 *
			MS/MSD				EOB @ 10' BGS, NO REFUSAL.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO-CORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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Ttnus Form 0018

BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 505
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							GRASS SURFACE.			
		3.2 /	OFF-SB-505-0004			BROWN. BROWN & BLACK & RED & GRAY	LOAM. SILTY, F-MED SAND. ~4". FILL. SAND & GRAVEL. ABUNDANT CONCRETE, BRICK, METAL WIRED DEBRIS	SM FILL	REFUSAL @ 3' ON 1ST & 2ND ATTEMPT. REF. @ 1' BGS ON 3RD TRY NEAR DISCHARGE PIPE FOR STORM SEWER. 4TH ATTEMPT ON EAST SIDE SUCCESSFUL.	FID-0.0
2										PID-7.8
4		4.0	S-1 0845							
		1.7 / 2.0	OFF-SB-505-0406							FID-62.5 *
6			S-2 METAL MS/MSD 0850			BLACK	SAND & GRAVEL BOTTOM 0.2'.		HEAVY OIL STAINING & ODOR.	PID-109
		1.1 / 2.0	OFF-SB-505-0608	OIL CONTAM @ 5.8'.	VERY SOFT & LOOSE		SAND. MOSTLY F-C SAND, SOME SILT, FEW F-C GRAVEL, TRACE BRICK & CERAMIC DINNERWARE FRAGMENTS	SW		FID-78.6 *
8			S-3 0855	SAND, SILT & GRAVEL						PID-331
		1.2 / 2.0	OFF-SB-505-0810							FID-42.2
10			S-4 0900							PID-298
							EOB @ 10' BGS			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 506
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							SOIL SURFACE			
2		3.1	OFF-SB-506-0004			BROWN MIXED BROWN, GRAY, RED	LOAM (SILTY F-MED. SAND) UPPER 4" FILL. MIXED, SILTY, F-C SAND, SOME GRAVEL, SOME BRICK, CONCRETE FRAGMENTS	FILL / SW	MOIST.	FID-427.8 PID-2000+
4		4.0	S1 0920							
6		1.9 / 2.0	OFF-SB-506-0406 DUP-0406 S2 0925	0940 HEAVY PET. STAINING		BLACK	S-2A=0.5'-SIMILAR TO ABOVE. S-2B=1.4'-SAND. MOSTLY F-C SAND, FEW SILT, FEW F-C SUBANG. GRAVEL.	SW	BLACK HEAVY PETROLEUM STAINING & ODOR	FID-400.1 PID-2000+
8		1.7 / 2.0	OFF-SB-506-0608 S3 0930				S-3A=0.5'-SIMILAR TO ABOVE. S-3B=0.2'-BORDERLINE ORG. SILT/PEAT	~~PT~~		FID-1,470 PID-1,031
10		0.0 / 2.0	OFF-SB-506-0610 S4 0935		NO RECOVERY		NO RECOVERY, DRILLER NOTED IT SEEMED VERY SOFT.	?		FID-— PID-—
							EOB @ 10'.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORES
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 507
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
							~~EXPOSED~~ SOIL SURFACE			
							4 ATTEMPTS MADE WITHIN			
							10' RADIOS OF ORIG. LOCATION			
							ALL RESULT IN REFUSAL			
							BETWEEN 1-2.5' BGS ON			
							ROCK FRAGMENTS.			

TYPE OF DRILLING RIG: SINCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 508
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
							SIMILAR TO SB-507			
							4 ATTEMPTS MADE WITHIN			
							10-15 RADIUS OF ORIG. LOC.			
							4 REFUSALS @ 2' BGS.			
							ROCK FRAGMENTS IN NOSE			
							OF SAMPLER.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 509
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							(EXPOSED) FILL SURFACE			
		3.2	OFF-SB-509-0004			BROWN MIXED	FILL. SURFACE FILL FROM FLEET ENV. BACKFILL.		DAMP.	FID-48.5
2						BLACK & BROWN	MIXED ASPHALT RUBBLE, BRICK, CONCRETE WITH SAND & GRAVEL.			PID-1,405
4		4.0	S-1 1100							
		1.6	OFF-SB-509-0406						SATURATED	FID-63.2
6		2.0	S-2 1105							PID-2,004
		1.5	OFF-SB-509-0608	HEAVY PET. STAIN, SHEEN,		BLACK	SAND & GRAVEL. MOSTLY F-C SAND & F-C SUBANG. GRAVEL.	SW/GW	HEAVY BLACK PET. STAIN, SHEEN, ODOR. LNAPL FLOATING ON FREE WATER INSIDE ACETATE SLEEVE OIL DROPS	FID-52.7
8		2.0	S-3 1110							PID-185
		1.2	OFF-SB-509-0810							FID-643.8
10		2.0	S-4 1115							PID-450
							EOB @ 10' BGS, NO REFUSAL			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 510
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
							SOIL FILL SURFACE			
							3 ATTEMPTS MADE W/IN 10-12'			
							OF ORIG. LOCATION. ALL			
							REFUSALS @ 3.5-4' BGS			
							BROKE NEW STEEL NOSE ON			
							SAMPLER ON LAST ATTEMPT.			
							APPEARS TO BE FILL WITH			
							BEDROCK FRAGMENTS (CONGLOMERATE)			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 511
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.: NA
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0		3.4	OFF-SB-511-0004			BROWN	FILL. SAND. MOSTLY F-C SAND, FEW SILT, FEW F-C GRAVEL	SW		FID-716.7
2						↓	TRACE BRICK + CONCRETE.	↓	MILD PET. ODOR	PID-2000+ SHUT DOWN PID!
		4.0	~~OFF-SB~~ S-1 1405			GRAY ↓	↓	↓	NOTED ~2'-4'	
4										
		1.8	OFF-SB-511-0406			BLACK/DARK GRAY	SAND + GRAVEL. F-C SAND + F-C SUBRANDED - SUBANG. GRAVEL.	SW/GW	SATURATED @ ~4.5-5', VERY HEAVY PET. ODOR, SHEEN,	FID-627.8 *
6		2.0	S-2 1410							PID-790
		1.6	OFF-SB-511-0608						LNAPL COATING GRAVEL + PORE SPACES FROM 5-5.5'	FID-290.5 *
8		2.0	S-3 1415							PID-683
		1.6	OFF-SB-511-0810			GRAY-DARK GRAY			0.01' LNAPL FLOATING INSIDE ACETATE SLEEVE	FID-330.6
10		2.0	S-4 1420		INC. DENSE		POSS. TILL. MOSTLY F-C GRAVEL, SOME F-C SAND, SOME SILT. STRONG PET. ODOR	SM		PID-577
				EOB			EOB @ 10' BGS. NO REFUSAL.		CHECK BOREHOLE w/ INT. PROBE. = WATER AT 4.6' BGS, BOREHOLE COLLAPSED TO 6.5'.	

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACROCORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 512
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.:
CHECKED BY:

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
2		3.5	OFF-SB-512-0004			BROWN IN RED & GRAY	FILL. MIXED SAND & GRAVEL WITH ABUNDANT BRICK, CONCRETE & ASPHALT RUBBLE.	FILL/SW	DAMP.	FID-252.6 PID-154
4		4.0	S-1 1445							
6		1.7 / 2.0	OFF-SB-512-0406. S-2 1450			GRAY	~~SAND~~ GRAVELLY, SAND. MOSTLY F-C SAND, SOME F-C GRAVEL, TRACE SILT.	SW	PET. ODOR & LT. STAINING OF SOILS	FID-198.2 * PID-595
8		1.5 / 2.0	OFF-SB-512-0608 S-3 1455			DARK GRAY	SAND & GRAVEL - F-C SAND AND F-C SUBANG.-SUBROUNDED GRAVEL	SW/GW	SATURATED @ ~4-4.5' BGS STRONG PET. ODOR & STAINING	FID-258.7 PID-585
10		1.1 / 2.0	OFF-SB-512-0810 S-4 1500			OLIVE GRAY				FID-240.6 PID-408
							EOB @ 10' BGS. NO REFUSAL			

TYPE OF DRILLING RIG: SIMCO DARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO-CORE
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: 513
START DATE: April 5, 2005
COMPLETION: DATE: April 5, 2005
MON. WELL NO.: NA
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							GRASS SURFACE			
2		3.2	OFF-SB-513-0004			BROWN, BROWN, RED, & GRAY	4" LOAM. SILTY F-MED. SAND. FILL SAND. MOSTLY F-C SAND, SOME GRAVEL, FEW SILT. ABUNDANT BRICK & CONCRETE FRAGMENTS	SM FILL SAND		FID-361.8 PID-124
4		4.0	S-1 1505	▽					DAMP.	
6		1.8 / 2.0	OFF-SB-513-0406 S-2 1510		INC. DENSE	GRAY TO DARK GRAY	S-2A=0.5'-SIMILAR TO ABOVE. S-2B=1.3'-POSS. TILL SILTY GRAVELLY SAND. MOSTLY F-MED. SAND/SOME SILT, SOME F-C SUBROUNDED GRAVEL.		STRONG PET. ODOR, STAINING + SHEEN. SATURATED	FID-1,537 PID-548 *
8		1.6 / 2.0	OFF-SB-513-0608 S-3 1515	~6.5' WEATHERED BEDROCK		GRAY & OLIVE GRAY	S-3A=0.4'-SIMILAR TO ABOVE. S-3B=1.2'-SAPROLITIC PHYLLITE/SHALE VERY SOFT WITH PASTE-LIKE CONSISTANCY IN SOME PLACES, SLIGHTLY FISSILE IN OTHERS		STRONG PET. (GASOLINE-TYPE) ODOR.	FID-1,250 PID-543 *
10		1.9 / 2.0	OFF-SB-513-0810 S-4 1520				SIMILAR TO ABOVE. NEAR HORIZONTAL FOLIATION - LOW ∡ FOLIATION.		SOFT CONSISTANCY (PASTE-LIKE @ 8.25' + @ 9.8')	FID-1,209 PID-399
							EOB @ 10' BGS. NOT REFUSAL BUT DRILLER NOTED GETTING HARDER TO ADVANCE.			

HEAVY PET. STAINING ACETATE SLEEVES FOR 8-10' SAMPLE (PHOTO TAKEN) APPEARS TO BE FROM WATER IN BOREHOLE, AS SAMPLE INSIDE SLEEVE DOES NOT HAVE FREE PRODUCT IN ROCK BUT DOES HAVE VERY STRONG PET. ODOR & PID => 1000 PPM WHEN SCREENING ROCK CORE.

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: MACRO CORES
METHOD OF SOIL SAMPLING: "
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: PZ-1
START DATE: April 6, 2005
COMPLETION: DATE: April 6, 2005
MON. WELL NO.: PZ-1
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							EXPOSED SOIL SURFACE (FILL)			
2		2.9	0004			BROWN, RED, GRAY	FILL. SILTY F-C SAND. SOME F-C GRAVEL. ABUNDANT BRICK + CONCRETE FRAGMENTS	FILL / SW	1ST ATTEMPT = REFUSAL @ 2' BGS. MOVE WEST ~8'.	
4		4.0	S-1 0750						DUMP. HITTING COBBLES, CHANGE TO AUGER.	
6						BLACK	LOG CUTTINGS ONLY OF SSA → SAND, GRAVEL, COBBLES, MINOR SILT		ADVANCE 3" SOLID-STEM AUGER TO 10' BGS.	
8							STRONG PETROLEUM ODOR, STAINING + SHEEN ON CUTTINGS.			
10										
12							REFUSAL @ 10'			
							WATER LEVEL = 4.1' BTPVC @ MW-4S			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: DPT INITIALLY TO OBTAIN SOIL SAMPLES THEN SOLID STEM AUGER (3" OD)
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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Ttnus Form 0018

BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: PZ-02
START DATE: April ,2005
COMPLETION: DATE: April ,2005
MON. WELL NO.: PZ-02
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							EXPOSED SOIL SURFACE			
							FILL. MIXED SAND, GRAVEL,			
2							COBBLES & BOULDERS.		DRY	
							No SAMPLES TAKEN, LOG		DRY	
4							CUTTINGS ONLY.			
									SATURATED.	
6										
8										
10										
							EOB @ 10' BGS.			
							REFUSAL w/ 3" SSA.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: 3" OD SSA
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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BORING LOG FOR: OFFTA - Supplemental Soil Investigation
PROJECT NO.: N1611-0530
LOGGED BY: T. Dorgan
DRILLED BY (Company/Driller): Drilex Environmental
GRD. SURFACE ELEVATION:

TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: PZ03
START DATE: April 6, 2005
COMPLETION: DATE: April 6, 2005
MON. WELL NO.: PZ-03
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID, (PPM)]
0							PAVED SURFACE			
							NO SAMPLES TAKEN,			
2							LOGGED CUTTINGS.			
							~3" ASPHALT.			
4							~4-6" - SAND + GRAVEL ROADBASE.			
							FILL. MIXED F-C SAND,			
6							TRACE SILT, FEW GRAVEL +			
							COBBLES TO 5'.		SATURATED	
8									↓	
10							REFUSAL @ 9' BGS			
							POSS. BEDROCK, VERY			
							LITTLE CUTTINGS RETURN.			

TYPE OF DRILLING RIG: SIMCO EARTHPROBE 200
METHOD OF ADVANCING BORING: 3" OD SSA
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.:

Tetra Tech NUS, Inc.

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Ttnus Form 0018

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - LIQUID PHASE

Site Name: OFFTA
Sample ID: OFF-TB01

Tetra Tech NUS Charge No. 1611-0530
QC Information: Trip Blank (if applicable)

Sample Method/Device: Direct Pour
Depth Sampled: N/A feet Total Depth N/A feet (SW Only)
Sample Date & Time: 4/4/05 1000 hours
Sampler(s): L. Seydewitz

Recorded By: L. Seydewitz
Signature

TYPE OF SAMPLE: (Check all that apply)

- ____ Groundwater
- ____ Surface Water
- ____ Residential Supply
- ____ Grab
- ____ Composite
- X Trip Blank*
- ____ Rinsate Blank*
- ____ Field Duplicate Collected
- ____ Other (Specify):

* include sample source & lot No.

WELL PURGE DATA:

Well Depth	feet	Purge Start	hrs
Inside Diameter	Inches	Purge Stop Time LS 4/4/05	hrs
Water Level	feet	Total Gallons Purged	
Well Volume	gal.	Purge Method	

Color: _____ Turbidity: CLR/SL CLDY/CLDY/OPAQ

Micro Tip/OVA Monitor Reading: ppm

Sampling/Purge Data:

Vol. #	Temp °C	pH LS 4/4/05	Spec. Cond.	DO
0				
1				
3				
4				

ANALYSIS	BOTTLE LOT NO.	TRAFFIC REPORT NO. ORGANIC	TRAFFIC REPORT NO. INORGANIC	COMMENTS
GRO				~~Poland spring water used to fill VOA vials~~ LS 4/4/05

TtNUS Form 0004

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - LIQUID PHASE

Site Name: OFFTA
Sample ID: OFF-TB02

Tetra Tech NUS Charge No. 1611-0530
QC Information: Trip Blank (if applicable)

Sample Method/Device:
Depth Sampled: N/A feet Total Depth N/A feet (SW Only)
Sample Date & Time: 4/6/05 0800 hours
Sampler(s): L. Seydewitz

Recorded By: L. Seydewitz
Signature

TYPE OF SAMPLE: (Check all that apply)

- ___ Groundwater
- ___ Surface Water
- ___ Residential Supply
- ___ Grab
- ___ Composite
- X Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate Collected
- ___ Other (Specify):

* include sample source & lot No.

WELL PURGE DATA:

Well Depth	feet	Purge Start	hrs
Inside Diameter	Inches	Purge Stop Time	hrs
Water Level	feet	Total Gallons Purged	
Well Volume	gal.	Purge Method	

LL 4/6/05

Color: _____ Turbidity: CLR/SL CLDY/CLDY/OPAQ

Micro Tip/OVA Monitor Reading: ppm

Sampling/Purge Data:

Vol. #	Temp °C	pH	Spec. Cond.	DO
0				
1				
3				
4				

LL 4/6/05

ANALYSIS	BOTTLE LOT NO.	TRAFFIC REPORT NO. ORGANIC	TRAFFIC REPORT NO. INORGANIC	COMMENTS
GRO				Poland Spring water used to fill HCL VOA vials.

TtNUS Form 0004

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - LIQUID PHASE

Site Name: OFFTA
Sample ID: OFF-DIUF-FB01

Tetra Tech NUS Charge No. 1611-0530
QC Information: Field Blank (if applicable)

Sample Method/Device: Direct Pour
Depth Sampled: N/A feet Total Depth N/A feet (SW Only)
Sample Date & Time: 4/6/05 0830 hours
Sampler(s): L. Seydewitz

Recorded By: L. Seydewitz
Signature

TYPE OF SAMPLE: (Check all that apply)

- ____ Groundwater
- ____ Surface Water
- ____ Residential Supply
- ____ Grab
- ____ Composite
- ____ Trip Blank*
- ____ Rinsate Blank*
- ____ Field Duplicate Collected
- ____ Other (Specify): Field Blank

* include sample source & lot No.

WELL PURGE DATA:

Well Depth	feet	Purge Start	hrs
Inside Diameter	Inches	Purge Stop Time LS 4/6/05	hrs
Water Level	feet	Total Gallons Purged	
Well Volume	gal.	Purge Method	

Color: _____ Turbidity: CLR/SL CLDY/CLDY/OPAQ

Micro Tip/OVA Monitor Reading: ppm

Sampling/Purge Data:

Vol. #	Temp °C	pH	Spec. Cond.	DO
0		LS 4/6/05		
1				
3				
4				

ANALYSIS	BOTTLE LOT NO.	TRAFFIC REPORT NO. ORGANIC	TRAFFIC REPORT NO. INORGANIC	COMMENTS
GRO				Direct pour of DIUF (lot 0908214, exp date 9/05) into sample bottles.
PAH				
DRO				
Metals				

TtNUS Form 0004

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - LIQUID PHASE

Site Name: OFFTA
Sample ID: OFF-SB-513-RB01

Tetra Tech NUS Charge No. 1611-0530
QC Information: Rinsate Blank (if applicable)

Sample Method/Device: Direct Pour
Depth Sampled: N/A feet Total Depth N/A feet (SW Only)
Sample Date & Time: 4/6/05 0845 hours
Sampler(s): L. Seydewitz

Recorded By: L. Seydewitz
Signature

TYPE OF SAMPLE: (Check all that apply)

- ____ Groundwater
- ____ Surface Water
- ____ Residential Supply
- ____ Grab
- ____ Composite
- ____ Trip Blank*
- X Rinsate Blank*
- ____ Field Duplicate Collected
- ____ Other (Specify):

* include sample source & lot No.

WELL PURGE DATA:

Well Depth	feet	Purge Start	hrs
Inside Diameter	Inches	Purge Stop Time	hrs
Water Level	feet	Total Gallons Purged	
Well Volume	gal.	Purge Method	

LS 4/6/05

Color: _____ Turbidity: CLR/SL CLDY/CLDY/OPAQ

Micro Tip/OVA Monitor Reading: ppm

Sampling/Purge Data:

Vol. #	Temp °C	pH	Spec. Cond.	DO
0				
1				
3				
4				

LS 4/6/05

ANALYSIS	BOTTLE LOT NO.	TRAFFIC REPORT NO. ORGANIC	TRAFFIC REPORT NO. INORGANIC	COMMENTS
GRO				Direct pour of DIUF (lot 0908214, exp 9/2005) through acetate sleeve and decontaminated steel bowl and into sample bottles.
PAH				
DRO				
Metals				
				Direct pour of poland spring water through same decontaminated equipment into sample VOA vials.

TtNUS Form 0004

TETRA TECH NUS, INC.

ANALYTICAL SERVICE
Packing List/Chain-of-Custody

Case No. N/A

Subcontract No. N/A

Project No.	Laboratory Name:	Container Type	Container Type	Container Type	Container Type	Container Type
N1611-0530	Mitkem	40-ml VOA vial	8oz Amber	4oz Amber		
Sampler Signatures: L. Seydwitz	Date Shipped: 4/6/05 Carrier: Lab Courier Airbill No.: N/A No. of Coolers	Analysis: GRO	Analysis: PAH DRO	Analysis: TAL Metals	Analysis	Analysis

Sample Number	Matrix	Date/Time	Sample Location	Tag Number(s)	QC	Preservative: Methanol ice	Preservative: ice only	Preservative: ice only	Preservative	Preservative
LS 4/6/05	AQ	4/4/05/1000	OFF-TB01	LS 4/6/05		2			LS 4/6/05	
	SO	1315	OFF-SB-501-0405.5			2	1	1		
		1410	OFF-SB-502-0406		D1	2	1	1		
		1430	OFF-DUP01		D1	2	1	1		
		1415	OFF-SB-502-0608*			2	1			
		1505	OFF-SB-503-0406			2	1	1		
		1515	OFF-SB-503-0810			2	1			
		4/5/05/0800	OFF-SB-504-0406			2	1	1		
		0810	OFF-SB-504-0810*		MS/MSD	6	3			
		0850	OFF-SB-505-0406		MS/MSD (met only)	2	1	3		
		0855	OFF-SB-505-0608*			2	1			
		0925	OFF-SB-506-0406		D2	2	1	1		

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Shipment for Case Complete?	Remarks
L. Seydwitz	4/6/05		YES NO	* Strong petroleum odor noted
Relinquished By: (Signature)	Date/Time	Received for Laboratory By:	Date/Time	
		Andrew C [illegible]	4/6/05 12:06	

Tt NUS Form 0022

No. 03221

TETRA TECH NUS, INC.

ANALYTICAL SERVICE
Packing List/Chain-of-Custody

Case No. N/A

Subcontract No. N/A

Project No. N1611-0530

Laboratory Name: Mitkem

Sampler Signatures: L. Seydewitz

Date Shipped: 4/6/05

Carrier: Lab Courier

Airbill No.: N/A

No. of Coolers

Container Type	Container Type	Container Type	Container Type	Container Type
40-ml VOA vial	8oz Amber	4oz Amber		
Analysis	**Analysis**	**Analysis**	**Analysis**	**Analysis**
GRO	PAH DRO	TAL Metals		
Preservative	**Preservative**	**Preservative**	**Preservative**	**Preservative**
methanol ice	ice only	ice only		

Sample Number	Matrix	Date/Time	Sample Location	Tag Number(s)	QC	Container Type 1	Container Type 2	Container Type 3	Container Type 4	Container Type 5
	SO	4/5/05/0940	OFF-DUP02		D2	2	1	1		
		0930	OFF-SB-506-0608*			2	1			
		1105	OFF-SB-509-0406			2	1	1		
		1115	OFF-SB-509-0810*			2	1			
		1410	OFF-SB-511-0406			2	1	1		
		1415	OFF-SB-511-0608*			2	1			
		1450	OFF-SB-512-0406			2	1	1		
		1455	OFF-SB-512-0608*			2	1			
		1510	OFF-SB-513-0406			2	1	1		
		1515	OFF-SB-513-0608*			2	1			
			LS 4/6/05							

LS 4/6/05

LS 4/6/05

LS 4/6/05

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Shipment for Case Complete?	Remarks
L. Seydewitz	4/6/05		YES NO	* Petroleum odor noted.
Relinquished By: (Signature)	**Date/Time**	**Received for Laboratory By:**	**Date/Time**	
		Andrew C Nelson	4/6/05 12:06	

Tt NUS Form 0022

No 03222

TETRA TECH NUS, INC.

ANALYTICAL SERVICE
Packing List/Chain-of-Custody

Case No. N/A

Subcontract No. N/A

Project No.	Laboratory Name:	Container Type	Container Type	Container Type	Container Type	Container Type
N1611-0530	Mitkem	40-ml VOA vial	1-liter Amber	250-ml poly		

Sampler Signatures	Date Shipped / Airbill No.	Carrier / No. of Coolers	Analysis	Analysis	Analysis	Analysis	Analysis
L. Seydewitz	4/6/05 / N/A	Lab Courier	GRO	PAH DRO	TAL Metals		

Sample Number	Matrix	Date/Time	Sample Location	Tag Number(s)	QC	Preservative HCl and ice	Preservative ice only	Preservative HNO_3 and ice	Preservative	Preservative
	AQ	4/6/05/0830	OFF-DIUF-FB01			4	4	2		
	↓	↓ 0845	OFF-SB-513-RB01			4	4	2		
		0800	OFF-TB02			2				

LS 4/6/05

LS 4/6/05

LS 4/6/05

LS 4/6/05

LS 4/6/05

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Shipment for Case Complete?	Remarks
L. Seydewitz	4/6/05		YES NO	• Rinsate collected by direct pouring DIUF water over acetate sleeve and decontaminated steel bowl into sample bottles.
Relinquished By: (Signature)	Date/Time	Received for Laboratory By:	Date/Time	• Poland spring water used for VOA vials for rinsate/trip blank
		Andrew C Miller	4/6/05 12:06	

Tt NUS Form 0022

№ 03223

ATTACHMENT B

ANALYTICAL RESULTS – SUPPLEMENTAL SOIL INVESTIGATION

ATTACHMENT B

ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-501	OFF-SB-502	OFF-SB-502	OFF-SB-502	OFF-SB-503	OFF-SB-503	OFF-SB-504
SAMPLE NUMBER	OFF-SB-501-0405.5	OFF-SB-502-0406	OFF-SB-502-0406-D	OFF-SB-502-0608	OFF-SB-503-0406	OFF-SB-503-0810	OFF-SB-504-0406
SAMPLE DATE	04/04/05	04/04/05	04/04/05	04/04/05	04/04/05	04/04/05	04/05/05
QC IDENTIFIER		ORIG	DUP				
DUPLICATE			OFF-SB-502-0406				
METALS (MG/KG)							
ALUMINUM	7430 *E	8120 *E	8070 *E	NA	7470 *E	NA	7090 *E
ANTIMONY	0.74 BN	0.94 BN	1.2 N	NA	0.21 BN	NA	0.2 BN
ARSENIC	13.4 *E	11.8 *E	9.9 *E	NA	4.7 *E	NA	5.9 *E
BARIUM	9.4 *E	116 *E	136 *E	NA	24.2 *E	NA	15.3 *E
BERYLLIUM	0.22	0.22	0.18	NA	0.15	NA	0.18
CADMIUM	0.0046 U	1	0.56	NA	0.0053 U	NA	0.005 U
CALCIUM	8440 *E	1800 *E	1830 *E	NA	696 *E	NA	673 *E
CHROMIUM	9.4 *E	12.3 *E	13.2 *E	NA	9.5 *E	NA	9.2 *E
COBALT	13.2 *E	10.8 *E	8.2 *E	NA	7.4 *E	NA	8.7 *E
COPPER	18.2 E	290 E	189 E	NA	20.3 E	NA	17.7 E
IRON	21800 *E	26900 *E	26600 *E	NA	17800 *E	NA	16900 *E
LEAD	12.5 E	2020 E	1500 E	NA	37.4 E	NA	38.9 E
MAGNESIUM	3680 *E	1960 *E	2220 *E	NA	2300 *E	NA	1810 *E
MANGANESE	1020 *E	297 *E	232 *E	NA	284 *E	NA	472 *E
MERCURY	0.0057 U*	0.22 *	0.18 *	NA	0.13 *	NA	0.029 B*
NICKEL	25.8 *E	34.2 *E	25.9 *E	NA	14.4 *E	NA	15.4 *E
POTASSIUM	492	501	353	NA	361	NA	302
SELENIUM	0.056 UN	0.075 UN	0.071 UN	NA	0.065 UN	NA	0.061 UN
SILVER	0.016 U*	4.4 *	3.5 *	NA	3.4 *	NA	3.1 *
SODIUM	31.1 B*	130 *	90.5 *	NA	51.7 *	NA	79.1 *
THALLIUM	4.8 *	2.4 *	2.2 *	NA	1.8 *	NA	2.6 *
VANADIUM	8.3 *E	24 *E	16.8 *E	NA	11.1 *E	NA	10.2 *E
ZINC	40.9 *E	1030 *E	853 *E	NA	53.3 *E	NA	46.9 *E
POLYNUCLEAR AROMATIC HYDROCARBONS (UG/KG)							
1-METHYLNAPHTHALENE	3.4 U	180	160	190	310	20 U	3.6 U
2-METHYLNAPHTHALENE	3.4 U	500	420	210	340	20 U	3.6 U
ACENAPHTHENE	3.4 U	41 U	47	520	1100	20 U	8.4
ACENAPHTHYLENE	3.4 U	110	110	47 U	420	20 U	25
ANTHRACENE	3.4 U	120	220	150	3600	20 U	47
BENZO(A)ANTHRACENE	3.4 U	160	570	180	5300 D	50	110
BENZO(A)PYRENE	3.4 U	210	620	120	3600	48	97
BENZO(B)FLUORANTHENE	3.4 U	230	690	160	4500 D	54	110

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
NA - NOT ANALYZED; R - VALUE IS NOT USABLE; U - VALUE IS NOT DETECTED; UJ -VALUE IS NOT DETECTED AND ESTIMATED

ATTACHMENT B

ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-501	OFF-SB-502	OFF-SB-502	OFF-SB-502	OFF-SB-503	OFF-SB-503	OFF-SB-504
SAMPLE NUMBER	OFF-SB-501-0405.5	OFF-SB-502-0406	OFF-SB-502-0406-D	OFF-SB-502-0608	OFF-SB-503-0406	OFF-SB-503-0810	OFF-SB-504-0406
SAMPLE DATE	04/04/05	04/04/05	04/04/05	04/04/05	04/04/05	04/04/05	04/05/05
QC IDENTIFIER		ORIG	DUP				
DUPLICATE			OFF-SB-502-0406				
BENZO(G,H,I)PERYLENE	3.4 U	260	470	110	1800	25	55
BENZO(K)FLUORANTHENE	3.4 U	72	200	50	1300	20 U	39
CHRYSENE	3.4 U	150	470	200	3500	56	81
DIBENZO(A,H)ANTHRACENE	3.4 U	41 U	40 U	47 U	38 U	20 U	3.6 U
FLUORANTHENE	3.4 U	250	920	520	10000 D	55	180
FLUORENE	3.4 U	71	77	47 U	1400	20 U	9.9
INDENO(1,2,3-CD)PYRENE	3.4 U	220	420	90	1800	20 U	48
NAPHTHALENE	3.4 U	180	180	190	310	20 U	4.2
PHENANTHRENE	3.4 U	220	640	200	10000 D	32	88
PYRENE	3.4 U	300	950	1000	10000 D	90	180
PETROLEUM HYDROCARBONS (MG/KG)							
DIESEL RANGE ORGANICS	12 U	1100	720	9000	130	130	27
GASOLINE RANGE ORGANICS	7.6	10	32	110	5.5	3.7	4.3

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
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ATTACHMENT B

ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-504	OFF-SB-505	OFF-SB-505	OFF-SB-506	OFF-SB-506	OFF-SB-506	OFF-SB-509
SAMPLE NUMBER	OFF-SB-504-0810	OFF-SB-505-0406	OFF-SB-505-0608	OFF-SB-506-0406	OFF-SB-506-0406-D	OFF-SB-506-0608	OFF-SB-509-0406
SAMPLE DATE	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05
QC IDENTIFIER				ORIG	DUP		
DUPLICATE					OFF-SB-506-0406		
METALS (MG/KG)							
ALUMINUM	NA	6480 *E	NA	8450 *E	7960 *E	NA	7260 *E
ANTIMONY	NA	0.46 BN	NA	0.39 BN	0.45 BN	NA	2.7 N
ARSENIC	NA	7.8 *E	NA	5.6 *E	7.3 *E	NA	36.4 *E
BARIUM	NA	60.7 *E	NA	15.4 *E	13.4 *E	NA	16.3 *E
BERYLLIUM	NA	0.22	NA	0.21	0.2	NA	1.1
CADMIUM	NA	0.0054 U	NA	0.0053 U	0.0054 U	NA	0.0052 U
CALCIUM	NA	4910 *E	NA	638 *E	624 *E	NA	1000 *E
CHROMIUM	NA	9.6 *E	NA	9.4 *E	11.4 *E	NA	6.7 *E
COBALT	NA	5.4 *E	NA	8.1 *E	9.4 *E	NA	9.5 *E
COPPER	NA	77.6 E	NA	19.8 E	24.8 E	NA	25.1 E
IRON	NA	17400 *E	NA	20800 *E	20700 *E	NA	44000 *E
LEAD	NA	413 E	NA	43.1 E	54.8 E	NA	35.2 E
MAGNESIUM	NA	2030 *E	NA	1680 *E	1990 *E	NA	1760 *E
MANGANESE	NA	196 *E	NA	247 *E	271 *E	NA	145 *E
MERCURY	NA	0.3 *	NA	0.086 *	0.043 *	NA	0.008 B*
NICKEL	NA	13.2 *E	NA	14.2 *E	16.5 *E	NA	15.1 *E
POTASSIUM	NA	282	NA	294	320	NA	307
SELENIUM	NA	0.066 UN	NA	0.065 UN	0.066 UN	NA	0.063 UN
SILVER	NA	0.43 B*	NA	4.1 *	3.1 *	NA	1.1 B*
SODIUM	NA	286 *	NA	64 *	730 *	NA	67.5 *
THALLIUM	NA	1.6 *	NA	1.9 *	2.3 *	NA	2.2 *
VANADIUM	NA	14.4 *E	NA	13.2 *E	14.8 *E	NA	21.9 *E
ZINC	NA	361 *E	NA	44.9 *E	54.4 *E	NA	48 *E
POLYNUCLEAR AROMATIC HYDROCARBONS (UG/KG)							
1-METHYLNAPHTHALENE	100	890	2100	390	960	150	1200
2-METHYLNAPHTHALENE	110	1400	1600	860	1800	150	1400
ACENAPHTHENE	130	2200	57 U	970	1500	450	1700
ACENAPHTHYLENE	41 U	520	57 U	38 U	40 U	37 U	38 U
ANTHRACENE	810	8400 D	6900 D	170 B	310	340	580
BENZO(A)ANTHRACENE	1100	14000 D	9300 D	160	150	160	120
BENZO(A)PYRENE	970	10000 D	7200 D	130	93	77	43
BENZO(B)FLUORANTHENE	1200	14000 D	9300 D	140	130	83	49

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
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ATTACHMENT B

ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-504	OFF-SB-505	OFF-SB-505	OFF-SB-506	OFF-SB-506	OFF-SB-506	OFF-SB-509
SAMPLE NUMBER	OFF-SB-504-0810	OFF-SB-505-0406	OFF-SB-505-0608	OFF-SB-506-0406	OFF-SB-506-0406-D	OFF-SB-506-0608	OFF-SB-509-0406
SAMPLE DATE	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05
QC IDENTIFIER				ORIG	DUP		
DUPLICATE					OFF-SB-506-0406		
BENZO(G,H,I)PERYLENE	550	4000 D	3800	77	64	45	38 U
BENZO(K)FLUORANTHENE	400	4200 D	2400	66	46	37 U	38 U
CHRYSENE	690	9500 D	6100 D	160 B	160	140	100
DIBENZO(A,H)ANTHRACENE	41 U	39 U	57 U	38 U	40 U	37 U	38 U
FLUORANTHENE	1300	27000 D	14000 D	280	290	420	240
FLUORENE	230	2600	57 U	1200	2200	670	3600
INDENO(1,2,3-CD)PYRENE	470	4000 D	3800	79	55	43	38 U
NAPHTHALENE	44	2100	790	660	1100	160	38 U
PHENANTHRENE	910	24000 D	5500	2200	2900	1700	7600 D
PYRENE	3000	27000 D	19000 D	480	670	480	700
PETROLEUM HYDROCARBONS (MG/KG)							
DIESEL RANGE ORGANICS	3700	3000	40000	7500	6700	1300	7600
GASOLINE RANGE ORGANICS	61	64	270	290	220	77	260

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
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ATTACHMENT B

ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-509	OFF-SB-511	OFF-SB-511	OFF-SB-512	OFF-SB-512	OFF-SB-513	OFF-SB-513
SAMPLE NUMBER	OFF-SB-509-0810	OFF-SB-511-0406	OFF-SB-511-0608	OFF-SB-512-0406	OFF-SB-512-0608	OFF-SB-513-0406	OFF-SB-513-0608
SAMPLE DATE	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05
QC IDENTIFIER							
DUPLICATE							
METALS (MG/KG)							
ALUMINUM	NA	8650 *E	NA	11000 *E	NA	9780 *E	NA
ANTIMONY	NA	0.45 BN	NA	0.88 BN	NA	0.47 BN	NA
ARSENIC	NA	5.4 *E	NA	6.5 *E	NA	8.5 *E	NA
BARIUM	NA	21.8 *E	NA	11.8 *E	NA	38.3 *E	NA
BERYLLIUM	NA	0.23	NA	0.31	NA	0.31	NA
CADMIUM	NA	0.0051 U	NA	0.0056 U	NA	0.0058 U	NA
CALCIUM	NA	594 *E	NA	224 *E	NA	926 *E	NA
CHROMIUM	NA	12 *E	NA	12.1 *E	NA	10.9 *E	NA
COBALT	NA	10.3 *E	NA	10.4 *E	NA	11.8 *E	NA
COPPER	NA	26 E	NA	21.5 E	NA	33.4 E	NA
IRON	NA	22300 *E	NA	24800 *E	NA	21700 *E	NA
LEAD	NA	34.7 E	NA	16.4 E	NA	44.3 E	NA
MAGNESIUM	NA	2710 *E	NA	4590 *E	NA	3020 *E	NA
MANGANESE	NA	312 *E	NA	986 *E	NA	256 *E	NA
MERCURY	NA	0.038 *	NA	0.011 B*	NA	0.47 *	NA
NICKEL	NA	21 *E	NA	19.1 *E	NA	24.3 *E	NA
POTASSIUM	NA	384	NA	214	NA	264	NA
SELENIUM	NA	0.063 UN	NA	0.069 UN	NA	0.07 UN	NA
SILVER	NA	3.4 *	NA	4.8 *	NA	3.8 *	NA
SODIUM	NA	182 *	NA	87 *	NA	77.3 *	NA
THALLIUM	NA	2.3 *	NA	5 *	NA	2.2 *	NA
VANADIUM	NA	15 *E	NA	9.2 *E	NA	13.3 *E	NA
ZINC	NA	50.3 *E	NA	50.1 *E	NA	195 *E	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (UG/KG)							
1-METHYLNAPHTHALENE	5900 D	56000 D	1400	37 U	80 U	11000 D	20000 D
2-METHYLNAPHTHALENE	38 U	13000 D	38 U	37 U	80 U	4500 D	24000 D
ACENAPHTHENE	38 U	37 U	2000	37 U	1100	40 U	39 U
ACENAPHTHYLENE	38 U	37 U	38 U	37 U	80 U	40 U	39 U
ANTHRACENE	540	1300	660	58	1400	350	450 B
BENZO(A)ANTHRACENE	53	390	100	65	130	120	72
BENZO(A)PYRENE	38 U	230	42	37 U	80 U	85	39 U
BENZO(B)FLUORANTHENE	38 U	250	49	37 U	80 U	99	39 U

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
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ATTACHMENT B

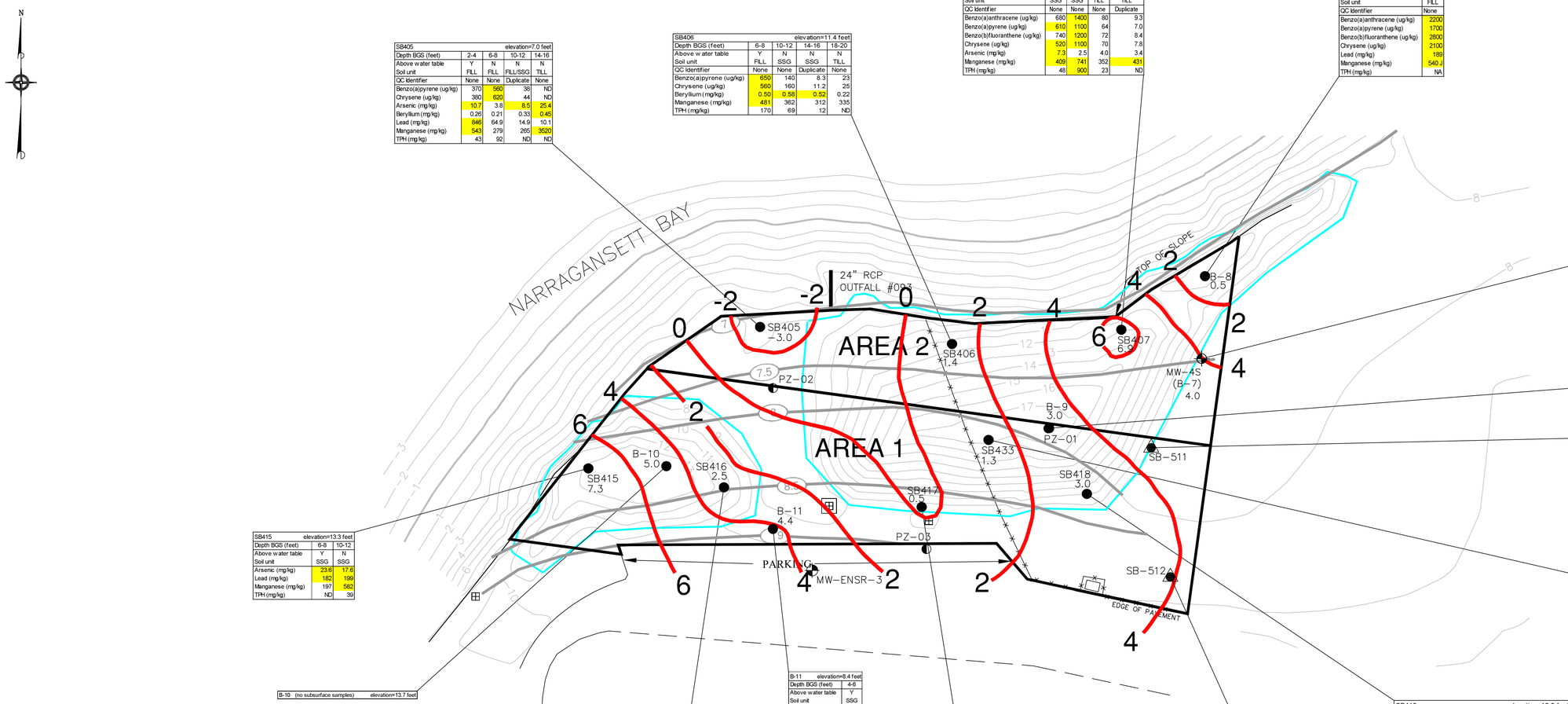
ANALYTICAL RESULTS - SUPPLEMENTAL SOIL INVESTIGATION
OLD FIREFIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE LOCATION	OFF-SB-509	OFF-SB-511	OFF-SB-511	OFF-SB-512	OFF-SB-512	OFF-SB-513	OFF-SB-513
SAMPLE NUMBER	OFF-SB-509-0810	OFF-SB-511-0406	OFF-SB-511-0608	OFF-SB-512-0406	OFF-SB-512-0608	OFF-SB-513-0406	OFF-SB-513-0608
SAMPLE DATE	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05	04/05/05
QC IDENTIFIER							
DUPLICATE							
BENZO(G,H,I)PERYLENE	38 U	120	38 U	37 U	80 U	65	39 U
BENZO(K)FLUORANTHENE	38 U	98	38 U	37 U	80 U	40 U	39 U
CHRYSENE	64	320	94	43	120	100	70 B
DIBENZO(A,H)ANTHRACENE	38 U	37 U	38 U	37 U	80 U	40 U	39 U
FLUORANTHENE	220	610	340	190	470	350	260
FLUORENE	2200	7600 D	1400	460	80 U	2100	2200
INDENO(1,2,3-CD)PYRENE	38 U	120	38 U	37 U	80 U	50	39 U
NAPHTHALENE	38 U	1100	330	140	150	1200	4300 D
PHENANTHRENE	4100 D	14000 D	3900 E	200	80 U	4700 D	5100 D
PYRENE	420	2000	630	360	1100	390	300
PETROLEUM HYDROCARBONS (MG/KG)							
DIESEL RANGE ORGANICS	4900	17000	7100	5900	9500	6900	6500
GASOLINE RANGE ORGANICS	180	420	140	320	260	220	250

NO QUALIFIER - POSITIVE HIT; J -VALUE IS ESTIMATED;
NA - NOT ANALYZED; R - VALUE IS NOT USABLE; U - VALUE IS NOT DETECTED; UJ -VALUE IS NOT DETECTED AND ESTIMATED

ATTACHMENT C

REVISED FIGURES 4-6 THROUGH 4-8



SB405			elevation=7.0 feet
Depth BGS (feet)	2-4	6-8	10-12	14-16
Above water table	Y	N	N	N
Soil unit	FILL	FILL	FILL/SSG	TILL
QC Identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	370	550	38	ND
Chrysene (ug/kg)	380	620	44	ND
Arsenic (mg/kg)	10.7	3.8	8.5	25.4
Beryllium (mg/kg)	0.26	0.21	0.33	0.45
Lead (mg/kg)	846	64.9	14.9	10.1
Manganese (mg/kg)	543	279	265	3520
TPH (mg/kg)	43	92	ND	ND

SB406			elevation=11.4 feet	
Depth BGS (feet)	6-8	10-12	14-16	18-20
Above w ater table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TILL
QC Identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	650	140	8.3	23
Chrysene (ug/kg)	560	160	11.2	25
Beryllium (mg/kg)	0.50	0.58	0.52	0.22
Manganese (mg/kg)	481	362	312	335
TPH (mg/kg)	170	69	12	ND

SB407				elevation=12.9 feet
Depth BGS (feet)	8-10	12-14	16-18	20-22
Above water table	Y	Y	N	N
Soil unit	SSG	SSG	TILL	TILL
QC Identifier	None	None	None	Duplicate
Benzo(a)anthracene (ug/kg)	680	1400	80	9.3
Benzo(a)pyrene (ug/kg)	610	1100	64	7.0
Benzo(b)fluoranthene (ug/kg)	740	1200	72	8.4
Chrysene (ug/kg)	520	1100	70	7.8
Arsenic (mg/kg)	7.3	2.5	4.0	3.4
Manganese (mg/kg)	409	741	352	431
TPH (mg/kg)	48	900	23	ND

B-8		elevation=11.5 feet
Depth BGS (feet)	8-10	
Above water table	N	
Soil unit	FILL	
QC Identifier	None	
Benzo(a)anthracene (ug/kg)	2200	
Benzo(a)pyrene (ug/kg)	1700	
Benzo(b)fluoranthene (ug/kg)	2800	
Chrysene (ug/kg)	2100	
Lead (mg/kg)	189	
Manganese (mg/kg)	540 J	
TPH (mg/kg)	NA	

B-7		elevation=8.1 feet
Depth BGS (feet)	4-6	6-8
Above water table	N	N
Soil unit	SSG	SSG
QC Identifier	None	None
Benzo(a)anthracene (ug/kg)	1300 J	550
Benzo(a)pyrene (ug/kg)	1000 J	490
Benzo(b)fluoranthene (ug/kg)	1300 J	400
Chrysene (ug/kg)	1000 J	540
TPH (mg/kg)	NA	NA

MW-4S (w ell installed in location of boring B-7)

B-9 (no subsurface samples) elevation=17.7 feet

SB511		
Depth BGS (feet)	4-6	6-8
Above w ater table	Y	N
Soil unit	FILL	Fill
QC Identifier	None	None
TPH (mg/kg)	17420	7240

SB415		elevation=13.3 feet
Depth BGS (feet)	6-8	10-12
Above w ater table	Y	N
Soil unit	SSG	SSG
Arsenic (mg/kg)	23.6	17.6
Lead (mg/kg)	182	199
Manganese (mg/kg)	197	582
TPH (mg/kg)	ND	39

B-10 (no subsurface samples) elevation=13.7 feet

B-11		elevation=8.4 feet
Depth BGS (feet)	4-6	
Above w ater table	Y	
Soil unit	SSG	
QC Identifier	None	
Arsenic (mg/kg)	10.0 J	
Lead (mg/kg)	314	
Manganese (mg/kg)	627 J	
TPH (mg/kg)	NA	

SB416				elevation=11.5 feet
Depth BGS (feet)	4-6	8-10	12-14	16-18
Above w ater table	Y	Y	N	N
Soil unit	FILL	FILL/SSG	SSG	TILL
Benzo(a)pyrene (ug/kg)	820	11	ND	55
Benzo(b)fluoranthene (ug/kg)	1100	13	ND	67
Chrysene (ug/kg)	890	11	ND	60
Arsenic (mg/kg)	11.8	12.4	15.6	25.9
Beryllium (mg/kg)	0.43	0.52	0.48	0.42
Manganese (mg/kg)	570	189	357	3210
TPH (mg/kg)	170	ND	ND	13

SB417					elevation=8.5 feet
Depth BGS (feet)	4-6	6-8	10-12	14-16	18-20
Above w ater table	Y	N	N	N	N
Soil unit	FILL	FILL	SSG	SSG	TILL
QC Identifier	None	Duplicate	None	None	None
Arsenic (mg/kg)	7.8	8.4	5.8	14.3	14.1
Beryllium (mg/kg)	0.44	0.33	0.35	0.41	0.45
Manganese (mg/kg)	129	193	114	1540	219
TPH (mg/kg)	310	175	ND	ND	ND

SB433					elevation=17.3 feet
Depth BGS (feet)	12-14	16-18	20-22	24-26	28-30
Above w ater table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	TILL	TILL
QC Identifier	None	None	Duplicate	Duplicate	None
Arsenic (mg/kg)	15.0	3.6	5.6	4.1	2.1
Beryllium (mg/kg)	0.34	0.09	0.23	0.41	0.20
Manganese (mg/kg)	582	171	279	2205	511
TPH (mg/kg)	190	170	98	ND	ND

SB418				elevation=10.0 feet
Depth BGS (feet)	4-6	8-10	12-14	16-18
Above w ater table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TILL
QC Identifier	None	None	None	Duplicate
Beryllium (mg/kg)	0.56	0.48	0.44	0.39
Lead (mg/kg)	321	14.5	12.7	10.3
Manganese (mg/kg)	496	333	759	1360
TPH (mg/kg)	32	44	ND	ND

SB512		
Depth BGS (feet)	4-6	6-8
Above w ater table	Y	N
Soil unit	FILL	Fill
QC Identifier	None	None
Manganese (mg/kg)	986	NA
TPH (mg/kg)	6220	9760

LEGEND

- CATCH BASIN
- FENCE
- EXISTING CONTOUR (DECEMBER 2003)
- B-16 — SOIL BORING LOCATIONS: TRC 1992, 1993: B-# TtNUS, 2003: SB4##
- MW-6S — MONITORING WELL LOCATION
- STORM SEWER
- 627.2 — CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1-1 FOR PRGs.
- SITE AREA BOUNDARY
- TP-10 — TEST PIT LOCATION (B&RE, 6/97)
- TP1C — TEST PIT LOCATION (TRC, 1/94)
- 8 — EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- SSG — SILTY SAND AND GRAVEL
- ELEVATION OF BOTTOM OF FILL

GRAPHIC SCALE

30' 0' 30' 60'

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

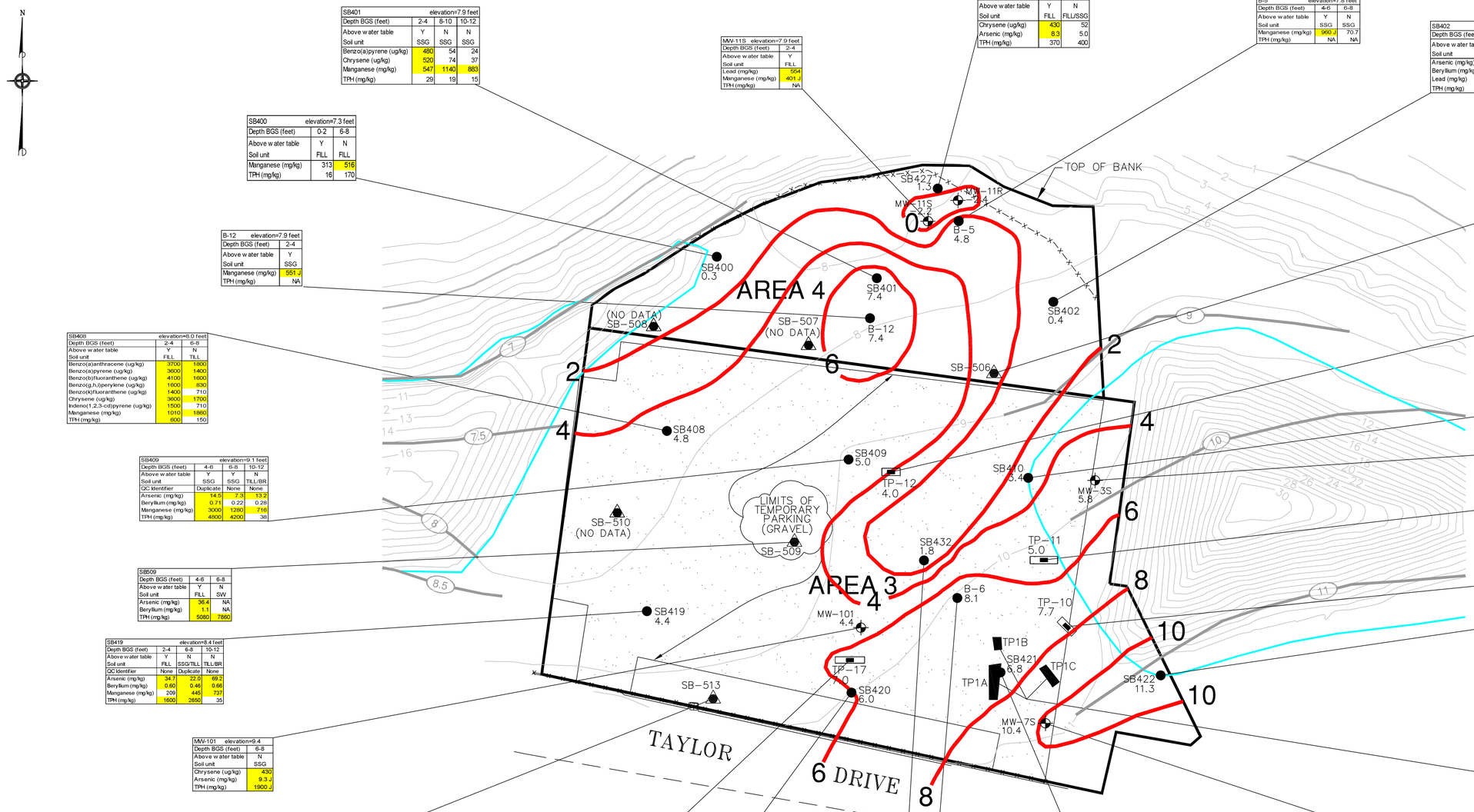
4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA - CONTAMINANT NOT ANALYZED. ND - NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

DRAWN BY: D.W. MACDOUGALL	TITLE: WESTERN SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: L. SEYDEWITZ	
CHECKED BY: J. FORRELLI	
	SOURCE: BASE PLAN BY SEE NOTES.
	SCALE: AS NOTED / DATE: NOVEMBER 25, 2005 / PROJ. NO: 1611
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-6 / ACFILE NAME: DWG\1611\3550\FIG_4-6.DWG / REV: 1
PROGRAM MANAGER: J. TREPANOWSKI	

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899



SB401	elevation=7.9 feet		
Depth BGS (feet)	2-4	8-10	10-12
Above water table	Y	N	N
Soil unit	SSG	SSG	SSG
Benzo(a)pyrene (ug/kg)	480	54	24
Chrysene (ug/kg)	520	74	37
Manganese (mg/kg)	547	1140	883
TPH (mg/kg)	29	19	15

MW-11S	elevation=7.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	FILL
Lead (mg/kg)	554
Manganese (mg/kg)	401 J
TPH (mg/kg)	NA

SB427	elevation=8.3 feet	
Depth BGS (feet)	2-4	6-8
Above water table	Y	N
Soil unit	FILL	FILL/SSG
Chrysene (ug/kg)	430	52
Arsenic (mg/kg)	8.3	5.0
TPH (mg/kg)	370	400

B-5	elevation=7.8 feet	
Depth BGS (feet)	4-6	6-8
Above water table	Y	N
Soil unit	SSG	SSG
Manganese (mg/kg)	960 J	70.7
TPH (mg/kg)	NA	NA

SB402	elevation=8.4 feet				
Depth BGS (feet)	2-4	8-10	12-14	16-18	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	PEAT	SSG	TILL	TILL
Arsenic (mg/kg)	4.0	4.4	3.3	8.0	8.6
Beryllium (mg/kg)	0.24	0.19	0.23	0.44	0.34
Lead (mg/kg)	147	1300	37.7	17.4	12.9
TPH (mg/kg)	63	180	ND	ND	ND

SB400	elevation=7.3 feet	
Depth BGS (feet)	0-2	6-8
Above water table	Y	N
Soil unit	FILL	FILL
Manganese (mg/kg)	313	516
TPH (mg/kg)	16	170

SB506			
Depth BGS (feet)	4-6	4-6	6-8
QC Identifier	Duplicate	Duplicate	None
Above water table	Y	Y	N
Soil unit	SW	SW	SW
Arsenic (mg/kg)	7.3	5.6	NA
TPH (mg/kg)	6920	7780	1377

B-12	elevation=7.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Manganese (mg/kg)	551 J
TPH (mg/kg)	NA

TP-12	elevation=9.0 feet
Depth BGS (feet)	4-5
Above water table	Y
Soil unit	FILL
QC Identifier	None
Lead (mg/kg)	283 J
Manganese	516 J
TPH (mg/kg)	4100 J

SB408	elevation=8.0 feet	
Depth BGS (feet)	2-4	6-8
Above water table	Y	N
Soil unit	FILL	TILL
Benzo(a)anthracene (ug/kg)	3700	1800
Benzo(a)pyrene (ug/kg)	3600	1400
Benzo(b)fluoranthene (ug/kg)	4100	1600
Benzo(g,h,i)perylene (ug/kg)	1600	830
Benzo(k)fluoranthene (ug/kg)	1400	710
Chryseme (ug/kg)	3600	1700
Indeno(1,2,3-cd)pyrene (ug/kg)	1500	710
Manganese (mg/kg)	1010	1860
TPH (mg/kg)	600	150

SB410	elevation=9.4 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	FILL	SSG	SSG	SSG	SSG
Arsenic (mg/kg)	10.0	8.3	4.6	7.0	6.7
Beryllium (mg/kg)	0.22	0.25	0.24	0.40	0.41
Manganese (mg/kg)	274	563	173	2120	316
TPH (mg/kg)	52	2900	110	25	ND

MW-3S	elevation=9.8 feet	
Depth BGS (feet)	6-8	12-14
Above water table	Y	N
Soil unit	SSG	SSG
Beryllium (mg/kg)	0.24	0.46
TPH (mg/kg)	NA	NA

SB409	elevation=9.1 feet		
Depth BGS (feet)	4-6	6-8	10-12
Above water table	Y	Y	N
Soil unit	SSG	SSG	TILL/BR
QC Identifier	Duplicate	None	None
Arsenic (mg/kg)	14.5	7.3	13.2
Beryllium (mg/kg)	0.71	0.22	0.28
Manganese (mg/kg)	3000	1280	716
TPH (mg/kg)	4900	4200	38

TP-11	elevation=10.0 feet
Depth BGS (feet)	5-6
Above water table	Y
Soil unit	FILL
QC Identifier	Duplicate
Chrysene (ug/kg)	460
Arsenic (mg/kg)	8.3
Lead (mg/kg)	563
TPH (mg/kg)	7500

TP-10 (no subsurface samples) elevation=10.5 feet

SB509		
Depth BGS (feet)	4-6	6-8
Above water table	Y	N
Soil unit	FILL	SW
Arsenic (mg/kg)	36.4	NA
Beryllium (mg/kg)	1.1	NA
TPH (mg/kg)	5080	7860

SB422	elevation=11.8 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	SSG	SSG	SSG	SSG/TILL	TILL
Benzo(a)anthracene (ug/kg)	18000	79	ND	ND	ND
Benzo(a)pyrene (ug/kg)	15000	84	ND	ND	ND
Benzo(b)fluoranthene (ug/kg)	17000	110	ND	ND	ND
Benzo(g,h,i)perylene (ug/kg)	9000	55	ND	ND	ND
Benzo(k)fluoranthene (ug/kg)	7800	36	ND	ND	ND
Chrysene (ug/kg)	15000	79	ND	ND	ND
Dibenzo(a,h)anthracene (ug/kg)	1900	17	ND	ND	ND
Indeno(1,2,3-cd)pyrene (ug/kg)	7500	50	ND	ND	ND
Antimony (mg/kg)	6.4	5.0	8.0	9.0	10.5
Beryllium (mg/kg)	0.44	0.22	0.62	0.64	0.40
Manganese (mg/kg)	334	160	528	917	514
TPH (mg/kg)	360	37	ND	ND	ND

SB419	elevation=8.4 feet		
Depth BGS (feet)	2-4	6-8	10-12
Above water table	Y	N	N
Soil unit	FILL	SSG/TILL	TILL/BR
QC Identifier	None	Duplicate	None
Arsenic (mg/kg)	34.7	22.0	69.2
Beryllium (mg/kg)	0.60	0.46	0.66
Manganese (mg/kg)	209	445	737
TPH (mg/kg)	1600	2650	35

MW-101	elevation=9.4
Depth BGS (feet)	6-8
Above water table	N
Soil unit	SSG
Chrysene (ug/kg)	430
Arsenic (mg/kg)	9.3 J
TPH (mg/kg)	1900 J

TPI	elevation= 10.5 feet	
Depth BGS (feet)	1.5-2.0	3.5-4.0
Above water table	Y	Y
Soil unit	FILL	FILL
Benzo(a)pyrene (ug/kg)	440 J	660 J
Chrysene (ug/kg)	410 J	730 J
Lead (mg/kg)	40.1 J	475 J
TPH (mg/kg)	NA	NA

SB513		
Depth BGS (feet)	4-6	6-8
Above water table	Y	N
Soil unit	FILL	FILL
Arsenic (mg/kg)	8.5	NA
TPH (mg/kg)	7120	6750

TP-17	elevation=10.0 feet
Depth BGS (feet)	8-9
Above water table	N
Soil unit	SSG
QC Identifier	Duplicate
Arsenic (mg/kg)	8.2
TPH (mg/kg)	200

B-6	elevation=10.1 feet	
Depth BGS (feet)	4-6	10-12
Above water table	N	N
Soil unit	SSG	SSG
Manganese (mg/kg)	NA	780 J
TPH (mg/kg)	NA	NA

SB421	elevation=10.8 feet				
Depth BGS (feet)	2-4	6-8	12-14	14-16	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	SSG	TILL
QC Identifier	Duplicate	None	None	None	None
Benzo(a)anthracene (ug/kg)	705	1100	17	37	ND
Benzo(a)pyrene (ug/kg)	690	1100	12	21	ND
Benzo(b)fluoranthene (ug/kg)	770	1200	10	26	ND
Chrysene (ug/kg)	730	1000	17	39	ND
Antimony (mg/kg)	5.0	9.9	13.3	10.0	11.3
Arsenic (mg/kg)	9.3	8.4	11.6	9.1	11.9
Beryllium (mg/kg)	0.53	0.34	0.53	0.42	0.44
Lead (mg/kg)	201	29.8	14.6	11.0	10.6
Manganese (mg/kg)	225	374	567	534	284
TPH (mg/kg)	125	7300	ND	16	18

MW-7S	elevation=10.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Benzo(a)anthracene	1300
Benzo(a)pyrene (ug/kg)	1000
Benzo(b)fluoranthene	1800
Chrysene (ug/kg)	1100
Antimony (mg/kg)	ND
Manganese (mg/kg)	396 J
TPH (mg/kg)	NA

SB420	elevation=10.0 feet			
Depth BGS (feet)	2-4	6-8	10-12	14-16
Above water table	Y	N	N	N
Soil unit	FILL	SSG	TILL	TILL
Benzo(a)pyrene (ug/kg)	430	55	11	ND
Chrysene (ug/kg)	540	110	27	ND
Antimony (mg/kg)	ND	13.0	13.9	17.3
Arsenic (mg/kg)	9.1	14.2	7.2	7.6
Beryllium (mg/kg)	0.73	0.59	0.38	0.60
Manganese (mg/kg)	448	543	428	2780
TPH (mg/kg)	46	8400	710	70

SB432	elevation=9.8 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	FILL	FILL	SSG	SSG	SSG
Benzo(a)anthracene (ug/kg)	1400	910	54	ND	4.7
Benzo(a)pyrene (ug/kg)	1200	720	40	ND	ND
Benzo(b)fluoranthene (ug/kg)	1600	870	45	ND	ND
Chrysene (ug/kg)	1400	920	54	ND	4.4
Arsenic (mg/kg)	6.2	7.2	7.3	8.8	4.5
Beryllium (mg/kg)	0.35	0.42	0.37	0.36	0.15
Lead (mg/kg)	158	188	26.0	15.8	8.8
Manganese (mg/kg)	314	344	260	1000	181
TPH (mg/kg)	1100	910	93	ND	ND

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

LEGEND

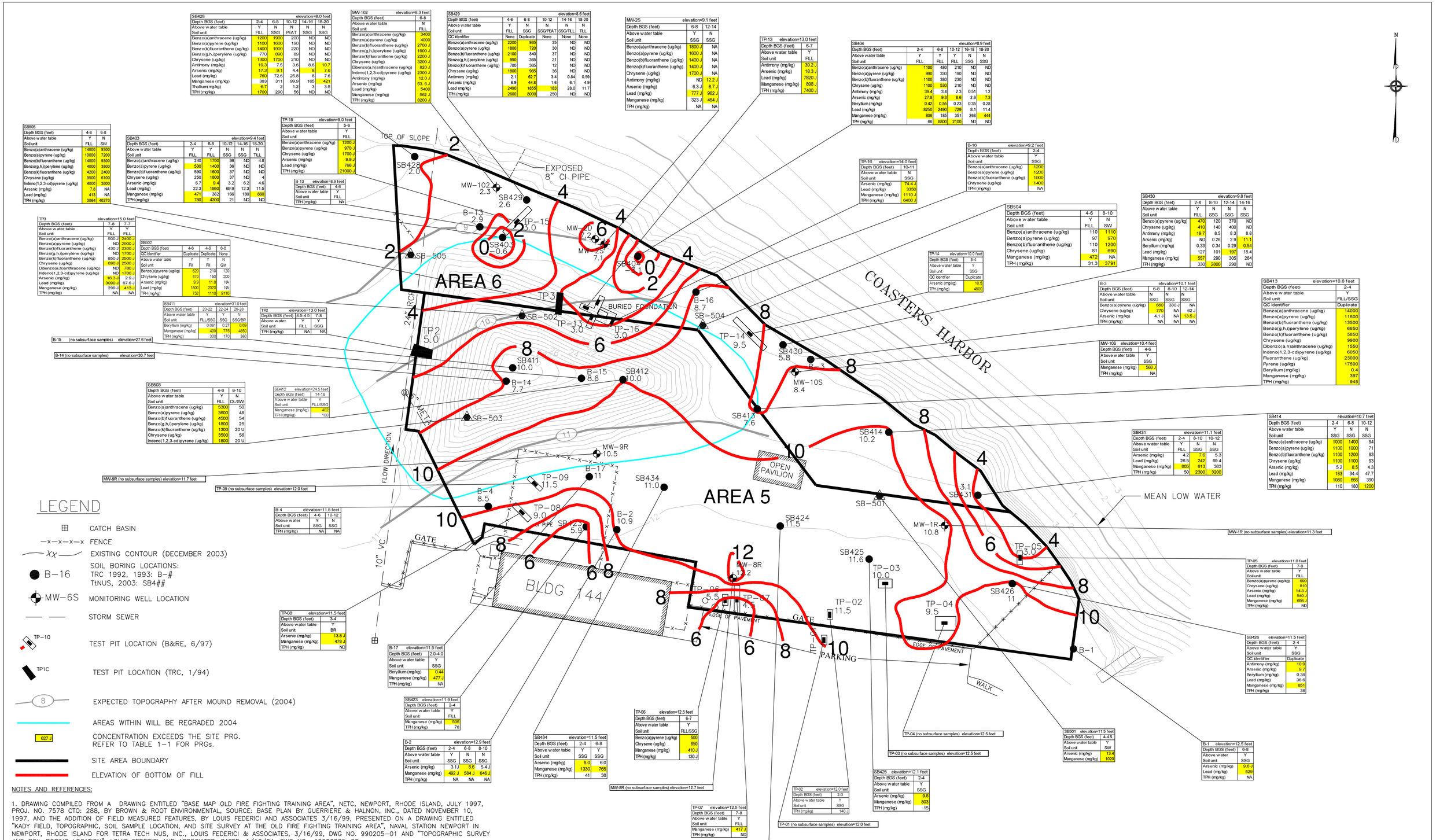
- CATCH BASIN
- FENCE
- EXISTING CONTOUR (DECEMBER 2003)
- B-16 — SOIL BORING LOCATIONS: TRC 1992, 1993: B-# TtNUS, 2003: SB4##
- MW-6S — MONITORING WELL LOCATION
- STORM SEWER
- 627 J — CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1-1 FOR PRGs.
- SSG — SILTY SAND AND GRAVEL
- TP-10 — TEST PIT LOCATION (B&RE, 6/97)
- TP1C — TEST PIT LOCATION (TRC, 1/94)
- 8 — EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- SITE AREA BOUNDARY
- ELEVATION OF BOTTOM OF FILL
- BR — BEDROCK

GRAPHIC SCALE

30' 0' 30' 60'

DRAWN BY: D.W. MACDOUGALL	TITLE: CENTRAL SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: L. SEYDEWITZ	
CHECKED BY: J. FORRELLI	
	SOURCE: BASE PLAN BY SEE NOTES.
	SCALE: AS NOTED / DATE: NOVEMBER 25, 2005 / PROJ. NO: 1611
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-7 / ACFILE NAME: DWG\1611\3550\FIG_4-7.DWG / REV: 1
PROGRAM MANAGER: J. TREPANOWSKI	

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899



SB428	elevation=8.0 feet
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	PEAT	SSG	SSG
Benzo(a)anthracene (ug/kg)	1200	1900	200	ND	ND
Benzo(a)pyrene (ug/kg)	1100	1600	190	ND	ND
Benzo(b)fluoranthene (ug/kg)	1400	1900	220	ND	ND
Benzo(g,h,i)perylene (ug/kg)	770	890	89	ND	ND
Chrysene (ug/kg)	1300	1700	210	ND	ND
Antimony (mg/kg)	19.3	7.5	3.6	8.6	10.7
Arsenic (mg/kg)	17.3	9.1	4.4	8	7.6
Lead (mg/kg)	760	72.6	25.8	8	7.6
Manganese (mg/kg)	383	311	99.9	165	421
Thallium(mg/kg)	6.7	2	1.2	3	3.5
TPH (mg/kg)	1700	290	56	ND	ND

MW-102	elevation=8.3 feet
Depth BGS (feet)	6-8
Above water table	N
Soil unit	FILL
Benzo(a)anthracene (ug/kg)	3400
Benzo(a)pyrene (ug/kg)	4000
Benzo(b)fluoranthene (ug/kg)	2700 J
Benzo(g,h,i)perylene (ug/kg)	1900 J
Benzo(k)fluoranthene (ug/kg)	2200 J
Chrysene (ug/kg)	3200 J
Dibenzo(a,h)anthracene (ug/kg)	820 J
Indeno(1,2,3-cd)pyrene (ug/kg)	2300 J
Antimony (mg/kg)	12.0 J
Arsenic (mg/kg)	53. 6 J
Lead (mg/kg)	5400
Manganese (mg/kg)	562 J
TPH (mg/kg)	6200 J

SB429	elevation=8.6 feet
Depth BGS (feet)	4-6	6-8	10-12	14-16	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG/PEAT	SSG/TILL	TILL
QC Identifier	None	Duplicate	None	None	None
Benzo(a)anthracene (ug/kg)	2200	930	35	ND	ND
Benzo(a)pyrene (ug/kg)	1800	720	30	ND	ND
Benzo(b)fluoranthene (ug/kg)	2100	840	37	ND	ND
Benzo(g,h,i)perylene (ug/kg)	990	365	21	ND	ND
Benzo(k)fluoranthene (ug/kg)	780	365	12	ND	ND
Chrysene (ug/kg)	1800	965	36	ND	ND
Antimony (mg/kg)	2.1	62.7	3.4	0.84	0.59
Arsenic (mg/kg)	6.9	44.8	1.6	6.1	4.9
Lead (mg/kg)	2490	1855	183	28.0	11.7
Manganese (mg/kg)	2600	8000	250	ND	ND

MW-2S	elevation=9.1 feet
Depth BGS (feet)	6-8	12-14
Above water table		
Soil unit	SSG	SSG
Benzo(a)anthracene (ug/kg)	1800 J	NA
Benzo(a)pyrene (ug/kg)	1600 J	NA
Benzo(b)fluoranthene (ug/kg)	1400 J	NA
Benzo(k)fluoranthene (ug/kg)	1400 J	NA
Chrysene (ug/kg)	1700 J	NA
Antimony (mg/kg)	ND	12.2 J
Arsenic (mg/kg)	6.3 J	8.7 J
Lead (mg/kg)	777 J	962 J
Manganese (mg/kg)	323 J	464 J
TPH (mg/kg)	NA	NA

TP-13	elevation=13.0 feet
Depth BGS (feet)	6-7
Above water table	Y
Soil unit	FILL
Antimony (mg/kg)	39.2 J
Arsenic (mg/kg)	18.3 J
Lead (mg/kg)	7820 J
Manganese (mg/kg)	898 J
TPH (mg/kg)	7400 J

SB404	elevation=8.9 feet
Depth BGS (feet)	2-4	6-8	10-12	16-18	18-20
Above water table	Y	Y	Y	N	N
Soil unit	FILL	FILL	FILL	SSG	SSG
Benzo(a)anthracene (ug/kg)	1100	480	210	ND	ND
Benzo(a)pyrene (ug/kg)	990	330	190	ND	ND
Benzo(b)fluoranthene (ug/kg)	1100	380	230	ND	ND
Chrysene (ug/kg)	1100	530	210	ND	ND
Antimony (mg/kg)	39.4	3.4	2.3	0.51	1.2
Arsenic (mg/kg)	27.8	9.3	8.6	2.6	7.3
Beryllium (mg/kg)	0.42	0.55	0.23	0.35	0.28
Lead (mg/kg)	8250	2490	729	8.1	11.4
Manganese (mg/kg)	806	185	351	268	444
TPH (mg/kg)	66	8800	2100	ND	ND

SB505	
Depth BGS (feet)	4-6	6-8
Above water table	Y	N
Soil unit	FILL	SW
Benzo(a)anthracene (ug/kg)	14000	9300
Benzo(a)pyrene (ug/kg)	10000	7200
Benzo(b)fluoranthene (ug/kg)	14000	9300
Benzo(g,h,i)perylene (ug/kg)	4000	3800
Benzo(k)fluoranthene (ug/kg)	4200	2400
Chrysene (ug/kg)	9500	6100
Indeno(1,2,3-cd)pyrene (ug/kg)	4000	3800
Arsenic (mg/kg)	7.8	NA
Lead (mg/kg)	413	NA
TPH (mg/kg)	3064	40270

SB403	elevation=9.4 feet
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	FILL	FILL	SSG	SSG	TILL
Benzo(a)anthracene (ug/kg)	240	1700	36	ND	4.8
Benzo(a)pyrene (ug/kg)	530	1400	36	ND	ND
Benzo(b)fluoranthene (ug/kg)	590	1600	37	ND	ND
Chrysene (ug/kg)	250	1800	37	ND	4
Arsenic (mg/kg)	6.7	9.4	3.2	6.2	4.6
Lead (mg/kg)	22.3	1950	69.9	12.3	11.5
Manganese (mg/kg)	471	382	166	180	860
TPH (mg/kg)	780	4300	21	ND	ND

TP-15	elevation=9.0 feet
Depth BGS (feet)	5-6
Above water table	Y
Soil unit	FILL
Benzo(a)anthracene (ug/kg)	1200 J
Benzo(a)pyrene (ug/kg)	970 J
Chrysene (ug/kg)	1700 J
Arsenic (mg/kg)	9.9 J
Lead (mg/kg)	788 J
TPH (mg/kg)	21000 J

B-13	elevation=8.9 feet
Depth BGS (feet)	4-6
Above water table	Y
Soil unit	FILL
TPH (mg/kg)	NA

TP-16	elevation=14.0 feet
Depth BGS (feet)	10-11
Above water table	N
Soil unit	SSG
Arsenic (mg/kg)	74.4 J
Lead (mg/kg)	3350
Manganese (mg/kg)	1110 J
TPH (mg/kg)	6400 J

B-16	elevation=9.2 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Benzo(a)anthracene (ug/kg)	1200
Benzo(a)pyrene (ug/kg)	1200
Benzo(b)fluoranthene (ug/kg)	1900
Chrysene (ug/kg)	1400
TPH (mg/kg)	NA

TP3	elevation=15.0 feet
Depth BGS (feet)	7-8	7-7
Above water table	Y	Y
Soil unit	FILL	FILL
Benzo(a)anthracene (ug/kg)	500 J	2400 J
Benzo(a)pyrene (ug/kg)	ND	2600 J
Benzo(b)fluoranthene (ug/kg)	430 J	2300 J
Benzo(g,h,i)perylene (ug/kg)	ND	1700 J
Benzo(k)fluoranthene (ug/kg)	850 J	2500 J
Chrysene (ug/kg)	690 J	2500 J
Dibenzo(a,h)anthracene (ug/kg)	ND	780 J
Indeno(1,2,3-cd)pyrene (ug/kg)	ND	1700 J
Arsenic (mg/kg)	16.3 J	2.9 J
Lead (mg/kg)	3090 J	67.6 J
Manganese (mg/kg)	299 J	413 J
TPH (mg/kg)	NA	NA

SB502	
Depth BGS (feet)	4-6	4-6	6-8
QC identifier	Duplicate	Duplicate	None
Above water table	Y	Y	N
Soil unit	Fill	Fill	GM
Benzo(a)pyrene (ug/kg)	820	210	120
Chrysene (ug/kg)	470	150	200
Arsenic (mg/kg)	9.9	11.8	NA
Lead (mg/kg)	1500	2020	NA
TPH (mg/kg)	752	1110	9110

SB411	elevation=31.0 feet
Depth BGS (feet)	20-22	22-24	26-28
Above water table	Y	Y	N
Soil unit	FILL/SSG	SSG	SSG/BR
Beryllium (mg/kg)	0.091	0.27	0.69
Manganese (mg/kg)	409	775	4650
TPH (mg/kg)	300	170	380

TP2	elevation=13.0 feet
Depth BGS (feet)	4.5-4.5	7-8
Above water	Y	Y
Soil unit	FILL	SSG
TPH (mg/kg)	NA	NA

B-15 (no subsurface samples) elevation=27.6 feet

B-14 (no subsurface samples) elevation=30.7 feet

SB503	
Depth BGS (feet)	4-6	8-10
Above water table	Y	N
Soil unit	FILL	OL/SW
Benzo(a)anthracene (ug/kg)	5300	50
Benzo(a)pyrene (ug/kg)	3600	48
Benzo(b)fluoranthene (ug/kg)	4500	54
Benzo(g,h,i)perylene (ug/kg)	1800	25
Benzo(k)fluoranthene (ug/kg)	1300	20 U
Chrysene (ug/kg)	3500	56
Indeno(1,2,3-cd)pyrene (ug/kg)	1800	20 U

SB412	elevation=24.5 feet
Depth BGS (feet)	14-16
Above water table	Y
Soil unit	FILL/SSG
Manganese (mg/kg)	402
TPH (mg/kg)	100

MW-9R (no subsurface samples) elevation=11.7 feet

TP-09 (no subsurface samples) elevation=12.0 feet

B-4	elevation=11.5 feet
Depth BGS (feet)	4-6	10-12
Above water	Y	N
Soil unit	SSG	SSG
TPH (mg/kg)	NA	NA

TP-08	elevation=11.5 feet
Depth BGS (feet)	3-4
Above water table	Y
Soil unit	BR
Arsenic (mg/kg)	13.8 J
Manganese (mg/kg)	478 J
TPH (mg/kg)	ND

B-17	elevation=11.5 feet
Depth BGS (feet)	2.0-4.0
Above water table	Y
Soil unit	SSG
Beryllium (mg/kg)	0.44
Manganese (mg/kg)	477 J
TPH (mg/kg)	NA

SB423	elevation=11.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	FILL
Manganese (mg/kg)	506
TPH (mg/kg)	78

B-2	elevation=12.9 feet
Depth BGS (feet)	2-4	6-8	8-10
Above water table	Y	N	N
Soil unit	SSG	SSG	SSG
Arsenic (mg/kg)	3.1 J	8.6	5.4 J
Manganese (mg/kg)	462 J	584 J	646 J
TPH (mg/kg)	NA	NA	NA

SB434	elevation=11.5 feet
Depth BGS (feet)	2-4	6-8
Above water table	Y	Y
Soil unit	SSG	SSG
Arsenic (mg/kg)	8.0	6.0
Manganese (mg/kg)	1330	765
TPH (mg/kg)	41	38

TP-06	elevation=12.5 feet
Depth BG6 (feet)	6-7
Above water table	Y
Soil unit	FILL/SSG
Benzo(a)pyrene (ug/kg)	500
Chrysene (ug/kg)	650
Manganese (mg/kg)	410 J
TPH (mg/kg)	130 J

MW-8R (no subsurface samples) elevation=12.7 feet

TP-07	elevation=12.5 feet
Depth BGS (feet)	7-8
Above water table	Y
Soil unit	FILL
Manganese (mg/kg)	417 J
TPH (mg/kg)	ND

TP-02	elevation=12.0 feet
Depth BGS (feet)	2-3
Above water table	Y
Soil unit	SSG
TPH (mg/kg)	140 J

SB424	elevation=12.0 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Manganese (mg/kg)	1210
TPH (mg/kg)	ND

TP-01 (no subsurface samples) elevation=12.0 feet

SB425	elevation=12.1 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Arsenic (mg/kg)	9.8
Manganese (mg/kg)	803
TPH (mg/kg)	15

TP-04 (no subsurface samples) elevation=12.5 feet

TP-03 (no subsurface samples) elevation=12.5 feet

SB501	elevation=11.5 feet
Depth BGS (feet)	4-4.5
Above water table	Y
Soil unit	SW
Arsenic (mg/kg)	13.4
Manganese (mg/kg)	1020

B-1	elevation=12.5 feet
Depth BGS (feet)	6-8
Above water	Y
Soil unit	SSG
Arsenic (mg/kg)	9.6 J
Lead (mg/kg)	529
TPH (mg/kg)	NA

TP-14	elevation=10.0 feet
Depth BGS (feet)	3-4
Above water table	Y
Soil unit	SSG
QC identifier	Duplicate
Arsenic (mg/kg)	10.5
TPH (mg/kg)	4800

SB504	
Depth BGS (feet)	4-6	8-10
Above water table	Y	N
Soil unit	FILL	SW
Benzo(a)anthracene (ug/kg)	110	1110
Benzo(a)pyrene (ug/kg)	97	970
Benzo(b)fluoranthene (ug/kg)	110	1200
Chrysene (ug/kg)	81	690
Manganese (mg/kg)	472	NA
TPH (mg/kg)	31.3	3791

SB430	elevation=9.8 feet
Depth BGS (feet)	2-4	8-10	12-14	14-16
Above water table	Y	N	N	N
Soil unit	FILL	SSG	SSG	SSG
Benzo(a)pyrene (ug/kg)	470	120	370	ND
Chrysene (ug/kg)	410	140	400	ND
Antimony (mg/kg)	19.7	8.5	8.3	8.8
Arsenic (mg/kg)	ND	0.28	2.9	11.1
Beryllium (mg/kg)	0.33	0.34	0.29	0.54
Lead (mg/kg)	127	101	197	18.4
Manganese (mg/kg)	557	290	305	284
TPH (mg/kg)	330	2800	290	ND

B-3	elevation=10.1 feet
Depth BGS (feet)	6-8	8-10	12-14
Above water table	N	N	N
Soil unit	SSG	SSG	SSG
Benzo(a)pyrene (ug/kg)	960	330 J	NA
Chrysene (ug/kg)	770	NA	62 J
Arsenic (mg/kg)	4.1 J	NA	13.5 J
TPH (mg/kg)	NA	NA	NA

MW-10S	elevation=10.4 feet
Depth BGS (feet)	4-6
Above water table	Y
Soil unit	SSG
Manganese (mg/kg)	588 J
TPH (mg/kg)	NA

SB413	elevation=10.6 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	FILL/SSG
QC identifier	Duplicate
Benzo(a)anthracene (ug/kg)	14000
Benzo(a)pyrene (ug/kg)	11600
Benzo(b)fluoranthene (ug/kg)	13500
Benzo(g,h,i)perylene (ug/kg)	6650
Benzo(k)fluoranthene (ug/kg)	5850
Chrysene (ug/kg)	9900
Dibenzo(a,h)anthracene (ug/kg)	1550
Indeno(1,2,3-cd)pyrene (ug/kg)	6050
Fluoranthene (ug/kg)	23000
Pyrene (ug/kg)	17500
Beryllium (mg/kg)	0.4
Manganese (mg/kg)	397
TPH (mg/kg)	945

SB431	elevation=11.1 feet
Depth BGS (feet)	2-4	8-10	10-12
Above water table	Y	N	N
Soil unit	FILL	SSG	SSG
Arsenic (mg/kg)	4.2	7.6	5.3
Lead (mg/kg)	26.5	242	69.4
Manganese (mg/kg)	805	613	383
TPH (mg/kg)	50	2300	3200

SB414	elevation=10.7 feet
Depth BGS (feet)	2-4	6-8	10-12
Above water table	Y	N	N
Soil unit	SSG	SSG	SSG
Benzo(a)anthracene (ug/kg)	1000	1400	94
Benzo(a)pyrene (ug/kg)	1100	1000	71
Benzo(b)fluoranthene (ug/kg)	1100	1200	83
Chrysene (ug/kg)	1100	1100	93
Arsenic (mg/kg)	5.2	8.9	4.3
Lead (mg/kg)	183	34.4	47.7
Manganese (mg/kg)	1080	666	390
TPH (mg/kg)	110	180	1200

MW-1R (no subsurface samples) elevation=11.3 feet

TP-05	elevation=11.0 feet
Depth BGS (feet)	7-8
Above water table	Y
Soil unit	FILL
Benzo(a)pyrene (ug/kg)	690
Chrysene (ug/kg)	810
Arsenic (mg/kg)	14.3 J
Lead (mg/kg)	540 J
Manganese (mg/kg)	698 J
TPH (mg/kg)	ND

SB426	elevation=11.5 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
QC Identifier	Duplicate
Antimony (mg/kg)	10.9
Arsenic (mg/kg)	9.7
Beryllium (mg/kg)	0.38
Lead (mg/kg)	36.6
Manganese (mg/kg)	851
TPH (mg/kg)	38

LEGEND

- CATCH BASIN
- FENCE
- EXISTING CONTOUR (DECEMBER 2003)
- B-16 — SOIL BORING LOCATIONS: TRC 1992, 1993: B-#; TtNUS, 2003: SB4##
- MW-6S — MONITORING WELL LOCATION
- STORM SEWER
- TP-10 — TEST PIT LOCATION (B&RE, 6/97)
- TP1C — TEST PIT LOCATION (TRC, 1/94)
- 8 — EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- 627 J — CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1-1 FOR PRGs.
- SITE AREA BOUNDARY
- ELEVATION OF BOTTOM OF FILL

GRAPHIC SCALE

30' 0' 30' 60'

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

DRAWN BY: D.W. MACDOUGALL
PREPARED BY: L. SEYDEWITZ
CHECKED BY: J. FORRELLI
PROJECT MANAGER: S. PARKER
PROGRAM MANAGER: J. TREPANOWSKI

TITLE: EASTERN SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND

SOURCE: BASE PLAN BY SEE NOTES.

SCALE: AS NOTED | DATE: NOVEMBER 25, 2005 | PROJ. NO: 1611

DRAWING NO: FIGURE 4-8 | ACFILE NAME: DWG\1611\3550\FIG_4-8.DWG | REV: 1

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899

ATTACHMENT D

PIEZOMETER CONSTRUCTION LOGS

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: OFFTA - CTO-008

PROJECT NO: 1611

PROJECT LOCATION: NAVAL STATION NEWPORT

WELL NO: PZ-01

CLIENT: U.S. NAVY - EFANE

BORING NO: PZ-01

CONTRACTOR: DRILEX ENV.

DRILLER: STEVE

BORING LOCATION:

LOGGED BY: T. DORGAN

DATE: 4-6-05

CHECKED BY:

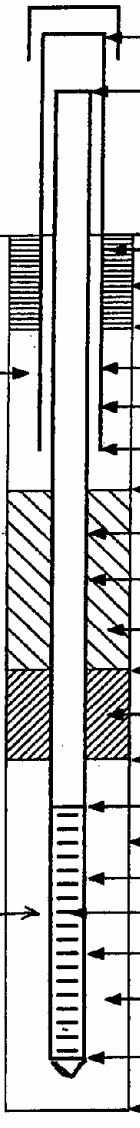
DATE:

PAGE: 1 OF - 1

ELEVATION TOP OF PROTECTIVE CASING 11.82

ELEVATION TOP OF RISER PIPE 11.59

GROUND ELEVATION 7.8



SAND DRAIN LAYER

GEOPROBE PRE-PACK SCREEN. 5' LONG, NO SUMP.

END OF BORING

LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.) 4.34

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.) 4.11

TYPE OF SURFACE SEAL CONCRETE

DIA. SURFACE SEAL BGS (In.) 8

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.) 0.7

I.D. OF PROTECTIVE CASING (In.) 6

TYPE OF PROTECTIVE CASING STEEL PIPE

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.) 0.66

DEPTH BOTTOM OF DRAIN LAYER (Ft.) 2

RISER PIPE (In.) I.D.: 1 O.D.: 1 3/8

TYPE OF RISER PIPE SCHEDULE 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE NA

DEPTH TOP OF SEAL (Ft.) 2

TYPE OF SEAL (HYDRATED) BENTONITE CHIP

DEPTH BOTTOM OF SEAL (Ft.) 2.5

DEPTH TOP OF PERVIOUS SECTION (Ft.) 3.1

DIAMETER OF BOREHOLE (In.) 3

TYPE OF PERVIOUS SECTION SCHEDULE 40 PVC

TYPE OF OPENINGS 0.010"

PERVIOUS SECTION (In.) I.D.: 1 O.D.: 1 3/8

TYPE OF FILTER PACK AROUND PERVIOUS SECTION 20-40 PRE-PACK

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.) 8.1

DEPTH BOTTOM OF FILTER PACK (Ft.) 10

Elevations reported by LFA 6/10/05

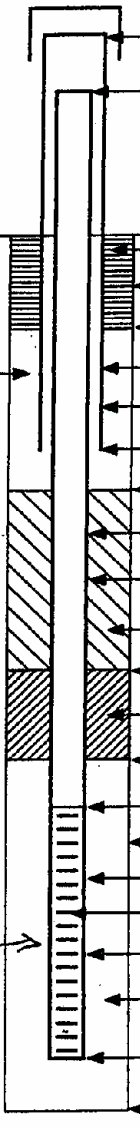
GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — TETRA TECH NUS, INC.

PROJECT NAME: OFFTA - CTO-008
PROJECT NO: 1611
PROJECT LOCATION: NAVAL STATION NEWPORT
WELL NO: PZ-02
CLIENT: U.S. NAVY - EFANE
BORING NO: PZ-02
CONTRACTOR: DRILLEX ENV.
DRILLER: STEVE
BORING LOCATION:
LOGGED BY: T. DORGAN
DATE: 4/6/05
CHECKED BY:
DATE:
PAGE: 1 OF - 1

ELEVATION TOP OF PROTECTIVE CASING: 11.27
ELEVATION TOP OF RISER PIPE: 11.01
GROUND ELEVATION: 7.4



GEOPROBE PRE-PACK SCREEN.
5' LONG, NO SUMP.

LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	4.2'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	3.95'
TYPE OF SURFACE SEAL	CONCRETE
DIA. SURFACE SEAL BGS (In.)	8
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	0.75'
I.D. OF PROTECTIVE CASING (In.)	6
TYPE OF PROTECTIVE CASING	STEEL PIPE
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	0.8'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	2
RISER PIPE (In.) I.D.: 1 O.D.: 1 3/8	
TYPE OF RISER PIPE	SCHEDULE 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	NA
DEPTH TOP OF SEAL (Ft.)	2
TYPE OF SEAL (HYDRATED)	BENTONITE CHIP
DEPTH BOTTOM OF SEAL (Ft.)	2.5
DEPTH TOP OF PERVIOUS SECTION (Ft.)	2.95
DIAMETER OF BOREHOLE (In.)	3
TYPE OF PERVIOUS SECTION	SCHEDULE 40 PVC
TYPE OF OPENINGS	0.010"
PERVIOUS SECTION (In.) I.D.: 1 O.D.: 1 3/8	
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	20-40 PRE-PACK
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	7.95
DEPTH BOTTOM OF FILTER PACK (Ft.)	10

Elevations Reported by LFA 6/10/05

GENERAL NOTE:

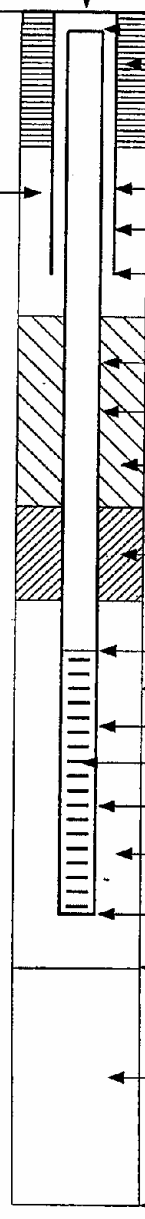
1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

FLUSH MOUNT MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS INC.

PROJECT NAME:	OFFTA - CTO-008	PROJECT NO:	1611
PROJECT LOCATION:	NAVAL STATION NEWPORT	WELL NO:	PZ-03
CLIENT:	U.S. NAVY - LEFANE	BORING NO:	PZ-03
CONTRACTOR:	DRILLEX ENV.	BORING LOCATION:	
DRILLER:	STEVE		
LOGGED BY:	T. DORGAN	DATE:	4/6/05
CHECKED BY:		DATE:	

PAGE: 1 OF 1



FLUSH MOUNT PROTECTIVE CASING

EL Grand Surf = 7.8

EL Top of Riser = 7.47 (LFA 6/10/05)

GROUND ELEVATION

SAND DRAIN LAYER

LENGTH RISER PIPE BELOW GRD. SURF.(Ft.)	0.3
TYPE OF SURFACE SEAL	CONCRETE
DIA. SURFACE SEAL BGS (In.)	0.5"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	0.5
I.D. OF PROTECTIVE CASING (In.)	4
TYPE OF PROTECTIVE CASING	ALUMINUM ROADBOX
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	0.6
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	1.2
RISER PIPE (In.) I.D.: 1 O.D.:	1 3/8
TYPE OF RISER PIPE	SCHEDULE 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	NA
DEPTH TOP OF SEAL (Ft.)	1.2
TYPE OF SEAL (HYDRATED)	BENTONITE CHIP
DEPTH BOTTOM OF SEAL (Ft.)	2.1
DEPTH TOP OF PERVIOUS SECTION (Ft.)	2.9
DIAMETER OF BOREHOLE (In.)	3
TYPE OF PERVIOUS SECTION	SCHEDULE 40 PVC
TYPE OF OPENINGS	0.010"
PERVIOUS SECTION (In.) I.D.: 1 O.D.:	1 3/8
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	20-40 PRE-PACK
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	7.9
DEPTH BOTTOM OF FILTER PACK (Ft.)	9
TYPE OF BACKFILL (GROUT) BELOW FILTER PACK	NA
END OF BORING	9

GEOPROBE PRE-PACK SCREEN. 5' LONG, NO SUMP

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation Indicates that Surveyed Ground Elevation is NOT Available.

TtNUS Form 0058

TZ-01 INIT. H_2O = 8.83'
T.D. = 12.1'

4/6/05

1435 BEGIN PURGE USING WATTERRA FOOT VALVE.
removed ~ 0.5 gal purge water brown, thick with sand, pet. odor no sheen (purged dry)

1440 11.5
1441 11.26
1442 11.00
1443 10.76
1444 10.57
1445 10.43

Well screen partially broken - foot valve caught at obstruction and came off of tubing. Foot valve remaining in well, tubing removed. New total depth = 11.9 (feels very soft)

1450 9.55

Replace old foot valve with new one, begin purging.
Purge water dark brown, petroleum odor, light sheen
Able to produce water continuously -> removed 2 gal (total 2.5 gal removed)

1502 10.41
1503 9.85
1504 9.54

Removed a total of 2.5 gal of water; demonstrated improved recovery; purge water brown w/ significant sand, pet odor, sheen
TD = 11.62 (firm bottom)

PZ-02

initial H_2O TD
8.75 11.9

.163 x 3.14 = 3.00
.489

.163
x .25
815
326
.04075
x 3.15

11.90
8.75
3.15

1 well vol = 0.128

1340 begin purging pz using watera; thick (sand) brown water; no odor/sheen
purged pz dry → ~ 0.5 gal removed
recovery rate

1406	11.05
1407	10.7
1408	10.43
1409	10.2
1410	10.02

begin purging - making continous water (still muddy)
remove → 1 additional gal (1.5 total)

1424	10.52
1425	9.9
1426	9.49
1427	9.25

Removed 2 gal of water; demonstrated improved recovery; purge water brown w/ significant sand

PZ-03

initial H_2O level = 4.5

TD = 8.2 (firm)

Stick down .3'

flushmount in pavement

4/6/05

PIEZOMETER DEVELOPMENT

1518

[redacted] begin purging pz using water a foot valve; dark brown w/ sand

purged dry - removed ~ 1 liter

1520 8.05

1521 7.67

1522 7.41

1523 7.20

1524 6.98

Begin purging [redacted] pz; dark brown w/ sand, pet odor, light sheen

purged dry - removed ~ 1 liter (total = ~ 0.5 gal)

1535 7.45

1600 5.70

purged dry - removed ~ 1 liter (total = ~ 1 gal)

Pz is not clearing up, significant sand with minimal recovery able to move it.

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: PZ-01

PROJECT NAME: 1611-0530

DATE/TIME: 4/6/05 1430

PROJECT MANAGER: S. Parker

INSPECTED BY: T. Dorgan
L. Seydewitz

VENT WELL

MONITORING INSTRUMENT READING: none

LEL/02 READING: none

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 12.1 (initially) 11.62 (after dvpmt) bottom is firm

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 8.83

WELL STICK-UP:

CASING STICK-UP (FEET):

WELL DIAMETER (INCHES): 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC in steel casing

LOCKED UPON ARRIVAL?	(YES)	NO
LOCKED REPLACED?	(YES)	NO
OBSTRUCTIONS?	YES	(NO)
WELL RELABELED?	(YES)	NO
SLUG TEST CONDUCTED?	YES	(NO) (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: Installed piezometer today.

Tt NUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: P2-02

PROJECT NAME: 1611-0530

DATE/TIME: 4/6/05 / 1340

PROJECT MANAGER: S. Parker

INSPECTED BY: T. Dorgan
L. Seydewitz

VENT WELL

MONITORING INSTRUMENT READING: none

LEL/02 READING: none

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 11.9

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 8.75

WELL STICK-UP

CASING STICK-UP (FEET)

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC in steel casing

LOCKED UPON ARRIVAL?	(YES)	NO
LOCKED REPLACED?	(YES)	NO
OBSTRUCTIONS?	YES	(NO)
WELL RELABELED?	(YES)	NO
SLUG TEST CONDUCTED?	YES	(NO) (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: Installed piezometer today

Tt NUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: PZ-03

PROJECT NAME: 1611-0530

DATE/TIME: 4/6/05 ~~1442~~ 23 4/6/05 1500

PROJECT MANAGER: S. Parker

INSPECTED BY: T. Dorgan
L. Seydewitz

VENT WELL

MONITORING INSTRUMENT READING: none

LEL/02 READING: none

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 8.2 (firm bottom)

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 4.5

WELL STICK-UP

CASING STICK-UP (FEET)

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC in steel casing

LOCKED UPON ARRIVAL?	(YES)	NO
LOCKED REPLACED?	(YES)	NO
OBSTRUCTIONS?	YES	(NO)
WELL RELABELED?	(YES)	NO
SLUG TEST CONDUCTED?	YES	(NO) (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: Installed piezometer today.

Tt NUS Form 0021