N60200.AR.003642
NAS CECIL FIELD, FL
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ANNUAL OPERATION AND MAINTENANCE STATUS REPORT FOR NUTRIENT INJECTION SYSTEM AT BUILDING 9 FORMER TANKS 9L1 AND 9L2 NAS CECIL FIELD FL

7/1/2003

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Annual Operation and Maintenance Status Report

Nutrient Injection System
Building 9, Former Tanks 9L1 and 9L2

January 1, 2002 – December 31, 2002

Naval Air Station Cecil Field
Jacksonville, Florida

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

Submitted to:

U.S. Naval Facilities Engineering Command Southern Division

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July 2003

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A Laboratory Analytical Reports for Soil Samples (on CD only)
B Laboratory Analytical Reports for Groundwater Samples (on CD only)

Acronym List

ABB-ES	ABB Environmental Services, Inc.
acfh	actual cubic feet per hour
acfm	actual cubic feet per minute
AST	aboveground storage tank
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCI	CH2M HILL Constructors, Inc.
cfm	cubic feet per minute
CTO	Contract Task Order
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FL PRO	Florida Petroleum Residual Organic
GCTLs	groundwater cleanup target levels
LNAPL	light non-aqueous phase liquid
MTBE	methyl-tert butyl ether
MW	monitoring well
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
O&M	operation and maintenance
OVA	organic vapor analyzer
PAHs	polycyclic aromatic hydrocarbons
ppb	parts per billion
psig	pounds per square inch gauge
RAP	Remedial Action Plan
RWP	Remediation Work Plan
SAR	Site Assessment Report
scfm	standard cubic feet per minute
SCTLs	soil cleanup target levels
SOUTHDIV	Department of the Navy, Southern Division
SVE	Soil Vapor Extraction
TEP	triethylphosphate
TRPH	total recoverable petroleum hydrocarbons
UST	underground storage tank
VEW	Vapor Extraction Well
VOCs	volatile organic compounds

1.0 Introduction

Terraine, Inc. (TERRAINE) has been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (Southern Division, NAVFAC), to provide Operation and Maintenance (O&M) services at Building 9, NAS Cecil Field, Jacksonville, Florida, under the Remedial Action 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. 2002 to December 31, 2002.

1.1 Objective

The objective of the remedial action at the Building 9 site is to reduce the concentrations of petroleum-related contaminants in the groundwater and unsaturated soils to target levels specified by Florida Administrative Code (FAC) 62-777. Nutrient injection using the PHOSter nutrient injection system is the technology being used to achieve this objective.

1.2 Site History

Building 9 served as the NAS Cecil Field main fire base station from 1953 until base closure. Prior to 1953, the site served as a public works center and incorporated a transportation garage and automotive hobby shop. As such, the site contained two gasoline underground storage tanks (USTs), Tanks 9L1 and 9L2, which were removed from the site around 1985 (TtNUS June 2000). A fuel storage tank was located west of the former UST location; the removal date of this tank is unknown (TtNUS February 1999).

A Site Assessment Report (SAR) prepared for Building 9 (Harding Lawson Associates [HLA], 1998) concluded that operation of the two former USTs had resulted in contamination of soil and groundwater with fuel-related compounds, including benzene, toluene, ethylbenzene, and xylenes (BTEX), naphthalene, acenaphthylene, and total recoverable petroleum hydrocarbons (TRPH). The SAR determined that an area of soil approximately 3,000 square feet at the location of the former USTs was highly contaminated to a depth of 7 feet below land surface (bls) and acted as a source of groundwater contamination. The SAR also established that groundwater contamination extends only to the shallow surficial aquifer (7 to 25 feet bls) to a depth of 20 feet bls over an approximately 3,000-square-foot area, which coincides with the area of soil contamination.

A nutrient injection system was installed at the site during the period of November 2000 to January 2001 to treat the impacted soil and groundwater to achieve State-mandated cleanup target levels. The nutrient injection system commenced operation on January 9, 2001.

1.3 Remediation System/Technology Description

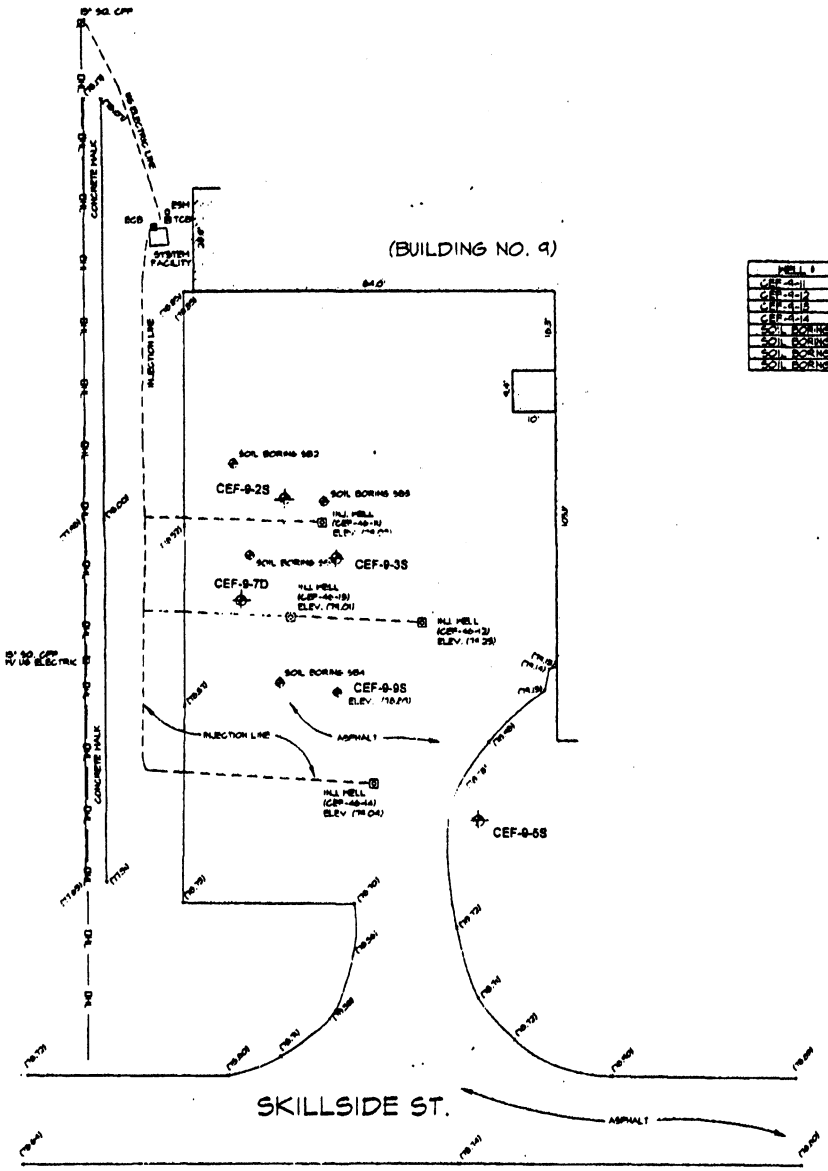
The PHOSter nutrient injection system provides subsurface delivery of oxygen, nitrogen, and phosphorus to enhance the development of naturally occurring heterotrophic bacteria that have the capability of metabolizing petroleum wastes. A compressor is used to inject air as the oxygen source, and the air flow is mixed with nitrous oxide and vapor-phase triethylphosphate (TEP) to provide nitrogen and phosphorus, respectively. Towards the end of cleanup operations, when contaminant concentrations have been reduced to the point where insufficient food (contaminant) is available to sustain an effective microorganism population, propane will also be injected as a carbon source (TtNUS June 2000).

The Building 9 nutrient injection system consists of four 30-foot-deep injection wells (labeled as CEF-9-I1 through CEF-9-I4) that are screened from 27 to 30 feet bls, and a temporary trailer

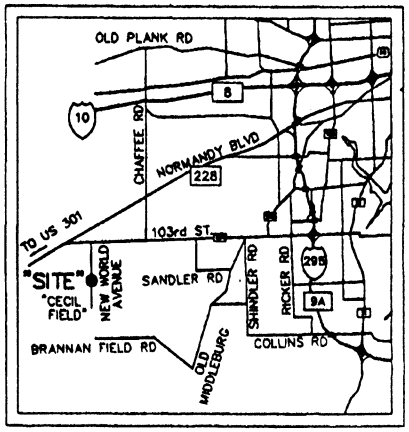
containing a compressor, injection gas storage containers, and associated piping and instrumentation. The nutrient injection system is designed for each injection well to operate at a flow rate of 3 to 5 cubic feet per minute (cfm) at an injection pressure of 15 pounds per square inch gauge (psig). The locations of the injection wells are shown on Figure 1-1.

MAP SHOWING SPECIFIC PURPOSE SURVEY OF

A PORTION OF SECTION 22, TOWNSHIP 3 SOUTH, RANGE 24 EAST, JACKSONVILLE HEIGHTS, PLAT BOOK 5, PAGE 93, OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA.



WELL #	NORTHING	EASTING
CEF-9-11	2142670.05	376265.68
CEF-9-12	2142646.27	376287.20
CEF-9-13	2142647.62	376256.09
CEF-9-14	2142608.87	376275.44
SOIL BORING SB1	2142662.16	376246.41
SOIL BORING SB2	2142664.15	376242.79
SOIL BORING SB3	2142673.29	376264.15
SOIL BORING SB4	2142652.16	376235.50



VICINITY MAP

NOT TO SCALE

LEGEND

BLDG - BUILDING
ELEV. - ELEVATION
INJ - INJECTION
CONC. - CONCRETE
SQ - SQUARE
CPP - CONCRETE POWER POLE
ESM - ELECTRIC SERVICE METER
TCB - TELEPHONE CONTROL BOX
ECB - ELECTRIC CONTROL BOX
US - UNDERGROUND
OHL - OVERHEAD LINE

N

SCALE: 1" = 20'

SURVEYOR'S NOTES

1) THE DESCRIPTION AS SHOWN HEREON WAS SUPPLIED BY CLIENT.
2) NORTH ARROW SHOWN HEREON IS BASED ON WELL COORDINATES FURNISHED BY CLIENT.
3) ALL MEASUREMENTS ARE IN U.S. STANDARD FEET AND WERE MADE WITH A THEODOLITE AND ELECTRONIC DISTANCE MEASURING DEVICE AND/OR STEEL TAPE.
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5) THIS MAP IS NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
6) ELEVATIONS SHOWN THUS (10.0) ARE IN FEET & REFER TO NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
7) THE SPECIFIC PURPOSE OF THIS MAP IS TO GRAPHICALLY ILLUSTRATE THE AS-BUILT LOCATION OF INJECTION WELLS, MONITORING WELLS, AND SOIL BORINGS ON SUBJECT SITE AT BUILDING 9.
8) INJECTION LINES SHOWN HEREON ARE AS PER CONTRACTOR.
ELEVATIONS ON NEW MONITORING WELLS WERE TAKEN ON NORTH TOP OF PVC CASING.

Injection Well, Monitor Well, and Soil Boring Location Map

Building 9

NAS Cecil Field

Jacksonville, Florida

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FL REGISTRATION NO. 4242
CHARLES R. BASSETT, JR.
FL REGISTRATION NO. 4541

DATE: JANUARY 23, 2001
WORK ORDER NO.: 264.00
PROJECT NUMBER: 17100
SHEET 1 OF 1
DRAWING NO. 17100

PARTY CHIEF: LSW COMPUTED BY: JLV CADD TECH: JLV CADD FILE: 17100AB DC FILE NO.: 17100 F.B.: - P.G.: -

2.0 System Performance Monitoring

O&M checks of the system were performed daily for the first week of operation and periodically thereafter. System checks were performed daily during the first week of operation and periodically thereafter to coincide with the O&M check.

During an O&M check, a preventative maintenance checklist (based upon manufacturer's recommendations) is completed, and any required maintenance activity is performed. A system check consists of an O&M check and system performance monitoring, including reading of all meters and gauges.

2.1 Operational Efficiencies

2.1.1 Nutrient Injection System

	Period	To Date
Hours of Possible Operation:	8,760	17,280
Hours of Actual Operation:	8,635	16,810
Percent Hours of Operation:	98.6	97.3

*Note: Hours of operation assumes 100% up-time for second and third quarter data, since this information was not made available by the previous contractor.

2.2 Summary of Maintenance and System Downtime

2.2.1 Nutrient Injection System

During the period of January 1, 2002, to December 31, 2002, the nutrient injection system ran a total of 359.8 days out of a possible 365 days, resulting in 125 hours of down time. The system downtime was due to failure of both air compressors and routine equipment maintenance.

2.3 Pressure/Flow Rate Monitoring

2.3.1 Nutrient Injection System

During second year of operation, the injection pressure at the compressors averaged 33.1 psig, compared to the design injection pressure of 15 psig. The total gas injection flow rate averaged 5.5 actual cubic feet per minute (acfm), compared to the design total gas injection flow rate of 12 to 20 acfm. The nitrous oxide injection rate averaged 0.31 actual cubic feet per hour (acfh) which is 0.06 percent by volume of air flow, compared to the design nitrous oxide injection rate of 0.07 to 0.10 percent by volume of air flow. The triethylphosphate (TEP) injection mass for the second year totaled 13.1 pounds, compared to the design injection mass of 38 pounds per quarter. The data for the injection wells and injection system are provided on Tables 2-1 and 2-2, respectively.

The injection flow rates were re-balanced during the second quarter or 2001 to maximize injection in the area of monitoring well CEF-9-9S by diverting all flow equally between injection wells CEF-9-I3 and CEF-9-I4 on a continuous basis (see Table 2-1). The injection flow rates remained in this configuration during the third quarter of 2001. The previous configuration was to alternate injection on 12-hour cycles between the four injection wells. During the fourth quarter of 2001, the injection rates were adjusted to divert 100 percent of the air flow to a single injection well for one month each

during the quarter as follows: CEF-9-I4 (October), CEF-9-I2 (November), and CEF-9-I3 (December). Diverting all flow to a single injection well increased the radius of influence for the active injection well in an attempt to affect monitoring well CEF-9-9S. This change caused a decrease in contaminant concentrations in CEF-9-9S during the fourth quarter of 2001. Injection rates were split between injection wells CEF-9-I1 and CEF-9-I3 in January 2002. All flow was diverted to CEF-9-I4 in February 2002, and split between CEF-9-I1 and CEF-9-I4 in March 2002.

2.4 Water Level Measurements

Depth to water measurements were recorded at selected monitoring wells on a quarterly basis during the second year of operation. The top of casing elevation, depth to water measurements and calculated water level elevations are provided on Table 2-3.

Light non-aqueous phase liquid (LNAPL) was not noted in any monitoring well during the monitoring period.

TABLE 1

INJECTION WELL MEASUREMENTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Injection Well	Date	Valve % Open	Wellhead Flow (acfm)
CEF-9-I1	1/9/01	100	3
	2/28/01	100	4.75
	3/30/01	100	4
	4/13/01	0	0
	5/10/01	0	0
	6/7/01	0	0
	7/2/01	0	0
	8/6/01	0	0
	9/11/01	0	0
	10/3/01	0	0
	11/15/01	0	0
	12/10/01	0	0
	1/11/02	100	4
	2/4/02	0	0
	3/11/02	25	1
	4/15/02	25	0
	5/13/02	25	1
	6/17/02	0	0
	7/16/02	0	0
	8/19/02	0	0
	9/25/02	0	0
	10/16/02	0	0
	11/19/02	0	0
	12/17/02	NR	NR
CEF-9-I2	1/9/01	100	4
	2/28/01	50	4
	3/30/01	100	4
	4/13/01	100	5
	5/10/01	0	0
	6/7/01	0	0
	7/2/01	0	0
	8/6/01	0	0
	9/11/01	0	0
	10/3/01	0	0
	11/15/01	100	4
	12/10/01	0	0
	1/11/02	0	0
	2/4/02	0	0
	3/11/02	0	0
	4/15/02	0	0
	5/13/02	0	0
	6/17/02	25	1
	7/16/02	25	1
	8/19/02	25	1
	9/25/02	25	2
	10/16/02	25	1
	11/19/02	25	1
	12/17/02	15	2

TABLE 1

INJECTION WELL MEASUREMENTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Injection Well	Date	Valve % Open	Wellhead Flow (acfm)
CEF-9-I3	1/9/01	100	4
	2/28/01	0	0
	3/30/01	100	3
	4/13/01	100	5
	5/10/01	100	3
	6/7/01	100	3
	7/2/01	100	3
	8/6/01	100	3
	9/11/01	100	3
	10/3/01	0	0
	11/15/01	0	0
	12/10/01	100	4
	1/11/02	100	4
	2/4/02	0	0
	3/11/02	0	0
	4/15/02	100	0
	5/13/02	0	0
	6/17/02	100	8
	7/16/02	100	8
	8/19/02	0	0
	9/25/02	100	0
	10/16/02	0	0
	11/19/02	100	8
	12/17/02	0	0
CEF-9-I4	1/9/01	100	2.75
	2/28/01	50	5
	3/30/01	100	3
	4/13/01	100	4
	5/10/01	100	3
	6/7/01	100	3
	7/2/01	100	3
	8/6/01	100	3
	9/11/01	100	3
	10/3/01	100	6
	11/15/01	0	0
	12/10/01	0	0
	1/11/02	0	0
	2/4/02	100	4
	3/11/02	100	4
	4/15/02	100	0
	5/13/02	100	4
	6/17/02	0	0
	7/16/02	0	0
	8/19/02	100	8
	9/25/02	0	6
	10/16/02	100	8
	11/19/02	0	0
	12/17/02	100	5

NR = No Reading

acfm = actual cubic feet per minute

TABLE 2

INJECTION SYSTEM DATA

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Date	Air Supply Pressure (psig)	Total Gas Flow (acfm)	NOX Flow (acfh)	TEP Injection (pounds)
1/9/01	NR	6.5	1	--
2/28/01	17	6.5	0.8	1.78
3/30/01	16	6.5	0.8	1.52
4/13/01	19	6.5	0.8	0.00
5/10/01	28	6	0.5	2.68
6/7/01	28	6	0.5	3.57
7/2/01	23	6	0.5	1.78
8/6/01	24	6	0.5	1.78
9/11/01	18	6	0.5	7.14
10/3/01	35	6	0.5	1.78
11/15/01	30	4	0.25	0.89
12/10/01	30	4	0.25	1.78
1/11/02	24	8	0.4	1.78
2/4/02	21	4	0.4	0.89
3/11/02	30	5	0.4	0.89
4/15/02	28	0	0.01	0.71
5/13/02	30	9	0.4	1.07
6/17/02	36	0	0.5	1.16
7/16/02	42	3.75	0.5	0.00
8/19/02	48	6	0.5	0.00
9/25/02	33	5	0.5	0.80
10/16/02	34	9	0.05	8.57
11/19/02	32	9	0.05	7.41
12/17/02	39	7	0.05	11.87

NR = No Reading
psig = pounds per square inch gauge
acfm = actual cubic feet per minute
acfh = actual cubic feet per hour

3.0 Summary of Sampling and Laboratory Analytical Results

3.1 Soil Monitoring

Quarterly soil screening and sampling was conducted on a quarterly basis during the second year of operation. One soil boring, labeled as SB-4, was installed in the vicinity of the contaminated ground water monitoring well (CEF-9-9S). The soil was screened using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID) and a sample was collected for laboratory analysis. The most recent (fourth quarter 2002) OVA/FID results are presented below. The water table was encountered at 7 feet bls.

Date	Soil Boring No.	Depth (ft bls)	OVA/FID Unfiltered	OVA/FID Filtered	OVA/FID Net
12/11/02	SB-4	2	0	0	0
12/11/02	SB-4	4	0	0	0
12/11/02	SB-4	6	40	0	40

Note: laboratory sample collected at 2 feet bls

The laboratory soil sample was analyzed for BTEX and methyl tert-butyl ether (MTBE) by United States Environmental Protection Agency (EPA) Method 8021B, naphthalene and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8310, and TRPH by Florida Petroleum Residual Organic (FL PRO Method. The results indicated that no constituents are above the Leachability or Direct Exposure Residential SCTLs per Chapter 2-777 F.A.C. The location of SB-4 is shown on Figure 1-1. Copies of the analytical laboratory report from the soil sampling event are provided in Appendix A, and analytical results are summarized on Table 3-1.

3.2 Groundwater Monitoring

Monitoring wells CEF-9-2S, CEF-9-3S, CEF-9-5S, CEF-9-7D, and CEF-9-9S were sampled on a quarterly basis during the second year of operation. The samples were analyzed for BTEX and MTBE by EPA Method 8021B, naphthalene and PAHs by EPA Method 8310, TRPH by FL PRO Method, and nitrate, nitrite, and phosphate by EPA Method 300.0. Groundwater sampled from CEF-9-2S exhibited benzene, ethyl benzene and xylene concentrations greater than the Groundwater Cleanup Target Levels (GCTLs) per Chapter 62-777 FAC. Groundwater sampled from CEF-9-9S exhibited benzene, ethylbenzene, xylene, and naphthalene concentrations above GTCLs. The locations of the monitoring wells are shown on Figure 1-1. Copies of the analytical laboratory reports from the groundwater sampling events are provided in Appendix B, and the analytical results are summarized on Table 3-2.

Field analytical tests were performed on the five monitoring wells during each sampling event. The groundwater was tested for pH, conductivity, temperature, dissolved oxygen, carbon dioxide, alkalinity, ferrous iron, and hydrogen sulfide. The results from the field analytical tests are summarized on Table 3-3. An evaluation of the field analytical tests for monitoring well CEF-9-9S indicates that pH and temperatures are acceptable for biological activity. The conductivity values have remained relatively constant during the second year operation indicating that the groundwater samples represent the same groundwater system. The dissolved oxygen levels are generally greater than 1 milligram per liter, which indicates aerobic conditions. The carbon dioxide and alkalinity values are decreasing, which may indicate decreased aerobic activity. Ferrous iron values remain

relatively constant. An increase in ferrous iron may indicate anaerobic activity and a depletion of oxygen, nitrite, and manganese. Hydrogen sulfide values remain relatively constant.

TABLE 4

SOIL ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Soil Boring Number	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	TRPH (mg/kg)
SB-1	1/4/01	0.00067	<0.0011	0.00081	<.0032	0.00148	<0.0011	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	0.0565	0.055	0.019	0.0345	0.0765	0.039	0.073	0.0564	0.113	0.18	73
	6/27/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/20/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/12/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/7/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SB-2	1/4/01	<0.12	0.65	<0.12	0.53	1.18	<0.12	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	0.0285	0.056	0.0096	0.027	0.0645	0.0215	0.062	0.046	0.0545	0.0815	70
	6/27/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/20/01	<0.0013	<0.0013	<0.004	0.0049	0.0049	<0.0013	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.02	<0.02	<0.02	0.0062	0.025	0.0097	0.016	<0.02	0.015	0.013	21
	12/12/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/7/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SB-3	1/4/01	<0.1	<0.1	0.5	4	4.5	<0.1	1.3	<0.18	<0.18	<0.18	<0.18	<0.18	<0.018	0.0425	<.018	0.0165	0.042	0.0195	0.042	0.0275	0.0405	0.0615	86
	6/27/01	<0.0011	<0.0011	<0.0011	<0.0033	<0.0066	<0.0011	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	21
	9/20/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/12/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/7/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SB-4	1/4/01	<0.11	<0.11	0.15	3.2	3.35	<0.11	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.019	0.01185	<.019	0.05	0.024	0.0121	0.0235	0.014	0.0636	0.0275	220
	6/27/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/20/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/12/01	<0.0012	<0.0012	<0.0012	<0.0035	<0.0071	<0.0012	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.021	<0.021	<0.021	0.045	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	1100
	3/7/02	<0.0012	<0.0012	<0.0012	<0.0035	<0.0071	<0.0012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.015	0.01	<0.020	0.027	0.017	0.01	0.029	0.024	0.038	0.03	340
	6/20/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/26/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/10/02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.004	<0.0412	<0.0412	<0.0412	<0.00864	<0.0263	<0.0272	<0.00864	<0.0111	<0.00535	<0.00618	<0.0074	<0.007	<0.00412	<0.0177	<0.0123	<0.0313	17.6
Direct Exposure Residential [1]		1.1	1100	380	5900	n/a	3200	40	1100	1900	2200	2000	18000	2900	2200	1.4	140	1.4	15	0.1	1.5	0.1	2300	340
Leachability from GW Criteria [1]		0.0007	0.6	0.5	0.2	n/a	0.2	1.7	27	2.1	160	250	2500	1200	880	3.2	77	10	25	8	28	30	32000	340

All values reported in mg/kg

Method 8310 compounds are the average of duplicate runs

1 = Ch 62-777 F.A.C Soil cleanup Target Level (SCTLs) reported in mg/kg

Shaded values indicate the compounds that exceed the SCTLs

NS = Not Sampled

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identificaltion	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	Nitrate	Nitrite	Phosphate	TRPH
CEF-9-2S	12/18/00	<1.0	6.9	<1.0	1.7	8.6	NA	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<530
	1/18/01	<1.0	<1.0	<1.0	4.2	4.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	0.21	<500
	1/24/01	<1.0	1.6	<1.0	0.56	2.16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	0.28	<530
	1/31/01	0.41	3.0	0.30	4.0	7.71	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	0.31	<500
	2/7/01	<1.0	0.98	<1.0	0.92	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.11	<0.40	0.29	<500
	2/14/01	<1.0	0.42	<1.0	0.76	1.18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.14	<0.40	0.20	220
	2/21/01	<1.0	0.41	0.32	0.69	1.42	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.11	<0.40	0.33	<500
	3/7/01	<1.0	0.24	<1.0	0.51	0.75	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.12	<.40	0.19	<530
	3/20/01	<1.0	1.1	<1.0	0.57	1.67	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.12	<0.40	0.28	<520
	4/3/01	0.15	0.62	<1.0	0.51	1.28	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.40	0.23	<500
	4/17/01	0.13	0.5	<1.0	<1.0	0.63	<1.0	0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.14	<0.40	0.17	<520
	5/1/01	<1.0	1.2	<1.0	0.32	1.52	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	6/14/01	<1.0	<1.0	<1.0	0.93	0.93	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.17	<0.40	0.36	280
	7/24/01	<1.0	8.8	<1.0	6.7	15.5	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.3	<0.40	<1.0	1400
	8/13/01	<1.0	7.6	<1.0	3.5	11.1	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.18	<0.40	<1.0	1200
	9/17/01	<1.0	2.1	<1.0	<1.0	2.1	<1.0	1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	580
	10/22/01	0.98	7.5	<1.0	0.98	9.46	<1.0	2.8	<1.0	<1.1	<1.1	<1.1	<1.1	<0.21	0.1	<0.21	<0.21	0.041	<0.21	<0.21	<0.21	<0.21	<0.21	0.16	<0.40	0.33	780
	11/13/01	2.4	14	<1.0	2.7	19.1	<1.0	5.3	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.21	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.15	<0.40	<1.0	720
	12/17/01	1.1	21	2.1	5.6	29.8	<1.0	3.3	<1.1	<1.1	<1.0	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	2000
	3/18/02	<1.0	7.28	2.02	4.57	13.87	<1.0	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.21	<0.21	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.21	0.165	<0.40	<1.0	736
	6/5/02	<1.0	<1.0	1.1	<1.0	1.1	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	0.120 J	0.091 J	<0.20	0.094 J	<0.20	<0.20	<0.60	<0.40	<1.0	310 J
	9/16/02	0.756	19	<1.0	11.7	31.46	<1.0	1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.22	0.075	<0.22	<0.22	0.13	<0.22	<0.22	<0.22	<0.22	0.15	0.11	<0.40	<1.0	851
	12/10/02	4.6	50.8	2.0	30.5	87.9	<1.0	3.60	<1.04	<1.04	<0.52	<0.52	<0.52	<0.21	<0.21	<0.10	<0.10	<0.10	<0.15	<0.10	<0.21	<0.21	<0.21	0.23	<0.10	<0.1000	1510

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identificaltion	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	Nitrate	Nitrite	Phosphate	TRPH
CEF-9-3S	12/18/00	18	130	8.9	170	326.9	NA	29	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1500
	1/18/01	21	140	40	430	631	<1.0	20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	0.20	1700
	1/24/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	0.21	720
	1/31/01	<1.0	38	2.8	180	220.8	<1.0	3.6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	960
	2/7/01	0.36	12	1.9	89	103.3	<1.0	0.75	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	0.039	<0.20	0.044	<0.20	<0.20	<0.20	<0.20	<0.20	0.074	<0.40	<1.0	720
	2/14/01	0.21	8.0	2.8	53	64.01	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	520
	2/21/01	0.24	7.2	3.7	45	56.14	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.15	<0.40	0.21	470
	3/7/01	<1.0	<1.0	<1.0	4.6	4.6	<1.0	2.3	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.20	<0.40	<1.0	440
	3/20/01	<1.0	<1.0	<1.0	4.7	4.7	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.22	<0.40	<1.0	<270
	4/3/01	<1.0	2.7	<1.0	3	5.7	<1.0	0.8	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.25	0.063	0.18	<520
	4/17/01	<1.0	5.9	0.95	5.6	12.45	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.16	<0.40	<1.0	300
	5/1/01	0.65	6.2	1.9	12	20.75	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	600
	6/14/01	0.52	3.3	<1.0	4.2	8.02	<1.0	1	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.19	<0.40	<1.0	780
	7/24/01	<1.0	11	<1.0	4.4	15.4	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.40	<1.0	540
	8/13/01	<1.0	11	<1.0	3.2	14.2	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.2	<0.40	<1.0	760
	9/17/01	<1.0	11	<1.0	20	31	<1.0	6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	1200
	10/22/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	8.3	<1.0	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	780
	11/13/01	<1.0	15	<1.0	5.9	20.9	<1.0	7.6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.21	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	500
	12/17/01	<1.0	11	1.1	3.1	15.2	<1.0	4.9	<1.0	<1.1	<1.0	<1.1	<1.1	<0.20	<0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	440
	3/18/02	<1.0	6.14	1.67	2.65	10.46	<1.0	2.72	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.21	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	<0.60	<0.40	<1.0	630
	6/5/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.21	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	<0.60	<0.40	<1.0	680
	9/16/02	<1.0	3.31	1.74	3	8.05	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	0.075	<0.21	<0.21	0.18	<0.21	<0.21	<0.21	<0.21	<0.21	0.22	<0.40	<1.0	674
	12/10/02	<1.0	1.6	<1.0	1.9	3.5	<1.0	<1.05	<1.05	<1.05	<0.53	<0.53	<0.53	<0.21	<0.21	<0.11	<0.11	<0.11	<0.15	<0.11	<0.21	<0.21	<0.21	0.49	<0.10	<0.1000	298

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identificaltion	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	Nitrate	Nitrite	Phosphate	TRPH
CEF-9-5S	12/18/00	<1.0	<1.0	<1.0	0.52	0.52	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.09	<0.40	<1.0	<530
	1/18/01	0.12	<1.0	<1.0	<1.0	0.12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.31	<0.40	<1.0	<500
	1/24/01	<1.0	0.77	0.30	2.2	3.27	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.30	<0.40	<1.0	<530
	1/31/01	0.30	<1.0	<1.0	<1.0	0.3	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.26	<0.40	<1.0	<530
	2/7/01	0.34	0.26	<1.0	<1.0	0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.28	<0.40	<1.0	<500
	2/14/01	0.84	0.66	<1.0	0.46	1.96	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.20	<0.40	<1.0	200
	2/21/01	0.84	0.77	0.31	0.56	2.48	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.18	<0.40	<1.0	<500
	3/7/01	0.75	0.85	0.31	0.87	2.78	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.20	<0.40	<1.0	<530
	3/20/01	0.10	0.11	<1.0	<1.0	0.21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.15	<0.40	<1.0	<520
	4/3/01	0.16	<1.0	<1.0	<1.0	0.16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0..074	<0.40	<1.0	<520
	4/17/01	0.26	<1.0	<1.0	<1.0	0.26	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.11	<0.40	<1.0	<520
	5/1/01	<1.0	0.32	<1.0	<1.0	0.32	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	<0.40	<1.0	<530
	6/14/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.25	<0.40	<1.0	<500
	7/24/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.2	<0.40	<1.0	<520
	8/13/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.16	<0.40	<1.0	<520
	9/17/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.32	<0.40	<1.0	<520
	10/22/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.1	<1.0	<1.0	<1.1	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.2	<0.40	<1.0	<530
	11/13/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.2	<0.40	<1.0	<530
	12/17/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.1	<1.0	<1.0	<1.0	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.36	<0.40	<1.0	<540
	3/18/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.394	<0.40	<1.0	<530
	6/5/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.5	0.096 J	<1.0	<530
	9/16/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.13	<0.40	<1.0	423
	12/10/02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.05	<1.05	<1.05	<0.53	<0.53	<0.53	<0.21	<0.21	<0.11	<0.11	<0.11	<0.15	<0.11	<0.21	<0.21	<0.21	0.71	<0.10	<0.1000	<100

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identificaltion	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	Nitrate	Nitrite	Phosphate	TRPH
CEF-9-7D	12/18/00	<1.0	<1.0	<1.0	<1.0	<4.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.30	<0.40	<1.0	<500
	1/18/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<500
	1/24/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<520
	1/31/01	0.13	<1.0	<1.0	0.37	0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.60	<0.40	<1.0	<520
	2/7/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<530
	2/14/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<500
	2/21/01	<1.0	<1.0	<1.0	0.24	0.24	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<500
	3/7/01	<1.0	<1.0	<1.0	0.36	0.36	<1.0	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<530
	3/20/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	4/3/01	0.47	<1.0	<1.0	1.1	1.57	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	0.072	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	4/17/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	5/1/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	6/14/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<520
	7/24/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.21	<0.40	<1.0	<520
	8/13/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.61	<0.40	<1.0	<520
	9/17/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	<520
	10/22/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.1	<1.0	<1.1	<1.1	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	290
	11/13/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.1	<1.1	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<530
	12/17/01	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.1	<1.0	<1.0	<1.0	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<530
	3/18/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<530
	6/5/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	<520
	9/16/02	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	0.097	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	420
	12/10/02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.11	<1.11	<1.11	<0.56	<0.56	<0.56	<0.22	<0.22	<0.11	<0.11	<0.11	<0.16	<0.11	<0.22	<0.22	<0.22	<0.10	<0.10	<0.1000	<100

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

Well Identificaltion	Sample Date	Benzene	Ethyl Benzene	Toluene	Xylene	BETX	Methyl tert-butyl ether	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1, 2, 3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene	Nitrate	Nitrite	Phosphate	TRPH
CEF-9-9S	1/18/01	24	210	99	640	973	<1.0	63	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	2300
	1/24/01	22	190	60	440	712	<1.0	45	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1400
	1/31/01	16	160	49	430	655	<5.0	57	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1800
	2/7/01	8.7	160	40	360	568.7	<2.0	53	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1900
	2/14/01	16	260	74	590	940	<1.0	36	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	2300
	2/21/01	9.5	150	36	290	485.5	<10	50	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1800
	3/7/01	27	210	82	410	729	<20	37	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	2100
	3/20/01	11	120	18	150	299	<5.0	45	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	1600
	4/3/01	14	140	36	250	440	<10	35	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.081	<0.40	<1.0	870
	4/17/01	23	200	44	370	637	<5.0	49	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	1300
	5/1/01	12	210	38	310	570	<5.0	59	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	1400
	6/14/01	9.5	130	17	130	286.5	<10	24	1.2	<1.0	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.18	<0.40	0.35	1200
	7/24/01	16	150	10	120	296	<1.0	25	3.3	7	<1.0	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.19	<0.40	<1.0	1200
	8/13/01	16	140	9.1	130	295.1	3.5	26	3.2	7.2	<1.0	<1.0	<1.0	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	0.2	<0.40	0.48	1500
	9/17/01	18	150	30	290	488	2.9	23	<1.1	<1.1	<1.1	<1.1	<1.1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.60	<0.40	<1.0	1500
	10/22/01	1.9	6	0.67	13	21.6	<1.0	4.7	<1.1	<1.1	<1.1	<1.1	<1.1	<0.20	<0.22	<0.20	<0.20	<0.20	<0.22	<0.20	<0.20	<0.20	<0.20	0.13	<0.40	<1.0	3100
	11/13/01	6.8	54	2.8	44	107.6	<1.0	24	<1.1	<1.1	<1.1	<1.1	<1.1	<0.20	<0.21	<0.20	<0.21	<0.20	<0.20	<0.21	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1700
	12/17/01	1.8	43	<1.0	36	80.8	<1.0	32	<1.0	<1.1	<1.0	<1.1	<1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.60	<0.40	<1.0	1400
	3/18/02	1	30.4	1.81	46.6	79.81	<1.0	42.6	<1.1	<1.1	<1.1	<1.1	<1.1	<0.20	<0.21	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	0.17	<0.40	<1.0	719
	6/5/02	1.4	39	1.7	55	97.1	<1.0	44	<1.1	<1.1	<1.1	<1.1	<1.1	<0.20	<0.21	<0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.21	0.089 J	<0.40	<1.0	860
	9/16/02	<1.0	9.79	<1.0	9.29	19.08	<1.0	13	<1.0	<1.0	<1.0	<1.0	<1.0	<0.21	0.084	0.1	<0.21	0.13	<0.21	<0.21	<0.21	<0.21	0.068	<0.60	<0.40	<1.0	3400
	12/10/02	1.4	7.6	<1.0	10	19	<1.0	21.6	<1.03	<1.03	<0.52	<0.52	<0.52	<0.21	<0.21	<0.10	<0.10	<0.10	<0.14	<0.10	<0.21	<0.21	<0.21	<0.10	<0.10	<0.1000	225
Groundwater Criteria [1]		1	30	40	20	n/a	50	20	210	20	280	210	2100	280	210	0.2	4.8	0.2	0.5	0.2	0.2	0.2	210	10,000	1000	n/a	5000
Natural Attenuation Default Source [1]		100	300	400	200	n/a	500	200	2100	200	2800	2100	21000	2800	2100	20	480	20	50	20	20	20	2100	100000	10000	n/a	50000

All values reported in ug/L; expcept Nitrate, Nitrite, and Phosphate for 12/10/02, they are reported in mg/L
1 = Ch 62-777 F.A.C Groundwater Cleanup Target Levels (GCTLs) reported in ug/L
Shaded values indicate the compounds that exceed the GCTLs

TABLE 6

GROUNDWATER FIELD ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

	Date	pH	Conductivity (mS/cm)	Temperature (^{o}C)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Alkalinity as $CaCO_3$ (mg/L)	Ferrous Iron (mg/L)	Hydrogen Sulfide (mg/L)
CEF-9-2S	12/18/2000	6.19	0.192	27.20	0.0	NR	80	1.2	0.3
	1/18/2001	6.19	0.106	23.40	2.5	1000+	400+	0.0	0.3
	1/24/2001	6.41	0.650	22.30	3.9	1000+	400+	0.0	0.1
	1/31/2001	6.49	0.062	25.10	4.7	1000+	400	0.0	0.2
	2/7/2001	6.42	0.060	22.40	5.2	1000+	400+	0.2	0.1
	2/14/2001	6.30	0.070	23.00	5.8	1000+	400+	0.0	0.7
	2/21/2001	6.30	0.070	23.00	6.3	NR	NR	0.0	0.1
	3/7/2001	6.60	0.080	22.00	6.0	NR	NR	0.2	0.1
	3/20/2001	6.37	0.092	22.60	6.6	1000+	400+	0.0	0.5
	4/3/2001	6.40	0.100	23.00	6.5	>	400+	0.2	0.5
	4/17/2001	8.55	0.110	23.00	4.0	1000+	400+	0.2	0.1
	5/1/2001	6.20	0.110	23.00	3.0	1000+	400+	0.2	0.1
	6/14/2001	5.74	0.128	25.00	2.0	1000+	400+	0.0	0.1
	7/24/2001	5.71	0.144	26.4	2.1	500	120	0.6	0.1
	8/13/2001	6.11	0.153	27.8	1.9	1000+	220	0.0	0.3
	9/17/2001	5.59	0.174	27.8	1.7	180	60	1.8	0.2
	10/22/2001	6.13	0.167	27.3	1.8	1000+	400+	1.0	0.1
	11/13/2001	6.38	0.163	26.1	1.6	160	60	1.0	0.5
	12/17/2001	6.00	0.146	25.6	1.5	240	60	1.0	1.0
	3/18/2002	6.13	0.140	23.6	1.2	200	60	0.6	0.3
	6/5/2002	6.18	0.120	26.6	1.0	240	60	0.2	0.1
	9/16/2002	5.91	0.154	28.8	0.2	NR	NR	1.0	0.5
	12/11/2002	5.50	NR	25.4	0.2	95	NR	NR	0.4
CEF-9-3S	12/18/2000	6.49	0.348	25.40	0.0	17	160	3.4	0.5
	1/18/2001	6.50	0.131	23.00	1.6	1000+	600	0.2	0.5
	1/24/2001	6.67	0.087	22.30	1.5	1000+	300	0.4	0.3
	1/31/2001	6.67	0.087	23.50	2.6	1000+	400	0.0	0.6
	2/7/2001	6.47	0.074	22.20	1.6	1000+	400+	1.2	0.1
	2/14/2001	6.50	0.067	22.00	2.4	1000+	400+	0.0	0.5
	2/21/2001	6.40	0.070	23.00	2.2	400	100	0.2	0.1
	3/7/2001	6.70	0.080	22.00	2.5	300	60	0.8	0.1
	3/20/2001	6.14	0.073	22.70	2.6	250	80	0.6	0.3
	4/3/2001	6.10	0.080	23.00	3.4	200	400+	0.1	0.1
	4/17/2001	5.90	0.080	23.00	1.8	160	80	0.8	0.5
	5/1/2001	6.20	0.090	24.00	1.7	120	60	1.2	0.3
	6/14/2001	5.41	0..098	26.10	1.9	228	80	1.1	2.0
	7/24/2001	6.82	0.111	27.20	3.1	120	40	2.0	2.0
	8/13/2001	6.61	0.108	27.90	2.5	84	60	2.2	0.5
	9/17/2001	6.24	0.139	28.20	2.1	60	60	1.0	0.3
	10/22/2001	6.82	0.119	27.40	1.8	120	80	1.4	0.7
	11/13/2001	6.58	0.121	26.30	0.5	100	40	1.4	0.8
	12/17/2001	5.00	0.118	25.60	1.7	100	60	1.2	1.0
	3/18/2002	6.19	0.138	23.4	3.9	60	40	1.0	0.4
	6/5/2002	6.18	0.158	27.5	1.6	80	40	0.8	0.5
	9/16/2002	6.20	0.160	29.1	0.6	380	40	0.1	0.5
	12/11/2002	5.80	NR	25.9	0.2	30	80	0.9	0.3

TABLE 6

GROUNDWATER FIELD ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

	Date	pH	Conductivity (mS/cm)	Temperature (^{o}C)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Alkalinity as $CaCO_3$ (mg/L)	Ferrous Iron (mg/L)	Hydrogen Sulfide (mg/L)
CEF-9-5S	12/18/2000	6.20	0.186	22.70	0.0	10	100	0.0	0.1
	1/18/2001	6.43	0.158	22.40	3.8	1000+	400+	0.6	0.1
	1/24/2001	6.54	0.159	21.40	3.5	200	100	0.4	0.0
	1/31/2001	6.51	0.178	22.80	4.2	350	400	0.6	0.1
	2/7/2001	6.55	0.163	21.80	4.0	220	120	0.2	0.0
	2/14/2001	6.40	0.150	22.00	3.4	1000+	400+	0.0	0.2
	2/21/2001	6.40	0.150	21.00	4.5	140	100	0.2	0.1
	3/7/2001	6.57	0.141	20.90	3.3	300	80	0.2	0.0
	3/20/2001	6.20	0.130	21.00	3.5	300	160	0.1	0.1
	4/3/2001	5.90	0.070	21.00	5.7	500	120	0.4	0.1
	4/17/2001	6.10	0.080	22.00	4.3	260	100	0.9	0.1
	5/1/2001	6.10	0.110	22.00	3.4	280	100	0.4	0.1
	6/14/2001	6.11	0.119	25.20	NR	1000+	400+	0.0	3.0
	7/24/2001	5.36	0.062	25.50	3.8	260	120	1.0	0.1
	8/13/2001	6.85	0.058	26.60	3.8	1000+	180	0.0	0.1
	9/17/2001	6.57	0.164	26.50	5.5	200	80	0.6	0.1
	10/22/2001	6.27	0.074	25.90	2.5	220	80	0.8	0.1
	11/13/2001	6.71	0.075	24.90	2.1	80	60	0.4	0.1
	12/17/2001	6.00	0.072	24.20	2.9	140	40	0.6	0.0
	3/18/2002	6.44	0.070	22.0	2.3	80	40	0.4	0.0
	6/5/2002	6.43	0.117	25.3	1.6	80	40	0.2	0.0
	9/16/2002	6.79	0.085	27.9	3.4	110	60	0.1	0.0
	12/11/2002	6.09	NR	24.6	1.1	22	60	0.0	0.1
CEF-9-7D	12/18/2000	7.45	0.264	25.20	0.1	8	85	0.0	0.1
	1/18/2001	6.69	0.133	24.40	2.0	80	100	0.4	0.1
	1/24/2001	6.29	0.079	24.20	1.9	130	100	0.6	0.0
	1/31/2001	6.29	0.092	25.40	1.0	50	60	0.1	0.1
	2/7/2001	5.93	0.057	24.20	2.4	140	60	0.2	0.0
	2/14/2001	5.90	0.050	24.00	2.6	70	40	0.2	0.1
	2/21/2001	5.80	0.050	24.00	2.4	100	40	0.4	0.0
	3/7/2001	6.10	0.060	23.30	1.9	140	40	0.6	0.0
	3/20/2001	5.47	0.049	23.60	2.4	50	40	0.3	0.1
	4/3/2001	5.40	0.050	23.00	2.8	80	40	0.4	0.1
	4/17/2001	5.30	0.050	24.00	2.7	60	40	0.6	0.0
	5/1/2001	5.50	0.050	24.00	2.5	80	40	0.8	0.0
	6/14/2001	9.82	0.047	24.40	NR	102	40	0.6	0.0
	7/24/2001	5.42	0.043	24.30	2.5	80	20	0.6	0.0
	8/13/2001	5.44	0.041	24.80	2.5	66	40	0.8	0.0
	9/17/2001	5.47	0.065	25.00	8.1	50	40	0.6	0.1
	10/22/2001	4.87	0.029	26.00	2.9	60	20	0.4	0.0
	11/13/2001	6.21	0.043	24.50	2.6	80	40	0.6	0.0
	12/17/2001	5.00	0.033	25.00	1.7	90	20	0.6	0.0
	3/18/2002	5.47	0.036	25.1	1.6	50	20	0.0	0.0
	6/5/2002	5.36	0.390	25.9	2.0	90	20	0.6	0.0
	9/16/2002	5.30	0.037	26.1	0.4	100	20	0.4	0.0
	12/11/2002	4.16	NR	25.3	0.5	63	40	0.8	0.1

TABLE 6

GROUNDWATER FIELD ANALYTICAL RESULTS

BUILDING 9 NUTRIENT INJECTION SYSTEM
NAS CECIL FIELD
JACKSONVILLE, FLORIDA

	Date	pH	Conductivity (mS/cm)	Temperature (^{o}C)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	Alkalinity as $CaCO_3$ (mg/L)	Ferrous Iron (mg/L)	Hydrogen Sulfide (mg/L)
CEF-9-9S	12/18/2001	5.31	0.121	26.30	0.0	NR	NR	NR	NR
	1/18/2001	5.44	0.058	23.00	2.1	500	400+	1.0	5.0
	1/24/2001	5.53	0.054	22.60	1.7	500	200	0.8	5.0
	1/31/2001	5.44	0.059	23.30	2.1	500	400	1.1	5.0
	2/7/2001	5.46	0.052	22.60	2.4	260	100	0.6	5.0
	2/14/2001	5.40	0.050	23.00	2.0	120	140	1.0	4.0
	2/21/2001	5.40	0.050	22.00	1.9	300	80	0.6	5.0
	3/7/2001	5.56	0.540	22.00	1.5	200	80	0.6	5.0
	3/20/2001	5.28	0.052	22.30	2.3	360	80	0.4	5.0
	4/3/2001	5.00	0.060	22.00	2.4	280	160	0.3	5.0
	4/17/2001	5.00	0.060	23.00	2.2	200	100	0.6	5.0
	5/1/2001	5.20	0.060	23.00	2.2	220	60	0.4	5.0
	6/14/2001	5.02	0.064	26.00	NR	88	60	1.8	0.5
	7/24/2001	4.35	0.057	26.80	2.1	170	40	1.0	2.0
	8/13/2001	8.54	0.049	27.40	2.5	220	40	1.0	5.0
	9/17/2001	5.08	0.088	28.20	3.1	130	20	0.8	0.6
	10/22/2001	4.94	0.095	27.20	2.7	160	40	1.0	5.0
	11/13/2001	5.21	0.080	25.90	1.2	110	40	1.4	1.0
	12/17/2001	5.00	0.068	25.40	1.7	80	20	1.0	1.0
	3/18/2002	5.15	0.104	23.6	1.2	100	20	0.6	1.0
	6/5/2002	5.35	0.119	26.7	1.4	10	20	0.6	0.7
	9/16/2002	5.13	0.136	28.4	0.1	380	20	0.7	2.0
	12/11/2002	4.62	NR	26.1	4.1	38	40	0.9	2.0

NR = No Reading

4.0 Conclusions and Recommendations

4.1 CONCLUSIONS

The soil screening results in the vicinity of the most contaminated groundwater monitoring well (CEF-9-9S) indicated that OVA/FID readings were less than 50 ppm after methane subtraction at depths above the water table, which was encountered at 7 feet bls. Laboratory analysis of the soil indicated that all contaminant concentrations were below the Leachability and Direct Exposure Residential SCTLs.

Sampling results indicated that groundwater sampled from monitoring wells CEF-9-3S, CEF-9-5S, and CEF-9-7D had contaminant concentrations below the GCTLs. Groundwater sampled from monitoring wells CEF-9-2S and CEF-9-9S exhibited contaminant concentrations above the GCTLs but below the Natural Attenuation Default Source Criteria per Chapter 62-777 FAC. The contaminant concentrations in groundwater sampled from CEF-9-2S increased whereas the contaminant concentrations in groundwater sampled from CEF-9-9S decreased during the second year of operation. LNAPL was not noted in any monitoring well during the monitoring period.

4.2 RECOMMENDATIONS

The site is currently being reassessed by TtNUS for system optimization and CH2MHill will be making modifications to the system in accordance with recommendations provided by TtNUS.

5.0 References

Tetra Tech NUS, Inc. (TtNUS), June 2000. Remedial Action Plan Addendum; Building 9, Former Tanks 9L1 and 9L2; Naval Air Station Cecil Field, Jacksonville, Florida.

Priester and Associates, September 2000. PHA-ER Remediation System Design Specifications, Building 9 Site, Remedial Action Plan Addendum.

CH2M HILL Constructors, Inc. (CCI), September 2000. Work Plan Addendum No. 08 nutrient injection system Installations at Building 9, former Tanks 9L1 and 9L2 and building 46, Former Tanks 46R, 46D, 46SUL, and 46UL; Naval Air Station Cecil Field, Jacksonville, Florida.

Appendix A

Laboratory Analytical Reports for Soil Samples

(on CD Only)

Appendix B

Laboratory Analytical Reports for Groundwater Samples

(on CD Only)

Appendix C

Active Remediation Status Report Summary

DEP Form # 62-785.900(5)
Form Title: Active Remediation Status Report Summary
Effective Date: July 6, 1998

Active Remediation Status Report Summary

(Use additional blank sheets if necessary to explain status of site.)

Site Name Building 9 **DEP Site ID No.** _____
Location NAS Cecil Field, Jacksonville, FL **Applicable Dates** 01/01/02 to 12/31/02
RAP Approval Date ___/___/___ **System Startup Date** 01/09/01
Media Contaminated: X **Groundwater** **Surface Water** **Sediment** X **Soil** **Air**
Estimated Total Mass Recovered or Remediated This Period _____ **(lbs)**

Method of Groundwater Remediation:

Amount of Mass Removed N/A (gals)

Pump-and-Treat:
- Design Flow Rate _____ (gpm)
- Actual Flow Rate _____ (gpm)
- Total Vol. Recovered to Date _____ (1000 gal)

In Situ Air Sparging
- Design Air Flow Rate 3 to 5 (cfm)
- Actual Air Flow Rate 5.5 (cfm)
- Estimated Radius of Influence _____ (ft)

Biosparging
- Design Flow Rate _____ (gpm)
- Actual Flow Rate _____ (gpm)

Bioremediation

Other _____

Free Product Present: Yes X No
- Volume Recovered to Date _____(gal)

Concentration of Total VOAs in Designated Wells:

	This Period	Previous period
CEF-9-2S	87.9 ppb	29.8 ppb
CEF-9-3S	3.5 ppb	15.2 ppb
CEF-9-9S	19 ppb	80.8 ppb
		ppb

Method of Soil Remediation:

Vapor Extraction System (VES):
- Design Air Flow Rate _____ (cfm)
- Actual Air Flow Rate _____ (cfm)
- Estimated Radius of Influence _____ (ft)
- Air Emissions Treatment
  Discontinued / date ___/___/___ Ongoing

Soil Bioventing
- Design Air Flow Rate _____ (cfm)
- Actual Air Flow Rate _____ (cfm)

In Situ Bioremediation

Other PHOSter Nutrient Injection System

Amount of Mass Removed N/A (yds^3)

Estimated Time of Cleanup:

- Estimated time of cleanup based on target level concentration C and on the exponential decay equation, $C_1 = C_0 e^{xt_1}$, where C_1 = present concentration at the most contaminated source well (ppb); C_0 = highest initial concentration of applicable chemical of concern at system startup (ppb); x = decay coefficient; and t_1 = length of time between initial and present concentration (days). A semi-log plot for cleanup times should be provided.
- Solve for decay coefficient, x:

$$[\ln(1.4 \text{ (ppb)} / 24 \text{ (ppb)})] / (691 \text{ (days)}) = 0.004112$$

present concentration, C_1 — initial concentration, C_0 — time, t_1 — decay coefficient, x

- Using this decay coefficient (x), solve for estimated time of cleanup (t):

$$[\ln(1.0 \text{ (ppb)} / 1.4 \text{ (ppb)})] / (0.004112) = 81.8 \text{ (days)}$$

target concentration, C — present concentration, C_1 — decay coefficient, x — estimated time of cleanup, t

Calculated Cleanup Time Compared to Cleanup Time Predicted in RAP: _____

O & M Problems: Yes (No) (if yes, provide explanation below)
- No. of scheduled O & M visits monthly
- Down-time 6.3 (days)
- No. of unscheduled O & M visits _____

Short Description of Effectiveness of Cleanup: Contaminant concentrations generally show an overall decrease. Some locations are below GCTLs.

Recommendations and Proposed Modifications:
Continue operation of injection system; split airflow between injection wells 9-11 and 9-12.