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NAS CECIL FIELD, FL
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THIRD QUARTER 2004 OPERATIONS AND MAINTENANCE STATUS REPORT FOR DAY
TANK 1 SITE NAS CECIL FIELD FL
12/1/2004
TERRAINE INC ENVIRONMENTAL SERVICES

**THIRD QUARTER 2004
Operations and Maintenance Status Report
July 1, 2004 – September 30, 2004**

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, Inc.

2656 NW 97th Ave. Miami, FL 33172

December 2004

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.

James L. Young, P.G., REM President/CEO TERRAINE, Inc.	Date	<u>PG-FL2090, REM-6089</u> Registration Nos.
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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
IDW	Investigation Derived Waste
LNAPL	Light Non-Aqueous Phase Liquids
mg/L	Milligrams per liter
mL/min	Milliliters per minute
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
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). Biosparging/vapor collection was the technology utilized to achieve this objective.

Due to the substantial reduction of contaminant concentrations in wells within the area of influence of the biosparge and soil vapor extraction 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 this 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: CEF-293-9, VEW-7, VEW-2, VEW-3, VEW-4, VEW-5, and CEF-293-22.

On September 30, the FDEP recommended to begin sampling groundwater from vapor extraction well VEW-1. Groundwater sampling at this location will begin 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 July 1, 2004 to September 30, 2004.

CONCLUSIONS AND RECOMMENDATIONS

In general, contaminant concentrations have increased slightly at the site. These increases, first noted in the December 2003 sampling event, could be a result of excavation activities which commenced between September and December 2003 and continue to date.

As a result of increasing contaminant concentrations, 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 VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7 and to begin sampling groundwater from vapor extraction well VEW-1 for VOAs and SVOAs on a quarterly basis.

OPERATIONS AND MAINTENANCE STATUS REPORT

DAY TANK 1 SITE

NAVAL AIR STATION, CECIL FIELD

JACKSONVILLE, FLORIDA

SEPTEMBER 2004

<i>PREPARED FOR:</i>	Mr. Nick Ugolini - SOUTHDIV
<i>PREPARED BY:</i>	<i>TERRAINE, Inc.</i>
<i>PERIOD OF PERFORMANCE:</i>	July 1, 2004 – September 30, 2004
<i>FIELD TEAM:</i>	Karen Baer, Larry Wolski
<i>CONTRACT NUMBER:</i>	N62467-02-G-0352
<i>TASK ORDER NUMBER:</i>	0001
<i>TASK ORDER MANAGER:</i>	James L. Young, P.G.; REM
<i>SUBMITTAL DATE:</i>	December 2004

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 July 1, 2004 to September 30, 2004.

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

The system was shut down on approximately August 15, 2003 as a result of FDEP approval for system deactivation. Post-active remediation O&M checks were performed during the Third Quarter of 2004 on July 22, 2004, August 30, 2004, and September 21, 2004.

During a post-active remediation O&M check, the system is activated for a period of 15 minutes, a preventative maintenance checklist (based upon manufacturer's recommendations) is completed, and any required maintenance activity is performed.

2.2 Summary of Maintenance

During the July 22, 2004 O&M check, the system shut down after 10 minutes. During the August 30, 2004 O&M check, the system ran for the entire 15 minute duration. During the September 21, 2004 O&M check, the system shutdown after 10 minutes. On September 27, 2004, a technician visited the site and was able to start the system. The system ran for 4 minutes before shutting down as a result of a malfunctioning compressor.

No maintenance was performed during the Third Quarter, 2004. Emergency maintenance is not necessary at this time as the compressor does not operate continuously. Service of the compressor is scheduled for January 2005.

2.3 Water Level Measurements

Depth-to-groundwater/Light Non-Aqueous Phase Liquid (LNAPL) measurements were recorded on September 20, 2004 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. The top-of-casing elevation, depth-to-LNAPL measurements, depth-to-water measurements, calculated LNAPL thickness and calculated water level elevations are provided in **Table 1, Appendix B**. A groundwater elevation map, using data collected on September 20, 2004 indicated a groundwater flow pattern to the east, and is included in **Figure 3, Appendix A**.

No LNAPL was discovered in vapor extraction well VEW-1 during the Third Quarter 2004.

2.4 Groundwater Sampling

2.4.1 Methodology

Groundwater sampling was conducted at Day Tank 1 on September 20, 2004. Two (2) monitoring wells (CEF-293-9 and CEF-293-22) and five (5) vapor extraction wells (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 of approximately 100 mL/min until field parameters (temperature, pH, conductivity, turbidity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) had stabilized. Water levels in the 2-inch 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 and containerized. All investigative derived waste (IDW) was stored on site in 55-gallon drums and was transported to Industrial Water Services in Jacksonville, Florida by Environmental Remediation Services on September 22, 2004.

3.0 SUMMARY OF SAMPLING AND LABORATORY ANALYTICAL RESULTS

3.1 Data Validation

A cursory 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 CEF-293-09, VEW-3, VEW-4, and VEW-7 exhibited naphthalene concentrations greater than the Groundwater Cleanup Target Levels (GCTL).

- Groundwater sampled from vapor extraction wells VEW-3 and VEW-4 exhibited 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene concentrations greater than the GCTL. The 1,2,4-trimethylbenzene concentration in groundwater sampled from VEW-4 was greater than the Natural Attenuation Default Source Concentration (NADSC) of 100 µg/L.
- Groundwater sampled from vapor extraction wells VEW-4 and VEW-7 exhibited benzene concentrations greater than the GCTL.
- Groundwater sampled from vapor extraction well VEW-4 exhibited ethylbenzene and xylene concentrations greater than the GCTL.

3.2.2 PAHs

PAHs detected in groundwater samples collected on September 20, 2004 did not exhibit concentrations greater than their respective GCTL.

4.0 CONCLUSIONS AND RECOMMENDATIONS

In general, VOC concentrations have increased since the September 2003 sampling event. Excavation activities on site to the north of the treatment facility and offsite to the north of the Day Tank 1 site began between the September 2003 and December 2003 sampling event and continue to date. Possible rebound could be a result of once adsorbed contaminants being released into groundwater during the beginning of excavation activities. Historical groundwater flow direction, (**Figures 4, 5, and 6, Appendix A**) is to the southeast.

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.

In March 2004, increased benzene and naphthalene concentrations were noted down gradient of CEF-293-9 in groundwater collected from vapor extraction well VEW-7. Benzene levels remained relatively consistent and naphthalene levels increased in groundwater collected from CEF-293-9.

In September 2004, increased benzene concentrations were noted in VEW-4 and increased naphthalene concentrations are noted in VEW-3 and VEW-4. Both wells are located down gradient of VEW-7. Benzene concentrations decreased and naphthalene concentrations increased in groundwater collected from VEW-7.

In the areas with elevated contamination (CEF-293-9, VEW-3, VEW-4, and VEW-7) geochemical parameters suggest that biodegradation of petroleum hydrocarbons is occurring. Negative ORP levels and depleted DO levels noted in groundwater sampled from these four wells indicate an environment conducive to biodegradation.

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

- Sample groundwater from VEW-1 as stated in the September 30, 2004 recommendation letter from the FDEP.
- Continue groundwater sampling from monitoring wells and vapor extraction wells to monitor for possible rebound as a result of excavation activities.
- Monitor benzene and naphthalene concentrations in vapor extraction well VEW-5 and CEF-293-22 to determine whether the contamination is migrating further southeast of the suspected release area.

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*

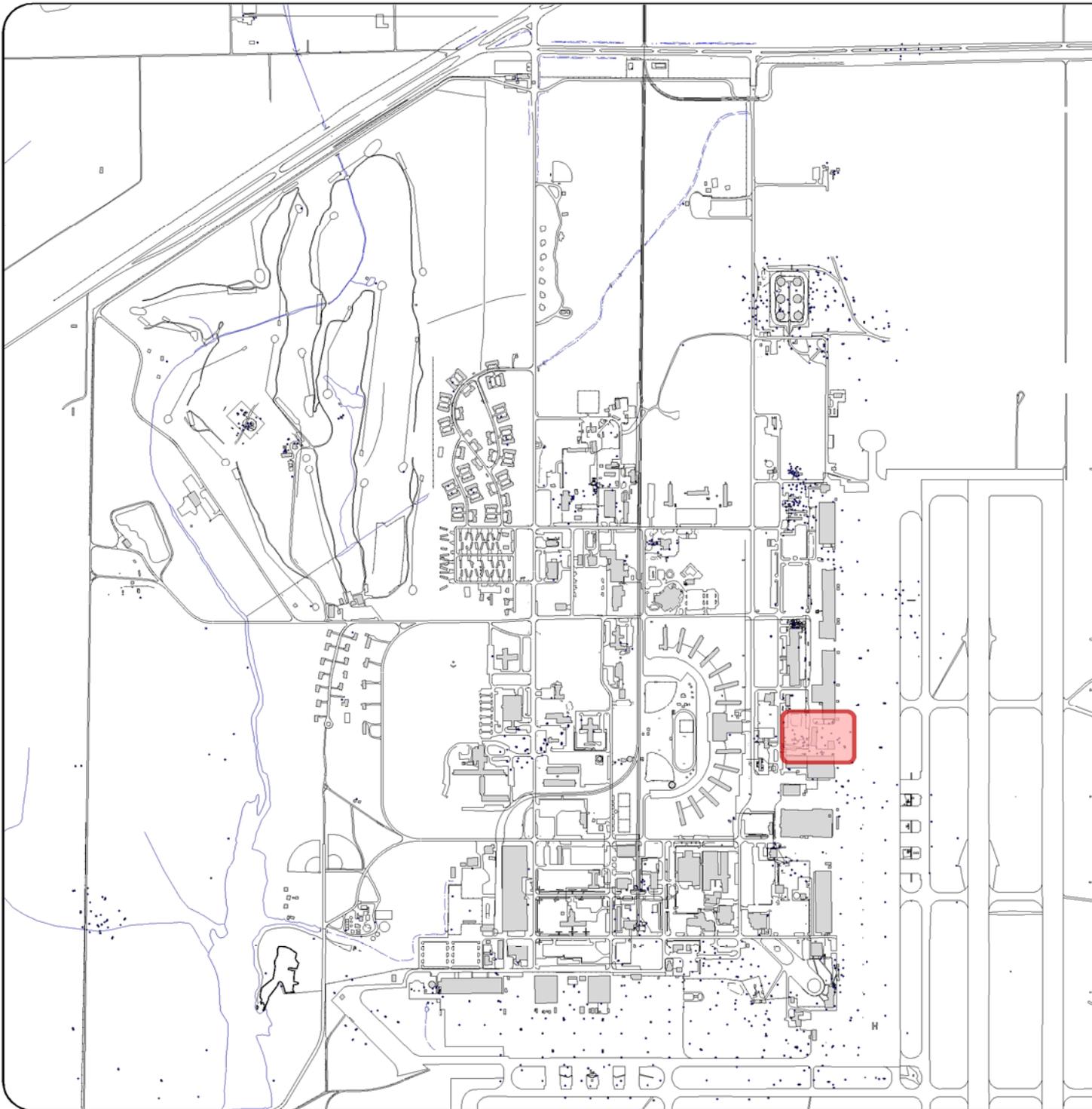
Figure 2 *Site Map, Day Tank 1*

Figure 3 *Groundwater Elevation Map, September 2004*

Figure 4 *Groundwater Elevation Map, June 2004*

Figure 5 *Groundwater Elevation Map, March 2004*

Figure 6 *Groundwater Elevation Map, December 2003*



NOTES

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

LEGEND

 APPROXIMATE SITE BOUNDARY

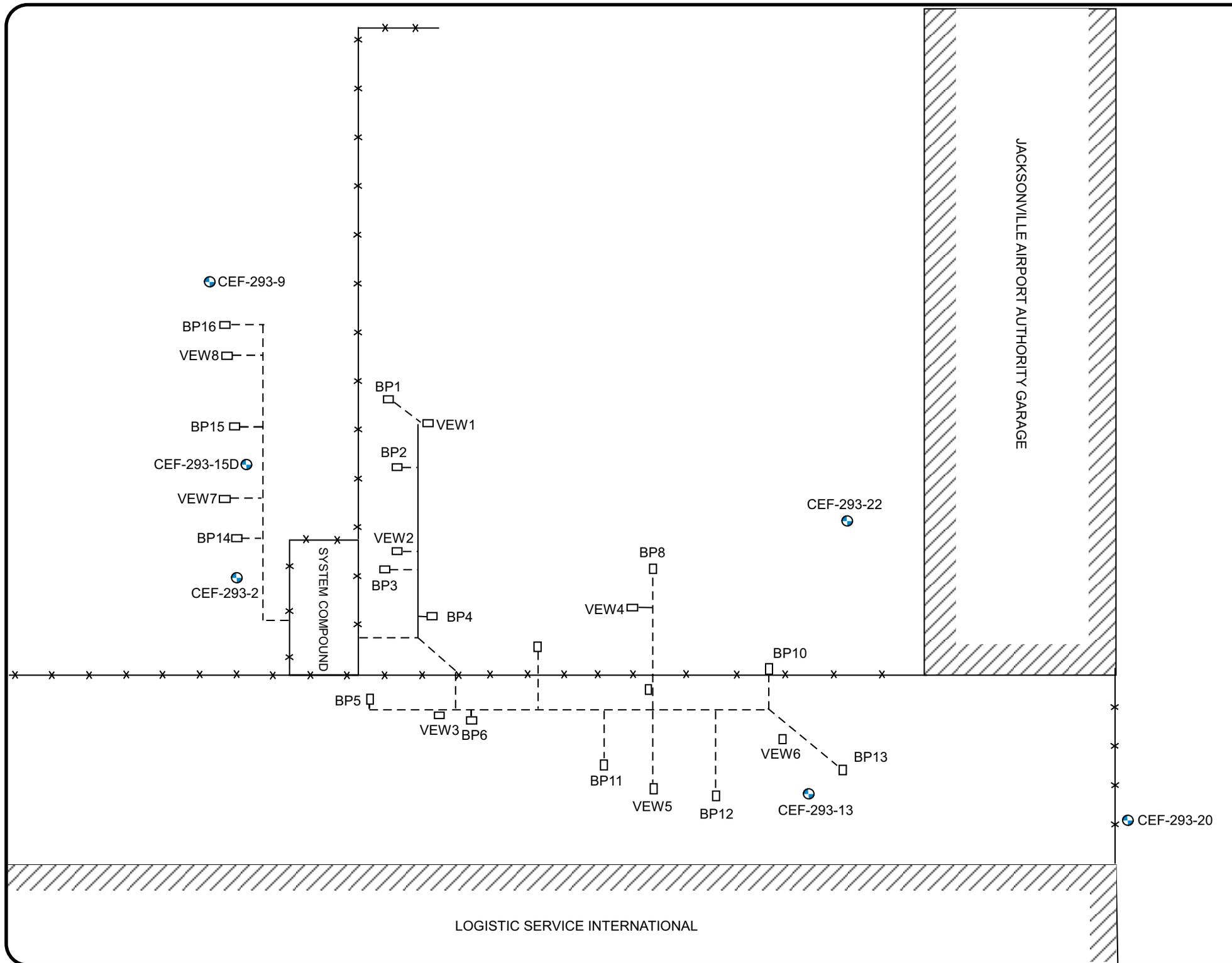
0 0.25 0.5
 APPROXIMATE SCALE IN MILES



**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

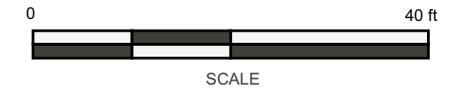


NOTES

DASHED LINES INDICATE SUBSURFACE FEATURES

LEGEND

- x — x — FENCE
- - - - UNDERGROUND LINES
- VAULT COVER
- MONITORING WELL



**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

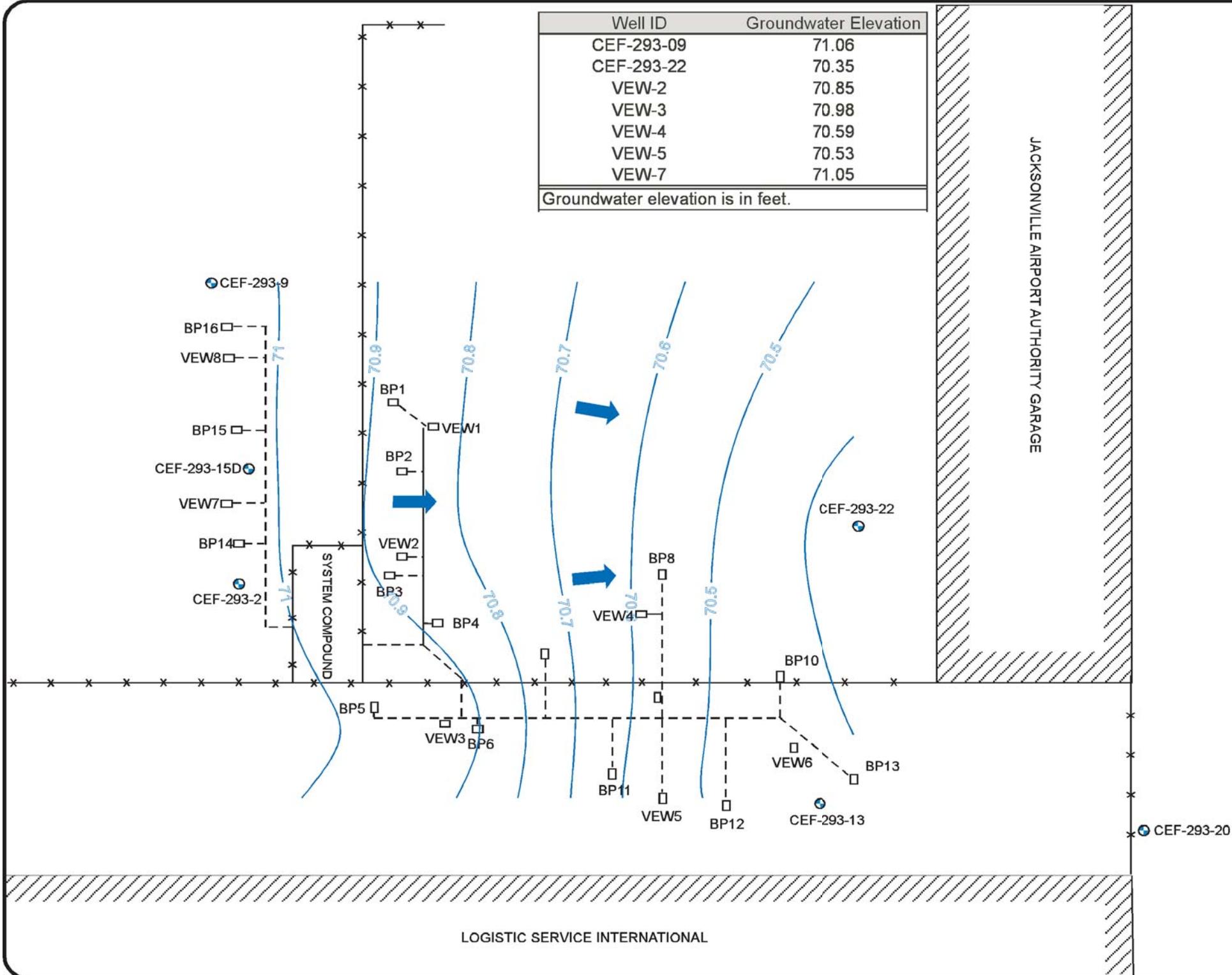
APR BY: JLY

DATE: 8-26-04

FILE: 04-41001

Well ID	Groundwater Elevation
CEF-293-09	71.06
CEF-293-22	70.35
VEW-2	70.85
VEW-3	70.98
VEW-4	70.59
VEW-5	70.53
VEW-7	71.05

Groundwater elevation is in feet.



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

- x — x — FENCE
 - - - - UNDERGROUND LINES
 - VAULT COVER
 - MONITORING WELL
 - ➔ INDICATES GROUNDWATER FLOW DIRECTION
- 0 40 ft
SCALE



NAS CECIL FIELD FIGURE 3: GROUNDWATER ELEVATION MAP SEPTEMBER 2004

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	67.53
CEF-293-22	67.39
VEW-2	67.32
VEW-3	67.27
VEW-4	67.17
VEW-5	67.08
VEW-7	67.45

Groundwater elevation is in feet.



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

- x — x — FENCE
 - - - - UNDERGROUND LINES
 - VAULT COVER
 - MONITORING WELL
 - ➔ INDICATES GROUNDWATER FLOW DIRECTION
- 0 40 ft
SCALE



NAS CECIL FIELD FIGURE 4: GROUNDWATER ELEVATION MAP JUNE 2004

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

DWN BY: JLY

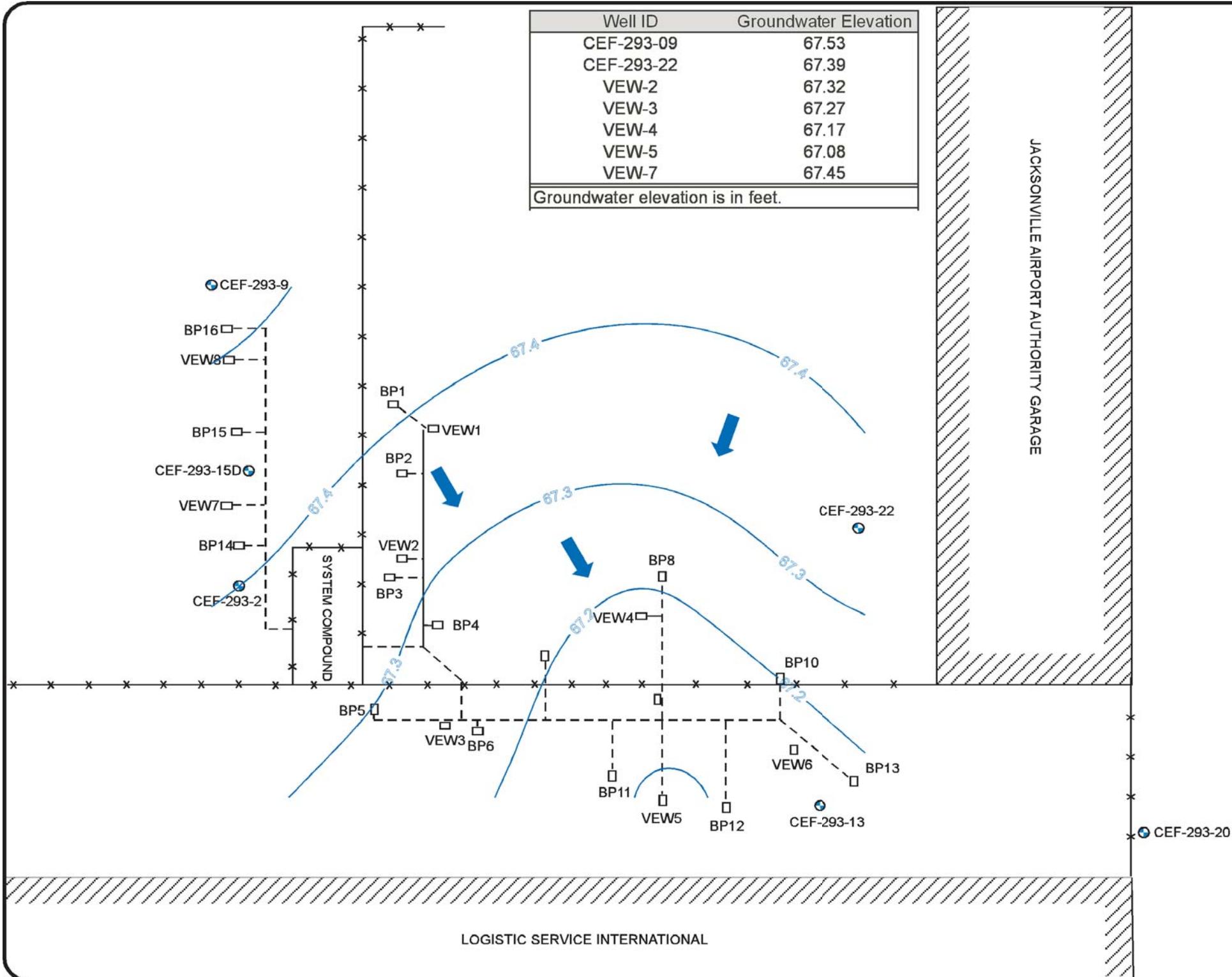
CHK BY:
 MJP

SCALE: SEE LEGEND

APR BY: JLY

DATE: 8-26-04

FILE: 04-41001



Well ID	Groundwater Elevation
CEF-293-09	67.52
CEF-293-22	67.15
VEW-2	67.46
VEW-3	67.26
VEW-4	67.24
VEW-5	67.13
VEW-7	67.44

Groundwater elevation is in feet.



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

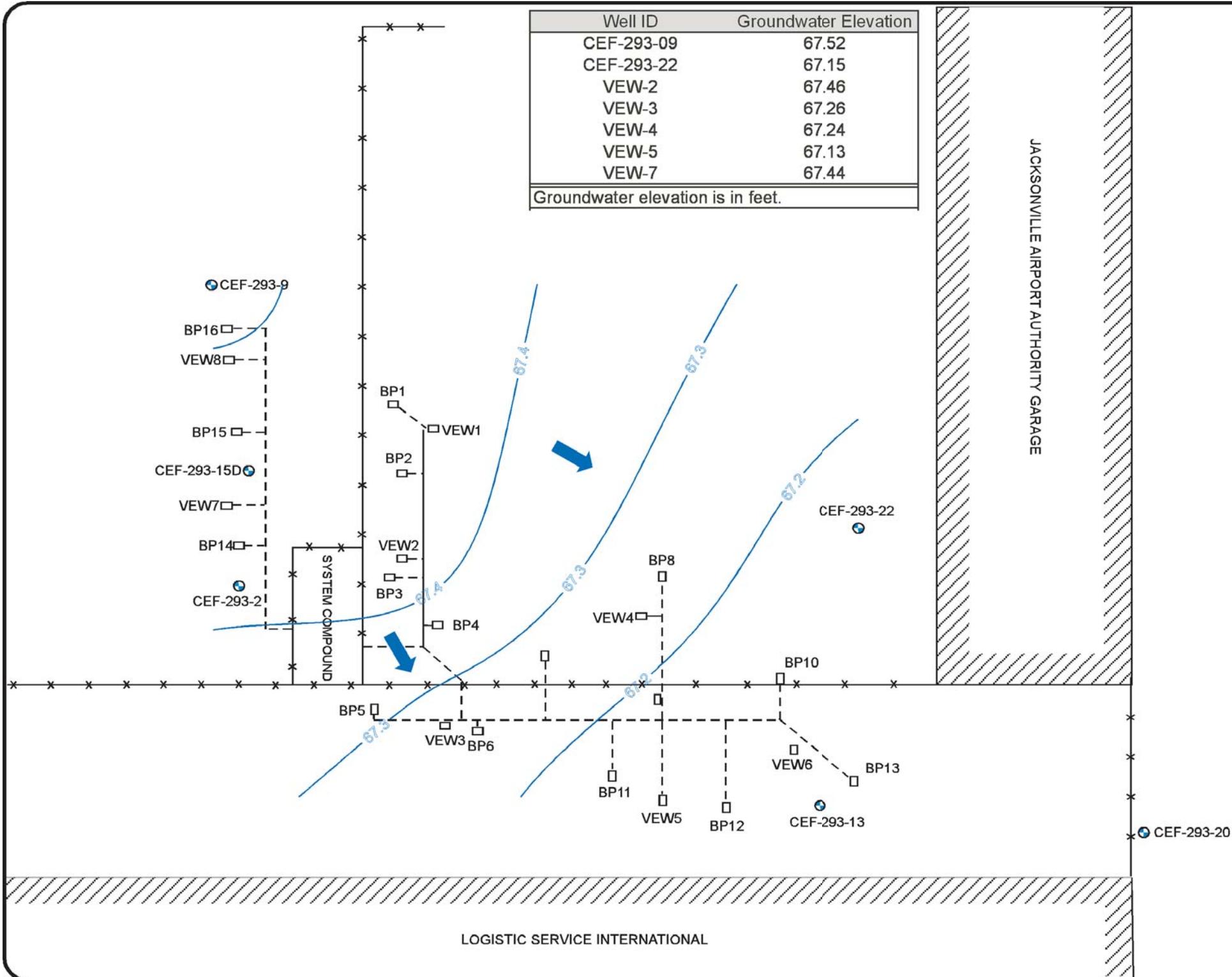
- x — x — FENCE
 - - - - UNDERGROUND LINES
 - VAULT COVER
 - MONITORING WELL
 - ➔ INDICATES GROUNDWATER FLOW DIRECTION
- 0 40 ft
SCALE



NAS CECIL FIELD FIGURE 5: GROUNDWATER ELEVATION MAP MARCH 2004

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

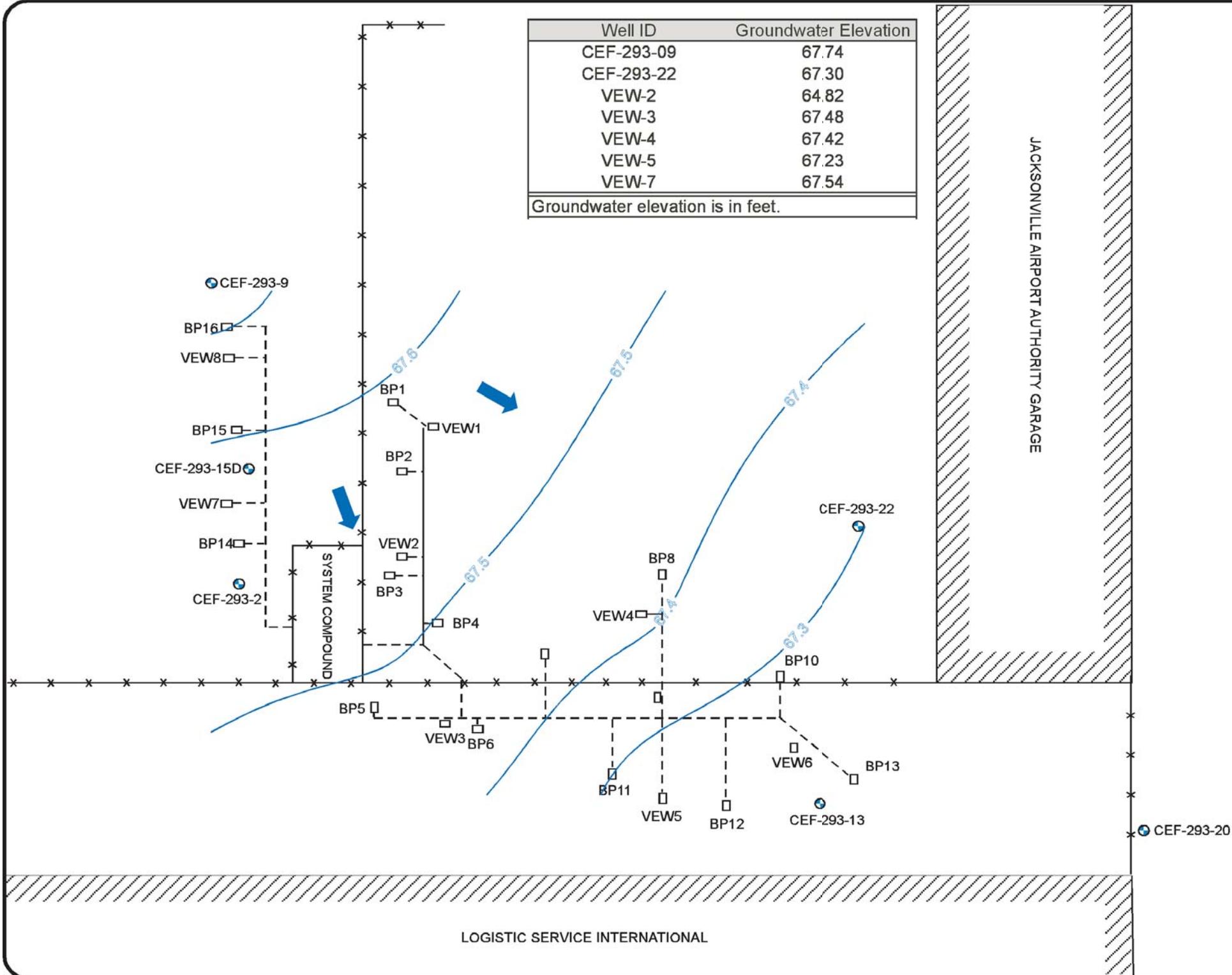
DWN BY: JLY	CHK BY: MJP
SCALE: SEE LEGEND	APR BY: JLY
DATE: 8-26-04	FILE: 04-41001



LOGISTIC SERVICE INTERNATIONAL

Well ID	Groundwater Elevation
CEF-293-09	67.74
CEF-293-22	67.30
VEW-2	64.82
VEW-3	67.48
VEW-4	67.42
VEW-5	67.23
VEW-7	67.54

Groundwater elevation is in feet.



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

- x — x — FENCE
 - - - - UNDERGROUND LINES
 - VAULT COVER
 - MONITORING WELL
 - ➔ INDICATES GROUNDWATER FLOW DIRECTION
- 0 40 ft
SCALE



NAS CECIL FIELD FIGURE 6: GROUNDWATER ELEVATION MAP DECEMBER 2003

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 *Groundwater Monitoring Well – Water and Free Product Data*

Table 2 *Monitoring Well Field Measurements*

Table 3 *Groundwater Analytical Results*

<p style="text-align: center;">TABLE 1 DEPTH TO GROUNDWATER/LNAPL MEASUREMENTS DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM NAS CECIL FIELD JACKSONVILLE, FLORIDA</p>						
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
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
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
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
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		
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
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
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

LNAPL = Light Non-Aqueous Phase Liquid

NA = Not Available

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 (°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
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	27.10
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
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
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
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	0.11	0.04	144	26.88
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	-137.9	25.36

s. u. = standard units
mS/cm = milli siemens per centimeter
mg/L = Milligrams per liter
°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)	Acenaphthylene	Acenaphthene	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	Naphthalene by Method 8260	1-Methylnaphthalene	2-Methylnaphthalene	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	692	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	ND	--	3.9	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	ND	--	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	ND	--	47.5	98	19.4	ND	11.8	ND	12.5	3.3	1.9	--	2.3	--	ND	--					
	03/17/04	2.3	5.7	ND	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	136	144	47.1	50.4	7.9	ND	13.1	4.1	2.4	--	ND	--	ND	--					
	06/09/04	ND	6.96	ND	1.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	63.8	81.6	24.6	22.4	12.2	ND	15.9	6.63	ND	ND	6.93	2.98	3.47	ND	1.2				
09/20/04	ND	1.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	12.4	24.1	3.83	4.50	3.80	ND	4.48	1.04	ND	ND	3.75	3.06	ND	ND						
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	ND	--	4.97	3.76	0.21	0.13	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	--	1.34	0.96	0.12	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	--	1.07	0.88	0.23	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	--	1.35	1.20	0.16	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	0.7801	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	--			
VEW-01	01/25/00	18.5	257	59.4	728	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	360	--	220	307	ND	--	--	--	--	--	--	--	--	--	--	--					
	06/13/00																																				
	03/11/03																																				
	06/07/03																																				
	09/04/03																																				
	12/12/03																																				
	03/17/04																																				
06/09/04																																					
09/20/04																																					
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	--	ND	--				
	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	--	3.90	--	ND	--	ND	--			
	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	--	2.2	--	1.60	--	ND	--			
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	0.58	1.09	ND	ND	ND	ND	ND	ND	--	2.0	--	ND	--	ND	--	ND	--		
	06/09/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	0.2841	0.3961	ND	ND	ND	ND	ND	ND	ND	ND	2.23	--	1.33	--	ND	--	ND	--	
09/20/04	ND	ND	ND	2.45	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND, J3	ND, J3	ND	ND, J3	ND	ND	ND	ND	ND	ND	5.95	--	1.63	--	ND	--	ND	--		
VEW-03	01/25/00	24.4	85.6	11.5	128	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	220	--	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	1.8	--	--	--	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	--		
	12/12/03	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	--	ND	--	ND	--	ND	--	
	03/17/04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	1.87	2.27	1.46	ND	3.8	ND	4.2	ND	ND	--	ND	--	ND	--	ND	--	ND	--	
	06/09/04	ND	ND	ND	2.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	2.021	3.01	1.181	ND	17.5	ND	17.2	3.21	ND	1.11	ND	2.18	6.02	ND	2.18	6.02	ND		
09/20/04	ND	ND	ND	ND	ND, J3	ND, J3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	5.29, J3	30.6	2.86, J3	2.88, J3	ND	ND, J3	19.0	24.2	11.6	ND	12.0	13.0	12.8	12.8	12.8	12.8	12.8			
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	--	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	--		
	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	--	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	--	

APPENDIX C

September 2004 Groundwater Sampling Logs

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: "Cloudy, Sunny"
Sampling ID: 04-41001/5:CEF-293-09:9/20/04		
Notes:		

Well Information

Well ID: CEF-293-09	Sampling Date: 9/20/2004	
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): 6.30	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubeing Material: PPE	Pump Set at (ft): 8.50
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 1.50	
Purge Start: 13:15	Purge End: 13:30	

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)	Color	Odor
13:20	6.52	1.30	0.00	0.60	25.90	281.0	5.67	-124.4	359.00	brown	none
13:26	6.41	1.40	0.00	0.26	25.85	282.0	5.67	-136.7	383.00		
13:29	6.36	1.50	0.05	0.14	25.79	282.0	5.66	-147.4	385.00		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.15	DO:		DO High Range:	
Sample Start Time:	13:33	Temp (°C):	25.79	CO2:		DO High Range:	
Sample End Time:	13:38	SEC (uS/cm):	283	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	5.66	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	-148.8	H2S:			
		Turb (NTU):	381	Manganese:			
				Sulfate:		Alkalinity High Range:	
				Sulfide:		Alkalinity Low Range:	
				Nitrate:			
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>					
"PAHs, VOCs"							

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Cloudy
Sampling ID: 04-41001/5:CEF-293-22:9/20/04		
Notes:		

Well Information

Well ID: CEF-293-22	Sampling Date: 9/20/2004	
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): 5.60	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubeing Material: PPE	Pump Set at (ft): 7.00	
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 14:50	Purge End: 15:16	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)	Color	Odor
15:01	6.10	1.50	0.00	3.89	26.56	476.0	4.12	140.0	419.00	turbid	none
15:05	6.20	1.70	0.06	1.45	26.42	489.0	4.41	126.0	288.00		
15:08	6.20	1.90	0.10	0.93	26.81	486.0	4.57	112.0	245.00		
15:11	6.20	2.10	0.06	0.59	27.12	478.0	4.79	89.0	215.00		
15:14	6.20	2.20	0.03	0.42	27.15	477.0	4.89	78.0	202.00		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.35	DO:		DO High Range:	
Sample Start Time:	15:16	Temp (°C):	27.1	CO2:		DO High Range:	
Sample End Time:	15:22	SEC (uS/cm):	478	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	4.97	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	70	H2S:			
		Turb (NTU):	199	Manganese:			
				Sulfate:		Alkalinity High Range:	
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>		Sulfide:		Alkalinity Low Range:	
"PAHs, VOCs"				Nitrate:			

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: Cloudy
Sampling ID: 04-41001/5:VEW-02:9/20/04		
Notes:		

Well Information

Well ID: VEW-02	Sampling Date: 9/20/2004	
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): 5.01	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE	Pump Set at (ft): 7.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P		
Purge Start: 14:30	Purge End: 14:42	Total Volume Purged (gal): 0.80

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)	Color	Odor
14:35	5.09	0.30	0.00	0.46	25.79	804.0	6.59	-73.6	257.00	brown	none
14:40	5.01	0.60	0.00	0.17	25.92	806.0	6.56	-123.6	477.00		
14:42	5.09	0.80	0.20	0.15	25.98	788.0	6.51	-137.5	516.00		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.1	DO:		DO High Range:	
Sample Start Time:	14:47	Temp (°C):	25.98	CO2:		DO High Range:	
Sample End Time:	14:53	SEC (uS/cm):	777	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	6.49	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	-141.6	H2S:			
		Turb (NTU):	537	Manganese:			
				Sulfate:		Alkalinity High Range:	
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>		Sulfide:		Alkalinity Low Range:	
"PAHs, VOCs"				Nitrate:			

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Cloudy
Sampling ID: 04-41001/5:VEW-03:9/20/04		
Notes:		

Well Information

Well ID: VEW-03	Sampling Date: 9/20/2004	
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): 4.30	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubeing Material: PPE	Pump Set at (ft): 7.00	
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 13:21	Purge End: 13:39	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)	Color	Odor
13:25	4.70	1.00	0.00	0.08	27.16	138.0	5.53	-10.0	127.00	turbid	none
13:28	4.60	1.20	0.10	0.01	27.23	136.0	5.60	-23.0	96.00		
13:31	4.60	1.40	0.00	0.00	27.29	136.0	5.62	-32.0	65.10		
13:34	4.60	1.50	0.05	0.00	27.30	136.0	5.65	-37.0	58.20		
13:37	4.60	1.60	-0.45	0.00	27.35	136.0	5.61	-40.0	54.10		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0	DO:		DO High Range:	
Sample Start Time:	13:39	Temp (°C):	27.32	CO2:		DO High Range:	
Sample End Time:	13:45	SEC (uS/cm):	137	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	5.62	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	-42	H2S:			
		Turb (NTU):	49.8	Manganese:			
				Sulfate:		Alkalinity High Range:	
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>		Sulfide:		Alkalinity Low Range:	
"PAHs, VOCs"				Nitrate:			

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: Cloudy
Sampling ID: 04-41001/5:VEW-04:9/20/04		
Notes:		

Well Information

Well ID: VEW-04	Sampling Date: 9/20/2004	
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): 4.95	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE	Pump Set at (ft): 7.00
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P		
Purge Start: 15:05	Purge End: 15:10	Total Volume Purged (gal): 0.90

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)	Color	Odor
15:06	5.02	0.30	0.00	0.17	27.62	272.0	5.28	-6.9	53.00	clear	none
15:08	5.01	0.50	0.00	0.09	27.65	283.0	5.19	-31.6	34.90		
15:10	5.01	0.90	0.20	0.08	27.63	284.0	5.16	-44.1	33.40		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.07	DO:		DO High Range:	
Sample Start Time:	15:14	Temp (°C):	27.6	CO2:		DO High Range:	
Sample End Time:	15:18	SEC (uS/cm):	282	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	5.15	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	-46.1	H2S:			
		Turb (NTU):	34.8	Manganese:			
				Sulfate:		Alkalinity High Range:	
				Sulfide:		Alkalinity Low Range:	
				Nitrate:			
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>					
"PAHs, VOCs"							

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Cloudy
Sampling ID: 04-41001/5:VEW-05:9/20/04		
Notes:		

Well Information

Well ID: VEW-05	Sampling Date: 9/20/2004	
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): 4.10	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubeing Material: PPE	Pump Set at (ft): 7.00	
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22	Turb. Meter: Hach 2100P
Purge Start: 14:10	Purge End: 14:22	Total Volume Purged (gal): 1.10	

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)	Color	Odor
14:15	4.20	0.70	0.00	0.26	26.95	113.0	4.00	136.0	556.00	milky	none
14:18	4.20	0.80	0.00	0.19	27.00	111.0	3.99	140.0	538.00		
14:22	4.20	1.10	0.10	0.04	26.94	110.0	3.94	144.0	498.00		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.04	DO:		DO High Range:	
Sample Start Time:	14:24	Temp (°C):	26.88	CO2:		DO High Range:	
Sample End Time:	14:32	SEC (uS/cm):	110	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	3.94	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	144	H2S:			
		Turb (NTU):	458	Manganese:			
				Sulfate:		Alkalinity High Range:	
				Sulfide:		Alkalinity Low Range:	
				Nitrate:			
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>					
"PAHs, VOCs"							

GROUNDWATER PURGING & SAMPLING LOG



Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: "Cloudy, Sunny"
Sampling ID: 04-41001/5:VEW-07:9/20/04		
Notes:		

Well Information

Well ID: VEW-07	Sampling Date: 9/20/2004	
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): 5.39	Well Capacity (gal): 0.00	

Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE	Pump Set at (ft): 7.50
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P		
Purge Start: 13:50	Purge End: 14:02	Total Volume Purged (gal): 0.80

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)	Color	Odor
13:57	5.62	0.30	0.00	0.47	25.41	217.0	5.42	-103.5	162.00	brown	sulfuric
13:59	5.55	0.60	0.00	0.25	25.39	219.0	5.42	-123.2	151.00		
14:01	5.55	0.80	0.10	0.18	25.36	220.0	5.41	-135.2	142.00		

Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Hach Field Data (mg/L)</u>		<u>CHEMetrics Field Data (mg/L)</u>	
Sample Date:	9/20/2004	DO (mg/L):	0.24	DO:		DO High Range:	
Sample Start Time:	14:04	Temp (°C):	25.36	CO2:		DO High Range:	
Sample End Time:	14:09	SEC (uS/cm):	220	Alkalinity:		CO2 High Range:	
Field Filtered:	<input type="checkbox"/>	pH:	5.41	Ferrous Iron:		CO2 Low Range:	
Duplicate:	<input type="checkbox"/>	ORP (mV):	-137.9	H2S:			
		Turb (NTU):	133	Manganese:			
				Sulfate:		Alkalinity High Range:	
<u>Lab Analyses/Methods:</u>		<u>Technician Initials</u>		Sulfide:		Alkalinity Low Range:	
"PAHs, VOCs"				Nitrate:			