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FIRST QUARTER 2005 OPERATIONS AND MAINTENANCE STATUS REPORT FOR DAY TANK 1 SITE NAS CECIL FIELD FL

7/1/2005

TERRAINE INC ENVIRONMENTAL SERVICES

TERRAINE Environmental Consulting
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FIRST QUARTER 2005 Operations and Maintenance Status Report

January 1, 2005 to March 31, 2005

DAY TANK 1 SITE

Contract No. N62467-02-G-0352
Contract Task Order No. 0001

Naval Air Station Cecil Field
Jacksonville, Florida

Submitted to:

U.S. Naval Facilities Engineering Command Southern Division

Prepared by:

TERRAINE
Environmental Consulting

2656 NW 97th Ave. Miami, FL 33172

July 2005

SIGNATURE PAGE

We, James L. Young and Karen L. Baer, do hereby affirm that the information contained in this report is accurate and correct to the best of our knowledge and belief.

		PG-FL2090, REM-6089
James L. Young, P.G., REM President/CEO TERRAINE, Inc.	Date	Registration Nos.

Karen L. Baer Field Superintendent TERRAINE, Inc.	Date

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ACRONYMS

BOA	Basic Ordering Agreement
°C	Degrees Celsius
CTO	Contract Task Order
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
Ft.	Feet
Gal.	Gallon
Gal/min	Gallon per minute
GCTL	Groundwater Cleanup Target Levels
LNAPL	Light Non-Aqueous Phase Liquids
mg/L	Milligrams per liter
µS/cm	Microsiemens per centimeter
mS/cm	Millisiemens per centimeter
mV	millivolts
NA	Not Analyzed / Not Available
NADSC	Natural Attenuation Default Source Criteria
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
ND	Non Detect
NGVD	National Geodetic Vertical Datum
NM	Not Measured
NS	Not sampled
NTU	Nephelometric Turbidity Units
O&M	Operation and Maintenance
ORP	Oxidation Reduction Potential
S.U.	Standard Unit
SVOA	Semi-Volatile Organic Aromatics
SVOC	Semi-Volatile Organic Compounds
TERRAINE	Terraine Environmental Services, Inc.
VEW	Vapor Extraction Well
VOA	Volatile Organic Aromatics
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

SCOPE

The objective of the remedial action at the site of Day Tank 1 was to reduce the concentrations of petroleum-related contaminants in the groundwater and unsaturated soils to target levels specified by Chapter 62-777 Florida Administrative Code (FAC). A biosparge and vapor extraction system was selected as the remediation system for the site.

Due to the substantial reduction of contaminant concentrations in wells within the area of influence of the remediation system, the Florida Department of Environmental Protection (FDEP) approved deactivating the remediation system on approximately August 15, 2003. Post-active remediation monitoring in accordance with Chapter 62-770.750, FAC began at that time.

As a part of the post-active remediation monitoring, the following wells were to be sampled quarterly for volatile organic aromatics (VOAs) and semi-volatile organic aromatics (SVOAs) for a period of one year to evaluate rebound: vapor extraction wells VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7; and monitoring wells CEF-293-9, and CEF-293-22.

On September 30, 2004, the FDEP recommended to begin sampling groundwater from vapor extraction well VEW-1. Groundwater sampling at this location began during the 4th quarter of 2004.

The purpose of this quarterly Groundwater Monitoring Report is to provide a summary of activities performed at the site during the period of January 1, 2005 to March 31, 2005.

CONCLUSIONS AND RECOMMENDATIONS

Excavation activities at and near the site began between the September 2003 and December 2003 sampling events and continued through September 2004. Excavation was performed on site to the north of the remediation system facility and offsite to the north of the Day Tank 1 site. Possible rebound, first noted in December 2003, could be a result of once adsorbed contaminants being released into groundwater during the beginning of excavation activities. Contaminant concentrations have fluctuated at the site in comparison to the December 2003 sampling event, but have remained below Natural Attenuation Default Source Criteria (NADSC) since 2000.

Based on analytical results obtained to date, it is recommended to continue quarterly groundwater monitoring for VOAs and SVOAs from monitoring wells CEF-293-9 and CEF-293-22 and vapor extraction wells VEW1, VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7.

OPERATIONS AND MAINTENANCE STATUS REPORT

DAY TANK 1 SITE

NAVAL AIR STATION, CECIL FIELD

JACKSONVILLE, FLORIDA

MARCH 2005

PREPARED FOR:	Mr. Gabe Magwood - SOUTHDIV
PREPARED BY:	*TERRAINE, Inc*.
PERIOD OF PERFORMANCE:	January 1, 2005 to March 31, 2005
FIELD TEAM:	Karen Baer, Larry Wolski
CONTRACT NUMBER:	N62467-02-G-0352
TASK ORDER NUMBER:	0001
TASK ORDER MANAGER:	James L. Young, P.G.; REM
SUBMITTAL DATE:	July 2005

1.0 INTRODUCTION

Terraine, Inc. (TERRAINE) has been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (NAVFAC), to provide Operation and Maintenance (O&M) services at Day Tank 1, Naval Air Station (NAS) Cecil Field, Jacksonville, Florida, under **Basic Ordering Agreement (BOA) Contract No. N62467-02-G-0352, Contract Task Order (CTO) No. 0001.** The purpose of this O&M Report is to provide a summary of activities performed at the site during the period of January 1, 2005 to March 31, 2005.

1.1 Purpose

The objective of the remedial action at the Day Tank 1 site was to reduce the concentrations of petroleum-related contaminants in the groundwater and unsaturated soils to target levels specified by Chapter 62-777 Florida Administrative Code (FAC). Biosparging/vapor collection was the technology utilized to achieve this objective.

A system description and a site background and history summary are included in the First Quarter 2004 Operations and Maintenance Status Report submitted by TERRAINE.

1.2 Site Location and Description

The Day Tank 1 site is located at the former NAS Cecil Field, approximately 1/8 mile south of the “A” Avenue gate on Jet Road. A base map illustrating the site location is included in **Figure 1, Appendix A**. A site map is included in **Figure 2, Appendix A**.

2.0 INVESTIGATION AND METHODOLOGY SUMMARY

2.1 System Performance Monitoring

A post-active remediation system check was performed on March 11, 2005. During this check, the system operated for 15 minutes before being manually shut down.

2.2 Summary of Maintenance

On January 5, 2005, a technician changed the air compressor oil, oil filter, dirt trap filter, and oil separator element. The technician also cleaned the motor filter mat, checked the belt tension, and reset the controller maintenance times. Upon completion of these maintenance activities, the system was fully operational.

2.3 Water Level Measurements

Depth-to-groundwater measurements were recorded on March 11, 2005 at monitoring wells CEF-293-9 and CEF-293-22 and vapor extraction wells VEW-1, VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7. A groundwater elevation map, using data collected on March 11, 2005 indicated a groundwater flow pattern to the east southeast, and is included in **Figure 3, Appendix A**. The top-of-casing elevations, historical depth-to-LNAPL measurements, depth-to-water measurements, historical calculated LNAPL thickness and calculated water level elevations are provided in **Table 1, Appendix B**.

No LNAPL was detected in any of the monitoring wells or vapor extraction wells during the First Quarter 2005.

2.4 Groundwater Sampling

2.4.2 Methodology

Groundwater sampling was conducted at Day Tank 1 on March 11, 2005. Two (2) monitoring wells (CEF-293-9 and CEF-293-22) and six (6) vapor extraction wells (VEW-1, VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7) were purged and sampled using the low-flow methodology. Purging of wells consisted of removing groundwater with a Nomad© submersible pump at a flow rate equal to or less than the groundwater recharge rate in the well until field parameters (temperature, pH, conductivity, turbidity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) had stabilized. Water levels in the wells were continuously monitored to maintain drawdown at less than 0.3 feet.

The results from the field measurements are summarized on **Table 2, Appendix B**. Copies of the groundwater purging/sampling logs including all field parameter measurements are provided in **Appendix C**.

2.4.2 Chemical Analysis Suite

Groundwater samples from the monitoring wells were laboratory analyzed for the following analyte suite:

- Volatile Organic Compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B
- Semi Volatile Organic Compounds (SVOCs) by EPA Method 8270C

2.5 Investigative Derived Waste

Purge water collected from the monitoring wells was collected, containerized, and was stored on site. The purge water was transported to Industrial Water Services in Jacksonville, Florida by Environmental Remediation Services on June 7, 2005.

3.0 SUMMARY OF SAMPLING AND LABORATORY ANALYTICAL RESULTS

3.1 Data Validation

A review of quality control data was performed. This review evaluated data completeness, holding time compliance, laboratory blank contamination, and detection limits. The validation process resulted in qualifiers that are shown with the analyte concentrations in **Table 2, Appendix B.**

3.2 Groundwater Monitoring

3.2.1 VOCs

- Groundwater sampled from monitoring well CEF-293-09 and vapor extraction wells VEW-1, VEW-2, VEW-4, and VEW-7 exhibited 1,2,4-trimethylbenzene concentrations greater than the Groundwater Cleanup Target Level (GCTL). Groundwater sampled from vapor extraction well VEW-4 exhibited 1,3,5-trimethylbenzene concentrations greater than the GCTL.
- Groundwater sampled from monitoring well CEF-293-22 and vapor extraction wells VEW-4 and VEW-7 exhibited benzene concentrations greater than the GCTL.
- Groundwater sampled from vapor extraction well VEW-1 exhibited xylene concentrations greater than the GCTL.
- Groundwater sampled from monitoring well CEF-293-09 and vapor extraction wells VEW-4 and VEW-7 exhibited naphthalene concentrations greater than the GCTL by EPA Method 8260.

3.2.2 PAHs

- Groundwater sampled from vapor extraction wells VEW-4 and VEW-5 exhibited naphthalene concentrations greater than the GCTL by EPA Method 8270 (**Table 3, Appendix B**).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Excavation activities at and near the site began between the September 2003 and December 2003 sampling events and continued through September 2004. Excavation was performed on site to the north of the remediation system facility and offsite to the north of the Day Tank 1 site. Possible rebound, first noted in December 2003, could be a result of once adsorbed contaminants being released into groundwater during the beginning of excavation activities.

Increases in benzene and naphthalene concentrations were first noted in monitoring well CEF-293-9, which is closest to the excavation areas, in December 2003. According to March 2005 analytical results, benzene and naphthalene concentrations have decreased and/or stabilized in comparison to the December 2003 sampling event.

In March 2004, increased benzene and naphthalene concentrations were noted down gradient of monitoring well CEF-293-9 in groundwater collected from vapor extraction well VEW-7. According to March 2005 analytical data, benzene concentrations have stabilized and naphthalene concentrations have increased in comparison to the March 2004 sampling event.

In September 2004, increased benzene concentrations were noted in vapor extraction well VEW-4 and increased naphthalene concentrations were noted in vapor extraction wells VEW-3 and VEW-4. Both wells are located down gradient of vapor extraction well VEW-7. According to March 2005 analytical data, benzene concentrations in groundwater sampled from vapor extraction well VEW-4 have decreased in comparison to the September 2004 sampling event. Naphthalene concentrations in both wells have decreased in comparison to the September 2004 sampling event.

In December 2004, increased contaminant concentrations were noted in monitoring well CEF-293-22. In March 2005, contaminant concentrations observed in groundwater sampled from monitoring well CEF-293-22 did not demonstrate a notable increase or decrease. In March 2005, increased contaminant concentrations were noted in vapor extraction well VEW-5.

Based on analytical data obtained to date, the following is recommended for the site:

- Continue groundwater sampling from monitoring wells and vapor extraction wells to monitor for possible rebound as a result of excavation activities.

5.0 REFERENCES

Terraine, Inc. First Quarter 2004 Operation and Maintenance Status Report, Biosparging and Soil Vapor Extraction System, Day Tank 1 Site, Naval Air Station, Cecil Field, Jacksonville, Florida.

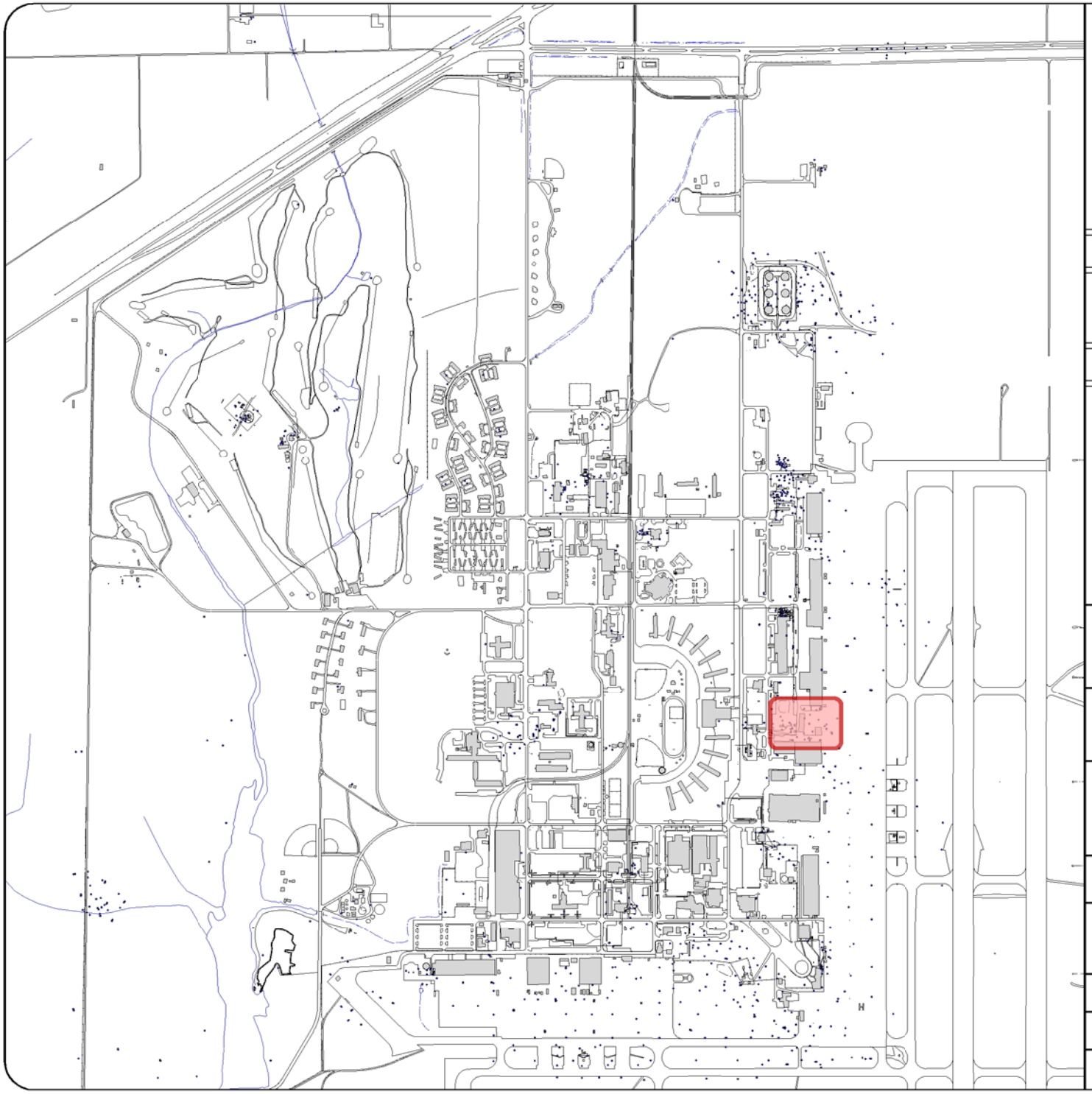
APPENDIX A

FIGURES

Figure 1 *Site Location Map, Day Tank 1*

Figure 2 *Site Map, Day Tank 1*

Figure 3 *Groundwater Elevation Map, March 2005*



N
W E
S

NOTES

Sources: Environmental IR Gateway (www.sdirport.com)

LEGEND

APPROXIMATE SITE BOUNDARY

0 0.25 0.5

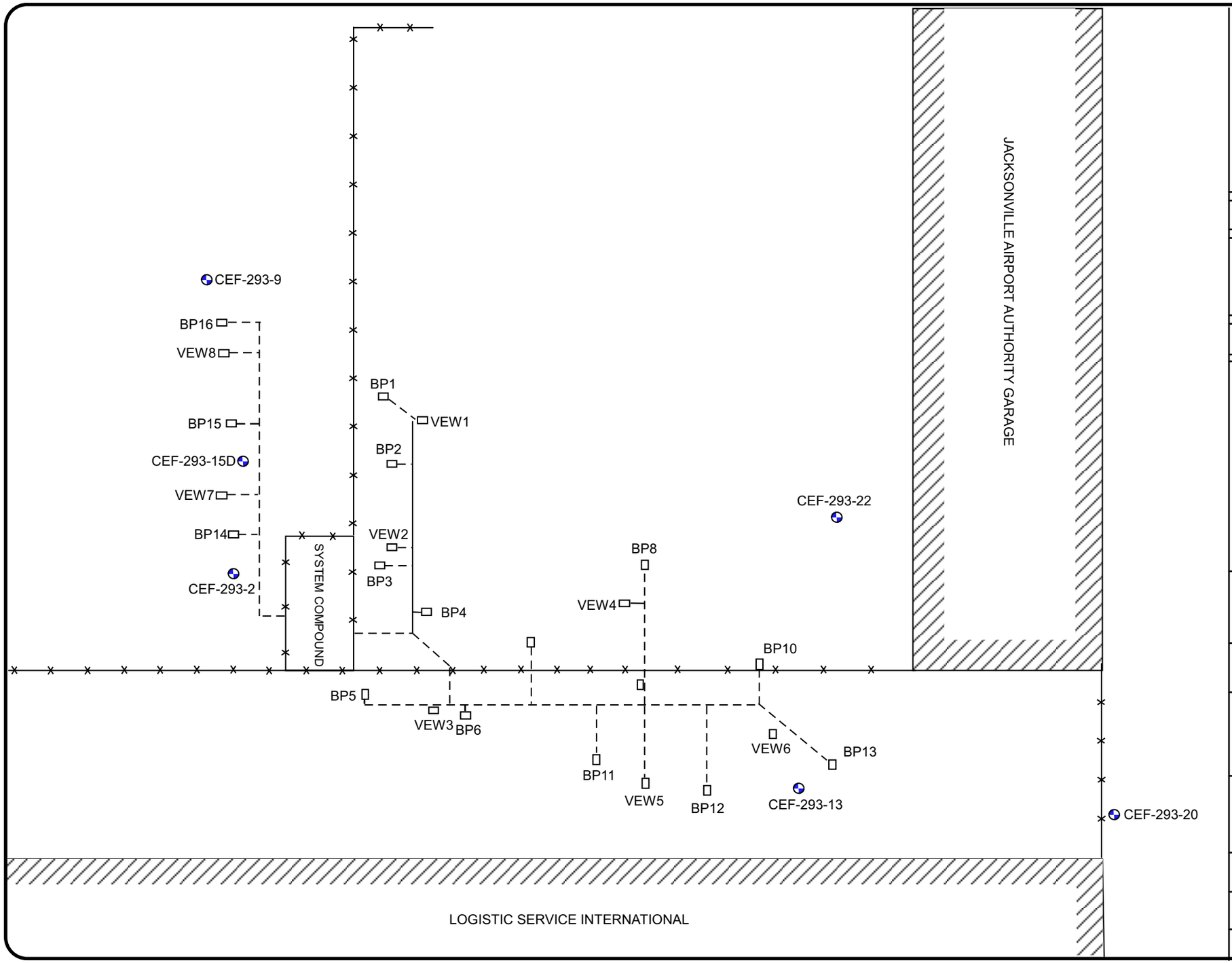
APPROXIMATE SCALE IN MILES

TERRAINE
Environmental Consulting

NAS CECIL FIELD
FIGURE 1: SITE LOCATION MAP
DAY TANK 1

Prepared For:
U.S. Naval Facilities Engineering Command, Southern Division

DWN BY: LFW	CHK BY: KBG
SCALE: SEE LEGEND	APR BY: JLY
DATE:10/12/04	FILE: N/A



N

W E

S

NOTES

DASHED LINES INDICATE SUBSURFACE FEATURES

LEGEND

FENCE

UNDERGROUND LINES

VAULT COVER

MONITORING WELL

0 40 ft

SCALE

TERRAINE
Environmental Consulting

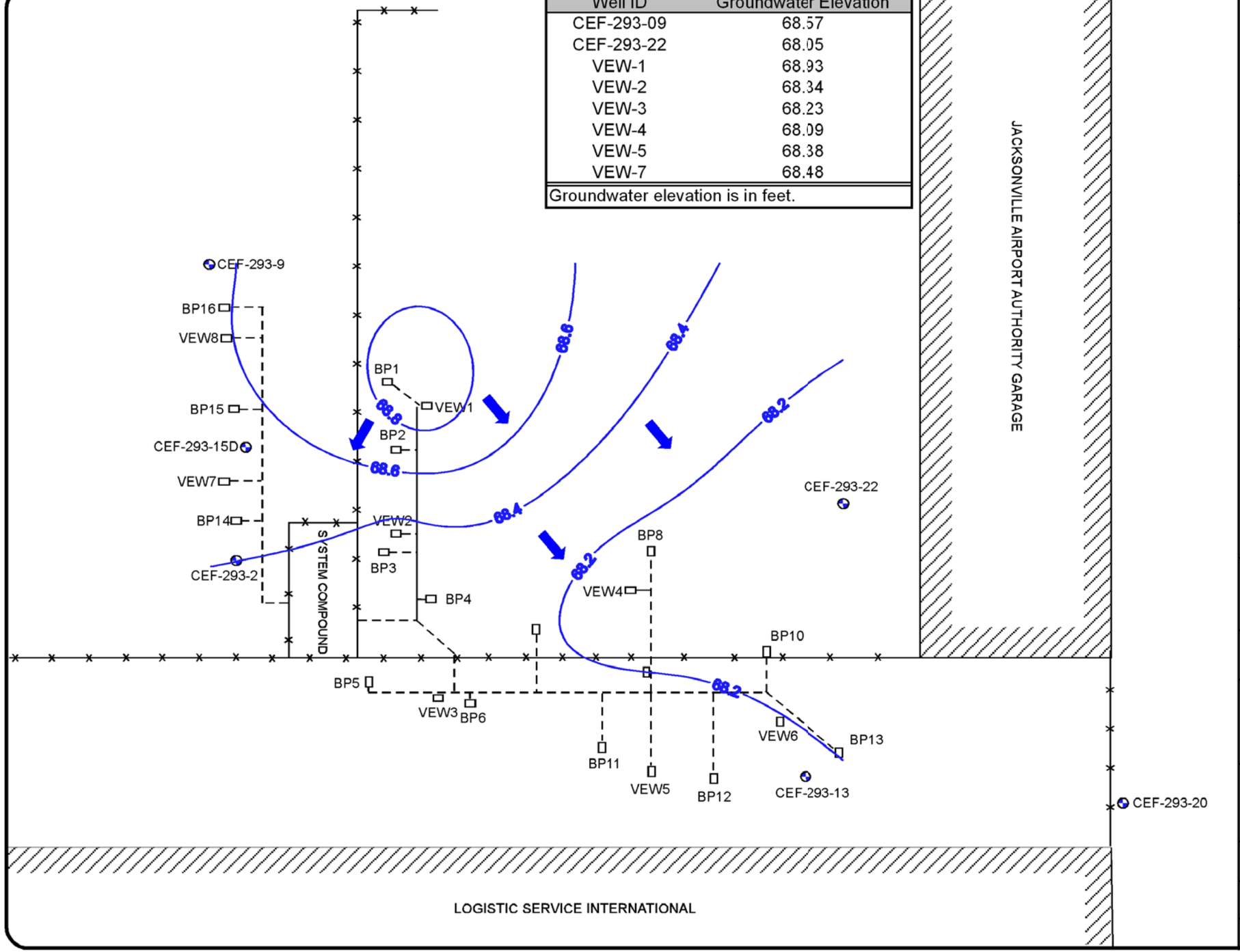
NAS CECIL FIELD
FIGURE 2: SITE MAP
DAY TANK 1

Prepared For:
U.S. Naval Facilities Engineering Command, Southern Division

DWN BY: JLY	CHK BY: MJP
SCALE: SEE LEGEND	APR BY: JLY
DATE: 8-26-04	FILE: 04-41001

Well ID	Groundwater Elevation
CEF-293-09	68.57
CEF-293-22	68.05
VEW-1	68.93
VEW-2	68.34
VEW-3	68.23
VEW-4	68.09
VEW-5	68.38
VEW-7	68.48

Groundwater elevation is in feet.



N

W E

S

NOTES

DASHED LINES INDICATE SUBSURFACE FEATURES

CONTOUR PLOT GENERATED USING KRIGING ALGORITHM WITH LINEAR VARIOGRAM MODEL.

WELLS IN TABLE USED IN CONTOUR PLOT GENERATION

LEGEND

FENCE

UNDERGROUND LINES

VAULT COVER

MONITORING WELL

INDICATES GROUNDWATER FLOW DIRECTION

0 40 ft

SCALE

TERRAINE Environmental Consulting

NAS CECIL FIELD
FIGURE 3: GROUNDWATER ELEVATION MAP
MARCH 2005

Prepared For:
U.S. Naval Facilities Engineering Command, Southern Division

DWN BY: JLY	CHK BY: MJP
SCALE: SEE LEGEND	APR BY: JLY
DATE: 8-26-04	FILE: 04-41001

APPENDIX B

TABLES

TABLE 1
DEPTH TO GROUNDWATER/LNAPL MEASUREMENTS

DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identification	Date	Top of Casing Elevation (Feet)	Depth to LNAPL (Feet)	Depth to Water (Feet)	LNAPL Thickness (Feet)	Water Level Elevation (Feet)
CEF-293-09	06/13/00	77.36	none present	9.93	0.00	67.43
	03/11/03		none present	6.09	0.00	71.27
	06/06/03		none present	7.85	0.00	69.51
	09/02/03		none present	7.29	0.00	70.07
	12/12/03		none present	9.62	0.00	67.74
	03/17/04		none present	9.84	0.00	67.52
	06/09/04		none present	9.83	0.00	67.53
	09/20/04		none present	6.30	0.00	71.06
	12/02/04		none present	8.75	0.00	68.61
	03/11/05		none present	8.79	0.00	68.57
CEF-293-22	06/13/00	75.95	none present	8.88	0.00	67.07
	03/11/03		none present	8.33	0.00	67.62
	06/07/03		none present	7.00	0.00	68.95
	09/02/03		none present	6.34	0.00	69.61
	12/12/03		none present	8.65	0.00	67.30
	03/17/04		none present	8.80	0.00	67.15
	06/09/04		none present	8.56	0.00	67.39
	09/20/04		none present	5.60	0.00	70.35
	12/02/04		none present	7.90	0.00	68.05
	03/11/05		none present	7.90	0.00	68.05
VEW-01	06/13/00	76.32	8.60	10.89	2.29	67.03
	03/11/03		5.08	5.80	0.72	71.02
	06/07/03		6.90	7.40	0.50	69.27
	09/02/03		4.40	4.90	0.50	71.77
	12/12/03		none present	NM	0.00	NM
	03/17/04		none present	NM	0.00	NM
	06/09/04		none present	8.40	0.00	67.92
	09/20/04		none present	4.90	0.00	71.42
	12/02/04		none present	7.44	0.00	68.88
	03/11/05		none present	7.39	0.00	68.93
VEW-02	06/13/00	75.86	7.50	13.02	5.52	62.84
	03/11/03		none present	4.71	0.00	71.15
	06/07/03		none present	6.50	0.00	69.36
	09/02/03		none present	5.96	0.00	69.90
	12/12/03		none present	11.04	0.00	64.82
	03/17/04		none present	8.40	0.00	67.46
	06/09/04		none present	8.54	0.00	67.32
	09/20/04		none present	5.01	0.00	70.85
	12/02/04		none present	7.61	0.00	68.25
	03/11/05		none present	7.52	0.00	68.34
VEW-03	06/13/00	75.28	none present	8.05	0.00	67.23
	12/11/02		none present	6.23	0.00	69.05
	03/11/03		none present	4.07	0.00	71.21
	06/06/03		none present	6.10	0.00	69.18
	09/02/03		none present	5.35	0.00	69.93
	12/12/03		none present	7.80	0.00	67.48
	03/17/04		none present	8.02	0.00	67.26
	06/09/04		none present	8.01	0.00	67.27
	09/20/04		none present	4.30	0.00	70.98
	12/02/04		none present	7.10	0.00	68.18
	03/11/05		none present	7.05	0.00	68.23

TABLE 1
DEPTH TO GROUNDWATER/LNAPL MEASUREMENTS

DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identification	Date	Top of Casing Elevation (Feet)	Depth to LNAPL (Feet)	Depth to Water (Feet)	LNAPL Thickness (Feet)	Water Level Elevation (Feet)
VEW-04	06/13/00	75.54	none present	8.38	0.00	67.16
	03/11/03		none present	4.66	0.00	70.88
	06/07/03		none present	6.50	0.00	69.04
	09/02/03		none present	5.80	0.00	69.74
	12/12/03		none present	8.12	0.00	67.42
	03/17/04		none present	8.30	0.00	67.24
	06/09/04		none present	8.37	0.00	67.17
	09/20/04		none present	4.95	0.00	70.59
	12/02/04		none present	7.50	0.00	68.04
	03/11/05		none present	7.45	0.00	68.09
VEW-05	06/13/00	74.63	none present	7.53	0.00	67.10
	03/11/03		none present	3.80	0.00	70.83
	06/06/06		none present	6.75	0.00	67.88
	09/02/03		none present	4.95	0.00	69.68
	12/12/03		none present	7.40	0.00	67.23
	03/17/04		none present	7.50	0.00	67.13
	06/09/04		none present	7.55	0.00	67.08
	09/20/04		none present	4.10	0.00	70.53
	12/02/04		none present	6.80	0.00	67.83
	03/11/05		none present	6.25	0.00	68.38
VEW-07	06/13/00	76.44	none present	9.06	0.00	67.38
	03/11/03		none present	5.01	0.00	71.43
	06/07/03		none present	6.97	0.00	69.47
	09/04/03		none present	6.45	0.00	69.99
	12/12/03		none present	8.90	0.00	67.54
	03/17/04		none present	9.00	0.00	67.44
	06/09/04		none present	8.99	0.00	67.45
	09/20/04		none present	5.39	0.00	71.05
	12/02/04		none present	8.37	0.00	68.07
	03/11/05		none present	7.96	0.00	68.48

LNAPL = Light Non-Aqueous Phase Liquid
NM = Not Measured
Elevation is referenced to National Geodetic Vertical Datum 1929 (NGVD 1929)

Depth to LNAPL is measured from top of casing

Depth to water is measured from top of casing

TABLE 2
GROUNDWATER FIELD ANALYTICAL RESULTS

DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

	Date	pH (S.U.)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Temperature (^{o}C)
CEF-293-9	1/25/2000	5.99	0.088	NM	NM	21.40
	3/11/2003	5.90	0.29	4.29	177.00	20.85
	6/6/2003	6.00	0.472	0.00	-26.00	23.26
	9/2/2003	5.84	0.730	0.93	-90.00	26.10
	12/12/2003	5.86	0.998	0.01	-41.00	23.22
	3/17/2004	5.40	0.279	1.00	NM	21.10
	6/9/2004	5.61	0.280	0.26	-109.60	24.03
	9/20/2004	5.66	0.283	0.15	-148.80	25.79
	12/2/2004	5.82	0.342	0.19	-196.90	24.97
	3/11/2005	8.34	0.240	1.49	-118.00	22.08
CEF-293-22	1/25/2000	6.44	0.126	NM	NM	23.00
	3/11/2003	3.95	0.508	3.13	193.00	21.50
	6/7/2003	5.72	0.428	0.12	-20.00	25.90
	9/2/2003	5.57	0.929	0.72	52.00	28.75
	12/12/2003	5.63	0.626	4.24	99.00	24.35
	3/17/2004	5.71	0.480	NM	74.00	23.01
	6/9/2004	4.96	0.172	0.90	15.00	25.32
	9/20/2004	4.97	0.478	0.35	70.00	27.10
	12/2/2004	5.68	0.716	0.33	6.00	26.08
	3/11/2005	5.23	0.518	0.25	-83.30	21.87
VEW-1	12/2/2004	5.92	0.302	0.10	-216.50	25.40
	3/11/2005	7.46	0.120	0.00	-100.00	21.55
VEW-2	1/25/2000	5.63	0.085	NM	NM	22.70
	3/11/2003	5.90	0.110	2.51	-53.00	21.10
	6/7/2003	6.09	0.132	0.00	-86.00	22.90
	9/4/2003	5.60	0.342	1.34	-163.00	26.85
	12/12/2003	5.82	0.563	4.01	23.00	22.78
	3/17/2004	5.48	0.172	0.80	NM	21.30
	6/9/2004	5.57	0.172	0.16	-75.90	23.45
	9/20/2004	6.49	0.777	0.10	-141.60	25.98
	12/2/2004	5.91	0.404	0.05	-225.70	24.79
	3/11/2005	8.53	0.310	0.98	-170.00	21.92
VEW-3	1/25/2000	5.90	0.070	NM	NM	22.10
	3/11/2003	4.84	0.166	6.06	202.00	21.30
	6/7/2003	5.61	0.159	0.34	30.00	25.10
	9/2/2003	5.06	0.306	0.51	NM	27.40
	12/12/2003	5.10	0.354	0.66	-223.00	24.60
	3/17/2004	5.40	0.398	NM	176.00	21.80
	6/9/2004	4.70	0.145	0.42	70.00	25.63
	9/20/2004	5.62	0.137	0.00	-42.00	27.32
	12/2/2004	5.39	0.341	0.45	32.00	25.51
	3/11/2005	5.01	0.275	0.31	-10.30	22.06
VEW-4	1/25/2000	5.59	0.078	NM	NM	23.00
	3/11/2003	4.35	0.126	5.85	190.00	22.40
	6/7/2003	5.60	0.109	0.00	-41.00	25.10
	9/2/2003	5.35	0.277	0.00	106.00	27.53
	12/12/2003	5.37	0.358	0.28	182.00	24.34
	3/17/2004	5.17	0.316	NM	200.00	22.73
	6/9/2004	4.63	0.128	0.57	210.00	25.43
	9/20/2004	5.15	0.282	0.07	-46.10	27.60
	12/2/2004	4.83	0.683	0.27	103.20	26.27
	3/11/2005	4.39	0.393	0.24	44.90	22.55
VEW-5	1/25/2000	6.28	0.113	NM	NM	21.50
	3/11/2003	4.35	0.104	5.25	227.00	20.70
	6/6/2003	5.10	0.122	0.02	40.00	24.70
	9/2/2003	4.84	0.319	0.08	158.00	27.69
	12/12/2003	4.68	0.278	0.36	-214.00	23.62
	3/17/2004	5.00	0.245	NM	232.00	21.51
	6/9/2004	4.47	0.106	0.11	238.00	25.83
	9/20/2004	3.94	0.110	0.04	144.00	26.88
	12/2/2004	5.11	0.227	0.62	159.20	24.44
	3/11/2005	5.24	0.253	0.23	53.50	20.82
VEW-7	1/25/2000	5.63	0.074	NM	NM	21.80
	3/11/2003	4.98	0.111	2.69	86.00	18.50
	6/7/2003	5.70	0.134	0.00	-36.00	22.00
	9/4/2003	5.01	0.318	2.26	-42.00	25.31
	12/12/2003	5.07	0.469	0.17	-307.00	23.18
	3/17/2004	5.44	0.186	1.20	NM	21.40
	6/9/2004	5.36	0.214	0.18	-65.60	24.23
	9/20/2004	5.41	0.220	0.24	-137.90	25.36
	12/2/2004	5.71	0.295	0.18	-145.90	24.95
	3/11/2005	7.92	0.260	3.32	-107.00	22.00

S.U. = standard units
mS/cm = millisiemens per centimeter
mg/L = Milligrams per liter
^{o}C = degrees Centigrade
NM = not measured

TABLE 3
Groundwater Analytical Results
NAS Cecil Field, Jacksonville, Florida

Sample I.D.	Date	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Acenapthylene	Acenapthene	Fluoranthene	Pyrene	Chrysene	Benzo (a) anthracene	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Benzo(a) Pyrene	Benzo(g,h,i) Perylene	Indeno (1,2,3-cd) Pyrene	Naphthalene by Method 8270C-SIM	Napthalene by Method 8260	1-Methylnapthalene	2-Methylnapthalene	Phenanthrene	Fluorene	Isopropylbenzene	Chloroform	n-Propylbenzene	sec-Butylbenzene	n-Butylbenzene	T-butylbenzene	1,2,4 Trimethylbenzene	1,3,5 Trimethylbenzene	p-Isopropyltoluene
CEF 293-09	01/25/00	43.1	602	826	2150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	378	--	128	182	ND	--	--	--	--	--	--	--	--	--	--
	12/09/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
	06/06/03	3.8	4.3	ND	20.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	--	ND	ND	ND	ND	5.8	ND	--	--	ND	--	ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36	--	0.20	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	12/12/03	2.9	5.8	ND	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	47.5	98	19.4	18.4	ND	ND	11.8	ND	12.5	3.3	1.9	--	2.3	ND	--
	03/17/04	2.3	5.7	ND	ND	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	136	144	47.1	50.4	ND	ND	7.9	ND	13.1	4.1	2.4	--	ND	ND	1.2
	06/09/04	ND	6.96	ND	1.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63.8	81.6	24.6	22.4	ND	ND	12.2	ND	15.9	6.63	ND	ND	6.93	2.98	3.47
	09/20/04	ND	1.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.4	24.1	3.8	4.5	ND	ND	3.6	ND	4.48	1.04	ND	ND	3.75	3.06	ND
	12/02/04	ND	7.180	ND	3.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	33.64	72.84	16.1 J3	22.7 J3	ND	ND	12.51	ND	15.37	6.20	ND	ND	26.34	7.77	5.53
	03/11/05	ND	6.060	ND	1.46 I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19.2	95.2	7.48	12.2	ND	ND	17.4	ND	22.0	8.20	ND	ND	30.7	6.50	5.56
CEF 293-22	01/25/00	24.2	19.4	0.88	47.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	142	--	59.6	67	ND	--	--	--	--	--	--	--	--	--	--
	03/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	2.4	ND	--	--	--	--	--	--	--	--	--	--
	06/09/03	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	0.64	--	4.97	3.76	0.21	0.13	ND	ND	--	--	ND	--	ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	1.34	0.96	0.12	ND	ND	ND	--	--	ND	--	ND	ND	--
	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.07	0.88	0.23	ND	ND	ND	ND	ND	ND	--	ND	ND	--
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.35	1.20	0.16	ND	ND	ND	ND	ND	ND	--	ND	ND	ND
	06/09/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.780 I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	09/20/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/02/04	3.67	ND	ND	1.80 I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	03/11/05	3.59	1.56 I	ND	3.73	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.09	ND	ND	ND	ND	ND	3.56	1.44 I	ND
VEW-01	01/25/00	18.5	257	59.4	726	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	350	--	220	307	ND	--	--	--	--	--	--	--	--	--	--
	06/13/00	FREE PRODUCT																													
	03/11/03	FREE PRODUCT																													
	06/07/03	FREE PRODUCT																													
	09/04/03	FREE PRODUCT																													
	12/12/03	NOT SAMPLED																													
	03/17/04	NOT SAMPLED																													
	06/09/04	NOT SAMPLED																													
	09/20/04	NOT SAMPLED																													
	12/02/04	ND	18.17	0.9700 I	39.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.590	ND J3	ND	ND	ND	4.7	ND	4.280	2.20	ND	ND	32.06	5.13	4.080
	03/11/05	ND	11.8	0.450 I	26.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.4	ND	ND	ND	ND	ND	4.86	ND	ND	2.26	ND	ND	39	3.67	5.25
VEW-02	01/25/00	91.6	149	29.2	573	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	283	--	118	139	ND	--	--	--	--	--	--	--	--	--	--
	03/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
	06/07/03	ND	ND	ND	ND	ND	ND	ND	0.16	ND	ND	ND	ND	ND	ND	ND	ND	--	1.06	0.42	ND	ND	ND	ND	--	--	3.2	--	2.3	6.00	--
	09/04/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	1.4	0.54	ND	ND	ND	ND	--	--	ND	--	ND	3.90	--
	12/12/03	ND	ND	ND	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	0.18	ND	ND	ND	3.2	ND	ND	ND	ND	ND	--	2.2	1.60	--
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58	ND	1.27	1.09	ND	ND	ND	ND	ND	ND	ND	ND	--	2.0	ND	ND
	06/09/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.284 I	ND	ND	0.396 I	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.23	1.33	ND
	09/20/04	ND	ND	ND	2.45	ND. J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND, J3	ND	ND	ND, J3	ND, J3	ND	ND, J3	ND	ND	ND	ND	ND	ND	ND	5.95	1.63	ND
	12/02/04	ND	1.310 I	ND	3.85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.16 I	10.03	3.18 J3 I	2.05 J3 I	ND	ND	1.690 I	ND	2.14	1.93 I	ND	ND	16.56	1.70 I	3.52
	03/11/05	ND	0.930 I	ND	1.25 I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.557 I	13.0	1.29 I	1.15 I	ND	ND	1.48 I	ND	2.45	1.94 I	ND	ND	13.30	ND	2.84
VEW-03	01/25/00	24.4	85.6	11.5	128	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	226	--	78	102	ND	--	--	--	--	--	--	--	--	--	--
	03/11/03	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
	06/06/03	ND	ND	ND	4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	1.8	--	--	ND	--	ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	ND	ND	ND	--	ND	ND	--
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.87	ND	2.27	1.46	ND	ND	3.8	ND	4.2	ND	ND	--	ND	ND	ND
	06/09/04	ND	ND	ND	2.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.02 I	ND	3.01	1.18 I	ND	ND	17.5	ND	17.2	3.21	ND	1.11	ND	2.18	6.02
	09/20/04	ND	ND	ND	ND	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND, J3	ND	30.6	2.86, J3	2.88 J3	ND	ND, J3	19	ND	24.2	11.6	ND	ND	12	13	12.8
	12/02/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.29, J3	30.6	2.86, J3	2.88 J3	ND	ND, J3	19	ND	24.2	11.6	ND	ND	12	13	12.8
	03/11/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.09 I	7.340	7.88 J3	7.05 J3	ND	ND	1.580 I	ND	2.32	4.73	3.32	ND	2.130 I	0.4900 I	6.44
VEW-04	01/25/00	81	138	7.8	288	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	232	--	88.7	108	ND	--	--	--	--	--	--	--	--	--	--
	03/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
	06/07/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	ND	ND	ND	--	ND	ND	--
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND
	06/09/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND
	09/20/04	8.18	41	ND	133	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND, J3	43.0, J3	104	7.00, J3	6.91, J3	ND	ND, J3	20.4	2.03	16.8	10.4	ND	--	131	49.8	13.4
	12/02/04	1.50 I	23.39	ND	16.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	43.39	79.27	11.3 J3	11.0 J3	ND	ND	10.49	1.01 I	10.16	6.83	ND	ND	61.23	22.41	7.43
	03/11/05	2.31	18.40	ND	14.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.9	79.4	10.2	10.2	ND	ND	11.6	ND	12.6	4.88	ND	ND	55.6	28.6	6.29
VEW-05	01/25/00	118	72.5	11.3	110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	194	--	59.8	86.1	ND	--	--	--	--	--	--	--	--	--	--
	03/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
	06/06/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	--	ND	--	ND	ND	--
	12/12/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	--
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND
	06/09/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	09/20/04	ND	ND	ND	ND	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND, J3	ND	ND, J3	ND	ND, J3	ND, J3	ND	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/02/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND, J3	ND, J3	ND	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND
	03/11/05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.6	ND	10.0	10.3	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
VEW-07	01/25/00	48	213	97.8	459	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	481	--	172	210	ND	--	--	--	--	--	--		--	--	--
	03/11/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	--	--	--	--	--	--		--	--	--
	06/07/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	1.6	--	--	ND		ND	ND	--
	09/02/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	0.13	ND	ND	ND	ND	ND	--	--	ND		ND	ND	--
	12/12/03	ND	ND	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	ND	ND	ND		ND	ND	--
	03/17/04	2.2	1.2	ND	7.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.09	ND	0.22	0.2	ND	ND	1	ND	1	ND	ND		5.7	ND	ND
	06/09/04	8.78	3.28	ND	2.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.74	28.0	ND	0.641 I	ND	ND	2.70	ND	3.29	1.53	ND	ND	ND	2.63	ND
	09/20/04	4.2	5.55	ND	ND	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND, J3	2.06 J3	38.0	ND, J3	0.214 J3	ND	ND, J3	5.17	ND	3.78	1.42	ND	ND	3.81	7.51	ND
	12/02/04	4.95	21.00	ND	5.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	75.89	193.1	11.4 J3	7.11 J3	ND	ND	12.05	ND	15.83	7.18	ND	ND	56.72	12.02	6.520
	03/11/05	3.70	14.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19.8	144	7.34	3.19 I	ND	ND	11.8	ND	17.0	13.2	ND	ND	19.3	0.470 I	ND
Cleanup Goal - RAP		1	NA	NA	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GCTL		1	30	40	20	210	20	280	210	4.8	0.2	0.2	0.5	0.2	210	0.2	20	20	20	20	210	280	--	5.7	NA	NA	NA	NA	NA	10	10	NA
NADSC		100	300	400	200	2100	200	2800	2100	480	20	20	50	20	2100	20	200	200	200	200	2100	2800	--	570	NA	NA	NA	NA	100	100	NA

Notes:
1. All concentrations are in mg/L.
3. ND= Not Detect
4. NS = Not Sampled
5. NA = Not Analyzed
6. I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
7. J3=The reported value failed to meet the established quality control criteria for either precision and/or accurancy.

Greater than GCTL
Greater than the NADSC

APPENDIX C

March 2005 Groundwater Purging and Sampling Logs

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Larry Wolski	Technician 2:	Weather: "Windy, Sunny"
Sampling ID: 04-41001/5:CEF-293-09:3/11/05		
Notes:		

Well Information

Well ID: **CEF-293-09**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 14.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 77.36	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.79	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 11.00
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 13:53	Purge End: 14:14	Total Volume Purged (gal):	1.90

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
14:03	0.00	1.60	0.08	0.00	21.49	240.0	7.67	-50.0	67.70		turbid	none
14:06	8.84	1.70	0.03	0.22	21.69	240.0	7.79	-65.0	59.60			
14:10	8.85	1.80	0.02	0.84	21.96	240.0	8.05	-92.0	53.80			
14:14	8.90	1.90	0.02	1.34	22.06	240.0	8.25	-111.0	49.70			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 14:18
Sample End Time: 14:24
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 1.49
Temp (*C): 22.08
SEC (uS/cm): 240.00
pH: 8.34
ORP (mV): -118.00
Turb (NTU): 47.70
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Sunny
Sampling ID: 04-41001/5:CEF-293-22:3/11/05		
Notes:		

Well Information

Well ID: **CEF-293-22**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 14.70	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.95	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.90	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 9.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 16:04	Purge End: 16:24	Total Volume Purged (gal):	1.50

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
16:15	8.35	1.10	0.10	0.32	21.70	546.0	5.22	-58.9	105.00		turbid	none
16:20	8.25	1.20	0.02	0.12	21.79	512.0	5.24	-81.1	107.00			
16:24	8.30	1.50	0.07	0.23	21.86	513.0	5.23	-81.9	110.00			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 16:24
Sample End Time: 16:35
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.25
Temp (*C): 21.87
SEC (uS/cm): 518.00
pH: 5.23
ORP (mV): -83.30
Turb (NTU): 113.00
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Larry Wolski	Technician 2:	Weather: "Windy, Sunny"
Sampling ID: 04-41001/5:VEW-01:3/11/05		
Notes:		

Well Information

Well ID: **VEW-01**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 14.50	Well Screen Interval (ft):
TOC Elevation (ft msl): 76.32	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.39	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 10.00
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 16:14	Purge End: 16:41	Total Volume Purged (gal):	1.60

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
16:34	7.51	1.20	0.06	0.21	21.52	120.0	7.40	-93.0	1,000.00		brown	none
16:37	7.59	1.40	0.06	0.09	21.53	120.0	7.43	-96.0	1,000.00			
16:41	7.59	1.60	0.05	0.00	21.55	120.0	7.45	-98.0	1,000.00			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 16:45
Sample End Time: 16:53
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.00
Temp (*C): 21.55
SEC (uS/cm): 120.00
pH: 7.46
ORP (mV): -100.00
Turb (NTU): 1000.00
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Larry Wolski	Technician 2:	Weather: "Windy, Partly Cloudy, Sunny"
Sampling ID: 04-41001/5:VEW-02:3/11/05		
Notes:		

Well Information

Well ID: **VEW-02**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 16.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.86	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.52	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 10.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 15:22	Purge End: 15:58	Total Volume Purged (gal):	2.10

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
15:49	7.65	1.40	0.05	1.19	21.93	320.0	8.64	-173.0	1,000.00		brown	slight HC
15:53	7.64	1.70	0.07	1.11	21.94	310.0	8.59	-172.0	1,000.00			
15:58	7.65	2.10	0.08	1.01	21.92	310.0	8.53	-170.0	1,000.00			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 16:00
Sample End Time: 16:07
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.98
Temp (*C): 21.92
SEC (uS/cm): 310.00
pH: 8.53
ORP (mV): -170.00
Turb (NTU): 1000.00
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Sunny
Sampling ID: 04-41001/5:VEW-03:3/11/05		
Notes: Water levels couldn't be obtained because pump head was above water level. couldn't put pump down further due to obstruction		

Well Information

Well ID: **VEW-03**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 0.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.28	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.05	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 8.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 13:55	Purge End: 14:16	Total Volume Purged (gal):	2.10

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
14:10	0.00	1.50	0.10	0.31	21.85	280.0	5.02	4.5	17.70		clear	none
14:13	0.00	1.80	0.10	0.32	21.94	278.0	5.04	-0.6	12.50			
14:16	0.00	2.10	0.10	0.34	22.04	276.0	5.02	-7.9	9.27			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 14:17
Sample End Time: 14:25
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.31
Temp (*C): 22.06
SEC (uS/cm): 275.00
pH: 5.01
ORP (mV): -10.30
Turb (NTU): 7.92
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: "Windy, Sunny"
Sampling ID: 04-41001/5:VEW-04:3/11/05		
Notes:		

Well Information

Well ID: **VEW-04**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 15.10	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.54	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.45	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 9.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 16:39	Purge End: 17:15	Total Volume Purged (gal):	2.20

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
16:52	7.40	1.20	0.09	0.33	22.31	395.0	4.50	89.0	74.00		turbid	none
16:56	7.40	1.30	0.02	0.30	22.39	393.0	4.47	38.5	63.00			
17:00	7.40	1.50	0.05	0.23	22.44	390.0	4.44	39.5	49.90			
17:03	7.40	1.60	0.03	0.38	22.34	387.0	4.43	39.4	40.30			
17:06	7.40	1.70	0.03	0.32	22.33	386.0	4.42	39.6	33.70			
17:11	7.40	2.00	0.07	0.26	22.20	388.0	4.42	38.6	27.70			
17:15	7.40	2.20	0.05	0.57	22.32	392.0	4.39	49.4	19.40			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 17:17
Sample End Time: 17:25
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.24
Temp (*C): 22.55
SEC (uS/cm): 393.00
pH: 4.39
ORP (mV): 44.90
Turb (NTU): 15.80
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: "Windy, Sunny"
Sampling ID: 04-41001/5:VEW-05:3/11/05		
Notes: well casing broken/bentTubing shoved down well. Result of excavation or filling activities?		

Well Information

Well ID: **VEW-05**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 16.85	Well Screen Interval (ft):
TOC Elevation (ft msl): 74.63	Northing: 0	Easting: 0
Static Depth to Water (ft): 6.25	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE		Pump Set at (ft): 8.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 14:46	Purge End: 15:25	Total Volume Purged (gal): 2.20	

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
15:08	6.30	1.00	0.04	0.19	20.85	267.0	5.33	55.4	67.80		turbid	none
15:11	6.30	1.30	0.10	0.23	20.82	262.0	5.32	52.5	61.80			
15:15	6.30	1.50	0.05	0.22	20.83	261.0	5.26	53.2	41.70			
15:18	6.30	1.70	0.06	0.22	20.78	260.0	5.30	44.9	34.00			
15:21	6.30	2.00	0.10	0.41	20.78	257.0	5.23	65.0	25.80			
15:25	6.30	2.20	0.05	0.24	20.79	253.0	5.22	55.7	23.40			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 15:26
Sample End Time: 15:40
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 0.23
Temp (*C): 20.82
SEC (uS/cm): 253.00
pH: 5.24
ORP (mV): 53.50
Turb (NTU): 20.00
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials

GROUNDWATER PURGING & SAMPLING LOG

TERRAINE Environmental Consulting

Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Larry Wolski	Technician 2:	Weather: "Windy, Partly Cloudy"
Sampling ID: 04-41001/5:VEW-07:3/11/05		
Notes:		

Well Information

Well ID: **VEW-07**	Sampling Date: **3/11/2005**	
Well Diam (in): 2.0	Total Well Depth (ft): 16.40	Well Screen Interval (ft):
TOC Elevation (ft msl): 76.44	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.96	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE		Pump Set at (ft): 10.00
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 14:30	Purge End: 15:01	Total Volume Purged (gal):	2.20

Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Salinity	Color	Odor
14:47	8.01	0.90	0.05	1.28	21.65	250.0	7.99	-97.0	201.00		brown	sulfuric
14:51	8.00	1.30	0.13	2.09	21.77	250.0	7.97	-101.0	132.00			
14:54	8.01	1.50	0.10	2.84	21.82	250.0	7.94	-102.0	106.00			
14:57	7.99	1.90	0.10	3.45	21.86	260.0	7.92	-103.0	70.10			
15:01	8.00	2.20	0.07	3.40	22.00	260.0	7.91	-107.0	66.70			

Sampling Data

Sample Information

Sample Date: 3/11/2005
Sample Start Time: 15:05
Sample End Time: 15:09
Field Filtered: ☐
Duplicate: ☐

Final Purge Readings

DO (mg/L): 3.32
Temp (*C): 22.00
SEC (uS/cm): 260.00
pH: 7.92
ORP (mV): -107.00
Turb (NTU): 62.60
Salinity:

Hach Field Data (mg/L)

DO:
CO2:
Alkalinity:
Ferrous Iron:
H2S:
Manganese:
Sulfate:
Sulfide:
Nitrate:

CHEMetrics Field Data (mg/L)

DO High Range:
DO High Range:

CO2 High Range:
CO2 Low Range:

Alkalinity High Range:
Alkalinity Low Range:

Lab Analyses/Methods:

"PAHs, VOCs"

Technician Initials