

Interim Remedial Action Report

Revision No. 00

Operable Unit 13 Sites 8 and 24

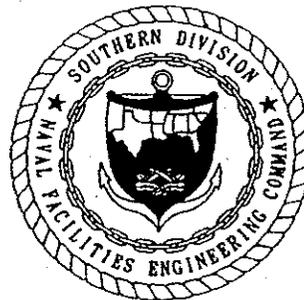
Naval Air Station Pensacola
Pensacola, Florida

Contract No. N62467-98-D-0995

Contract Task Order 0085

January 2004

PREPARED FOR



Department of the Navy, Southern Division

Naval Facilities Engineering Command

2155 Eagle Drive

North Charleston, South Carolina 29406

**Interim Remedial Action Report
for Operable Unit 13
Sites 8 and 24**

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EPA ID No. FL9170024567**

Submitted to

**Southern Division
Naval Facilities Engineering Command**

Prepared by:



**1766 Sea Lark Lane
Navarre, FL 32566**

January 2004

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Submitted to
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Naval Facilities Engineering Command**

January 2004

Prepared/Approved By:

Handwritten signature of Amy Twitty in black ink.

Amy Twitty, P.G, Project Manager

January 15, 2004

Date

Approved By:

Handwritten signature of Scott Newman in black ink.

Scott Newman, Program Manager

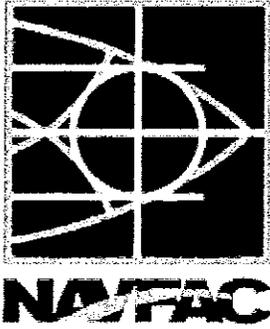
January 15, 2004

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Client Acceptance:

U.S. Navy Responsible Authority

Date



**CERTIFICATION OF TECHNICAL
DATA CONFORMITY (January 2004)**

The contractor, CH2M HILL Constructors, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0995, Contract Task Order (CTO) No. 0085, is complete and accurate and complies with all requirements of this contract.

DATE: January 15, 2004

NAME AND TITLE OF CERTIFYING OFFICIAL:

A handwritten signature in black ink, appearing to read 'Amy Twitty', is written over a horizontal line.

Amy Twitty, P.G.
Project Manager



CH2MHILL
Constructors, Inc.

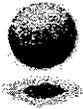
Certificate of Completion

CH2M HILL Constructors, Inc., attests that, to the best of its knowledge and belief, the Interim Remedial Action for Operable Unit 13, Sites 8 and 24, delivered under Contract No. N62467-98-D-0995, Naval Air Station Pensacola, Pensacola, Florida, CTO 0085, has been completed and complies with the contract.

A handwritten signature in black ink, appearing to read "Ryan Bitely", is written over a horizontal line.

Ryan Bitely
Project QC Manager

1/15/04
Date

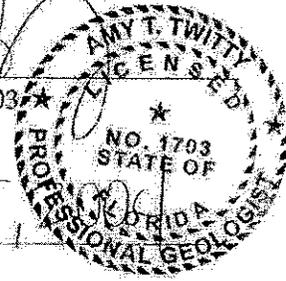


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This Interim Remedial Action Report for Operable Unit 13, Sites 8 and 24, Naval Air Station Pensacola, Pensacola, Florida, was prepared under the direction of a Florida registered Professional Geologist.

Amy Twitty

Amy Twitty, P.G. No. 1703



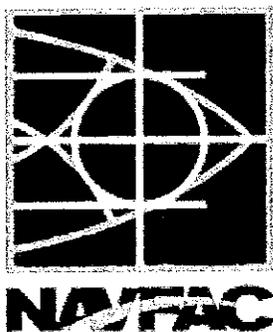
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FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the U.S. Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at its facilities.

One of these programs is the Installation Restoration Program (IRP). This program complies with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation and Recovery Act, and the Hazardous and Solid Waste Amendments of 1984. These acts establish the means to assess and clean up the hazardous waste site for both private-sector and federal facilities. The CERCLA and SARA acts form the basis for what is commonly known as the Superfund program.

Originally, the Navy's part of this program was called the Naval Assessment and Control of Installation Pollutants (NACIP) program. Early reports reflect the NACIP process and terminology. The Navy eventually adopted the program structure and terminology of the standard IRP.

The IRP conducted in several stages, as follows:

- Preliminary assessment (PA)
- Site inspection (SI) (formerly the PA and SI steps were called the initial assessment study under the NACIP program)
- Remedial investigation and feasibility study
- Remedial design and remedial action

Southern Division Naval Facilities Engineering Command manages and the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection (formerly Florida Department of Environmental Regulation) oversee the Navy environmental program at Naval Air Station (NAS) Pensacola. All aspects of the program are conducted in compliance with federal and state regulations, as ensured by the participation of these regulatory agencies.

Questions regarding the CERCLA program at NAS Pensacola should be addressed to Bill Hill at (843) 820-7324.

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- B Data Validation Report
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- E Project Photographs
- F October 15, 2003 FDEP Email
- G Survey Report
- H Transportation and Disposal Log and Waste Manifests

Acronyms and Abbreviations

ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CLEAN	Comprehensive Long-term Environmental Action Navy
COC	contaminant of concern
COPC	contaminant of potential concern
CTO	Contract Task Order
DDT	d(ichloro)d(iphenbyl)t(richloroethane)
DO	dissolved oxygen
DPT	direct push technology
EISOPQAM	EPA Region 4 Environmental Investigation Standard Operating Procedures and Quality Assurance Manual
EnSafe	EnSafe, Inc.
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFA	Federal Facilities Agreement
FFS	Focused Feasibility Study
FPDWS	Florida primary drinking water standard
FS	Feasibility Study
ft	feet
GCTL	groundwater cleanup target level
IR	Installation Restoration (program)
IRA	interim remedial action
LTM	long-term monitoring
LUC	Land Use Control
LUCA	Land Use Control Agreement
µg/L	micrograms per liter
MCL	maximum contaminant level
MDL	method detection limit
mg/kg	milligram per kilogram

msl	mean sea level
NACIP	Naval Assessment and Control of Installation Pollutants
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
ORP	oxygen-reduction potential
OU	operable unit
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PVC	polyvinyl chloride
PWC	Public Works Center
QA	quality assurance
QC	quality control
RBCA	risk-based corrective action
RCRA	Resource Conservation and Recovery Act
RG	remedial goal
RI	Remedial Investigation
RL	reporting limit
ROD	Record of Decision
SCTL	soil cleanup target level
SI	site inspection
SOP	standard operating procedure
SPLP	synthetic precipitation leaching procedure
SVOC	semivolatile organic compound
SWMU	solid waste management unit
T&D	transportation and disposal
TAL	target analyte list
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TRPH	total recoverable petroleum hydrocarbon
UCL	upper confidence limit
VOC	volatile organic compound

Executive Summary

CH2M HILL Constructors, Inc. (CCI) conducted interim remedial action (IRA) activities at Naval Air Station Pensacola, Sites 8 and 24, Operable Unit (OU) 13. An IRA was necessary to allow for the expansion of the Barrancas National Cemetery and to minimize the risk to cemetery workers. Cemetery personnel had notified the Navy of the critical need to use the area for future gravesites. The objective of the IRA was to excavate and properly dispose of approximately 12,070 cubic yards of contaminated soil at Sites 8 and 24. Prior to excavation activities, soil and groundwater samples were collected to delineate or confirm the presence of cadmium and dieldrin at Site 8; and arsenic, benzo(a)pyrene, and dieldrin at Site 24. In addition, CCI also installed groundwater monitoring wells and collected groundwater samples to evaluate whether the constituents detected in soil affected groundwater.

Soil Sampling Activities and Results

On August 13 and 14, 2002, a total of 20 subsurface samples and associated quality assurance/quality control (QA/QC) samples were collected at Site 8 by CCI in the vicinity of former Remedial Investigation (RI) sample 08S01 for the source delineation of cadmium. Subsurface soil samples were collected from 5 to 7 feet (ft) below land surface (bls) and 10 to 12 ft bls. Of the 8 initial subsurface samples collected and analyzed for cadmium, no samples exceeded the residential direct exposure remedial goal (RG) of 75 milligrams per kilogram (mg/kg) or the leachability RG of 8 mg/kg.

Additionally, a total of 6 surface and 12 subsurface samples and associated QA/QC samples were collected by CCI in the vicinity of former RI sample 08S03 for the source delineation of dieldrin. Surface and subsurface soil samples were collected in intervals from zero to 1 ft bls, 5 to 7 ft bls, and 10 to 12 ft bls. Of the three initial surface and six subsurface soil samples collected and analyzed for dieldrin, no samples exceeded their respective residential direct exposure RG of 0.21 mg/kg or leachability RG of 0.004 mg/kg.

On August 14 and 15, 2002, a total of 8 surface, 13 subsurface, and associated QA/QC samples were collected at Site 24 by CCI in the vicinity of former sample 24S10 for the source delineation of arsenic, benzo(a)pyrene, and dieldrin. Additionally, a total of 1 surface, 11 subsurface, and associated QA/QC samples were collected by CCI in the vicinity of former samples 24S11 and 24S12 for the source delineation of arsenic and dieldrin.

Of the four surface samples collected and analyzed for arsenic in the vicinity of sample 24S10, one sample, 24S55, exceeded the residential and industrial direct exposure RGs of 2.4 and 3.7 mg/kg, respectively, with a concentration of 3.89 mg/kg. This sample was below the leachability RG of 29 mg/kg. In the vicinity of former sample 24S12, one surface sample, 24S65, was collected and analyzed for arsenic; the results did not indicate an exceedance of its residential direct exposure RG.

All four surface soil samples collected and analyzed for benzo(a)pyrene in the vicinity of sample 24S10 exceeded the residential and industrial direct exposure RGs of 0.3 and 0.5 mg/kg, respectively, with results ranging from 0.459 J (estimated) to 7.57 mg/kg, but were below the leachability RG of 8 mg/kg.

One (24S57) of four samples collected from the 5 to 7 ft bls range and analyzed for dieldrin exceeded the leachability RG of 0.004 mg/kg with a result of 0.00695 mg/kg. All three samples collected from the 9 to 11 ft bls range and analyzed for dieldrin exceeded the leachability RG with results ranging from 0.0376 to 0.0572 J mg/kg. In the vicinity of former sample 24S12, nine subsurface soil samples were collected from the 5 to 7 ft bls range and analyzed for dieldrin. Of those nine samples, only sample 24S60 exceeded the leachability RG of 0.004 mg/kg, with a result of 0.0275 J mg/kg. None of the samples collected exceeded the residential or industrial direct exposure RGs of 0.21 and 0.3 mg/kg, respectively.

Groundwater Sampling Activities and Results

In August 2002, groundwater samples were collected at Site 8 using direct push technology (DPT) downgradient of former RI samples 08S01 and 08S03 at locations 08S104 and 08S113, respectively, and analyzed for cadmium and/or dieldrin. No detectable concentrations of cadmium or dieldrin were reported in the groundwater sample results. However, the method detection limit (MDL) for dieldrin was 0.0263 µg/L, which is above the associated GCTL; therefore, any concentrations of dieldrin above the RG of 0.005 µg/L, but below the MDL of 0.0263 µg/L, could not be detected or reported.

At Site 24, groundwater samples were collected using DPT downgradient of former samples 24S10 and 24S12 at locations 24S51 and 24S59, respectively. Select samples were analyzed for arsenic, benzo(a)pyrene, and/or dieldrin. Arsenic results exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) of 10 micrograms per liter (µg/L) in the two samples collected, but were below the Florida Department of Environmental Protection (FDEP) groundwater cleanup target level (GCTL) of 50 µg/L.

No detectable concentrations of benzo(a)pyrene were reported in the groundwater sample results. Groundwater results also indicated that there were no detectable concentrations of dieldrin. As stated previously, the MDL for dieldrin was 0.0263 µg/L, which is above the associated GCTL. Therefore, any concentrations of dieldrin above the RG of 0.005 µg/L, but below the MDL of 0.0263 µg/L, could not be detected or reported.

Leachability Sampling Activities and Results

CCI submitted two technical memoranda, *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 8, Revision 01* (CCI, 2002a) and *Evaluation of Site Conditions based on Results of Soil and Groundwater Sampling, Operable Unit 13 – Site 24, Revision 01* (CCI, 2002b) in October 2002. These memoranda provided details of the soil and groundwater sampling and subsequent results. After a review of these memoranda, EPA and FDEP recommended further soil sampling using the synthetic precipitation leaching procedure (SPLP) method in the hot spot areas to evaluate whether the

contaminants in the soil have the potential to leach into groundwater. In addition, it was recommended that permanent groundwater monitoring wells be installed and sampled to verify the presence or absence of groundwater contamination in the hot spot areas.

From June through August 2003, three soil borings were advanced from 5 to 7 ft bls and 7 to 9 ft bls in the vicinity of RI sample 08S01 and analyzed for cadmium at Site 8. Cadmium concentrations ranged from 1.44 to 222 J mg/kg, exceeding the residential direct exposure RG of 75 mg/kg in one sample and the leachability RG of 8 mg/kg in two samples. In addition, one of four samples collected from 7 to 9 ft bls and analyzed for cadmium using SPLP methodology exceeded the GCTL of 5 $\mu\text{g/L}$, with a concentration of 257 $\mu\text{g/L}$.

Additionally, in an effort to evaluate the leachable properties of the dieldrin contamination in the vicinity of RI sample 08S03, three surface (zero to 1 ft bls) and three subsurface (5 to 7 ft bls) soil samples were collected and analyzed for dieldrin. Only one of the three surface samples collected (with a concentration of 0.0402 J mg/kg) and analyzed for dieldrin exceeded the leachability RGs of 0.004 mg/kg. None of the surface soil samples exceeded the residential direct exposure RG of 0.21 mg/kg; none of the three subsurface soil samples analyzed for dieldrin exceeded the residential or leachability RGs. Additionally, all four surface samples (with concentrations ranging from 0.0251 J to 0.571 J $\mu\text{g/L}$) and two of the three subsurface soils (with concentrations of 0.00563 J and 0.0267 J $\mu\text{g/L}$) collected and analyzed for dieldrin using SPLP methodology exceeded the GCTL of 0.005 $\mu\text{g/L}$.

To evaluate the leachable properties of benzo(a)pyrene in the vicinity of RI sample 24S10 at Site 24, three soil borings were advanced from zero to 1 ft bls and analyzed for benzo(a)pyrene. Two samples, 24S67 and 24S69, exceeded the residential direct exposure RG of 0.3 mg/kg, with results of 0.406 and 1.01 J mg/kg, respectively. Sample 24S69 also exceeded the industrial direct exposure RG of 0.5 mg/kg; none of the three samples exceeded the leachability RG of 8 mg/kg. In addition, only one (24S69) of three samples exceeded the GCTL of 0.2 $\mu\text{g/L}$ during SPLP analysis, with a concentration of 1.05 J $\mu\text{g/L}$.

To evaluate the leachable properties of dieldrin in the vicinity of RI sample 24S10 at Site 24, three soil borings were advanced between 4 and 6 ft bls and analyzed for dieldrin. Additionally, in the soils adjacent to and in the vicinity of RI sample 24S12, three samples were collected from various depths (between 3 and 6 ft bls) and analyzed for dieldrin. All three samples collected in the vicinity of RI sample 24S10 and analyzed for dieldrin using SPLP methodology exceeded the GCTL of 0.005 $\mu\text{g/L}$, with concentrations ranging from 0.00796 J to 0.0391 $\mu\text{g/L}$. None of these samples, however, exceeded the residential direct exposure or leachability RGs. All three samples collected in the vicinity of RI sample 24S12 and analyzed for dieldrin using SPLP methodology also exceeded the GCTL, with concentrations ranging from 0.00769 J to 0.0444 J $\mu\text{g/L}$. None of these samples exceeded the residential direct exposure or leachability RGs.

On June 23 and 24, 2003, four shallow monitoring wells were installed at Site 8 to an approximate depth of 18 ft bls. Select samples were analyzed for cadmium, dieldrin, iron, lead, and manganese. Cadmium exceeded its GCTL of 5 $\mu\text{g/L}$ in monitoring well 08-MW-02 with a concentration of 12.7 $\mu\text{g/L}$. This well is located approximately 200 feet downgradient of the cadmium-impacted soil. Cadmium was not detected above its GCTL in the well located directly in the area with elevated cadmium in soil. Additionally, dieldrin was not detected above its GCTL in monitoring well 08-MW-03, where the soil exceeded the SPLP

criteria. Iron exceeded its background concentration of 1,707 $\mu\text{g}/\text{L}$ in monitoring wells 08-MW-01, 08-MW-02, and 08-MW-03, with concentrations ranging from 3,230 to 10,300 $\mu\text{g}/\text{L}$. Manganese exceeded its GCTL of 50 $\mu\text{g}/\text{L}$ in the same three monitoring wells, with concentrations ranging from 123 to 392 $\mu\text{g}/\text{L}$. Lead was not detected in any of the monitoring wells above its GCTL of 15 $\mu\text{g}/\text{L}$.

On June 23 and 24, 2003, three shallow monitoring wells were installed at Site 24 to an approximate depth of 15 ft bls. Select samples were analyzed for arsenic, benzo(a)pyrene, dieldrin, iron, and manganese. No constituents were detected above their respective GCTLs.

Conclusions and Recommendations

On the basis of the analytical data, the conclusions and recommendations for Sites 8 and 24 are as follows.

Site 8

- The volume of cadmium-contaminated soils is approximately 333 cubic yards and currently is covered with asphalt, preventing direct contact and significantly decreasing rainwater infiltration in the area. In accordance with Florida's new Global Risk-based Corrective Action (RBCA), the leachability RGs may not be applicable if site-specific characteristics, in conjunction with institutional and engineering controls (such as the asphalt pavement), show that the contaminants will not leach into groundwater at levels that pose a threat to human health and the environment. It is recommended, therefore, that cadmium is left in place and long-term monitoring (LTM) be conducted to monitor the cadmium concentrations in groundwater for a minimum of 1 year and until two consecutive groundwater monitoring events indicate that cadmium concentrations are below its RG. Additionally, because cadmium exceeded the soil residential direct exposure RG in one sample, institutional controls should be placed on Site 8 to prevent residential use.
- The volume of dieldrin-contaminated soil is approximately 200 cubic yards and currently is covered with asphalt, preventing direct contact and significantly decreasing rainwater infiltration in the area. During the 2002 and 2003 sampling events, there were exceedances of the leachability RG. However, there were no exceedances of the residential or industrial direct exposure RGs. These included samples collected from former RI location 08S03 at the same depths. It is recommended, therefore, that dieldrin be left in place and LTM be conducted for a minimum of 1 year and until two consecutive monitoring events show dieldrin below its GCTL.
- Lead was not detected in wells above its GCTL of 15 $\mu\text{g}/\text{L}$. However, iron and manganese concentrations in wells 08-MW-01, 08-MW-02, and 08-MW-03 exceeded their respective GCTLs. It is recommended that LTM for lead continue for a minimum of 1 year and until two consecutive groundwater monitoring events indicate that lead is below its GCTL. In addition, LTM should continue for iron and manganese until their respective concentrations are below their respective GCTLs or alternative RGs are established. It is assumed that LTM will continue for these constituents for 30 years.

- LTM activities at Site 8 will be initiated after the approval of the Record of Decision (ROD) by the agencies. The results of the LTM activities will be submitted in an annual site inspection report. A review of the site conditions will be conducted with the agencies following the initiation of LTM activities, and a Site Conditions Report will be prepared after the completion of the review. The first review will be included in the next 5-year review for the activity, which is scheduled for 2007. Following the 5-year review (or before), type and frequency of continued LTM will be evaluated.

Site 24

- The area affected with arsenic at Site 24 is not associated with the former dichlorodiphenyltrichloroethane (DDT) mixing area (approximately 300 ft away) and the low concentrations of arsenic are consistent with basewide and areawide background concentrations. Because site-specific concentrations at Site 24 are within the range of these background concentrations, no further action is recommended to address arsenic at the site.
- The detected concentrations of benzo(a)pyrene are nearer the road and in the downslope areas, where small asphalt pieces have reached the sampling area of the site either through runoff or spraying pavement pieces by moving vehicles. In addition, asphalt pieces were present in the soil column from the boreholes where samples were collected, which strongly suggests that the polynuclear aromatic hydrocarbons (PAHs) detected in the samples are attributable to the road and not to site activities. Implementation of any remedy to remove these PAHs would be ineffective because the asphalt continues to contribute to such similar levels in this area from the nearby John Towers Road. In an e-mail received on October 15, 2003, FDEP concurred that the asphalt from the nearby road was contributing the benzo(a)pyrene concentrations; therefore, benzo(a)pyrene is no longer a contaminant of concern (COC) at Site 24. It is recommended, therefore, that no further action be taken with regard to the likely anthropogenic background-related benzo(a)pyrene levels at Site 24 to protect human health or the ecology.
- Dieldrin was not detected above its GCTL in the three monitoring wells sampled in July 2003. Two of the monitoring wells sampled were located directly in the area with the elevated dieldrin in soil (former RI sample locations 24S10 and 24S12). Therefore, it is believed that dieldrin is not leaching into the groundwater in spite of its presence in the deepest soil above both the leachability RG and SPLP RG. It is recommended that groundwater monitoring continue for a minimum of 1 year and until two consecutive groundwater monitoring events indicate that dieldrin remains below its GCTL.
- Iron and manganese were below their respective GCTLs. It is recommended that LTM for iron and manganese continue until two consecutive rounds of groundwater sampling indicate that iron and manganese are not present in groundwater above their respective GCTLs. It is anticipated No Further Action criteria for these constituents will be achieved following one more monitoring event.

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI), was contracted by the U.S. Department of the Navy, Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH), to prepare this report to document the results of the interim remedial action (IRA) activities performed by CCI at Naval Air Station (NAS) Pensacola in Pensacola, Florida. The work was performed under Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0085, and in accordance with the management approach outlined in the CCI Contract Management Plan (July 1998); CCI Basewide Work Plan, Revision 00 (June 2002d); CCI Soil Sampling and Analysis Plan, Revision 00 (June 2002e); CCI Soil and Groundwater Sampling and Analysis Plan, Revision 00 (March 2003a); and CCI Work Plan, Addendum 05, Revision 00 (April 2003b).

1.1 Project Scope

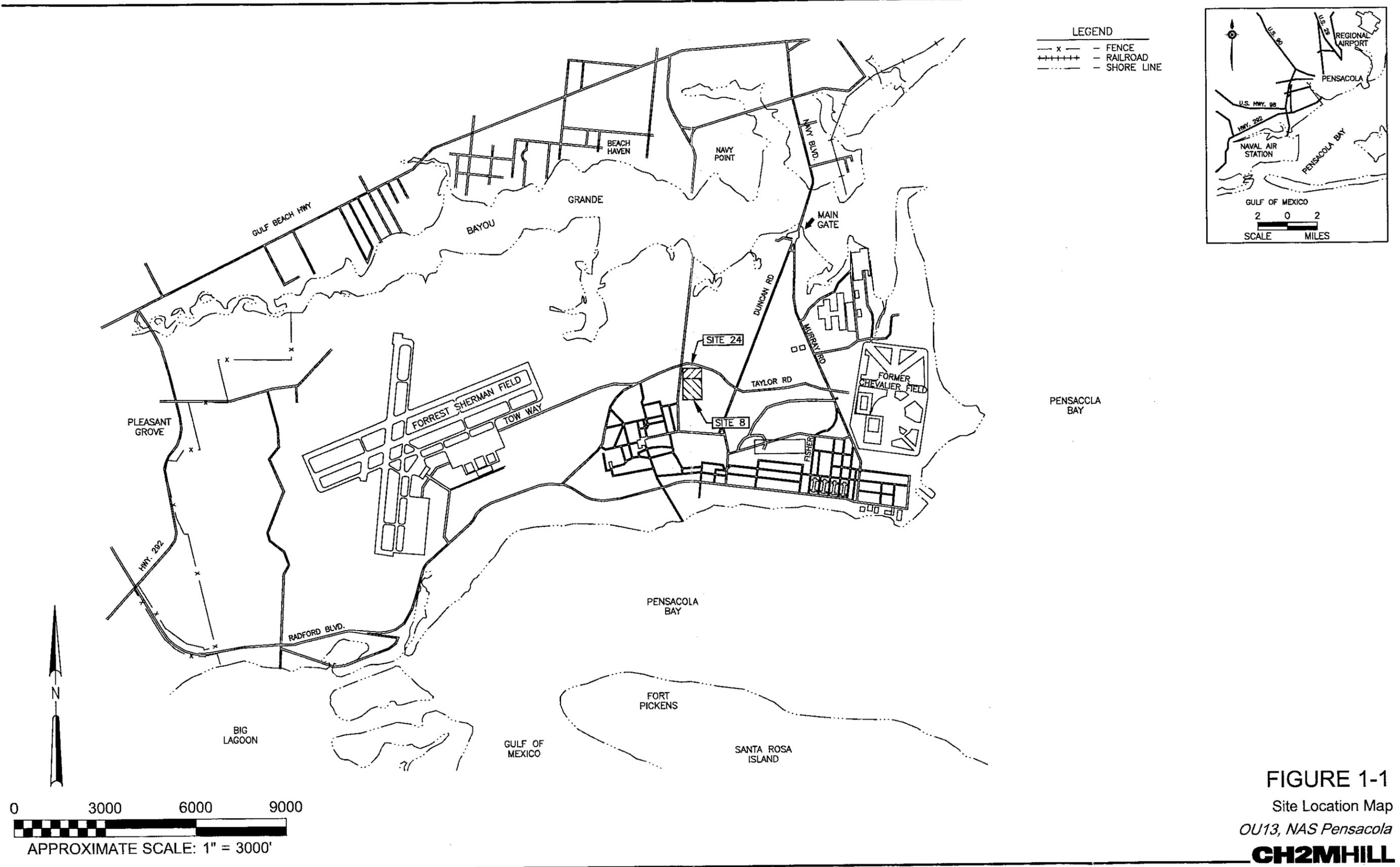
The scope of work for the project included the following tasks:

- Mobilization and setup
- Site utility clearance
- Survey location of contaminated areas
- Groundwater sampling
- Groundwater monitoring well installation
- Surface and subsurface soil sampling
- Site restoration
- Waste management and disposal
- Demobilization

1.2 Site Location and Environmental History

Operable Unit (OU) 13 consists of Sites 8 and 24 and is one of 13 OUs located at NAS Pensacola. Sites 8 and 24 are located along the eastern side of John Towers Road, south of Taylor Road, in the middle of the NAS complex, as shown in the site location map in **Figure 1-1**.

Site 8 is an approximate 450- by 600-foot area currently occupied by Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department, as shown in **Figure 1-2**. An extensive asphalt-paved area exists around Building 3561 to the north, east, and west, covering nearly all land surface. An approximate 20-foot-wide concrete apron is immediately around the building to the east and west and is covered by an awning. The PWC stores building materials on the paved area west of the building. Site 8 is generally flat, with a land surface elevation averaging 29 feet (ft) above mean sea level (msl). Miscellaneous office trailers and fenced storage, including Building 3678, are north of the Building 3561 (EnSafe, Inc. [EnSafe], 2000). The paved area east of the Building 3561 is used



LEGEND

- x - FENCE
- ++++ RAILROAD
- SHORE LINE

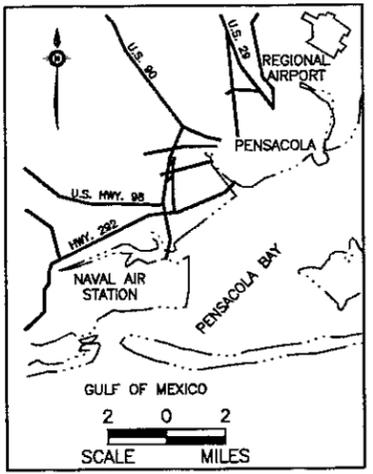


FIGURE 1-1
 Site Location Map
 OU13, NAS Pensacola
CH2MHILL

0 3000 6000 9000
 APPROXIMATE SCALE: 1" = 3000'

LEGEND
 Building 
 Fence 

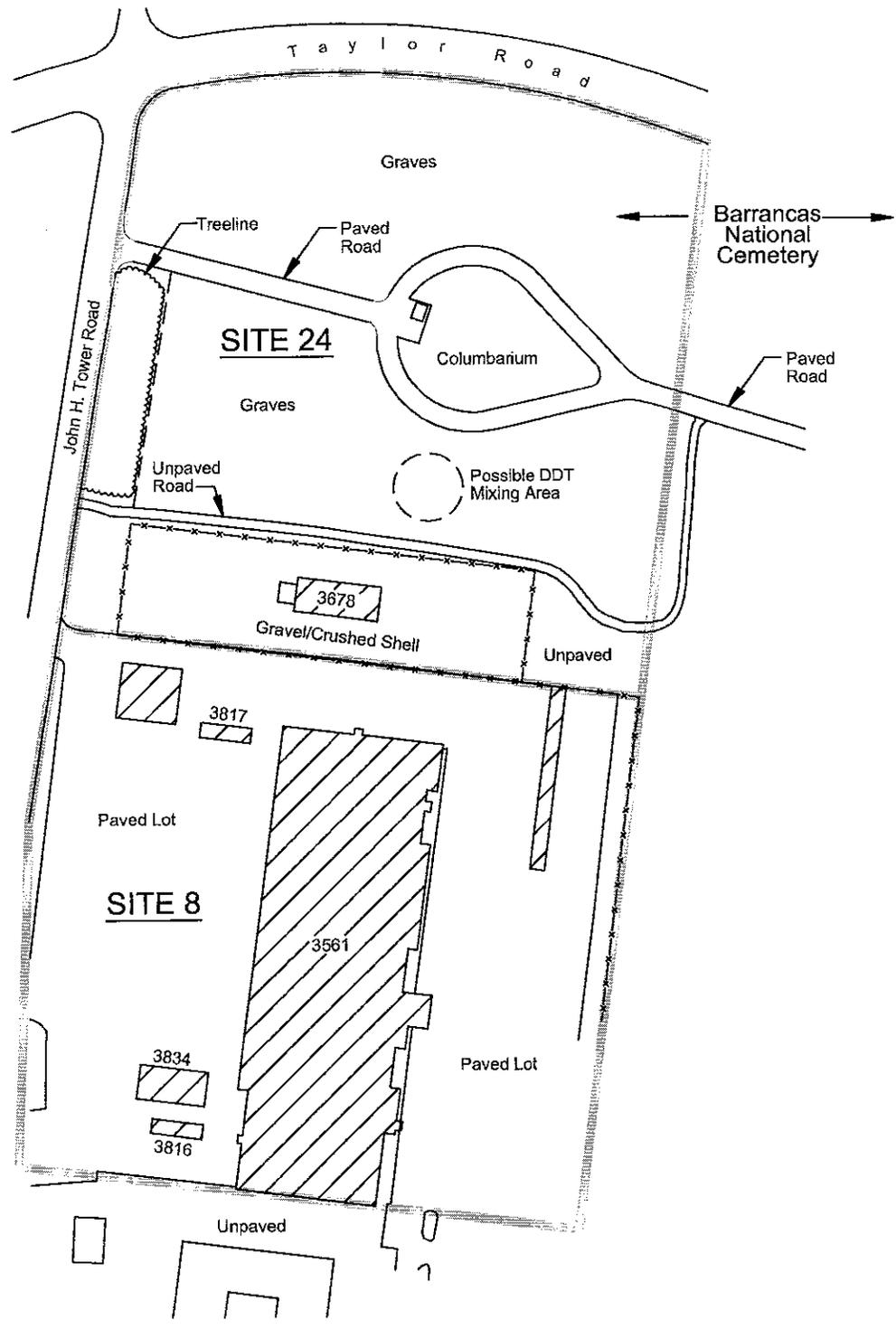


FIGURE 1-2
 Site Layout Map
 OU13, NAS Pensacola

for PWC storage and employee parking. Sidewalks and a grassy median are to the south, between Buildings 3560 and 3561. Most of the site is surrounded by a chain-link fence.

Site 24 is immediately north of Building 3561 in the northwestern corner of the Barrancas National Cemetery, as shown in **Figure 1-2**. Nearly all of the site is now part of the Barrancas National Cemetery and contains multiple gravesites. A paved road transects the site from east to west, which leads to the circular drive surrounding the columbarium. Cemetery personnel have reported finding buried metal, rubber, and plastic aircraft parts during excavation along the eastern boundary of Site 24 (EnSafe, 2000). The fenced storage area around Building 3678, located in the southern portion of Site 24, has a gravel/crushed shell land surface. The site is generally flat, with land elevations between 24 and 26 ft above msl.

1.3 Operational History

1.3.1 Site 8

Site 8 is the former base rifle range and disposal area. Various solid wastes and dry refuse reportedly were placed in trenches and burned there in the late 1950s and early 1960s (EnSafe, 2000). Aerial photographs and maps from the 1950s and 1960s show a rifle range at the current location of Building 3561. Earlier aerial photographs show an excavation at the northern end of the rifle range, while later photographs show the excavated area overgrown with vegetation (EnSafe, 2000). Most of the excavation noted in the earlier photographs currently is covered by Building 3561 and the surrounding paved area, which were covered in the mid 1970s. Facility personnel reported that no waste or residue was identified during the building's construction (Naval Energy and Environmental Support Activity [NEESA], 1983).

During most of the 1980s, a limited portion of Building 3561 was used as a pesticide storage and equipment rinsing area. A tank washrack rinsing area was constructed in March 1981 midway along Buildings 3561's eastern side to contain and collect pesticide equipment wash water and rinsate. Wastewater from the wash rack was discharged to the sanitary sewer system. Base pest control operations were moved from Building 3561 to their current location at Building 1538 in the early 1990s (EnSafe, 2000).

1.3.2 Site 24

From the early 1950s until the early 1960s, Site 24 was used to mix dichlorodiphenyl-trichloroethane (DDT) with diesel fuel for mosquito control. DDT reportedly spilled in the mixing area while being transferred from drums to spray tanks and may have contaminated local soil and groundwater (EnSafe, 2000). DDT was applied aerially for at least 10 years to control mosquito outbreaks. In later years, DDT was applied by a fogger machine. On average, two or three mosquito outbreaks occurred each year during the spring and summer. Following each outbreak, DDT typically was applied for a 1-week period (EnSafe, 2000). For each application, 500 gallons of 20-percent DDT solution was mixed with 300 gallons of diesel fuel. The fogger machine used 300 gallons of 20-percent DDT mixed with 300 gallons of diesel fuel. It is estimated that up to 20 gallons of the 20-percent solution

may have been spilled during the approximate 10-year period of DDT mixing at the site (NEESA, 1983).

1.4 Regulatory and Enforcement History

NAS Pensacola was placed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) for environmental study and cleanup in December 1989. The Federal Facilities Agreement (FFA), signed in October 1990, outlined the regulatory path to be followed at NAS Pensacola. NAS Pensacola must complete the regulatory obligations of its NPL listing and meet the ongoing requirements of an environmental permit issued in 1988. This permit addresses the treatment, storage, and disposal of hazardous materials and waste, as well as the investigation and remediation of any releases of hazardous waste and/or constituents from solid waste management units (SWMUs) at NAS Pensacola. The Resource Conservation and Recovery Act (RCRA) governs ongoing use of hazardous materials and the operating permit regulations. RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations and actions are coordinated through the FFA, streamlining the cleanup process (EnSafe, 2002b).

Environmental work at Sites 8 and 24 is part of the ongoing Installation Restoration (IR) Program at NAS Pensacola. This is a U.S. Department of Defense program to investigate and, if necessary, clean up conditions related to suspected past releases of hazardous materials at military facilities. The program complies with CERCLA, RCRA, and other applicable Florida and federal environmental regulations.

1.5 Previous Investigations

1.5.1 Site 8

An Initial Assessment Study, completed by NEESA in 1983, evaluated Site 8 based on information obtained from historical records, field inspections, and interviews with NAS Pensacola personnel. No evidence of hazardous waste disposal was identified at Site 8.

Preliminary site characterization was performed from 1995 through 1997 under the authority of the U.S. Navy Comprehensive Long-term Environmental Action Navy (CLEAN) program. Soil and groundwater samples were analyzed for the full target analyte list/target compound list (TAL/TCL). These analyses included TCL volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), TCL pesticides, TCL polychlorinated biphenyls (PCBs), TAL metals (unfiltered for groundwater), and TAL cyanide. The investigation was raised to Remedial Investigation (RI) status after the analytical results showed preliminary remediation goal exceedances for metals, SVOCs, and pesticides at several locations (EnSafe, 1999a).

During RI activities conducted by EnSafe in 1996, two soil contamination areas were identified beneath the asphalt pavement at Site 8 in the vicinity of sample locations at 08S01 and 08S03. As shown on **Figure 1-3**, sample 08S01 was taken from the western side of Building 3561 and sample 08S03 was taken adjacent to the eastern side of Building 3561. **Figure 1-3** presents only those RI samples applicable to this investigation. It was determined

LEGEND

- Building 
- Fence 
- Soil Sample (1995/1996) 

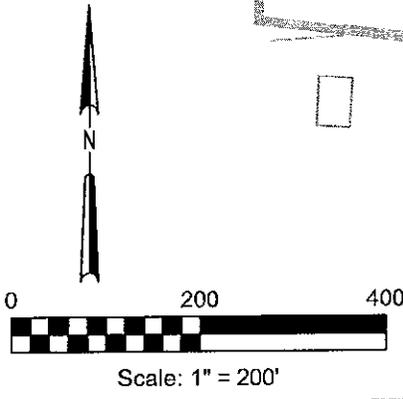
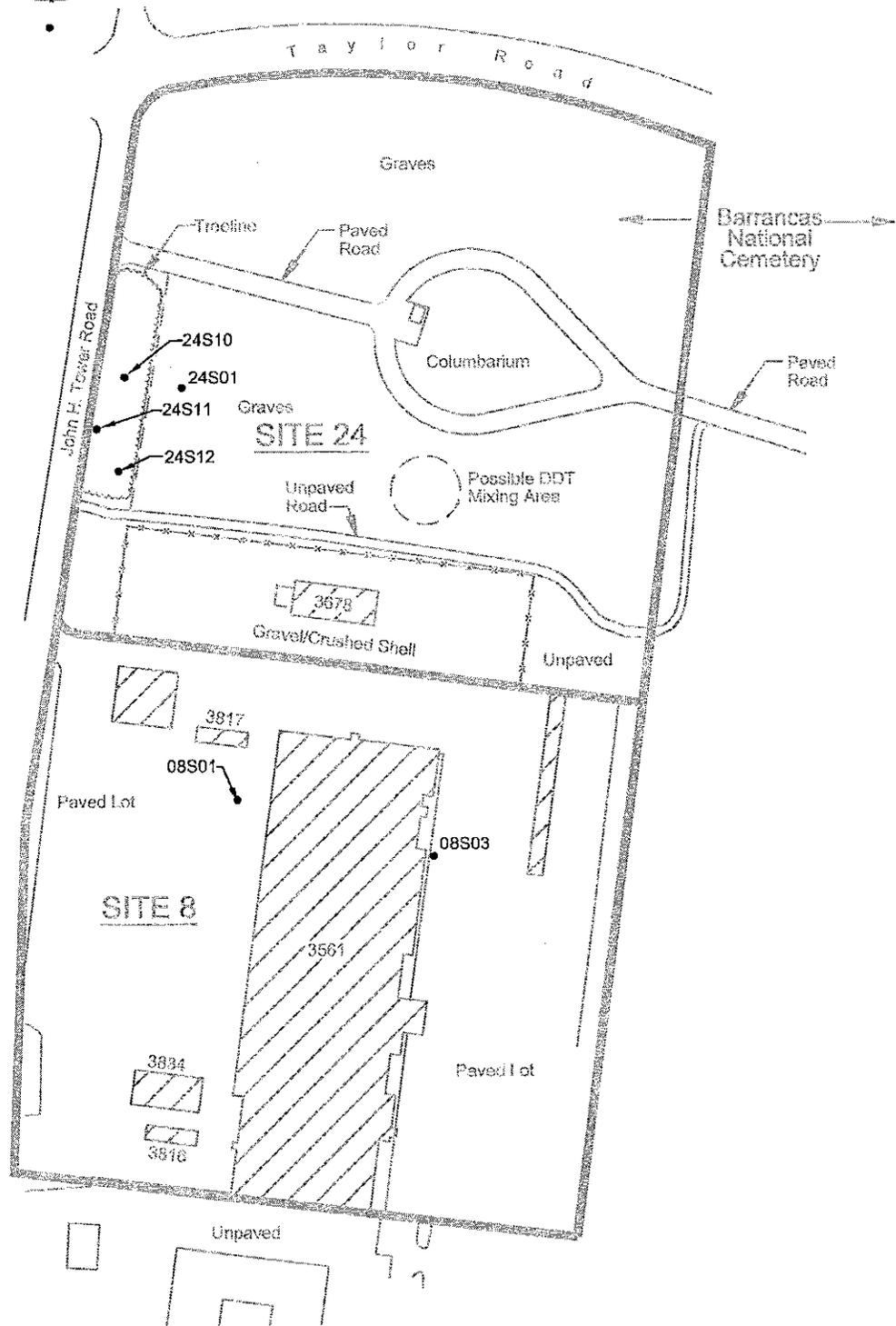


FIGURE 1-3
RI Soil Sample Location Map
OU13, NAS Pensacola

that sample 08S01 exhibited cadmium levels at 10.9 milligrams per kilogram (mg/kg) at 4 to 6 ft below land surface (ft bls) and 15.9 mg/kg at 7 to 9 ft bls. Both of these samples exceeded the preliminary remedial goal (PRG) of 6 mg/kg for cadmium. The background reference concentration for cadmium in soil at NAS Pensacola is 1 mg/kg. In addition, sample 08S03 exhibited a dieldrin concentration of 2.01 mg/kg in surface soil (zero to 1 ft bls), and 0.49 mg/kg (5 to 7 ft bls) and 0.134 mg/kg (9 to 11 ft bls) in subsurface soil. Each of these samples exceeded its respective PRG of 0.04 mg/kg for surface soil and of 0.001 mg/kg for subsurface soil (EnSafe, 2000).

Groundwater samples collected in 1996 and 1997 from temporary monitoring wells at Site 8 did not reveal the presence of dieldrin. The PRG for dieldrin in groundwater during the RI was 0.1 microgram per liter ($\mu\text{g/L}$). Cadmium was detected in four temporary wells ranging from 19 to 32 $\mu\text{g/L}$, all above the applicable Florida Department of Environmental Protection (FDEP) primary drinking standard (FPDWS) of 5 $\mu\text{g/L}$ for cadmium.

1.5.2 Site 24

Ecology & Environment, Inc., completed a Phase I screening investigation in 1991 to identify areas with contaminants of potential concern (COPCs). Soil and groundwater samples were collected during the investigation and submitted for laboratory analysis. Lead, total recoverable petroleum hydrocarbons (TRPHs), PAHs, and the carbamate pesticide, fluometuron, were detected in soil. Metals, tetrachloroethene, and the carbamate pesticide, methomyl, were detected in groundwater. DDT and its metabolites, DDD and DDE, were not detected in samples analyzed. As a result, additional assessment was recommended (EnSafe, 2000).

Preliminary site characterization was performed from 1995 through 1997 under the authority of the U.S. Navy CLEAN program. Soil and groundwater samples were analyzed for the full TAL/TCL. These analyses included TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, TAL metals (unfiltered for groundwater), and TAL cyanide. The investigation was raised to RI status after the analytical results showed PRG exceedances for metals, SVOCs, and pesticides at several locations (EnSafe, 1999a).

The results of the RI and supplemental investigation identified four soil contamination areas at Site 24 in the vicinity of samples 24S01, 24S10, 24S11, and 24S12 (Figure 1-3). Figure 1-3 presents only those RI samples applicable to this investigation. Initially, dieldrin was identified as a contaminant of concern (COC) based on an exceedance of the then soil screening level of 0.001 mg/kg. However, the remedial goal (RG) for dieldrin in subsurface soil subsequently was changed to the leachability-based Florida soil cleanup target level (SCTL) of 0.004 mg/kg. Consequently, the dieldrin concentration detected in sample 24S01 no longer exceeded the cleanup level for dieldrin. Samples 24S10 and 24S12 still exceeded the leachability RG for dieldrin. Sample 24S10 also exceeded the surface soil RGs for arsenic and benzo(a)pyrene and sample 24S11 exceeded the surface soil RG for arsenic.

Groundwater samples collected in 1995 and 1996 from temporary monitoring wells at the site did not reveal the presence of benzo(a)pyrene. Only the sample collected from 24GS01 (located at former boring 24S01) exceeded the applicable RG of 0.1 $\mu\text{g/L}$ for dieldrin during the RI (0.26 and 0.34 $\mu\text{g/L}$). Samples collected from wells 24GS01 and 24GS03 (located at former boring 24S03) exhibited dieldrin in excess of the current RG of 0.005 $\mu\text{g/L}$. Both of

these temporary wells were located on the western portion of the property. The sample collected from temporary well 24GS03 also exhibited an arsenic concentration of 10.6 µg/L. This concentration did not exceed the applicable RG of 50 µg/L during the RI; however, it slightly exceeded the new federal maximum contaminant level (MCL) of 10 µg/L.

Based on the RI results, additional information was deemed necessary to complete the OU 13 investigation. A supplementary investigation was performed in March 1999 to further evaluate shallow soil and groundwater quality in the northernmost portion of Site 24 and to confirm that contaminants in groundwater were not migrating offsite. Six additional monitoring wells were installed and sampled at Site 24. Results indicated that contaminants in groundwater were not extending to offsite areas (EnSafe 1999a).

1.6 Proposed Interim Remedial Action

An IRA was proposed to allow for the expansion of the Barrancas National Cemetery and minimize the risk to cemetery workers. Cemetery personnel had notified the Navy of the critical need to use the area for future gravesites. The IRA for OU 13 proposed excavating the soil to residential and leachability remedial goals, as outlined in the Focused Feasibility Study (FFS) and FFS Addendum as Alternatives S3(c) and S3(d) for Sites 8 and 24 (EnSafe, 2000; 2001). Under these alternatives, all surface soil exceeding the residential direct exposure RG for dieldrin and subsurface soil volumes containing concentrations of dieldrin and cadmium above leachability-based RGs would be excavated and disposed offsite at Site 8. Surface soil exceeding the residential direct exposure for arsenic and benzo(a)pyrene, and subsurface soils volumes containing concentrations of dieldrin above the leachability-based RGs, would be excavated and disposed offsite at Site 24. The estimated volume of surface and subsurface soil to be removed (including slope material) from these two sites was approximately 12,070 cubic yards (EnSafe, 2000). It also was recommended that during remedial design, additional extent sampling be performed.

1.7 Interim Remedial Action Objectives

Before the proposed soil removal activities, CCI conducted soil and groundwater sampling at Sites 8 and 24 to evaluate the nature and extent of the contaminated areas. The objective of this sampling event was to delineate the presence of cadmium and dieldrin at Site 8; and of arsenic, benzo(a)pyrene, and dieldrin at Site 24. In addition, CCI also collected one groundwater sample in each area of soil contamination to evaluate whether the constituents detected in soil had affected groundwater. Upon a review of the sampling results, CCI would prepare a work plan to excavate and properly dispose the contaminated soil.

2.0 Operable Unit Background

2.1 ROD Requirements

To date, a Record of Decision (ROD) has not been completed for OU 13. An FFS was conducted and submitted in May 2000; an FFS Addendum was submitted in September 2001 (EnSafe, 2001). Alternatives were developed to reduce risks to human health and the environment—three remedial options for soil and three for groundwater (EnSafe 2000). Because of small quantities of soil contamination, limited extent, and relatively low risk, the alternative array for soil was limited. Additionally, because of the relatively low concentrations of contaminants in groundwater, the lack of potential current and future receptors, and the long remedial time frame and costs associated with the treatment of inorganics at low concentrations, no active remedial treatment alternatives were developed for groundwater.

The remedial alternatives developed in the FFS for soil are as follows:

- No Action (S1)—No remediation of contaminated soil would be conducted to reduce volume, mobility, or toxicity of surface soil, and no controls would be initiated to restrict future use or exposure to contaminated media.
- Institutional Controls (S2)—No remedial actions would be conducted to reduce, treat, or decrease the mobility or toxicity of onsite contamination. Institutional controls, such as Land Use Control Agreements (LUCAs), would be implemented to limit access and property use to industrial/commercial, thereby limiting unacceptable excess exposure to contamination. The LUCA would also limit ingestion of groundwater onsite because of the potential for soil-to-groundwater impacts.
- Excavation with Offsite Disposal (S3)—This alternative considered removing soil under four different cleanup scenarios: residential (S3a), industrial (S3b), residential and leachability (S3c), or industrial and leachability (S3d) criteria.

The remedial alternatives developed in the FFS for groundwater are as follows:

- No Action (G1)—No action would be taken to treat or prevent exposure to contaminated groundwater at OU 13.
- Institutional Controls (G2)—No remedial actions would be conducted to reduce, treat, or decrease the mobility or toxicity of onsite groundwater contamination. Institutional controls, such as a LUCA, would be implemented to restrict groundwater use, thereby limiting unacceptable exposure to contamination.
- Institutional Controls with Monitoring (G3)—No remedial actions would be conducted to reduce, treat, or decrease the mobility or toxicity of onsite groundwater contamination. Institutional controls, such as a LUCA, would be implemented to restrict groundwater use, thereby limiting unacceptable exposure to contamination. In addition, this

alternative would implement a monitoring program to track the groundwater plume's migration and to ensure that concentrations of COCs are not migrating offsite at unacceptable levels (EnSafe, 2000).

2.1.1 Remedial Goals

The RGs for OU 13 initially were developed in the RI stage. However, as the RI/Feasibility Study (FS) proceeds, the RGs are often modified to reflect the understanding of the site and identified applicable or relevant and appropriate requirements (ARARs). ARARs are federal and state human health and environmental requirements used to define the extent of contamination and to develop remedial alternatives and direct site remediation. Federal ARARs are categorized as chemical-specific, location-specific, or action-specific. Each of these is described in detail in the FFS (EnSafe, 2000).

In April 2002, EnSafe performed a statistical evaluation for the COCs in surface soil at OU 13. The evaluation was conducted in conjunction with the FDEP's *Use of the 95% Upper Confidence Limit in Developing Exposure Point Concentrations of Contaminants in Soil* (May 11, 1999). This evaluation (upper confidence limit [UCL 95%]) resulted in estimated UCL 95% levels above the target RG. On the basis of the statistical analysis using the UCL 95%, the new interim action called for the removal of two surface soil "hot spots" and four subsurface "hot spots" to residential criteria, resulting in the elimination of Land Use Controls (LUCs) for soil. The target levels for the COCs are listed in Table 2-1. A copy of EnSafe's memorandum and the data used to evaluate the UCL 95% are included in Appendix A.

TABLE 2-1
Soil Remedial Goals
OU 13, NAS Pensacola

Contaminant of Concern	Remedial Goal (mg/kg)		
	Residential Direct Exposure	Industrial Direct Exposure ^b	Leachability to Groundwater ^c
Arsenic	2.4 ^a	3.7	29
Benzo(a)pyrene	0.3 ^a	0.5	8
Cadmium	75 ^d	1300	8
Dieldrin	0.21 ^a	0.3	0.004

Notes:

^a Based on statistical analysis using the Upper Confidence Limit 95%UCL 95%, 3 x SCTL

^b Chapter 62-777 Florida Administrative Code (FAC)

^c Leachability based on groundwater criteria, Chapter 62-777 FAC

^d SCTL based on acute toxicity considerations, Chapter 62-777 FAC

mg/kg = milligrams per kilogram

SCTL = soil cleanup target level from Chapter 62-777 FA

The groundwater RGs are listed in Table 2-2.

TABLE 2-2
Groundwater Remedial Goals
OU 13, NAS Pensacola

COC	Remedial Goal (µg/L)	Source
Arsenic	10	Federal EPA primary standard as provided in 40 CFR Part 141
Benzo(a)pyrene	0.2	Primary standard as provided in 62-550 FAC
Cadmium	5	Primary standard as provided in 62-550 FAC
Dieldrin	0.005	Minimum criteria practical quantitation limit as provided in 62-777 FAC
Iron	1,707	Reference concentration (2 x mean) for NAS Pensacola
Lead	15	Primary standard as provided in 62-550 FAC
Manganese	50	Secondary standard as provided in 62-550 FAC

Notes:

CFR = Code of Federal Regulations

FAC = Florida Administrative Code

COC = contaminant of concern

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

2.1.2 Institutional Controls

As stated in the FFS, institutional controls may be controlled through LUCA, public awareness and education, or development of a deed restriction. Navy planners and attorneys may execute the development and implementation of proper institutional controls (EnSafe, 2000).

2.1.3 Monitoring Requirements

Per the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), any alternative that leaves contamination onsite must be reevaluated every 5 years. Groundwater monitoring will ensure that the COCs are not moving offsite. After two consecutive sampling events demonstrate attainment of RGs, and concurrence by EPA and FDEP is received, the monitoring program will cease.

2.2 Basis for Cleanup Goals

Surface soil RGs were based on the State of Florida residential direct SCTLs found in 62-777 Florida Administrative Code (FAC), unless an alternative RG was calculated using the UCL 95%. Subsurface soil RGs were based on the leachability SCTLs.

Groundwater RGs were based on the FPDWS MCLs found in 62-550 FAC; Florida's Secondary Drinking Water Standard found in 62-550 FAC; Florida's Chapter 62-777 Groundwater Cleanup Target Levels (GCTLs); or the National Primary Drinking Water

Standard MCLs found in 40 Code of Federal Regulations (CFR) 141, whichever was more stringent, unless an alternative RG was established using background concentrations.

2.3 Remedial Design

The Navy decided that Alternatives S3c and S3d, as outlined in the FFS and FFS Addendum, would be implemented to address soil contamination at Sites 8 and 24. The estimated volume of surface soil to be excavated was 2,070 cubic yards from Site 8 and 1,060 cubic yards from Site 24, for a total volume of 3,170 cubic yards. Additionally, the estimated volume of subsurface soil to be excavated was 5,788 cubic yards from Site 8; 4,800 cubic yards from Site 24; and 2,000 cubic yards for slope stability, for a total volume of 8,900 cubic yards. The total estimated volume of surface soil and subsurface soil to be excavated from Sites 8 and 24 was 12,070 cubic yards (EnSafe, 2000; 2001).

Additionally, the Navy decided that Alternative G3, as outlined in the FFS, would be implemented to address groundwater contamination at Sites 8 and 24. Under this option, institutional controls would be implemented to restrict groundwater use. Regular monitoring would occur to track the groundwater plume's migration and to ensure that concentrations of COCs are below acceptable regulatory levels as they leave the site (EnSafe, 2000; 2001).

2.4 ROD Amendments

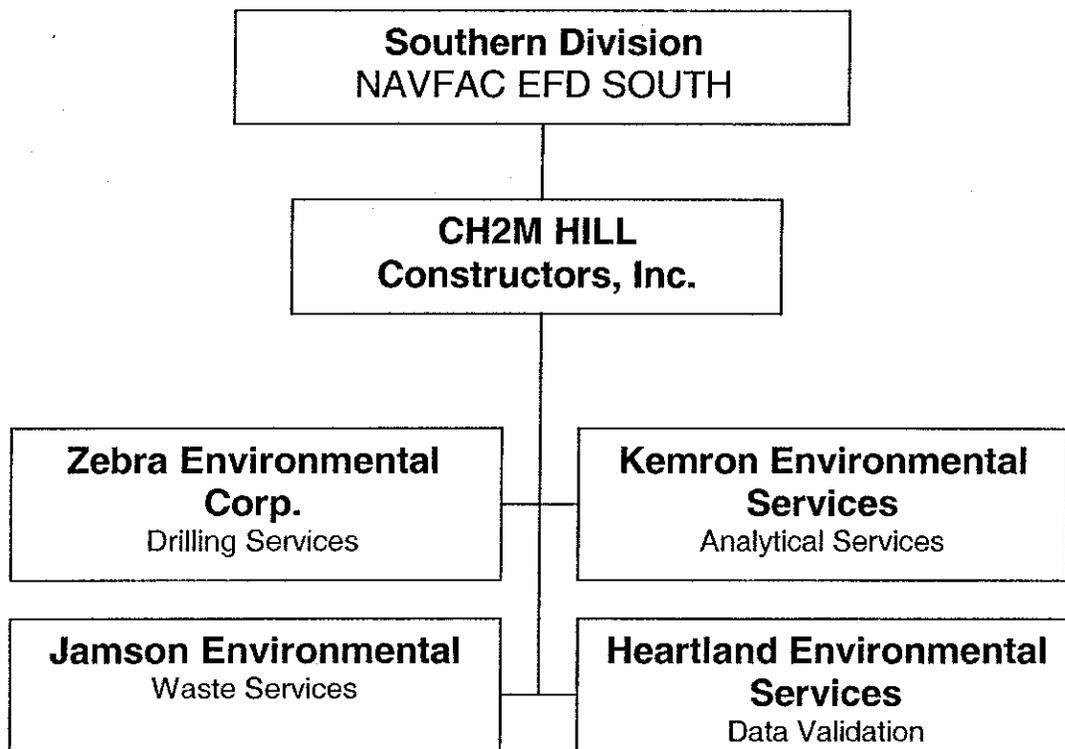
The ROD has not yet been submitted for OU 13.

3.0 Construction Activities

3.1 Interim Remedial Action Participants

The IRA participants and their respective responsibilities are shown in Figure 3-1.

FIGURE 3-1
Remedial Action Participants
OU 13, NAS Pensacola



3.2 Mobilization

On August 13 and 14, 2002, CCI personnel, equipment, and materials mobilized to NAS Pensacola to perform pre-excitation soil delineation sampling activities at Sites 8 and 24 and to collect one groundwater sample in each area of soil contamination. On the basis of the results of the first mobilization, CCI personnel re-mobilized on June 23 and August 1, 2003, to conduct additional soil and groundwater investigation activities including groundwater monitoring well installation and sampling as well as further soil sampling using the synthetic precipitation leaching procedure (SPLP).

3.3 Site Preparation

Site preparation tasks consisted of logistical issues associated with the sampling and analysis. These tasks included coordination with NAS Pensacola personnel regarding the location of utilities in the area, obtaining an excavation permit, designation of a laydown area for equipment and materials, and site-specific security and safety concerns. The field schedule also was discussed with personnel from Barrancas National Cemetery to ensure that the activities did not interfere with ongoing funerals. A decontamination area was set up for the drilling activities and the proper well permits were obtained from the Northwest Florida Water Management District.

Additionally, in preparation for the soil and groundwater investigation, a survey was conducted by a Florida Registered Surveyor on August 6 and 7, 2002, to locate the former RI sampling locations and to identify the proposed sampling locations.

3.4 Site 8 Investigation

3.4.1 Soil Delineation

On August 13 and 14, 2002, a total of 20 subsurface samples and associated quality assurance/quality control (QA/QC) samples were collected by CCI in the vicinity of former RI sample 08S01 for the delineation of cadmium. Additionally, a total of 6 surface, 12 subsurface, and associated QA/QC samples were collected by CCI in the vicinity of former RI sample 08S03 for the delineation of dieldrin.

All soil samples were collected using a direct push technology (DPT) drill rig equipped with 4-foot samplers lined with plastic sleeves. Zebra Environmental Corporation of Tampa, Florida, performed the DPT sampling. Soil was mixed thoroughly and placed in 4-ounce glass jars. All sampling was conducted in accordance with CCI's *Basewide Work Plan for NAS Pensacola* (CCI, 2000), FDEP standard operating procedures (SOPs), and EPA, Region 4, *Environmental Investigation Standard Operating Procedures and Quality Assurance Manual* (EISOPQAM, May 1996, revised 1997). All soil cuttings were returned to the associated borehole. Decontamination water was drummed and left onsite for subsequent disposal.

The delineation of the cadmium contamination at former sample 08S01 was performed by collecting three initial samples 25 ft to the north, south, and west of its location. In addition, three samples were then collected from these sampling points (50 ft from the original sample location), and two more samples were collected 75 and 100 ft to the south of the

original sample. Because of the location of Building 3561, initial and secondary samples were collected 18 ft and 36 ft to the east of former sample 08S01. All samples collected in this sampling effort were from 5 to 7 ft and 10 to 12 ft bls. Initially, only the samples collected closest to the original samples were analyzed. The additional samples were held at the laboratory pending the results of these samples. When the results of this initial set of samples did not exceed the target RG, other samples were not analyzed because the extent for potential excavation was already defined. **Figure 3-2** indicates the layout for each soil sample collected during this and subsequent mobilizations.

The delineation of the dieldrin contamination at former sample 08S03 was achieved by collecting surface and subsurface samples at 25- and 50-foot increments to the north, south, and east of its location. Samples were collected from zero to 1 foot, 5 to 7 ft, and 10 to 12 ft bls. Initially, only the samples collected closest to the original samples (on 25-foot centers) were analyzed. The additional samples were held at the laboratory pending the results of the 25-foot samples. Similar to the approach for cadmium, when the results of this initial set of samples from the first 25-foot distance did not exceed the target RG, other samples were not analyzed because the extent for potential excavation was already defined. **Figure 3-2** indicates the layout for each soil sample location.

All samples were delivered to Kemron Environmental Services (Kemron) in Marietta, Ohio (a Navy-approved laboratory). Select samples were analyzed for cadmium using EPA Method 6010B and for dieldrin using EPA Method 8081A on a 48-hour turnaround time (TAT). Some samples were analyzed first, while others were held pending the results of the initial samples.

Of the eight initial samples collected and analyzed for cadmium, no samples exceeded the residential direct exposure or leachability RGs. **Figure 3-3** presents the soil analytical results for cadmium. Of the nine initial samples collected and analyzed for dieldrin near former sample 08S03, no samples exceeded the residential RG of 0.21 mg/kg; however, one sample exceeded the leachability RG of 0.004 mg/kg. Sample 08S110 exhibited a dieldrin concentration of 0.0123 mg/kg. **Figure 3-4** presents the soil analytical results for dieldrin. **Table 3-1** presents a summary of the soil sample results. The complete laboratory validation report is included in **Appendix B**.

Because there was an exceedance in the leachability RG at Site 8 in 1996, as well as for one sample in 2002, FDEP and EPA requested further sampling using the SPLP methodology (SW 846 Method 1312). In June and August 2003, CCI remobilized to the site with a DPT rig and stainless-steel hand augers and collected additional samples. Three soil borings were advanced in the known area of contamination in the vicinity of RI sample 08S01 from zero to 9 ft bls. Samples were collected from 7 to 9 ft bls and analyzed for cadmium using total and SPLP methodology. One of the three samples (08S116 at 27.5 mg/kg) exhibited a total cadmium result above the leachability RG of 8 mg/kg. Another sample (08S117 at 222 mg/kg) exhibited a total cadmium result above the residential direct exposure RG (75 mg/kg) and the leachability RG. The results of the SPLP sampling are discussed in the following subsection.

Additionally, three surface (zero to 1 ft bls) and three subsurface (5 to 7 ft bls) soil samples were collected in the known area of contamination in the vicinity of RI sample 08S03 and

LEGEND

- Building 
- Fence 
- Soil Sample (1996) 
- Soil Sample (August 2002) 
- Soil Sample (June/August 2003) 

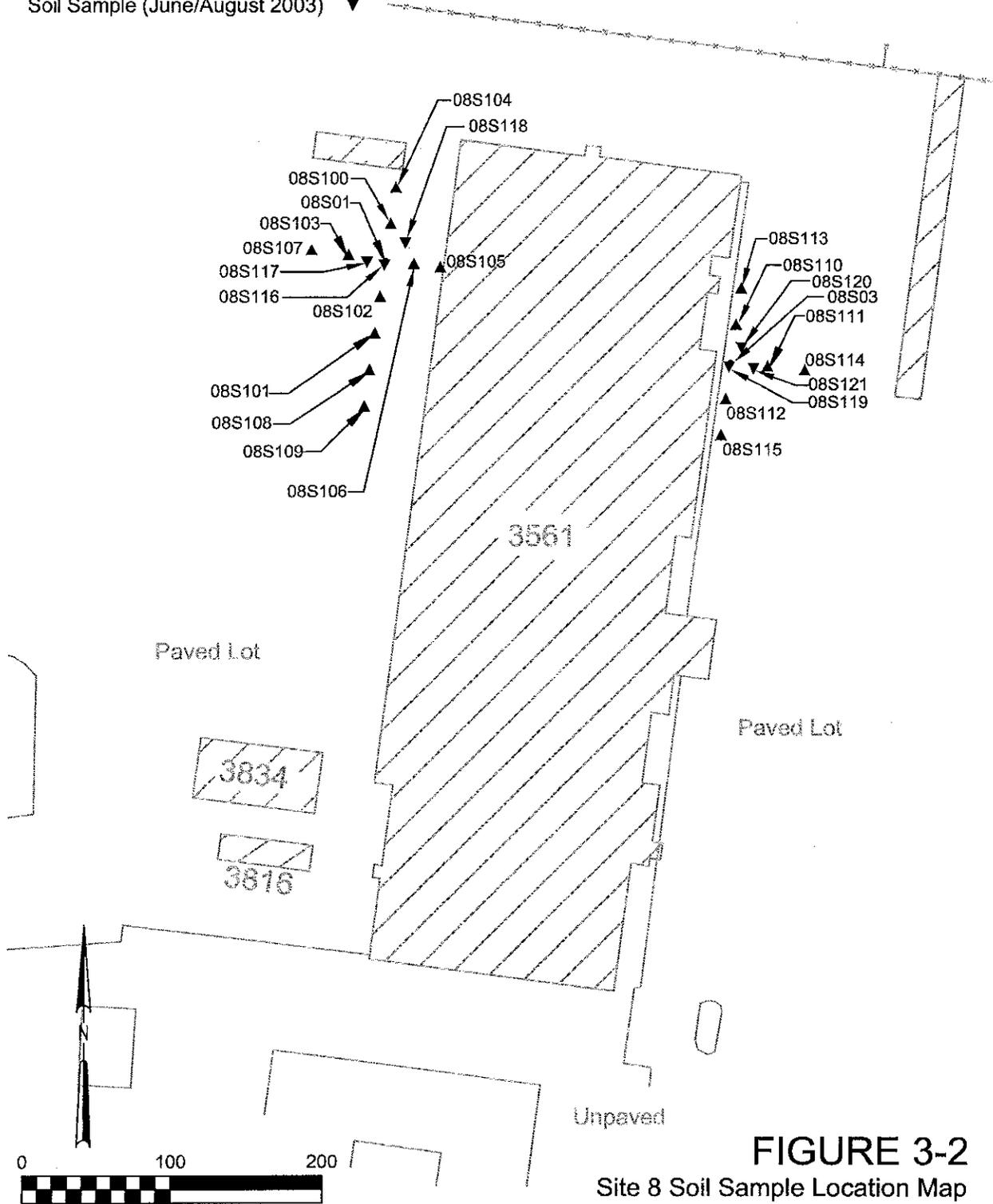


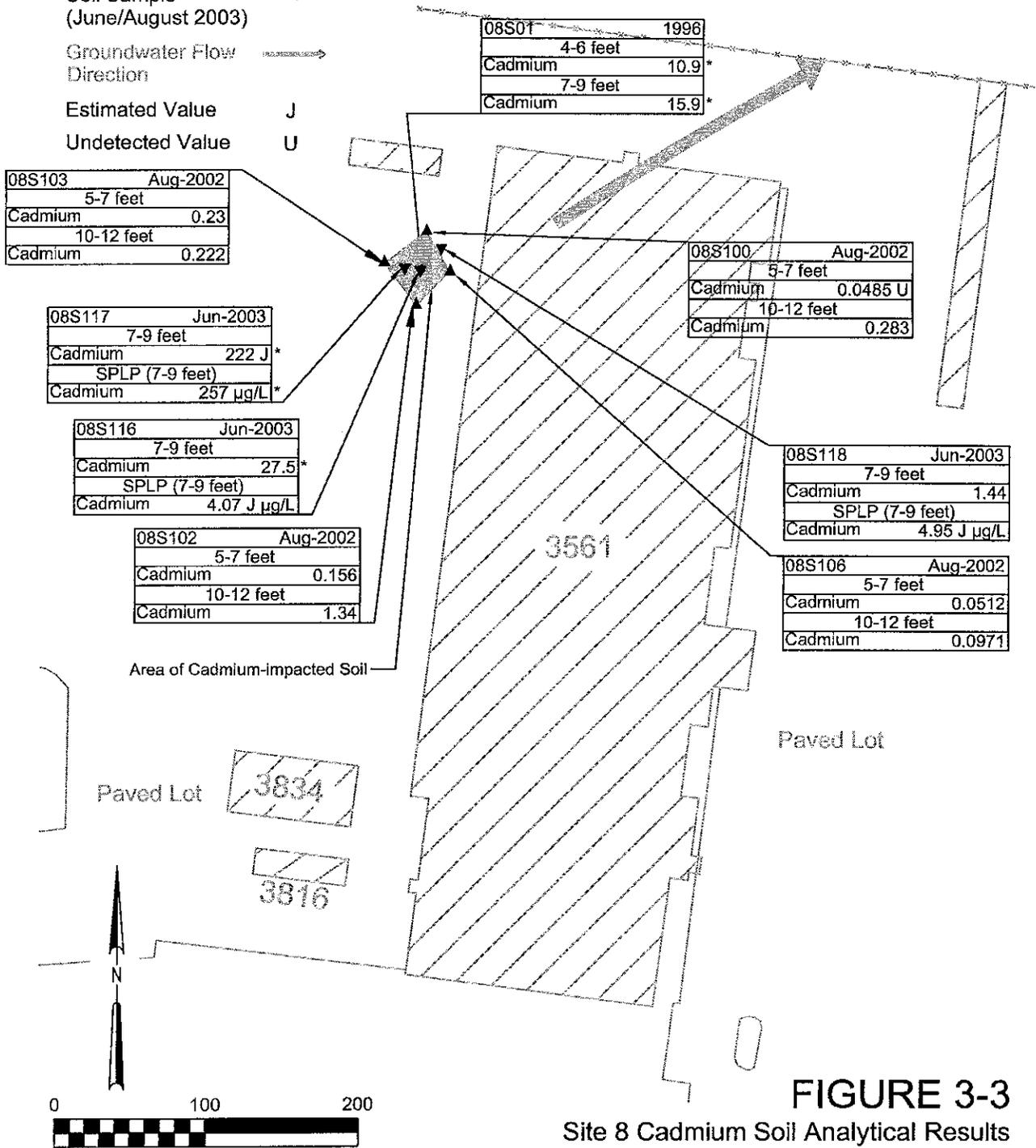
FIGURE 3-2
Site 8 Soil Sample Location Map
OU13, NAS Pensacola

LEGEND

- Building 
- Fence 
- Soil Sample (1996) 
- Soil Sample (August 2002) 
- Soil Sample (June/August 2003) 
- Groundwater Flow Direction 
- Estimated Value **J**
- Undetected Value **U**

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Cadmium	8	1,300	75	5

Soil analytical results are shown in mg/kg.
* Indicates an exceedance of one or more cleanup criteria.



08S103	Aug-2002
5-7 feet	
Cadmium	0.23
10-12 feet	
Cadmium	0.222

08S117	Jun-2003
7-9 feet	
Cadmium	222 J*
SPLP (7-9 feet)	
Cadmium	257 µg/L*

08S116	Jun-2003
7-9 feet	
Cadmium	27.5*
SPLP (7-9 feet)	
Cadmium	4.07 J µg/L

08S102	Aug-2002
5-7 feet	
Cadmium	0.156
10-12 feet	
Cadmium	1.34

08S01	1996
4-6 feet	
Cadmium	10.9*
7-9 feet	
Cadmium	15.9*

08S100	Aug-2002
5-7 feet	
Cadmium	0.0485 U
10-12 feet	
Cadmium	0.283

08S118	Jun-2003
7-9 feet	
Cadmium	1.44
SPLP (7-9 feet)	
Cadmium	4.95 J µg/L

08S106	Aug-2002
5-7 feet	
Cadmium	0.0512
10-12 feet	
Cadmium	0.0971

FIGURE 3-3
Site 8 Cadmium Soil Analytical Results
OU13, NAS Pensacola

LEGEND

- Building
- Fence
- Soil Sample (1996)
- Soil Sample (August 2002)
- Soil Sample (June/August 2003)
- Groundwater Flow Direction
- Estimated Value **J**
- Undetected Value **U**

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Dieldrin	0.004	0.3	0.21	0.005

Soil analytical results are shown in mg/kg.
 * Indicates an exceedance of one or more cleanup criteria.

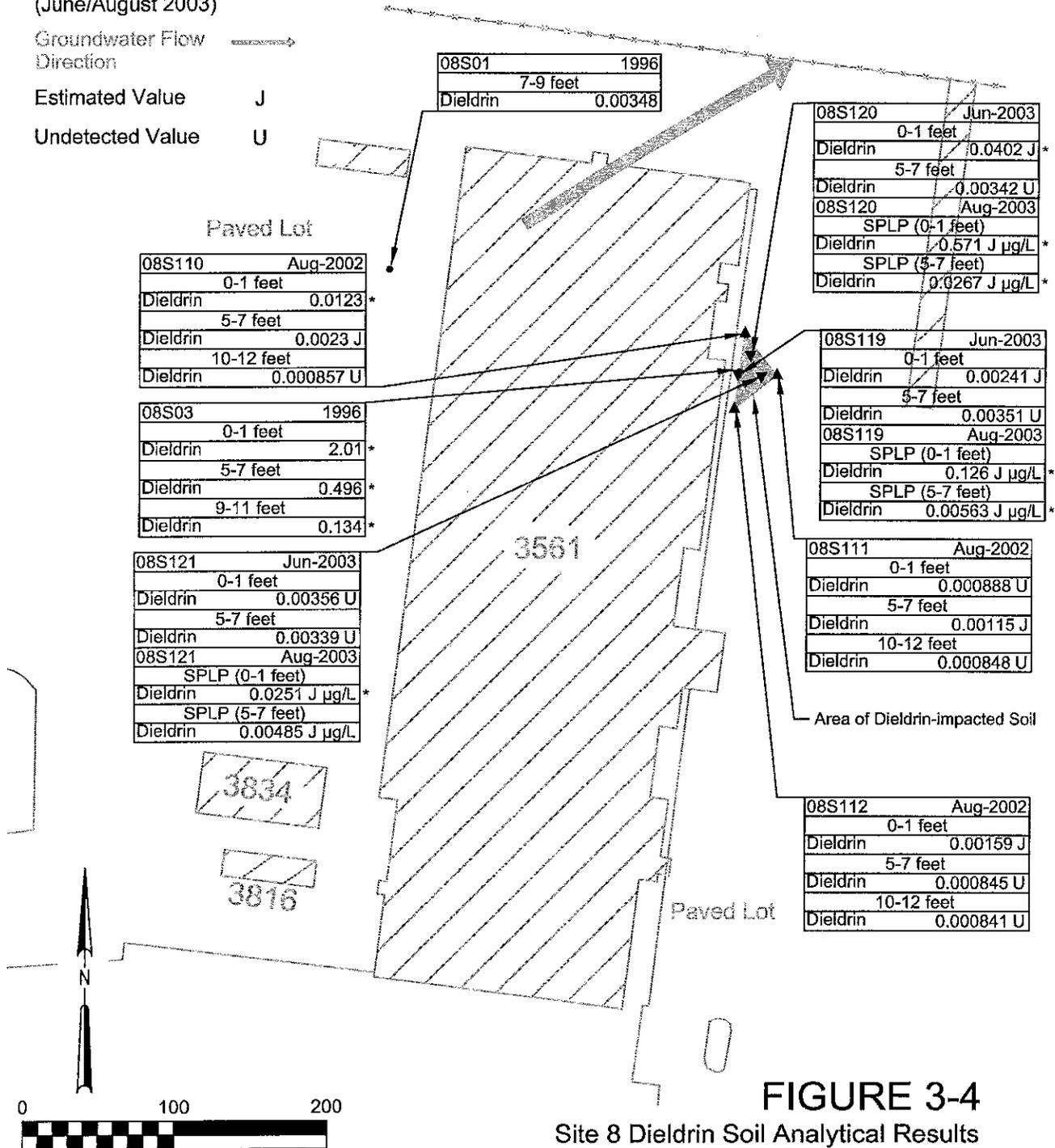


FIGURE 3-4
 Site 8 Dieldrin Soil Analytical Results
 OU13, NAS Pensacola

TABLE 3-1

Site 8 Soil Sampling Results

OU 13, NAS Pensacola

		Station ID	085-08-100-S-7	085-08-100-S-12	085-08-102-S-7	085-08-102-S-12	085-08-103-S-7	085-08-103-S-12	085-08-106-S-7
		Depth	5-7'	10-12'	5-7'	10-12'	5-7'	10-12'	5-7'
		Sample Date	08/13/2002	08/13/2002	08/13/2002	08/13/2002	08/13/2002	08/13/2002	08/13/2002
Parameter	Unit	Remedial Goals							
SW6010B									
Cadmium	mg/kg	75 ^a /1,300 ^b /8 ^c	0.0485 U	0.283	0.156	1.34	0.23	0.222	0.0512
SW8081A									
Dieldrin-Surface	mg/kg	0.21^a/0.3^b/0.004^c							
Dieldrin-Subsurface	mg/kg	0.21^a/0.3^b/0.004^c							

Notes:

^a = residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

^d = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

J - estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-1
 Site 8 Soil Sampling Results
 OU 13, NAS Pensacola

		Station ID	085-08-106-S-12	085-08-110-S-1	085-08-110-S-7	085-08-110-S-12	085-08-111-S-1	085-08-111-S-7	085-08-111-S-12
		Depth	10-12'	0-1'	5-7'	10-12'	0-1'	5-7'	10-12'
		Sample Date	08/13/2002	08/14/2002	08/14/2002	08/14/2002	08/14/2002	08/14/2002	08/14/2002
Parameter	Unit	Remedial Goals							
SW6010B									
Cadmium	mg/kg	75 ¹ /1,300 ² /8 ³	0.0971						
SW8081A									
Dieldrin-Surface	mg/kg	0.21^d /0.3 ^b /0.004 ^c		0.0123			0.000888 U		
Subsurface	mg/kg	0.21 ^a /0.3 ^a /0.004 ^c			0.0023 J	0.000857 U		0.00115 J	0.000848 U

Notes:

- ^a = residential land use, direct exposure, Chapter 62-777 F.A.C.
 - ^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.
 - ^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.
 - ^d = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.
- Bold indicates concentration exceeds remedial goal.
 J - estimated value
 mg/kg = milligrams per kilogram
 U = The analyte was analyzed for, but not detected.

TABLE 3-1

Site 8 Soil Sampling Results
 OU 13, NAS Pensacola

		Station ID	085-08-112-S-1	085-08-112-S-7	085-08-112-S-12	085-08-116-S-9	085-08-117-S-9	085-08-118-S-9	085-08-119-S-1
		Depth	0-1'	5-7'	10-12'	5-7'	5-7'	5-7'	0-1'
		Sample Date	08/14/2002	08/14/2002	08/14/2002	06/23/2003	06/23/2003	06/23/2003	06/23/2003
Parameter	Unit	Remedial Goals							
SW6010B									
Cadmium	mg/kg	75 ¹ /1,300 ² /8 ³				27.5	222 J	1.44	
SW8081A									
Dieldrin-Surface	mg/kg	0.21 ^d /0.3 ^b /0.004 ^c	0.00159 J						0.00241 J
Subsurface	mg/kg	0.21 ^a /0.3 ^b /0.004 ^c		0.000845 U	0.000841 U				

Notes:

^a = residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

^d = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

J - estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-1

Site 8 Soil Sampling Results
OU 13, NAS Pensacola

		Station ID	085-08-119-S-7	085-08-120-S-1	085-08-120-S-7	085-08-121-S-1	085-08-121-S-7
		Depth	5-7'	0-1'	5-7'	0-1'	5-7'
		Sample Date	06/23/2003	06/23/2003	06/23/2003	06/23/2003	06/23/2003
Parameter	Unit	Remedial Goals					
SW6010B							
Cadmium	mg/kg	75 ¹ /1,300 ² /8 ³					
SW8081A							
Dieldrin-Surface	mg/kg	0.21 ^a /0.3 ^b /0.004 ^c		0.0402 J		0.00356 U	
Subsurface	mg/kg	0.21 ^a /0.3 ^b /0.004 ^c	0.00351U		0.00342 U		0.00339 U

Notes:

^a = residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

^d = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

J - estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

analyzed for dieldrin using total and SPLP methods. **Figure 3-2** depicts the locations of the soil borings. Only one of the six samples (08S120 from zero to 1 ft bls) exceeded the leachability RG for dieldrin of 0.004 mg/kg; however, this sample was below the residential direct exposure RG of 0.21 mg/kg. **Figure 3-4** presents the total and SPLP results for dieldrin at Site 8. **Table 3-1** provides a summary of the total dieldrin results. The complete laboratory validation report is included in **Appendix B**.

3.4.2 Site 8 Soil SPLP

As previously stated, following the initial sampling activities in August 2002, EPA and FDEP recommended further soil sampling using the SPLP in the hot spot areas to evaluate whether the contaminants in the soil have the potential to leach into groundwater. Therefore, on June 23 and August 1, 2003, CCI remobilized to the site to collect these additional soil samples. The soil samples were collected using a DPT rig and stainless-steel hand augers.

To assess the leachable properties of the cadmium contamination in the vicinity of RI sample 08S01, three soil borings were advanced from zero to 9 ft bls. Samples were collected from 7 to 9 ft bls and analyzed for cadmium using SPLP methodology. Cadmium SPLP concentrations in the subsurface soil at Site 8 ranged from 4.07 $\mu\text{g}/\text{L}$ to 257 $\mu\text{g}/\text{L}$. Only one subsurface soil sample exceeded the associated cadmium groundwater cleanup target level (GCTL) of 5 $\mu\text{g}/\text{L}$. **Figure 3-3** and **Table 3-2** present the total and SPLP results for cadmium at Site 8.

Additionally, in an effort to evaluate the leachable properties of the dieldrin contamination, three surface (zero to 1 ft bls) and three subsurface (5 to 7 ft bls) soil samples were collected in the vicinity of RI sample 08S03 and analyzed for dieldrin using total and SPLP methods. **Figure 3-2** depicts the locations of the soil borings. Five of the six samples (both surface and subsurface) analyzed for dieldrin using SPLP exceeded the GCTL of 0.005 $\mu\text{g}/\text{L}$. **Table 3-2** provides a summary of SPLP results for Site 8. **Figure 3-4** presents the total and SPLP results for dieldrin at Site 8. The complete laboratory validation report is included in **Appendix B**.

3.4.3 Site 8 Groundwater

3.4.3.1 DPT Groundwater Sampling

In August 2002, groundwater samples were collected approximately 50 ft downgradient of former samples 08S01 and 08S03 at locations 08S104 and 08S113, respectively, to evaluate whether the COCs in soil had affected groundwater at the site. **Figure 3-5** presents the groundwater sample locations. Samples were collected using the DPT rig. In collecting the samples, a 4-foot screened rod descended to the water table from approximately 15 to 19 ft bls. Teflon® tubing was then lowered into the screen interval until it was 1 foot above the bottom of the screen (approximately 18 ft bls). The tubing was attached to a peristaltic pump and the groundwater was pumped to the surface using low flow. To minimize turbidity, 3 gallons of water were purged before the collection of the groundwater samples. Samples were analyzed for cadmium using EPA Method 6010B (sample 08S104) or for dieldrin (sample 08S113) using EPA Method 8081A.

TABLE 3-2

Site 8 SPLP Sampling Results
 OU 13, NAS Pensacola

		StationID	085-08-116-S-9	085-08-116-S-9	085-08-117-S-9	085-08-118-S-9	085-08-119-S-1	085-08-119-S-7	085-08-120-S-1	085-08-120-S-7
		Depth	7-9'	Duplicate 7-9'	7-9'	7-9'	0-1'	5-7'	0-1'	5-7'
		Sample Date	06/23/2003	06/23/2003	06/23/2003	06/23/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003
Parameter	Unit	Remedial Goal								
SW6010B										
Cadmium	µg/L	5 ^a	4.07 J	3.39 J	257	4.95 J	--	--	--	--
SW8081A										
Dieldrin	µg/L	0.005 ^b	--		--	--	0.126 J	0.00563 J	0.571 J	0.0267 J

Notes:

^a = primary standard as provided in Chapter 62-550 F.A.C.

^b = minimum criterial practical quantitation limit as provided in Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

J = estimated value

U = The analyte was analyzed for, but not detected.

µg/L = micrograms per liter

TABLE 3-2

Site 8 SPLP Sampling Results

OU 13, NAS Pensacola

		StationID	085-08-121-S-1	085-08-121-S-7
		Depth	0-1'	5-7'
		Sample Date	08/01/2003	08/01/2003
Parameter	Unit	Remedial Goal		
SW6010B				
Cadmium	µg/L	5 ^a	--	--
SW8081A				
Dieldrin	µg/L	0.005 ^b	0.0251 J	0.00485 J

Notes:

^a = primary standard as provided in Chapter 62-550 F.A.C.

^b = minimum criterial practical quantitation limit as provided in Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

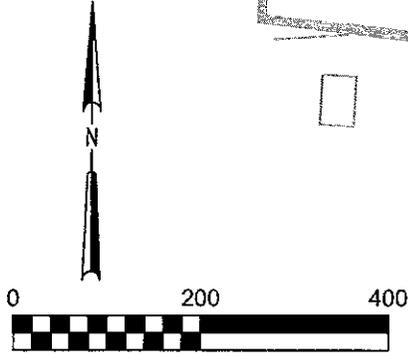
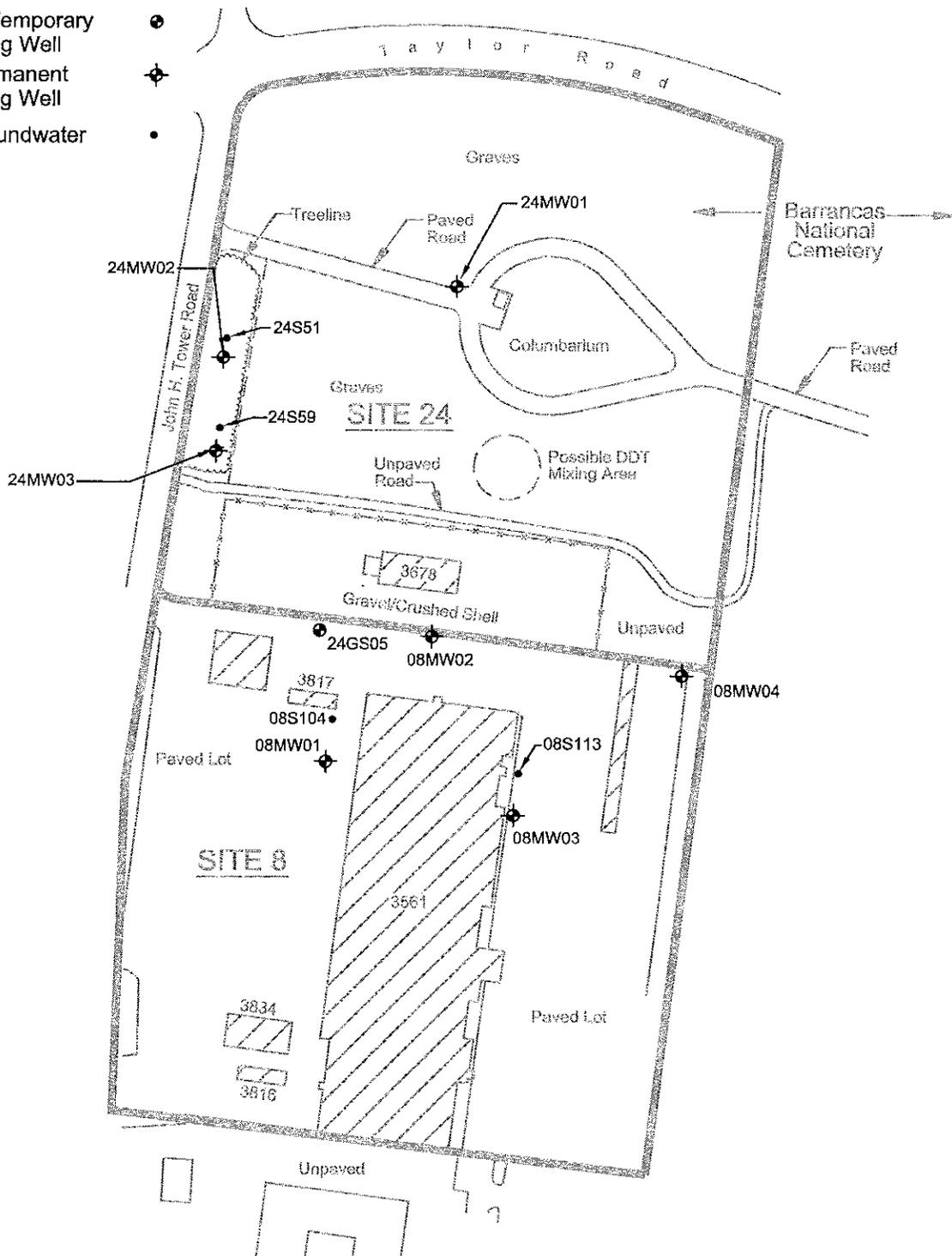
J = estimated value

U = The analyte was analyzed for, but not detected.

µg/L = micrograms per liter

LEGEND

- Building 
- Fence 
- Former Temporary Monitoring Well 
- New Permanent Monitoring Well 
- DPT Groundwater Sample 



Scale: 1" = 200'

FIGURE 3-5
 DPT Sample and Monitoring Well Location Map
 OU13, NAS Pensacola

No detectable concentrations of cadmium or dieldrin above their respective GCTLs were reported in the groundwater sample results. However, the method detection limit (MDL) for dieldrin was 0.0263 µg/L, which is above the associated GCTL; therefore, any concentrations of dieldrin above the RG of 0.005 µg/L, but below the MDL of 0.0263 µg/L, could not be detected or reported. Table 3-3 provides a summary of groundwater sample results. The groundwater results are shown in Figure 3-6. The complete laboratory validation report is included in Appendix B.

3.4.3.2 Monitoring Well Installation

During the RI, the groundwater at OU 13 was monitored using temporary monitoring wells, which are not ideal for monitoring inorganic chemicals because of the commonly recognized presence of particulate interference and introduction of metals into water samples. During the August 2002 groundwater sampling event, DPT samples were collected. Although no COCs were detected from the DPT groundwater samples, permanent wells were installed, because temporary wells and DPT groundwater samples do not always accurately reflect the water quality. To verify the presence or absence of soil COCs in groundwater and to monitor other groundwater COCs (iron, lead, and manganese), a total of four permanent groundwater wells were installed at Site 8 on June 23 and 24, 2003. The wells were installed to an approximate depth of 18 ft bls. The permanent monitoring wells replaced the former temporary wells 08GR01 (08-MW-01), 08GR02 (08-MW-02), 08GR03 (08-MW-03), and 08GR05 (08-MW-04). Figure 3-5 presents the monitoring well locations for Site 8.

Monitoring wells were installed by Zebra Environmental Corporation in accordance with American Society for Testing and Materials (ASTM) Method D-5092, *Design and Installation of Groundwater Monitoring Wells in Aquifers* (1990). Hollow stem augers were used to advance 8-inch-diameter boreholes to the total drilling depths. Soil samples were classified in accordance with the Unified Soil Classification System and descriptions included color, moisture content, density, grain size, odor, discoloration, and any other pertinent information. Soil boring logs and well completion logs are presented in Appendix C.

The drill rig, as well as all downhole tools and equipment, was decontaminated between each monitoring well location to minimize the potential for cross contamination. All wells were installed at the desired depth so that the screen extends both below and above the water level in the boring. The wells were constructed with 10 ft of 2-inch-diameter, 0.010-inch machine slotted polyvinyl chloride (PVC) well screen and flush joint threaded PVC riser casing.

A washed, graded, 20/30 sand pack was placed around the well screen and topped off with a finer-grained 30/65 sand to a maximum of 2 ft above the top of the screen. A 2-foot-thick bentonite seal was placed above the sand pack. After the bentonite seal was allowed to hydrate for a minimum of 1 hour, cement grout was added to ground surface. Grout was placed by the tremie method except when grouting was done within 5 ft of ground surface, in which case the tremie method was not required.

All wells were completed with flush mount covers. A freely draining valve box with a locking bolt-down cover were installed over the PVC well casing of each well. The casing was cut approximately 3 inches bls and equipped with a water tight cap. A 2-foot by 2-foot

TABLE 3-3

Site 8 Groundwater Sampling Results
 OU 13, NAS Pensacola

		StationID	08-104-GW	08-113-GW-19	08-MW-01	08-MW-02	08-MW-03	08-MW-04
		SampleID	085-08-104-GW	085-08-113-GW-19	085-08-MW-01-W-1	085-08-MW-02-W-1	085-08-MW-03-W-1	085-08-MW-04-W-1
		Sample Date	08/13/2002	08/14/2002	07/09/2003	07/09/2003	07/09/2003	07/09/2003
Parameter	Unit	Remedial Goal						
SW6010B								
Cadmium	µg/L	5.0 ^a	2.5 U	--	5 U	12.7	5 U	5 U
Iron	µg/L	1,707 ^b		--	8,900	10,300	3,230	32.9 J
Manganese	µg/L	50 ^c	--	--	238	392	123	26.7
SW6020								
Lead	µg/L	15 ^c	--	--	0.653 J	1.21	0.965 J	1 U
SW8081A								
Dieldrin	µg/L	0.005 ^d	--	0.0263 UJ	--	--	0.00103 U	--

Notes:

^a = primary standard as provided in Chapter 62-550 F.A.C.

^b = reference concentration (2 x mean) for NAS Pensacola

^c = Groundwater Target Cleanup Level, Chapter 62-777 F.A.C.

^d = minimum critical practical quantitation limit as provided in Chapter 62-777 F.A.C.

Bold indicates concentration exceeds remedial goal.

J = estimated value

U = The analyte was analyzed for , but not detected.

µg/L = micrograms per liter

LEGEND

- Building
- Fence
- Former Temporary Monitoring Well
- New Permanent Monitoring Well
- Groundwater Flow Direction
- DPT Groundwater Sample
- Estimated Value J
- Undetected Value U
- Undetected Value (Estimated) UJ

24MW02	Jul-2003
Arsenic	0.823 J
Iron	57.3
Manganese	2.18 J
Benzo(a)pyrene	0.0553 J
Dieldrin	0.00379

24MW03	Jul-2003
Iron	69.9
Manganese	10 U
Dieldrin	0.00149 J

08MW02	Jul-2003
Cadmium	12.7
Iron	10,300
Lead	1.21
Manganese	392

08S104	Aug-2002
Cadmium	2.5 U

08MW01	Jul-2003
Cadmium	5 U
Iron	8,900
Lead	0.653 J
Manganese	238

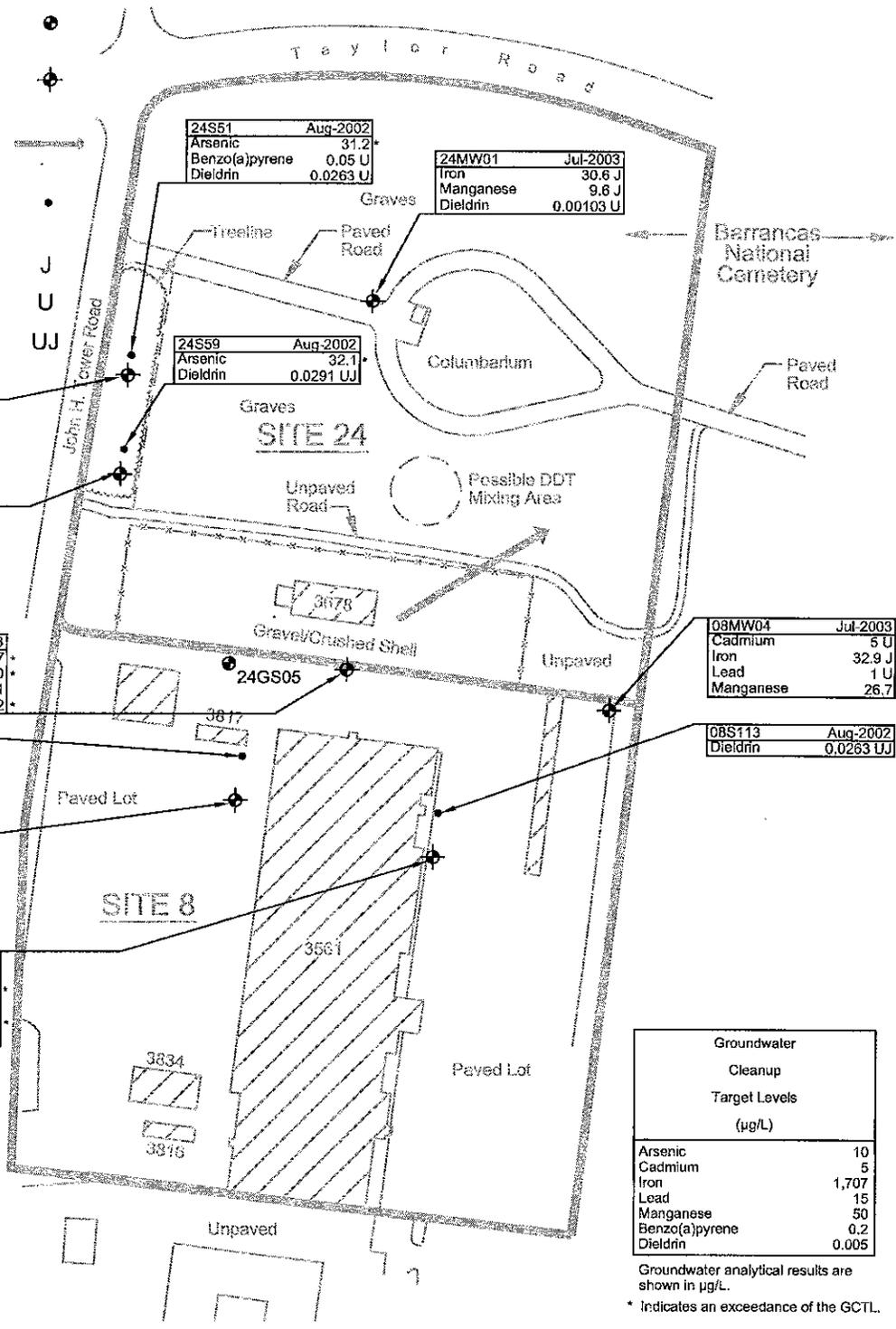
08MW03	Jul-2003
Cadmium	5 U
Iron	3,230
Lead	0.965 J
Manganese	123
Dieldrin	0.00103 U

24S51	Aug-2002
Arsenic	31.2
Benzo(a)pyrene	0.05 U
Dieldrin	0.0263 U

24MW01	Jul-2003
Iron	30.6 J
Manganese	9.6 J
Dieldrin	0.00103 U

24S59	Aug-2002
Arsenic	32.1
Dieldrin	0.0291 UJ

Barrancas National Cemetery



08MW04	Jul-2003
Cadmium	5 U
Iron	32.9 J
Lead	1 U
Manganese	26.7

08S113	Aug-2002
Dieldrin	0.0263 UJ

Groundwater Cleanup Target Levels (µg/L)	
Arsenic	10
Cadmium	5
Iron	1,707
Lead	15
Manganese	50
Benzo(a)pyrene	0.2
Dieldrin	0.005

Groundwater analytical results are shown in µg/L.
 * Indicates an exceedance of the GCTL.

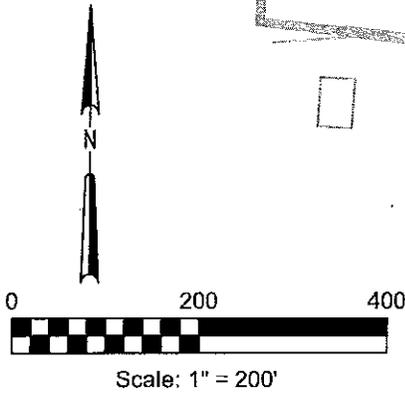


FIGURE 3-6
 Groundwater Analytical Results
 OU13, NAS Pensacola

by 6-inch-deep concrete pad was installed and sloped to drain water away from the valve box. Each well was equipped with a keyed-alike lock.

On June 25 and 26, 2003, each well was developed for up to 1 hour by pumping and surging until the well produced clear water with a minimum amount of sediment. The wells were pumped using a Grunfos submersible pump. Well development logs are provided in **Appendix D**.

3.4.3.3 Groundwater Monitoring Well Sampling

On July 9, 2003, all four wells at Site 8 were sampled. Before sampling, the depth to groundwater was measured in each of the monitoring wells. Another round of water levels was collected from the wells on September 17, 2003, to verify the flow direction. The groundwater elevations from both events are presented in **Table 3-4**.

TABLE 3-4
Groundwater Elevation Data Site 8
OU 13, NAS Pensacola

Monitoring Well	Well Depth (ft bls)	TOC Elevation (ft NAVD)	Screened Interval (ft bls)	07/09/2003		09/17/2003	
				DTW (ft btoc)	GWE (ft NAVD)	DTW (ft btoc)	GWE (ft NAVD)
08-MW-01	18.22	27.73	8.0-18.0	9.01	18.72	8.23	19.50
08-MW-02	18.26	27.71	8.0-18.0	8.91	18.80	8.47	19.24
08-MW-03	18.52	28.13	8.0-18.0	9.59	18.54	8.89	19.24
08-MW-04	18.00	28.16	8.0-18.0	9.30	18.86	9.20	18.96

Notes:

bls = below land surface
btoc = below top of casing
DTW = depth to water
NA = not available

GWE = groundwater elevation
NAVD = North American Vertical Datum
TOC = top of casing
ft = feet

The groundwater flow direction determined for the July 2003 monitoring event was to the south, which was not consistent with historical flow. Consequently, another round of water levels was collected on September 17, 2003. The flow from the September 2003 measuring event is shown in **Figure 3-7**. Groundwater flow was generally to the northeast during September 2003 and is consistent with historical flow.

Groundwater sampling was performed using a peristaltic pump and dedicated Teflon® tubing in accordance with the FDEP SOPs and the EPA EISOPQAM (May 1996, revised 1997). Before sampling, the field parameters (temperature, pH, conductivity, turbidity, salinity, oxygen-reduction potential [ORP], and dissolved oxygen [DO]) were measured at each monitoring well. The field parameter data are summarized in **Table 3-5**. The field data sheets are presented in **Appendix D**. All purge water was drummed, properly labeled, and staged on base for subsequent disposal.

All samples were delivered to Kemron on standard TAT. All four wells were analyzed for total cadmium in accordance with Method 6010B. Additionally, well 08-MW-03 was analyzed for dieldrin in accordance with Method 8081A. Because the FFS proposed long-term monitoring (LTM) for iron, lead, and manganese, all four wells at Site 8 also were analyzed for these constituents using Method 6010B to verify their current concentrations and to assess the need for LTM.

LEGEND

- Building
- Fence
- Former Temporary Monitoring Well
- New Permanent Monitoring Well
- Groundwater Flow Direction
- Contour Interval = 0.2 feet

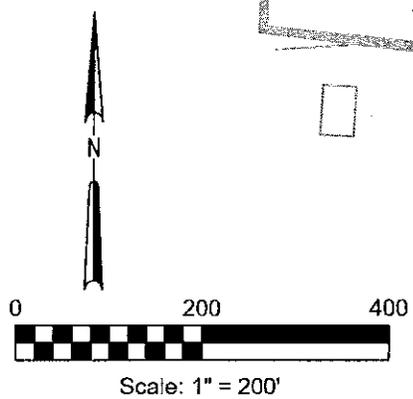
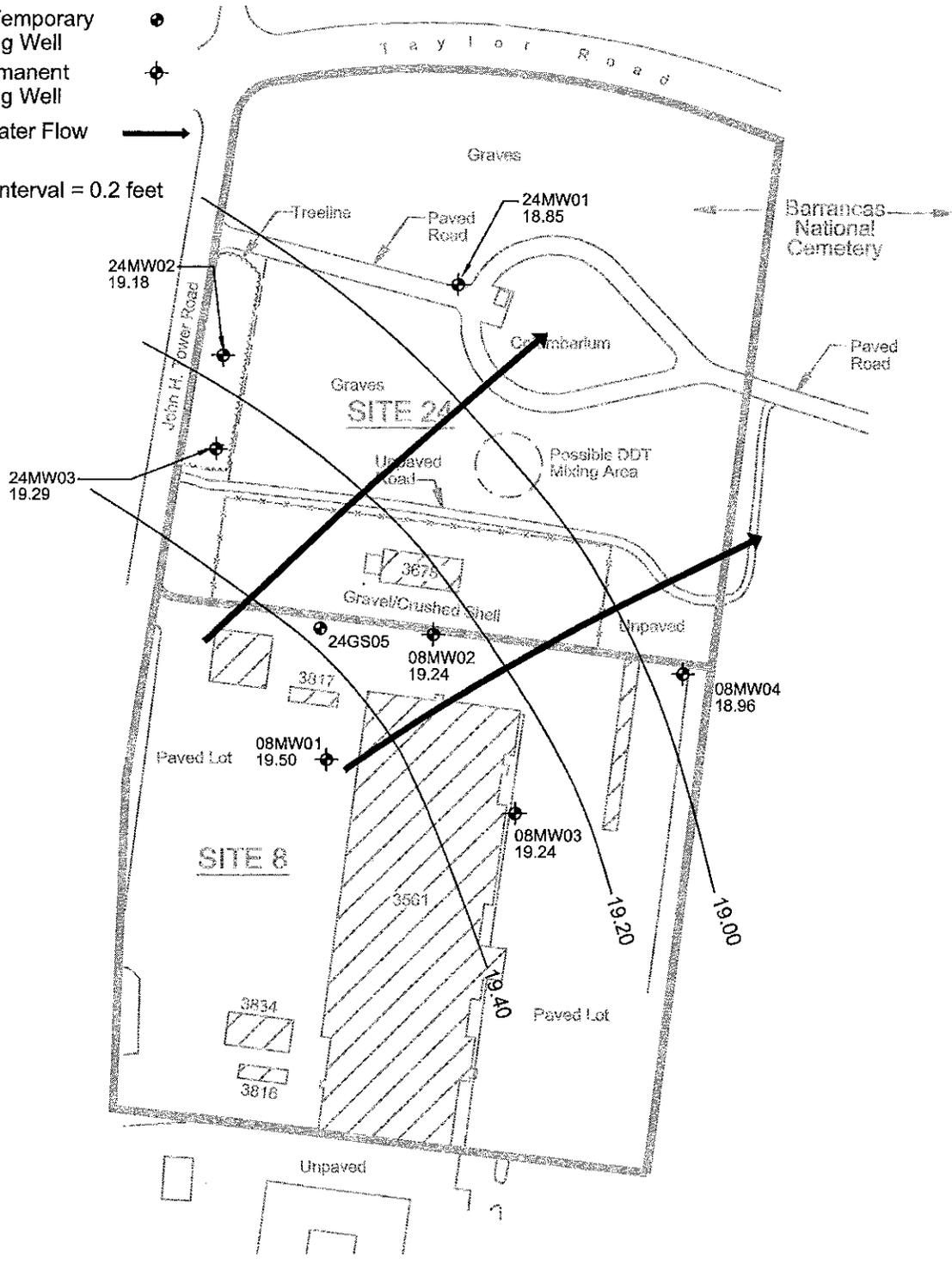


FIGURE 3-7
Groundwater Flow Map
OU13, NAS Pensacola

TABLE 3-5
 Final Groundwater Field Parameter Data Site 8 (July 2003)
 OU 13, NAS Pensacola

Monitoring Well	Date	pH	Salinity	Water Temp (°C)	Specific Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)
08-MW-01	07/09/03	6.29	0.01	26.75	0.349	-70	0	0
08-MW-02	07/09/03	6.13	0.01	26.14	0.336	-41	0	0
08-MW-03	07/09/03	6.07	0.01	26.10	0.253	6	0	0
08-MW-04	07/09/03	6.05	0.02	25.52	0.393	161	1.97	20.3

Notes:

°C = degrees Celsius
 mS/cm = millisecond per centimeter
 ORP = oxygen-reduction potential
 mV = millivolt
 DO = dissolved oxygen
 mg/L = milligram per liter
 NTU = nephelometric turbidity unit

Cadmium results exceeded the RG of 5 µg/L in only one monitoring well, 08-MW-02, with a concentration of 12.7 µg/L. This well is located approximately 200 ft downgradient of the source area for cadmium. The well located directly within the area of cadmium-contaminated soil did not contain detectable levels of cadmium in the groundwater. No other exceedances were reported above the RG.

Dieldrin was not detected in monitoring well 08-MW-03 where the soil exceeded the leachability and SPLP criteria.

Iron exceeded its RG of 1,707 µg/L in monitoring wells 08-MW-01, 08-MW-02, and 08-MW-03, with concentrations ranging from 3,230 to 10,300 µg/L. Manganese exceeded its RG of 50 µg/L in the same three monitoring wells, with concentrations ranging from 123 to 392 µg/L. Lead was not detected in any of the monitoring wells above its RG of 15 µg/L. Figure 3-6 presents the groundwater results for Site 8. The complete laboratory validation report is included in Appendix B.

3.4.4 Site 8 Discussion

During the RI, cadmium was detected in sample location 08S01, with a concentration of 10.9 mg/kg (4 to 6 ft bls) and 15.9 mg/kg (7 to 9 ft bls), both exceeding the leachability RG of 8 mg/kg. Of the 11 cadmium samples collected from August 2002 through August 2003, two subsurface soil samples (08S116 and 08S117) exceeded the leachability RG (8 mg/kg) with concentrations of 27.5 and 222 J mg/kg, respectively. Sample 08S117 also exceeded the residential direct exposure RG of 75 mg/kg. Of the three subsurface soil samples collected and analyzed for cadmium using SPLP methodology, one sample exceeded the groundwater RG of 5 µg/L, with a concentration of 257 µg/L. Groundwater samples collected directly beneath the area of soil contamination were below the groundwater RG, but there was one exceedance in downgradient well 08-MW-02, with a concentration of 12.7 µg/L.

LEGEND

- Building ▨
- Fence —x—
- Soil Sample (1995/1996) •
- Soil Sample (August 2002) ▲
- Soil Sample (June/August 2003) ▼

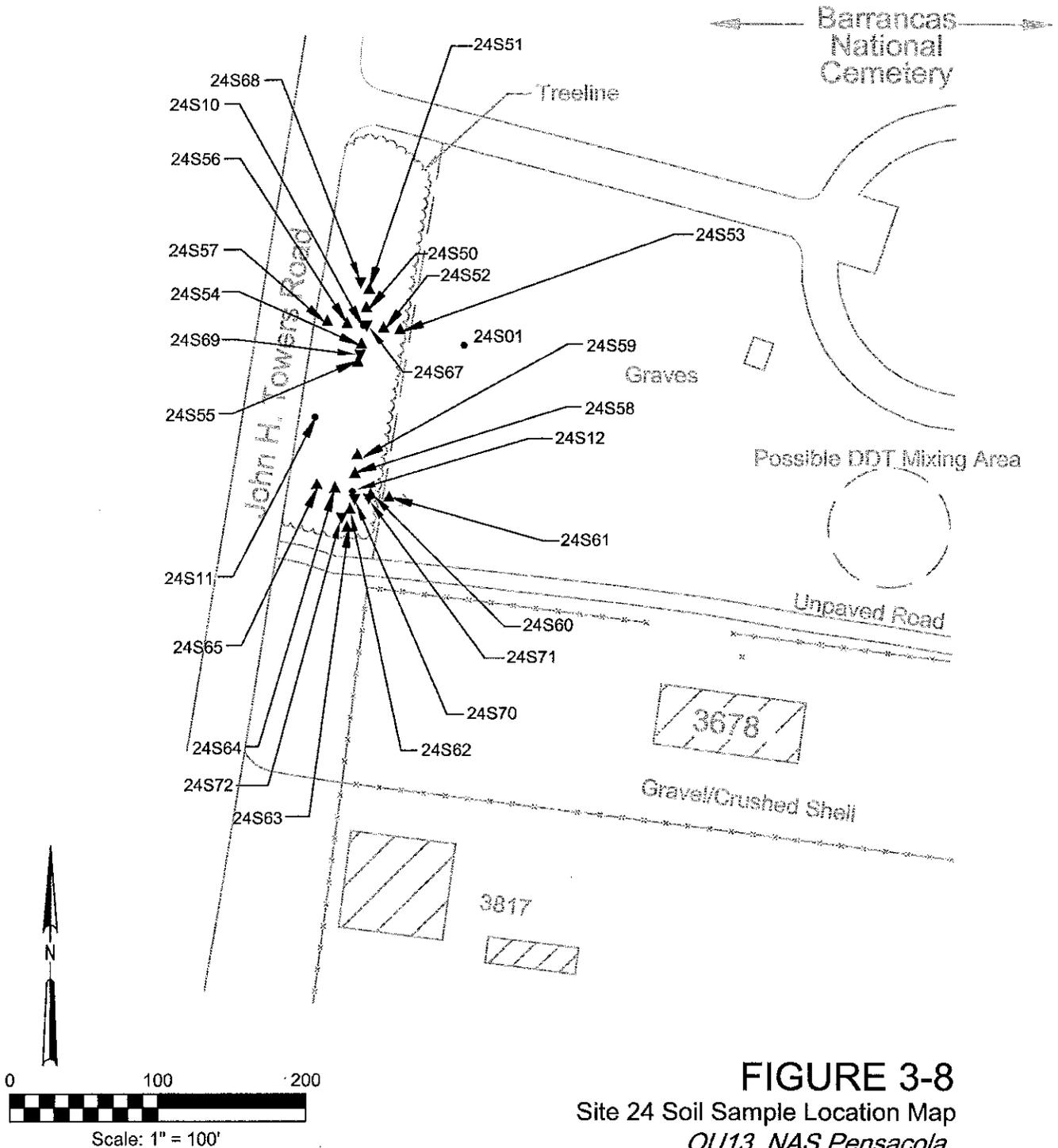


FIGURE 3-8
 Site 24 Soil Sample Location Map
 OU13, NAS Pensacola

The FFS estimated that the remedial volume for cadmium at Site 8 was 3,700 cubic yards (EnSafe, 2000). After delineation, it was determined that the volume of cadmium-contaminated soil is approximately 333 cubic yards and currently is covered with asphalt, preventing direct contact and significantly decreasing rainwater infiltration in the area. In accordance with Florida's new global risk-based corrective action (RBCA), no further action is necessary if site-specific characteristics, in conjunction with institutional and engineering controls (such as the asphalt pavement), show that the contaminants will not leach into groundwater at levels that pose a threat to human health and the environment. Therefore, it is recommended that cadmium is left in place and groundwater monitoring for cadmium continue for a minimum of 1 year and until two consecutive groundwater monitoring events indicate that cadmium concentrations are below its RG. Additionally, because there were soil exceedances of the residential RG for cadmium, LUCs should be placed on the site to prevent residential use.

During the RI, dieldrin was detected in the surface and subsurface soil above the residential and industrial RGs at sample location 08S03 with concentrations of 2.01 mg/kg (zero to 1 ft bls) and 0.496 mg/kg (5 to 7 ft bls). During the 2002 and 2003 sampling events, however, there were no dieldrin exceedances of the residential or industrial direct exposure RGs. These included samples collected from former RI location 08S03 at the same depths.

Additionally, dieldrin was detected above the leachability RG at former RI sample location 08S03 at three depths (zero to 1 ft bls, 5 to 7 ft bls, and 9 to 11 ft bls). Of the 15 soil samples collected during the 2002 and 2003 sampling events, two samples exceeded the leachability RG with a concentration of 0.0123 and 0.0402 mg/kg. However, the two samples collected in 2003 at former RI location 08S03 (zero to 1 ft and 5 to 7 ft bls) did not exceed leachability RG.

Five of the six soil samples collected in 2003 exhibited SPLP concentration above the associated groundwater RG. In groundwater, dieldrin was not detected above the MDL in the August 2002 DPT sample, however, the MDL for dieldrin was above the associated GCTL; therefore, any concentrations of dieldrin above the RG, but below the MDL could not be detected or reported. Dieldrin was not detected (0.00103 $\mu\text{g/L}$) in July 2003 in the monitoring well located directly in the source area above the groundwater RG (RL was below the RG).

The FFS Addendum estimated that the remedial volume for dieldrin at Site 8 was 70 cubic yards of surface soil and 300 cubic yards of subsurface soil (EnSafe, 2001). After soil delineation, it was determined that the volume of dieldrin-contaminated soil is approximately 200 cubic yards and currently is covered with asphalt, preventing direct contact and significantly decreasing rainwater infiltration in the area. Dieldrin at Site 8 meets the residential and industrial direct exposure RGs, however, dieldrin exceeded the leachability RG and GCTL (using SPLP methodology) in five of six samples. Although not detected in groundwater above the RG, dieldrin remains a leachability concern; therefore, it is recommended that dieldrin is left in place and LTM be conducted for a minimum of 1 year and until two consecutive monitoring events show dieldrin below its groundwater RG.

Lead was not detected in wells above its RG. However, iron and manganese concentrations in three wells exceeded their respective RGs. It is recommended that LTM for lead, iron, and

manganese continue until two consecutive groundwater monitoring events indicate that all COCs are below their respective GCTLs or alternative RGs are established. It is anticipated lead may be dropped from the LTM following one additional sampling event. Because the sources of iron and manganese are unknown and no active remediation will be conducted, LTM may continue for 30 years.

3.5 Site 24 Investigation

3.5.1 Soil Delineation

On August 14 and 15, 2002, samples were collected in the vicinity of former RI samples 24S10, 24S11, and 24S12. A total of 8 surface, 13 subsurface, and associated samples were collected in the vicinity of former RI sample 24S10 for the source delineation of arsenic, benzo(a)pyrene, and dieldrin. One sample was collected south of former RI sample 24S11 from zero to 1 ft bls and analyzed for arsenic, and one sample was collected from 5 to 7 ft bls and analyzed for dieldrin. Moreover, a total of 1 surface, 11 subsurface, and associated QA/QC samples were collected by CCI in the vicinity of former RI sample 24S12 for the source delineation of arsenic and dieldrin.

Delineation at former RI sample 24S10 was performed by taking four initial samples 25 ft to the north, south, east, and west of its location. To prevent the displacement of several large trees in the event of excavation, four additional samples were collected on 12.5-foot centers from the original sample (half the distance to the 25-foot samples). These samples were held at the laboratory pending the results of the 25-foot samples. Surface soil samples were collected from zero to 1 ft bls and analyzed for arsenic and benzo(a)pyrene. Subsurface soil samples were collected from 5 to 7 ft bls and 9 to 11 ft bls (unless groundwater was encountered) and analyzed for dieldrin.

One sample also was collected south of former RI sample 24S11 from zero to 1 ft bls and analyzed for arsenic; one sample was collected from 5 to 7 ft bls and analyzed for dieldrin.

Delineation at the location of former RI sample 24S12 was performed by taking four initial samples 25 ft to the north, south, east, and west of its location. As with sampling at 24S10, secondary samples were collected 12.5 ft from sample 24S12 to mitigate the potential disturbance to the tree line. These samples were held at the laboratory pending the results of the 25-foot samples. Subsurface soil samples were collected from 5 to 7 ft bls and analyzed for dieldrin. Figure 3-8 illustrates the soil boring locations.

All soil samples were collected using a DPT rig equipped with 4-foot samplers lined with plastic sleeves. Soil was mixed thoroughly and placed in 4-ounce glass jars. All sampling was conducted in accordance with CCI's *Basewide Work Plan for NAS Pensacola* (CCI, 2000), FDEP SOPs, and EPA Region 4 EISOPQAM (May 1996, revised 1997). All soil cuttings were returned to the associated borehole. Decontamination water was drummed and left onsite for subsequent disposal.

All samples were delivered to Kemron. Select samples were analyzed for arsenic using EPA Method 6010B, benzo(a)pyrene using EPA Method 8270C, and/or dieldrin using EPA Method 8081A on 48-hour TAT. Table 3-6 presents the results for soil samples. The complete laboratory validation report is included in Appendix B.

Arsenic results in surface soil in the vicinity of former sample 24S10 ranged from 0.549 to 3.89 mg/kg. Of the four surface samples collected and analyzed for arsenic in the vicinity of sample 24S10, sample 24S55 exceeded the residential direct exposure RG of 2.4 mg/kg, with a concentration of 3.89 mg/kg. In the vicinity of former sample 24S12, one surface sample, 24S65, was collected and analyzed for arsenic; the results did not indicate an exceedance of the residential direct exposure RG. **Figure 3-9** presents the analytical results for arsenic samples collected at Site 24 and denotes the area exceeding the residential RG. The area affected with arsenic at Site 24 is not associated with the former DDT mixing area (approximately 300 ft away) and the low concentrations of arsenic are consistent with basewide and regional background averages. Because site-specific concentrations at Site 24 are within the range of the background concentrations, no further actions are recommended to address arsenic at the site. **Table 3-6** presents the arsenic results for soil samples.

All four samples collected and analyzed for benzo(a)pyrene in the vicinity of sample 24S10 exceeded the residential direct exposure RG of 0.3 mg/kg, with results ranging from 0.459 J (estimated) to 7.57 mg/kg. **Figure 3-10** presents the analytical results for benzo(a)pyrene samples collected at Site 24 and denotes the area exceeding the residential RG. **Table 3-6** presents the benzo(a)pyrene results for soil samples.

Of the seven subsurface samples collected in the vicinity of sample 24S10 in August 2002 and analyzed for dieldrin, four samples exceeded the leachability RG of 0.004 mg/kg, with results ranging from 0.00695 mg/kg to 0.0572 J mg/kg.

Of the eight subsurface samples collected in the vicinity of former sample 24S12 and analyzed for dieldrin, only sample 24S60 exceeded the leachability RG of 0.004 mg/kg in its native sample (0.0275 J mg/kg) and its duplicate (0.0191 J mg/kg). No samples exceeded the residential or industrial direct exposure RGs of 0.21 mg/kg and 0.3 mg/kg, respectively. **Figure 3-11** presents the analytical results for dieldrin samples collected at Site 24 and denotes the area exceeding the leachability RG. **Table 3-6** presents the dieldrin results for soil samples.

Because there were exceedances of the leachability RG, FDEP and EPA requested further sampling using the SPLP methodology. In June and August 2003, CCI remobilized to the site with a DPT rig and hand auger and collected additional samples. Three soil samples (24S67 through 24S69) were collected in the vicinity of RI sample 24S10 from zero to 1 ft bls and analyzed for benzo(a)pyrene. Three subsurface soil samples (24S70 through 24S72) were collected from various subsurface depths and analyzed for dieldrin. Additionally, three samples (24S67 through 24S69) were collected adjacent to and in the vicinity of RI sample 24S12 at various subsurface depths and analyzed for dieldrin. No additional arsenic samples were collected. **Figure 3-8** depicts the soil sample locations.

Two samples, 24S67 and 24S69, analyzed for benzo(a)pyrene exceeded the residential RG of 0.3 mg/kg, with results of 0.406 mg/kg and 1.01 J mg/kg, respectively. No samples exceeded the leachability RG for benzo(a)pyrene. SPLP results are discussed below. **Figure 3-10** presents the analytical results for the benzo(a)pyrene samples collected at Site 24 and denotes the area with residential direct exposure RG exceedances.

TABLE 3-6

Site 24 Soil Sampling Results
OU 13, NAS Pensacola

		Station ID	085-24-51-S-1	085-24-51-S-7	085-24-51-S-11	085-24-53-S-1	085-24-53-S-7	085-24-55-S-1	085-24-55-S-7
		Depth	0-1'	5-7'	9-11'	0-1'	5-7'	0-1'	5-7'
		Sample Date	08/15/2002	08/15/2002	08/15/2002	08/15/2002	08/15/2002	08/15/2002	08/15/2002
Parameter	Unit	Remedial Goals							
SW6020									
Arsenic	mg/kg	2.4 ^a /3.7 ^b /29 ^c	0.918			0.74		3.89	
SW8081A									
Dieldrin-Subsurface	mg/kg	0.21 ^a /0.3 ^b /0.004 ^c		0.000861 U	0.0376		0.000856 U		0.000866 U
SW8270C									
Benzo(a)pyrene	mg/kg	0.3 ^a /0.5 ^b /8 ^c	4.03			0.741 J		7.57	

Notes:

^a = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds leachability remedial goal.

J = estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-6

Site 24 Soil Sampling Results
OU 13, NAS Pensacola

		Station ID	085-24-55-S-11	085-24-57-S-1	085-24-57-S-7	085-24-57-S-11	085-24-58-S-7	085-24-59-S-7	085-24-60-S-7
		Depth	9-11'	0-1'	5-7'	9-11'	5-7'	5-7'	5-7'
		Sample Date	08/15/2002	08/15/2002	08/15/2002	08/15/2002	08/14/2002	08/14/2002	08/14/2002
Parameter	Unit	Remedial Goals							
SW6020									
Arsenic	mg/kg	2.4 ^a /3.7 ^b /29 ^c		0.549					
SW8081A									
Dieldrin-Subsurface	mg/kg	0.21 ^a /0.3 ^b /0.004 ^c	0.0572 J		0.00695	0.0478 J	0.00086 U	0.000887 U	0.0275 J
SW8270C									
Benzo(a)pyrene	mg/kg	0.3 ^a /0.5 ^b /8 ^c		0.459 J					

Notes:

^a = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds leachability remedial goal.

J = estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-6

Site 24 Soil Sampling Results
OU 13, NAS Pensacola

		Station ID	085-24-61-S-7	085-24-62-S-7	085-24-63-S-7	085-24-64-S-7	085-24-65-S-1	085-24-65-S-7	085-24-67-S-1
		Depth	5-7'	5-7'	5-7'	5-7'	0-1'	5-7'	0-1'
		Sample Date	08/14/2002	08/14/2002	08/14/2002	08/14/2002	08/14/2002	08/14/2002	06/23/2003
Parameter	Unit	Remedial Goals							
SW6020									
Arsenic	mg/kg	2.4 ^a /3.7 ^b /29 ^c					0.697		
SW8081A									
Dieldrin-Subsurface	mg/kg	0.21 ^a 0.3 ^b /0.004 ^c	0.00102 J	0.000859 U	0.00394	0.000858 U		0.00108 J	
SW8270C									
Benzo(a)pyrene	mg/kg	0.3 ^a /0.5 ^b /8 ^c							0.406

Notes:

^a = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds leachability remedial goal.

J = estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-6

Site 24 Soil Sampling Results
OU 13, NAS Pensacola

		Station ID	085-24-67-S-1	085-24-67-S-10	085-24-68-S-1	085-24-68-S-8	085-24-69-S-1	085-24-69-S-8	085-24-70-S-7	085-24-71-S-7
		Depth	Duplicate 0-1'	8-10'	0-1'	6-8'	0-1'	6-8'	5-7'	5-7'
		Sample Date	06/23/2003	06/23/2003	06/23/2003	06/23/2003	06/23/2003	06/23/2003	06/23/2003	06/23/2003
Parameter	Unit	Remedial Goals								
SW6020										
Arsenic	mg/kg	2.4^a/3.7^b/29^c								
SW8081A										
Dieldrin-Subsurface	mg/kg	0.21 ^a /0.3 ^b / 0.004^c		0.00387 U		0.00346 U		0.00352 U	0.00355 U	0.00361 U
SW8270C										
Benzo(a)pyrene	mg/kg	0.3^a/0.5^b/8^c	0.339 J		0.276		1.01 J			

Notes:

^a = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds leachability remedial goal.

J = estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

TABLE 3-6

Site 24 Soil Sampling Results
 OU 13, NAS Pensacola

		Station ID	085-24-72-S-7
		Depth	5-7'
		Sample Date	06/23/2003
Parameter	Unit	Remedial Goals	
SW6020			
Arsenic	mg/kg	2.4 ^a /3.7 ^b /29 ^c	
SW8081A			
Dieldrin-Subsurface	mg/kg	0.21 ^a /0.3 ^b / 0.004^c	0.00349 U
SW8270C			
Benzo(a)pyrene	mg/kg	0.3^a /0.5 ^b /8 ^c	

Notes:

^a = UCL 95% based on 3 x residential land use, direct exposure, Chapter 62-777 F.A.C.

^b = industrial land use, direct exposure, Chapter 62-777 F.A.C.

^c = leachability based on groundwater criteria, Chapter 62-777 F.A.C.

Bold indicates concentration exceeds leachability remedial goal.

J = estimated value

mg/kg = milligrams per kilogram

U = The analyte was analyzed for, but not detected.

LEGEND

- Building 
- Fence 
- Soil Sample (1996) 
- Soil Sample (August 2002) 
- Groundwater Flow Direction 

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)
Arsenic	29	3.7	2.4

Soil analytical results are shown in mg/kg.

* Indicates an exceedance of one or more cleanup criteria.

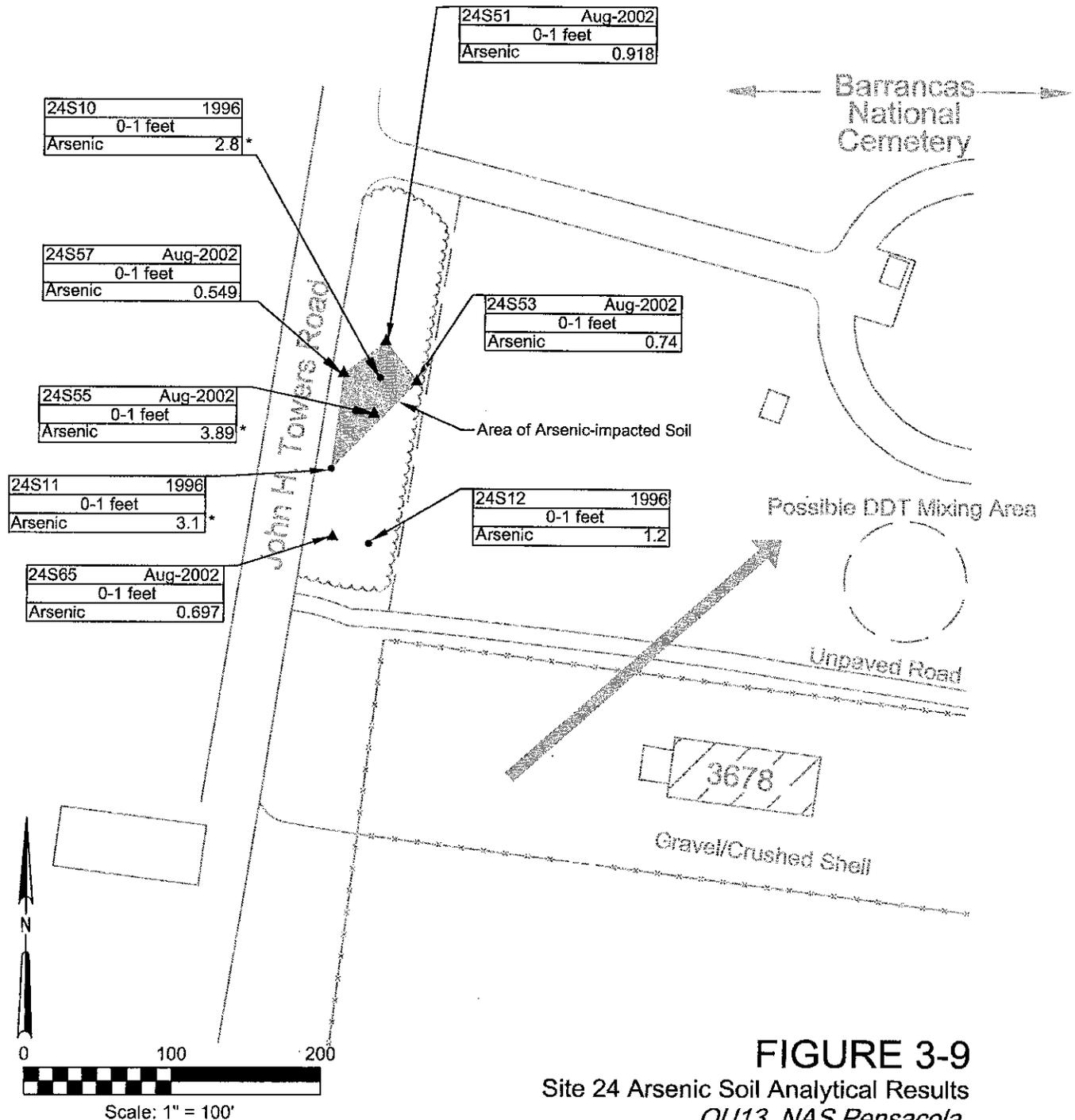


FIGURE 3-9
 Site 24 Arsenic Soil Analytical Results
 OU13, NAS Pensacola

LEGEND

- Building 
- Fence 
- Soil Sample (1996) 
- Soil Sample (August 2002) 
- Soil Sample (June/August 2003) 
- Groundwater Flow Direction 
- Estimated Value J
- Undetected Value (Estimated) UJ

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Benzo(a)pyrene	8	0.5	0.3	0.2

Soil analytical results are shown in mg/kg.
 * Indicates an exceedance of one or more cleanup criteria.

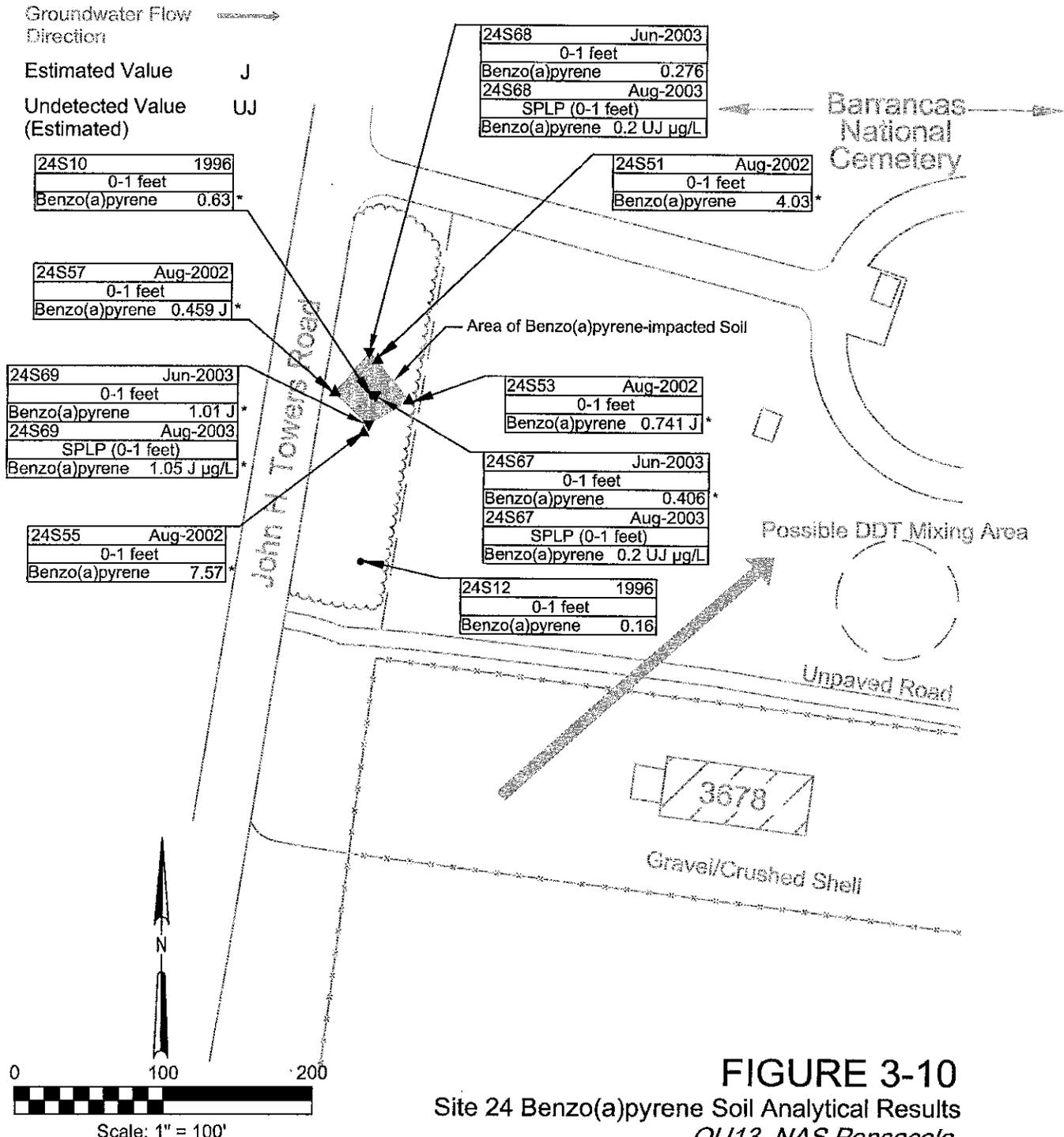


FIGURE 3-10
 Site 24 Benzo(a)pyrene Soil Analytical Results
 OU13, NAS Pensacola

None of the subsurface soil samples collected in 2003 in the vicinity of former sample 24S10 or former sample 24S12 and analyzed for dieldrin exceeded the leachability RG of 0.004 mg/kg or the residential RG of 0.21 mg/kg. SPLP results are discussed below. **Figure 3-11** presents the analytical results for the dieldrin samples collected at Site 24. The complete laboratory validation report is included in **Appendix B**.

3.5.2 Site 24 SPLP

To evaluate the leachable properties of benzo(a)pyrene and dieldrin in the vicinity of RI sample 24S10, three soil samples were collected from zero to 1 ft bls and analyzed for benzo(a)pyrene, and three subsurface soil samples were collected from 4 to 6 ft bls and analyzed for dieldrin using SPLP methodology. Additionally, in an effort to assess the leachable properties of dieldrin in the soils adjacent to and in the vicinity of RI sample 24S12, three samples were collected from various depths (3 to 6 ft bls) and analyzed for dieldrin using SPLP methodology. **Figure 3-8** depicts the locations of the soil borings.

One SPLP sample collected from zero to 1 ft bls and analyzed for benzo(a)pyrene using SPLP exceeded the GCTL of 0.2 $\mu\text{g/L}$, with a concentration of 1.05 J $\mu\text{g/L}$. All three samples collected in the vicinity of RI sample 24S10 and analyzed for dieldrin using SPLP exceeded the GCTL of 0.005 $\mu\text{g/L}$, with concentrations ranging from 0.00796 J to 0.0391 $\mu\text{g/L}$. All three samples collected in the vicinity of RI sample 24S12 and analyzed for dieldrin using SPLP also exceeded the GCTL, with concentrations ranging from 0.00769 J to 0.0444 J $\mu\text{g/L}$. **Table 3-7** provides a summary of the SPLP soil results for Site 24. **Figure 3-10** presents the total and SPLP analytical results for benzo(a)pyrene samples. **Figure 3-11** presents the total and SPLP analytical results for the dieldrin samples collected. The complete laboratory validation report is included in **Appendix B**.

3.5.3 Site 24 Groundwater Sample Collection

3.5.3.1 DPT Sampling

In August 2002, groundwater samples were collected at the most downgradient locations (approximately 50 ft) to former samples 24S10 and 24S12 at locations 24S51 and 24S59, respectively. The purpose of the sampling was to evaluate whether the soil contamination had affected groundwater. **Figure 3-5** presents the groundwater sample locations. In collecting the samples, a 4-foot screened rod descended to the water table from approximately 12 to 16 ft bls. Teflon[®] tubing was then lowered into the screen interval until it was 1 foot above the bottom of the screened interval (approximately 15 ft bls). The tubing was attached to a peristaltic pump and the groundwater was pumped to the surface using low flow. To minimize turbidity, 3 gallons of water were purged before collecting the groundwater samples.

All samples were delivered to Kemron for analyses on a standard 2-week TAT. Select samples were analyzed for arsenic using EPA Method 6010B, benzo(a)pyrene using EPA Method 8270C, and dieldrin using EPA Method 8081A. The groundwater results indicated there were no detectable concentrations of benzo(a)-pyrene or dieldrin. However, the MDL for dieldrin was above the associated GCTL; therefore, any concentrations of dieldrin above the RG of 0.005 $\mu\text{g/L}$, but below the MDL, could not be detected or reported. **Table 3-8** and **Figure 3-6** present the groundwater analytical results for Site 24.

LEGEND

- Building 
- Fence 
- Soil Sample (1995/1996) 
- Soil Sample (August 2002) 
- Soil Sample (June/August 2003) 
- Groundwater Flow Direction 
- Estimated Value J
- Undetected Value U

	62-777, F.A.C. Leachability Based On Groundwater (mg/kg)	62-777, F.A.C. Industrial Direct Exposure (mg/kg)	62-777, F.A.C. 3X Residential Direct Exposure (mg/kg)	Groundwater Cleanup Target Level (µg/L)
Dieldrin	0.004	0.3	0.21	0.005

Soil analytical results are shown in mg/kg.
* Indicates an exceedance of one or more cleanup criteria.

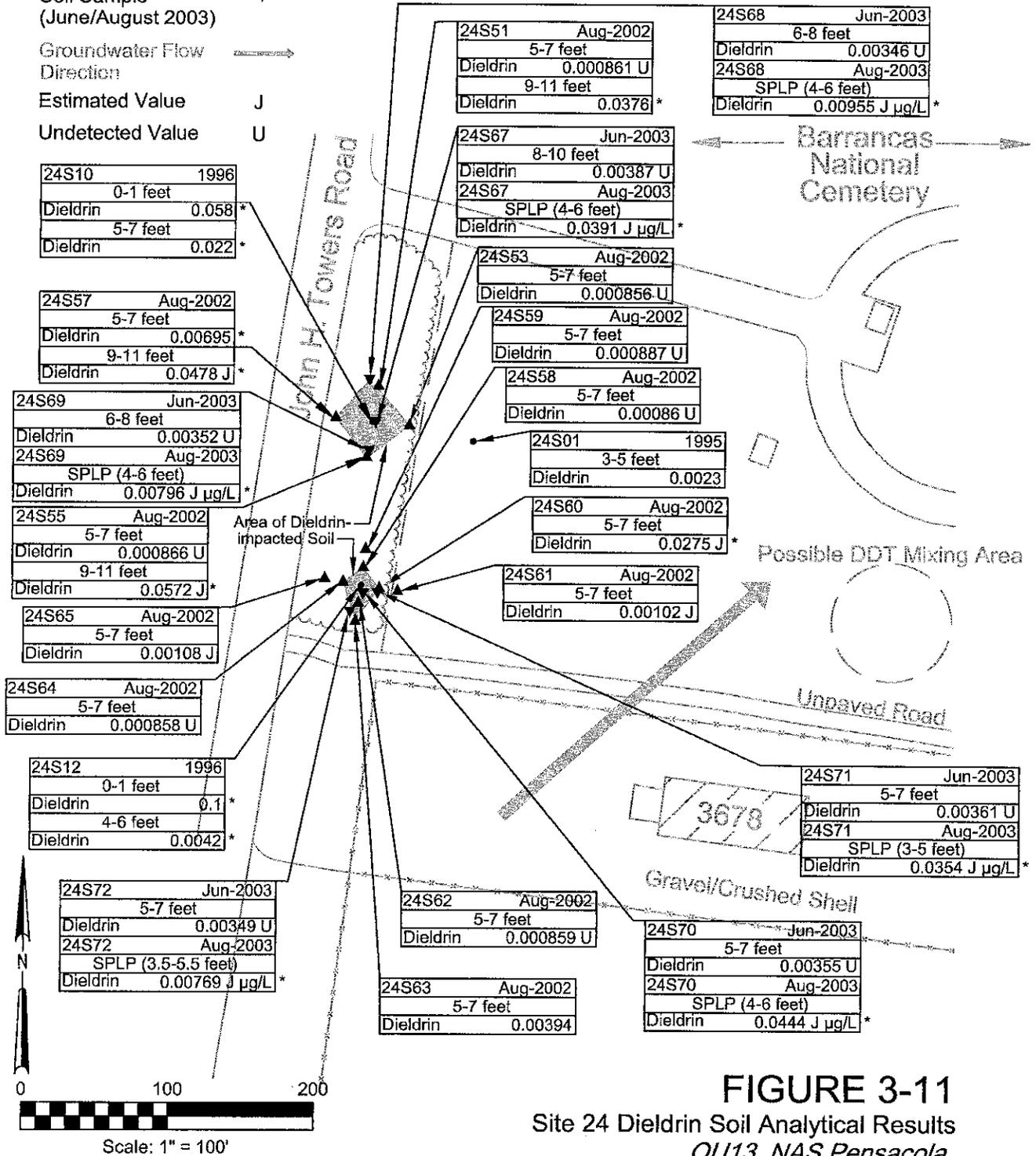


FIGURE 3-11
Site 24 Dieldrin Soil Analytical Results
OU13, NAS Pensacola

TABLE 3-7

Site 24 SPLP Sampling Results
 OU 13, NAS Pensacola

		StationID	24-67-S-1	24-67-S-6	24-68-S-1	24-68-S-6	08-24-69-S-1	24-69-S-1	24-69-S-6	24-70-S-6	24-71-S-5	24-72-S-5.5
		Depth	0-1'	4-6'	0-1'	4-6'	0-1'	Duplicate 0-1'	4-6'	4-6'	3-5'	3.5-5.5'
		Sample Date	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003	08/01/2003
Parameter	Unit	Remedial Goal										
SW8081A												
Dieldrin	µg/L	0.005 ^a	--	0.0391 J	--	0.00955 J	--	--	0.00796 J	0.0444 J	0.0354 J	0.00769 J
SW8270C												
Benzo(a)pyrene	µg/L	0.2 ^b	0.2 UJ	--	0.2 UJ	--	1.05 J	0.05 U	--	--	--	--

Notes:

^a = minimum criterial practical quantitation limit as provided in Chapter 62-777 F.A.C.

^b = primary standard as provided in Chapter 62-550 F.A.C.

Bold indicates concentration exceeds remedial goal.

J = estimated value

U = The analyte was analyzed for, but not detected.

µg/L = micrograms per liter

TABLE 3-8

Site 24 Groundwater Sampling Results
OU 13, NAS Pensacola

		StationID	24-51-GW-16	24-59-GW-16	24-MW-01	24-MW-02	24-MW-03
		SampleID	085-24-51-GW-16	085-24-59-GW-16	085-24-MW-01-W-1	085-24-MW-02-W-1	085-24-MW-03-W-1
		Sample Date	08/15/2002	08/14/2002	07/09/2003	07/09/2003	07/09/2003
Parameter	Unit	Remedial Goal					
SW6010B							
Iron	µg/L	1,707 ^a	--	--	30.6 J	57.3	69.9
Manganese	µg/L	50 ^b			9.6 J	2.18 J	10 U
SW6020							
Arsenic	µg/L	10 ^c	31.2	32.1	--	0.823 J	--
SW8081A							
Dieldrin	µg/L	0.005 ^d	0.0263 U	0.0291 UJ	0.00103 U	0.00379	0.00149 J
SW8270C							
Benzo(a)pyrene	µg/L	0.2 ^e	0.05 U	--	--	0.0553 J	--

Notes:

^a = reference concentration (2 x mean) for NAS Pensacola

^b = Groundwater Target Cleanup Level, Chapter 62-777 F.A.C.

^c = primary standard as provided in 40 CFR Part 141

^d = minimum critical practical quantitation limit as provided in Chapter 62-777 F.A.C.

^e = primary standard as provided in Chapter 62-550 F.A.C.

Bold indicates concentration exceeds remedial goal.

J = estimated value

U = The analyte was analyzed for, but not detected.

µg/L = micrograms per liter

The arsenic results exceeded the EPA MCL of 10 µg/L in two samples, with results ranging from 32.1 to 31.2 µg/L. These two results, however, are below Florida's GCTL of 50 µg/L. Refer to **Table 3-8** and **Figure 3-6** for a summary of groundwater results. The complete laboratory validation report is included in **Appendix B**.

3.5.3.2 Monitoring Well Installation

To verify the presence or absence of groundwater COCs, a total of three permanent groundwater wells were installed at Site 24 on June 23 and 24, 2003. The wells were installed to an approximate depth of 15 ft bls, at former temporary well location 24GS08 and at soil boring locations 24S10 and 24S12. **Figure 3-5** presents the monitoring well locations.

Monitoring wells were installed as described in Section 3.4.3.2. Well completion logs are provided in **Appendix C**. On June 25 and 26, 2003, each well was developed for up to 1 hour by pumping and surging until the well produced clear water with a minimum amount of sediment. Well development logs are provided in **Appendix D**.

3.5.3.3 Groundwater Monitoring Well Sampling

On July 9, 2003, all three wells at Site 24 were sampled. Before sampling, the depth to groundwater was measured in each of the monitoring wells. Another round of water levels was collected from the wells on September 17, 2003, to verify the flow direction. The groundwater elevations from both events are presented in **Table 3-9**.

TABLE 3-9
Groundwater Elevation Data Site 24
OU 13, NAS Pensacola

Monitoring Well	Well Depth (ft bls)	TOC Elevation (ft NAVD)	Screened Interval (ft bls)	07/09/2003		09/17/2003	
				DTW (ft btoc)	GWE (ft NAVD)	DTW (ft btoc)	GWE (ft NAVD)
24-MW-01	14.60	27.35	5.0-14.60	8.21	19.14	8.50	18.85
24-MW-02	14.88	25.21	5.0-14.88	6.04	19.17	6.03	19.18
24-MW-03	14.50	24.89	5.0-14.50	5.72	19.17	5.60	19.29

Notes:

bls = below land surface
btoc = below top of casing
DTW = depth to water
NA = not available

GWE = groundwater elevation
NAVD = North American Vertical Datum
TOC = top of casing
ft = feet

The groundwater flow direction determined for the July 2002 monitoring event was to the south, which is not consistent with historical flow. Consequently, another round of water levels was collected on September 17, 2003. The flow from the September 2003 measuring event is shown in **Figure 3-7**. Groundwater flow in September 2003 was generally to the northeast and is consistent with historical flow.

Groundwater sampling was performed using a peristaltic pump and dedicated Teflon® tubing in accordance with the FDEP SOPs and the EPA Region 4 EISOPQAM (May 1996, revised 1997). Before sampling, the field parameters (temperature, pH, conductivity, turbidity, salinity, ORP, and DO) were routinely measured at each monitoring well. The field parameter data are provided in Table 3-10. Groundwater flow in September 2003 was generally to the northeast and is consistent with historical flow.

TABLE 3-10
Final Groundwater Field Parameter Data Site 24 (July 2003)
OU 13, NAS Pensacola

Monitoring Well	Date	pH	Salinity	Water Temp (°C)	Specific Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)
24-MW-01	07/09/03	6.10	0.01	25.67	0.305	147	4.40	0
24-MW-02	07/09/03	7.02	0.04	23.83	0.935	101	4.91	6.7
24-MW-03	07/09/03	6.96	0.03	23.84	0.670	101	5.58	7.7

Notes:

- °C = degrees Celsius
- mS/cm = millisecond per centimeter
- ORP = oxygen-reduction potential
- mV = millivolt
- DO = dissolved oxygen
- mg/L = milligram per liter
- NTU = nephelometric turbidity unit

All samples were delivered to Kemron on a standard TAT. All three wells were analyzed for dieldrin in accordance with Method 8081A, and for iron and manganese using Method 6010B, to verify their current concentrations and to evaluate the need for LTM. In addition, monitoring well 24-MW-08 was analyzed for arsenic using Method 6010B and benzo(a)pyrene using Method 8270C.

None of the COCs analyzed (dieldrin, iron, manganese, arsenic, and benzo(a)pyrene) were detected above their respective RGs. Table 3-8 provides a summary of the groundwater sample results. The groundwater results are shown in Figure 3-6. The complete laboratory validation report is included in Appendix B.

3.5.4 Site 24 Discussion

During the 1996 RI and 1999 supplemental investigation, only two samples exceeded the residential direct exposure RG of 2.4 mg/kg, with results of 2.8 mg/kg (former sample location 24S10) and 3.1 mg/kg (former sample 24S11). Arsenic concentrations detected in surface soil during the August 2002 sampling event at Site 24 ranged from 0.549 to 3.89 mg/kg. Only one sample at Site 24 exceeds the current industrial direct exposure RG of 3.7 mg/kg. The background reference concentration for arsenic at NAS Pensacola is 1.01 mg/kg, which was established using Site 1 data. The Site 1 data set for arsenic concentrations ranged from 0.305 to 2.4 mg/kg. This range is consistent with arsenic concentrations found at Site 24. Because site-specific concentrations at Site 24 generally are within the range of these background concentrations, and arsenic is a naturally occurring element in northwest Florida, no further action is recommended to address arsenic at the site. It also should be noted that the arsenic cleanup values are expected to increase with the

upcoming rule change for Chapter 62-777, which probably would result in no exceedances of the industrial direct exposure RG. FDEP and EPA Restoration Program managers agreed that arsenic is not a COC at the site.

During the 1996 RI and 1999 supplemental investigation, only two surface samples exceeded the then RG of 0.1 mg/kg for benzo(a)pyrene. Only one of these samples exceeds the current RG of 0.3 mg/kg for residential direct exposure. Of the six surface samples collected and analyzed for benzo(a)pyrene from August 2002 through August 2003, five samples exceeded the benzo(a)pyrene residential direct exposure RG, but none of the samples exceeded the leachability RG of 8 mg/kg. One of the three surface soil samples collected and analyzed using SPLP methodology exceeded the GCTL of 0.2 µg/L. However, neither of the two groundwater samples collected in August 2002 and July 2003 exceeded the GCTL.

As reported in the Agency for Toxic Substances and Disease Registry (ATSDR) toxicity profile for PAHs (ATSDR, 1995), asphalt contains 85 percent PAHs by weight, and most of these PAHs (including benzo[a]pyrene) are commonly found in soil samples collected adjacent to and within the buffer zones of asphalt-paved roads. In contrast, diesel fuel, which was used at the site 50 years ago in the DDT mixing area 300 feet east of the benzo(a)pyrene-affected area, contains less than 1 percent PAHs by weight. PAHs in diesel fuel tend to degrade more quickly (half-life between 50 days to 1 year; thus, in fewer than 7 years, less than 1 percent of the original concentration is expected to remain at the site) than PAHs matrixed into asphalt material, which are detectable over longer periods of time.

As presented in the technical memorandum, *The Presence of Benzo(a)Pyrene at Site 24, NAS Pensacola* (CCI, October 10, 2003), the area with detectable levels of benzo(a)pyrene are closer to John Towers Road and in the downslope areas where small asphalt pieces have reached the sampling area of the site either through runoff or spraying pavement pieces by moving vehicles (CCI, 2003). In addition, asphalt pieces were present in the soil column from the boreholes where samples were collected (refer to the photograph log in **Appendix E**).

In an e-mail received October 15 (**Appendix F**), 2003, FDEP concurred that the asphalt from the nearby John Towers Road was attributable to the benzo(a)pyrene concentrations. Because benzo(a)pyrene is no longer a COC at Site 24, it is recommended that no further action be taken for this constituent.

During the 1996 RI and 1999 supplemental investigation, dieldrin exceeded the leachability RG in two surface samples and in two subsurface soil samples collected. None of the samples exceeded the residential direct exposure RG. Of the 21 subsurface soil samples collected from August 2002 through August 2003, five samples exceeded the dieldrin leachability RG, but no samples exceeded the residential direct exposure RG.

The average undiluted MDL and the reporting limit (RL) for dieldrin in soil during this investigation were 0.0008 and 0.0035 mg/kg, respectively. The leachability RG is close to these limits; thus, most of the detected concentrations exceed the target RG. Typical source areas (with spills and disposal) tend to have much higher dieldrin concentrations, ranging from greater than 1.0 mg/kg to hundreds of mg/kg. All of the detectable concentrations of dieldrin in subsurface soil at Site 24 are below 0.06 mg/kg and the average concentration is

0.02 mg/kg, which is much lower and closer to typical RLs. These results indicate that detected dieldrin levels at Site 24 are not indicative of a spill or release.

Dieldrin, which was discontinued for use in the early 1970s, has a half-life in soil of about 5 years (ATSDR, 1993). It is probable that dieldrin will reduce to less than 1 percent of the original concentration in 35 years from the time of release. If the observed concentrations are from applications or releases between 1960 to 1970 (last year when its use was discontinued), 32 to 40 years have passed. Thus, the observed concentrations are about 1.56 percent to less than 1 percent of the original release concentrations. The primary loss pathway is through surface runoff and photooxidation in the surface soil (ATSDR, 1993). The most likely reasons for the detected concentrations of dieldrin in subsurface soils at Site 24 are the physical disturbance of surface soil, which would carry the surface dieldrin to the subsurface, or sampling artifacts that were conducted according to the procedural guidance. Another possibility is that when dieldrin was mixed with a solvent or other mixing agent for dispersal, it adhered onto the solvent rather than adsorbing onto the soil. As the solvent traveled through the soil column, so did the dieldrin.

All six samples collected and analyzed for dieldrin using SPLP methodology exceeded the GCTL of 0.005 µg/L. Groundwater results from the August 2002 DPT samples indicate that there were no detectable concentrations of dieldrin. However, the MDL was above the associated GCTL; therefore, any concentrations of dieldrin above the GCTL, but below the MDL, could not be detected or reported. Dieldrin was not detected above the GCTL in any of the three monitoring wells sampled in July 2003; therefore, it is believed that dieldrin is not leaching into the groundwater in spite of its presence in the deepest soil.

During the July 2003 groundwater sampling event, iron and manganese were below their respective GCTLs of 1,707 µg/L and 50 µg/L.

Originally, the goal for Site 24 was to excavate areas of contamination exceeding the residential criteria (based on the 95%UCL) and to avoid LUCs on soil at the site. Although this site has been in operation for more than 50 years, the groundwater has not been affected; soil removal, therefore, is not necessary to protect the groundwater. A greater impact to the environment would be realized by destroying more than a dozen trees in the area. Therefore, the Navy recommends no further action for soil at Site 24. After two consecutive rounds of groundwater sampling indicate that the COCs are not present in groundwater above their GCTLs, monitoring should cease.

3.6 Temporary Monitoring Well Abandonment

On July 23 and 24 2003, CCI personal took an inventory of all groundwater monitoring wells at Sites 8 and 24. One permanent monitoring well was discovered to be intact during the well inventory. Monitoring well 24GS05, located along the southern border of Site 24 (Figure 3-5), was located and left in place. No temporary monitoring wells were located or abandoned.

4.0 Chronology of Events

The chronology of events for the soil and groundwater investigation activities at OU 13 is listed in Table 4-1.

TABLE 4-1
Chronology of Events
OU 13, NAS Pensacola

Event	Date
CCI Cost Proposal to NAVFAC EFD SOUTH	June 20, 2002
CCI Sampling and Analysis Plan for Soil Delineation	June 17, 2002
Pre-IRA Survey	August 6-7, 2002
Soil and Groundwater Sampling	August 13-15, 2002
Draft Sites 8 and 24 Technical Memorandum	September 9, 2002
Draft Sites 8 and 24 Technical Memorandum Rev 01	October 30-31, 2002
Response to EPA Comments to Sites 8 and 24 Technical Memorandum	December 26, 2002
Work Plan Addendum No. 05, Soil and Groundwater Sampling at OU 13, Sites 8 and 24 Rev 00	April 11, 2003
Final Work Plan Addendum No. 05, Soil and Groundwater Sampling at OU 13, Sites 8 and 24	June 18, 2002
Mobilized to NAS Pensacola, Sites 8 and 24	June 23, 2003
Install 4 Shallow Monitoring Wells at Site 8 and 3 Shallow Monitoring Wells at Site 24	June 23-24, 2003
Monitoring Well Pads Set and Monitoring Wells Developed at Sites 8 and 24	June 25-26, 2003
Groundwater Sampling at Sites 8 and 24	July 9, 2003
Soil Sampling at Sites 8 and 24	August 1, 2003
Surveyed Soil Borings and Groundwater Monitoring Wells	September 11, 2003
Collect Water Levels at Sites 8 and 24	September 17, 2003
Technical Memorandum, <i>The Presence of Benzo(a)Pyrene at Site 24, NAS Pensacola, Florida</i>	October 15, 2003
Transportation and Disposal of Decontamination-generated Wastes	October 22, 2003

The ROD should be completed following finalization of the IRA Report. In addition, it is anticipated that groundwater monitoring for dieldrin at Site 24 will cease following two consecutive groundwater sampling events in which dieldrin is detected below its GCTL. Similarly, it is anticipated groundwater monitoring for dieldrin and lead at Site 8 will cease following two consecutive groundwater monitoring events in which these constituents are detected below their respective GCTLs. Cadmium in groundwater at Site 8 currently is more

than twice the groundwater RG, but is approximately 30 percent to 60 percent lower than concentrations detected during the RI. Cadmium might meet its GCTL within the next 10 to 15 years. Because no active remediation will occur at Site 8 for iron and manganese, it is estimated that achievement of their respective GCTLs will take 30 years.

5.0 Performance Standards and Construction Quality Certifications

5.1 Field Observation

CCI provided project oversight of all field operations throughout the project. Detailed records of project activities were maintained in the site field records. Photographs of all site activities were made throughout the project and are included in **Appendix E**. QC records were provided to the Navy as the project progressed and are maintained in the project file.

5.2 Overall Performance

No problems were encountered during IRA activities.

5.3 Construction Quality Assurance/Quality Control

CCI field oversight staff included a project manager, site superintendent/health and safety officer, and QC manager. Detailed records of subcontractor activities were maintained in field logbooks and site field records, including daily Contractor Production Reports and Contractor QC Reports, which were kept daily and submitted to the Navy on a regular basis. These reports were completed by CCI and also can be found in the project file and on the Navy Web Page. In addition, photographs of all site activities were collected throughout the project. Representative photographs documenting the work are included in **Appendix E**.

The QC Plan provided in the Basewide Work Plan (CCI, 2000) and the Work Plan Addendum (CCI, 2003b) detailed the quality administrators, the project organization for the work completed at NAS Pensacola, and the definable features of work for this site.

Environmental samples were collected in accordance with FDEP and EPA methods and procedures. Other controls included maintaining a chain of custody; proper handling, packing, and shipping; and the use of qualified laboratories. All material brought onsite was inspected for accuracy and its acceptance documented in the daily field sheets.

5.4 Data Quality Assurance/Quality Control

The QA reports for the validation of results from the soil and groundwater investigations are included in **Appendix B**.

5.5 Site Restoration

In accordance with the work plan, soil cuttings from soil sampling activities were returned to the associated boreholes. Soil cuttings from well installation activities were drummed and

subsequently disposed. All boreholes completed in asphalt areas were patched with asphalt and the surfaces returned to their original condition.

5.6 Survey

In addition to an initial survey conducted in September 2002 to locate former RI sample locations, a final survey was conducted on September 11, 2003, for all sampling locations relative to an arbitrary benchmark. The surveyor located local benchmarks provided by NAS Pensacola personnel, which referenced the National Geodetic Vertical Datum (NGVD). Horizontal control surveying (X-, Y-coordinates) was performed at the ground surface of each sampling location. Vertical control surveying (Z-coordinate) was performed on the monitoring wells at the top of casing and the ground surface. The survey coordinates were used to locate the sampling points on the maps and to draw the shallow groundwater contour. Survey information is provided in **Appendix G**.

5.7 Equipment Decontamination

To prevent the introduction of foreign contaminants into samples and to prevent cross-contamination from one sampling location to the next, field equipment was decontaminated before use and between sampling locations. All drilling equipment, well construction, and development equipment was decontaminated as follows:

- Low-volume, high-pressure washer before demobilizing the project site
- Brushed or scrubbed with laboratory grade detergent (Alconox) to remove visible dirt and soil
- Rinsed with potable water

Hand augers and other sampling equipment were cleaned as follows:

- Brushed or scrubbed with an Alconox and water solution
- Rinsed with Type II reagent grade water
- Rinsed with pesticide-grade Isopropanol
- Air dried

Ten 55-gallon metal drums of purge water generated from developing the seven groundwater monitoring wells, and one 55-gallon drum of purge water generated by groundwater sampling activities, were staged at the Industrial Wastewater Treatment Plant on base pending analysis. Personal protective equipment and plastic sheathing used in the staging area were discarded as nonhazardous waste in accordance with the health and safety plan and applicable provisions in 29 CFR 1910.120, and were properly disposed.

5.8 Waste Management and Disposal

Waste characterization samples were collected on July 9, 2003. On September 17, 2003, the wastewater laboratory data were delivered to Greg Campbell, NAS Pensacola IRP Manager, for review.

5.8.1 Solid Wastes

Soil cuttings and debris associated with monitoring well drilling activities at NAS Pensacola, OU 13, were placed into containers, sampled, and transported to an approved waste facility. A composite sample was taken from the six soil drums on July 9, 2003, to develop a disposal profile. Analyses included toxicity characteristic and leaching procedure (TCLP) (preparation method SW 846 Method 1311) VOCs (SW 846 Methods 5030B and 8260B), TCLP SVOCs (EPA SW 846 Methods 3510C and 8270C), TCLP pesticides (EPA SW 846 Methods 3510C and 8081A), TCLP PCBs (EPA SW 846 Methods 3510C and 8082), TCLP herbicides (EPA SW 846 Method 8151A), TCLP metals (EPA SW 846 Methods 3005A, 3015, 6010B, 6020A, and 7439), corrosivity (EPA 150.1/SW 846 Methods 9040B/9045C), reactivity (Chapter 7.3), and ignitibility (EPA Method 1010). A copy of the laboratory report is included in **Appendix H**.

All soil was designated as nonhazardous and shipped to Waste Management's Springhill Landfill in Campbellton, Florida (**Table 5-1**). The Transportation and Disposal (T&D) Log and waste manifests are included in **Appendix H**.

TABLE 5-1
Wastestream Quantities and Disposal Facilities
OU 13, NAS Pensacola

Nonhaz Waste	Material	Quantity Disposed	Disposal Facility
Soil cuttings	Solids	6,000 pounds	Waste Management, Springhill Landfill
Decontamination liquid and purge water	Liquid	605 gallons	Waste Management, Springhill Landfill

5.8.2 Liquid Waste

A grab composite sample was taken from the eleven, 55-gallon drums on July 9, 2003, to develop a disposal profile. Analyses included VOCs (SW 846 Methods 5030B and 8260B), SVOCs (EPA SW 846 Methods 3510C and 8270C), pesticides (EPA SW 846 Methods 3510C and 8081A), PCBs (EPA SW 846 Methods 3510C and 8082), herbicides (EPA SW 846 Method 8151A), TCLP metals (EPA SW 846 Methods 3005A, 3015, 6010B, 6020A and 7439), corrosivity (EPA SW 846 Methods 040B/9045C), and ignitibility (EPA Method 1010). A copy of the laboratory report is included in **Appendix H**.

The decontamination-generated fluids and purge water were placed into containers and transported offsite to Waste Management's Springhill Landfill in Campbellton, Florida (**Table 5-1**). The T&D Log and waste manifests are included in **Appendix H**.

6.0 Final Inspection and Certifications

6.1 Inspections

Pursuant to CCI's QC program, all materials arriving onsite were inspected for accuracy before acceptance for the IRA activities. Materials inspected included the well construction material (casing, screen, packers, sumps, sand, bentonite, and grout). All equipment was satisfactory for use during the investigation.

Greg Campbell, NAS Pensacola IRP Manager, and Amy Twitty, CCI Project Manager, inspected OU 13 on December 15, 2003. All monitoring wells were observed, all borehole locations were noted as being patched with the proper surface material, and all waste had been removed. Mr. Campbell noted that the site conditions were appropriate for site restoration. No deficiencies were noted during the inspection.

6.2 Health and Safety

During the duration of the IRA, approximately 316 personnel hours were worked onsite by CCI and subcontractors with no first aid, property damage, or lost-time incidents.

6.3 Institutional Controls

An ROD should be prepared for OU 13, calling for institutional controls for Site 8. One cadmium soil sample exceeded the residential RG; therefore, the site's use should be limited to industrial/commercial and the asphalt "cap" should be monitored for its effectiveness. Because of the elevated levels of cadmium, iron, and manganese, groundwater use also should be restricted.

No institutional controls are required for Site 24.

7.0 Operation and Maintenance Activities

This section describes the implementation of operation, maintenance, and monitoring activities after the completion of the IRA construction activities. The post-construction activities include LUCs, performance of long-term monitoring activities, inspections and 5-year reviews.

7.1 Administrative and Land Use Controls

LUCs will be implemented at Site 8 to limit the future use of the site to control or eliminate exposure pathways to contaminants of concern at the site. The LUCs will be developed through a site-specific land use control implementation plan (LUCIP) and land use control assurance plan (LUCAP). These plans will require that the land use be periodically reviewed to ensure the effectiveness of the controls. Should any changes be needed, NAS Pensacola personnel will notify the EPA.

7.2 Long-term Monitoring

LTM for OU 13 includes the activities and procedures to monitor and maintain the integrity of the implemented remedy. The LTM plan should include operation and maintenance activities and performance verification sampling and monitoring activities. LTM activities will include the following:

- Maintain and monitor the groundwater monitoring system
- Maintain the integrity and effectiveness of the asphalt "cap", including making repairs to the "cap" as necessary to correct the effects of settling, subsidence, erosion, or other events
- Implement and maintain the LUCs

7.2.1 Groundwater Sampling

Groundwater sampling of shallow groundwater will be conducted from the new monitoring wells installed by CCI in 2003.

The groundwater monitoring results will be assessed following the next sampling event for all COCs at Site 24 and for dieldrin and lead at Site 8 to determine the need for future monitoring requirements. In addition, groundwater monitoring results will be assessed for all other COCs at Site 8 during the 5-year review, scheduled for 2007, to determine the need for future monitoring requirements. In the event that after two consecutive events site-specific constituents are below their respective RGs, and concurrence from FDEP and EPA is received, the LTM plan should be reevaluated and modified as necessary. An LTM plan that describes the wells to be monitored, sampling and analytical methods to be used, monitoring frequency, and data evaluation and reporting requirements will be prepared.

Some of the monitoring wells at Site 8 lie within a secured, fenced area. Scheduling should be arranged with the PWC personnel for access. The Site 24 wells are located within the Barrancas National Cemetery property. Monitoring and maintenance activities need to be scheduled with the cemetery personnel so that these activities do not interfere with burials or other cemetery functions.

7.2.2 Routine Inspection

Following the IRA, routine inspections should be conducted at least annually. Inspections will include, at a minimum, identifying and documenting any disturbance of the asphalt "cap", the presence of new construction, verifying the monitoring point integrity of the LUCs, and the integrity of the monitoring wells. The results of the inspections will be reported to the EPA on an annual basis.

Based on the inspections, necessary repairs will be performed. This may include repair of asphalt surface, etc. to ensure that the interim remedy remains effective and in place.

7.3 Final ROD Action Summary and Schedule

Following the completion of the IRA, site monitoring activities such as groundwater monitoring will be conducted. The results from these monitoring activities will be evaluated for additional response actions to address residual risks, if any, associated with OU 13.

A final ROD for the site should be developed to include long-term monitoring of the site and LUCs.

7.4 5-year Review Discussion

The cadmium in soil at Site 8 above the residential RG will continue to remain at the site after the completion of the remedial action. Pursuant to CERCLA section 121(c) and as provided in OSWER Directive 9355.7-02, *Structure and Components of 5-year Reviews*, May 23, 1991, and OSWER Directive 9355.702A, *Supplemental 5-year Review Guidance*, July 26, 1994, EPA must conduct a statutory 5-year review.

LTM activities at the site will be initiated after the approval of the ROD by the agencies. The results of the LTM activities will be submitted in an annual site inspection report. A review of the site conditions will be conducted with the agencies following the initiation of LTM activities, and a Site Conditions Report will be prepared after the completion of the review. Following the 5-year review (or before), type and frequency of continued LTM will be evaluated.

7.5 Site Completion and Closeout

OU 13 may meet the site completion requirements when it has satisfied all requirements specified in the final ROD, and contamination detected at the site has been remediated to acceptable risk levels. At that point in time, information and verification will be developed to provide assurance that the site no longer poses any threats to human health or the environment, and no further response action is necessary. A Preliminary Close-Out Report

will be submitted to the agencies that all activities necessary to achieve performance standards and site completion have been implemented. Upon regulatory agency determination that the site meets all the site completion requirements as specified in OSWER Directive 9320.2-3C, *Procedures for Completion and Deletion of National Priorities List Sites and Update*, a Final Close-Out Report will be prepared.

Following the site completion, the site may be partially deleted from the CERCLA program as specified in OSWER Directive 9320.2-3C, *Procedures for Completion and Deletion of National Priorities List Sites and Update*. Section 300.425(e) of the National Contingency Plan provides that releases may be deleted from, or re-categorized on the National Priority List (NPL) where no further response is appropriate. In making a determination to delete a release from the NPL, agencies will determine whether any of the following criteria have been met:

- Responsible parties or other parties have implemented all appropriate response actions required;
- All appropriate response under CERCLA has been implemented, and no further action by responsible parties is appropriate; or
- The site poses no significant threat to public health or the environment and, therefore, taking of remedial measures is not appropriate.

NAS Pensacola, as a facility, cannot be closed or deleted from the NPL until all OUs identified meet the cleanup requirements.

8.0 Summary of Project Costs

A comparison between the estimated remedial costs presented in the FFS and FFS Addendum and the actual construction cost for this IRA is presented in this section.

8.1 Focused Feasibility Study Estimated Costs

As previously discussed, the FFS and FFS Addendum identified several alternatives to address the soil and groundwater contamination at OU 13. The Navy determined that option S3c and S3d, excavation of soil to residential standards with subsurface soil removal, would be implemented to address soil contamination. The volume of surface soil to be excavated under remedial option S3c was 2,000 cubic yards from Site 8 and 1,060 cubic yards from Site 24, for a total approximate volume of 3,100 cubic yards. Additionally, the volume of subsurface soil to be excavated under remedial option S3c was 5,200 cubic yards from Site 8 and 4,800 cubic yards from Site 24, with 2,000 cubic yards removed for slope stability, for a total approximate volume of 8,600 cubic yards. However, alternative S3c did not address the subsurface soil at Site 8 at former sample 08S03. Alternative S3d incorporates this area. The assumptions for Alternative S3d included an additional 300 cubic yards of subsurface soil. The cost to implement options S3c and S3d was projected at \$1,994,000 and \$197,800, respectively, for a total of \$2,191,800.

It also was determined that remedial option G3, institutional controls and monitoring, would be implemented to address groundwater contamination at Sites 8 and 24. Under this option, institutional controls would be implemented to restrict groundwater use. Annual monitoring would occur to track the groundwater plume's migration and to ensure that concentrations of COCs are below acceptable levels as they leave the site. The cost to implement the LTM was \$560,200, which included monitoring costs over a 30-year period. The cost estimates for the remedial alternatives consists of four principal elements: capital costs, O&M costs, costs for evaluation reports (i.e. 5-year reviews), and present-worth analysis (EnSafe, 2000). The LUC implementation costs were estimated at an additional \$50,000, for a total of \$610,200.

8.2 Actual Final Costs

The actual total costs for implementation of the IRA was \$276,680. Costs reflect the development of two Sampling and Analysis Plans, a general site work plan with a site-specific health and safety plan, two soil sampling events, groundwater monitoring well installation and sampling, preparation and submittal of three technical memoranda summarizing the results of the sampling activities and including some risk evaluations, and completion of this IRA report. The subcontracting portion of the project including drilling activities for the DPT soil and groundwater sampling and monitoring well installation, collection of soil delineation samples, waste disposal services, laboratory analysis, and independent laboratory validation. These equipment and subcontracting costs totaled \$35,426.

8.3 Cost Comparison

The cost to perform the IRA was approximately 87 percent less than the total estimated cost of \$2,191,800 and is not within the -30 percent and +50 percent of the estimated cost. The greatest cost savings were based on the detailed delineation and confirmation soil sampling and risk evaluation conducted at Sites 8 and 24, which determined that surface and subsurface soil excavation was unnecessary; EPA and FDEP concurred with this recommendation. Therefore, no excavation, transportation, disposal, or backfilling were necessary.

In addition, the projected costs for LTM of groundwater is approximately 66 percent less than the total estimated cost of \$560,200 and also is not within the -30 percent and +50 percent of the estimated cost. The groundwater at Site 24 already meets the RGs and cleanup may be achieved after just one additional monitoring event if the results continue to meet the cleanup criteria. Arsenic and benzo(a)pyrene were determined to not be site related; therefore, they will not be included in the monitoring plan. Only metals (iron and manganese) and dieldrin will be monitored at least once more. LTM will occur only in three wells.

Using the same sample labor rates as the FFS, the first-year costs to implement LTM at OU 13, including all COCs in a total of seven wells, is estimated at \$15,600. Assuming that Site 24 meets the groundwater cleanup criteria after one event, and lead and dieldrin are not detected at Site 8 above their RGs, the out-year LTM will include only the four wells at Site 8. The first out-year costs for LTM are \$12,800. The LTM present worth cost for 29 additional years, assuming annual monitoring and a discount rate of 6 percent is \$191,200. This cost is approximately one-third of the \$560,200 estimated in the FFS. The cost savings realized is based on the changes to the number of wells monitored (4 instead of 17) and the travel, labor (3 days instead of 2 weeks per event), and analyses required.

LUC implementation costs of \$50,000 for OU 13 probably would remain unchanged.

9.0 Observations and Lessons Learned

9.1 Problems Encountered

No problems were encountered during the IRA process.

9.2 Successes

The IRA for OU 13 was successful in that it saved (or will save) the Navy over \$2,000,000. Through diligent sampling efforts and risk evaluations, it was determined that no active soil removal was necessary. The total cost savings realized for the soil remedial actions and LTM for groundwater was 87 percent (\$1,914,8000) and 66 percent (\$369,200), respectively. The regulators made well-informed decisions, because they were kept appraised of the results of the additional sampling activities, resulting in cost savings without increasing the risk to human health and the environment. This project is the result of a great partnering effort between the consultants, the Navy, and the regulators.

10.0 Operable Unit Contact Information

The contact information for OU 13, Sites 8 and 24, is included in **Table 10-1**.

TABLE 10-1
Operable Unit Contact Information

OU 13, NAS Pensacola

Contact Name	Address and Phone Number
Bill Hill Southern Division Naval Facilities Engineering Command Remedial Project Manager	2155 Eagle Drive P.O. Box 190010 North Charleston, SC 29419-9019 (843) 820-5574
Greg Fraley EPA Remedial Project Manager	Federal Facilities Branch 61 Forsyth Street SW Atlanta, GA 30303 (404) 562-8544
Tracie Vaught FDEP Remedial Project Manager	2600 Blairstone Road, Office #471F Mail Station 4535 Tallahassee, FL 32399 (850) 245-8998
Greg Campbell IRP Manager	NAS Pensacola 520 Turner Street, Building 746 Pensacola, Florida 32508-5225 850-452-4611, x103
Amy Twitty, P.G. CCI Project Manager	1766 Sea Lark Lane Navarre, FL 32566 (850)939-8300, ext. 17

Notes:

EPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
IR = Installation Restoration
CCI = CH2M HILL Constructors, Inc.
P.G. = Professional Geologist

11.0 References

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APPENDIX A

**EnSafe Technical Memorandum Regarding
95% UCL**

Technical Memorandum
Naval Air Station – Pensacola, Florida

To: NAS Pensacola Partnering Team
From: EnSafe
Date: April 29, 2002

Subject: 95% UCL Calculations for OU 13

Background

The *Focused Feasibility Study (FFS) — OU 13, NAS Pensacola, Florida* (EnSafe Inc., May 3, 2000) and the *Focused Feasibility Study Addendum* (EnSafe Inc. September, 2001) evaluated several remedial alternatives for removing contaminated surface and/or subsurface soil at OU 13. These remedial alternatives address the residential and industrial risk scenarios developed in the Baseline Risk Assessment of the *Final Remedial Investigation Report — OU 13, NAS Pensacola, Florida* (EnSafe Inc. 1997), and leaching of contaminants to groundwater.

In 1999, the Methodology Focus Group of the Florida Department of Environmental Protection (FDEP) Contaminated Soils Forum published its paper *Use of the 95% Upper Confidence Limit in Developing Exposure Point Concentrations for Contaminants in Soil* (May 11, 1999). This paper discusses how, in most cases, risks from contaminated soils are evaluated based on chronic exposure. If an individual's contact with a contaminated area is random, the best representation of the concentration the individual is exposed to is the average contaminant concentration over that area. To more accurately generate an average concentration across a given area, the United States Environmental Protection Agency (USEPA) recommends use of a 95% upper confidence limit (95% UCL) of the mean generated from the data. The 95% UCL of the mean concentration is generally considered a conservative basis for comparing site contaminant concentrations to soil cleanup target levels (SCTLs). The paper also addressed hot-spots, saying that an upper limit for contaminant concentrations of 3-times the SCTL should be health protective.

Application to OU 13

In order to refine the remedial alternatives developed in the FFS, the methods developed by FDEP's Contaminated Soils Forum were applied to surface soil data from OU 13. First, surface soil data were compared to the appropriate SCTL. Constituents with maximum detected concentrations below their applicable residential SCTL were not evaluated. The only constituents that exceeded the appropriate SCTLs in surface soil at OU 13 were arsenic, benzo(a)pyrene, and dieldrin. 95% UCL calculations were determined for these parameters for OU 13. Table 1 presents the 95% UCLs for OU 13 surface soil data.

Table 1
95% UCL Calculations
OU 13

Contaminant	95% UCL	Residential SCTL/Reference Concentration	Hot-Spot/Removal Area*	Concentration	Recalculated 95% UCL
Benzo(a)pyrene	204.47 µg/kg	100 µg/kg	024S010	730 µg/kg	124 µg/kg

Notes:

- * = Hot spots denote sample locations with detections greater than 3 X the FDEP SCTL.
- SCTL = Soil cleanup target level.
- UCL = Upper confidence limit.
- NC = Because the original 95% UCL is below the SCTL/reference concentration, the UCL was not recalculated.

As can be seen in the table, three locations are identified for removal using the 95% UCL and three-times the SCTL approach. At Site 24, arsenic hot spots are at sample locations 24S10 and 24S11, while benzo(a)pyrene has a hot-spot at 24S10. These sample locations are near each other, where the site borders John Tower Road. At Site 8, a dieldrin hot-spot exists at sample location 08S03, on the east side of Building 3561. Figure 1 shows the surface soil remedial areas for the combined sites.

Recommendation

The Navy recommends removal of the surface soil areas identified in Table 1. With those removals and the previously agreed upon subsurface soil removals, OU 13 will meet residential requirements, and no further action is required for site soil.

Figure 1 Surface Soil Remedial Areas Based on Residential RGOs

Laboratory Data Used to Calculate 95% UCL

SAMPLE_ID	SAMP	SAMPL_DATE	CONC_UNITS	CAS_NO	RESULT	VQUAL	PARAM
024S001001	S	04/02/1996	MG/KG	7440382	2.8000	J	Arsenic
024S001007	S	04/02/1996	MG/KG	7440382	0.2500	J	Arsenic
024S001101	S	04/02/1996	MG/KG	7440382	3.1000	J	Arsenic
024S001106	S	04/02/1996	MG/KG	7440382	0.2100	UJ	Arsenic
024S001201	S	04/02/1996	MG/KG	7440382	1.2000	J	Arsenic
024S001206	S	04/02/1996	MG/KG	7440382	0.2900	J	Arsenic
024S001301	S	04/03/1996	MG/KG	7440382	0.5800		Arsenic
024S001307	S	04/03/1996	MG/KG	7440382	0.2000	U	Arsenic
024S001401	S	04/02/1996	MG/KG	7440382	1.6000	J	Arsenic
024S001407	S	04/02/1996	MG/KG	7440382	0.9600	J	Arsenic
024S001501	S	04/02/1996	MG/KG	7440382	2.2000	J	Arsenic
024S001507	S	04/02/1996	MG/KG	7440382	0.3500	J	Arsenic
024S001601	S	04/02/1996	MG/KG	7440382	0.9700	J	Arsenic
024S001607	S	04/02/1996	MG/KG	7440382	0.3700	J	Arsenic
024S001701	S	04/03/1996	MG/KG	7440382	0.8100		Arsenic
024S001707	S	04/03/1996	MG/KG	7440382	0.2100	U	Arsenic
024S001801	S	04/03/1996	MG/KG	7440382	1.5000		Arsenic
024S001807	S	04/03/1996	MG/KG	7440382	0.2100	U	Arsenic
024S001901	S	04/03/1996	MG/KG	7440382	0.6400		Arsenic
024S001907	S	04/03/1996	MG/KG	7440382	0.2000	U	Arsenic
024S002001	S	04/03/1996	MG/KG	7440382	1.6000		Arsenic
024S002006	S	04/03/1996	MG/KG	7440382	0.2800	J	Arsenic
024S002101	S	04/03/1996	MG/KG	7440382	1.1000		Arsenic
024S002106	S	04/03/1996	MG/KG	7440382	0.2100	U	Arsenic
024S002201	S	04/03/1996	MG/KG	7440382	0.9400		Arsenic
024S002207	S	04/03/1996	MG/KG	7440382	0.2000	U	Arsenic
024S001001	S	04/02/1996	UG/KG	50328	630.0000		Benzo(a)pyrene
024S001007	S	04/02/1996	UG/KG	50328	93.0000	U	Benzo(a)pyrene
024S001101	S	04/02/1996	UG/KG	50328	56.0000	J	Benzo(a)pyrene
024S001106	S	04/02/1996	UG/KG	50328	93.0000	U	Benzo(a)pyrene
024S001201	S	04/02/1996	UG/KG	50328	160.0000		Benzo(a)pyrene
024S001206	S	04/02/1996	UG/KG	50328	95.0000	U	Benzo(a)pyrene
024S002301	S	06/07/1996	UG/KG	50328	93.0000	U	Benzo(a)pyrene
024S002307	S	06/07/1996	UG/KG	50328	91.0000	U	Benzo(a)pyrene
024S001001	S	04/02/1996	UG/KG	60571	58.0000	D	Dieldrin
024S001007	S	04/02/1996	UG/KG	60571	22.0000	DJ	Dieldrin
024S001101	S	04/02/1996	UG/KG	60571	32.0000	J	Dieldrin
024S001106	S	04/02/1996	UG/KG	60571	0.7600	J	Dieldrin
024S001201	S	04/02/1996	UG/KG	60571	100.0000	J	Dieldrin
024S001206	S	04/02/1996	UG/KG	60571	4.2000	J	Dieldrin
024S001301	S	04/03/1996	UG/KG	60571	3.4000	U	Dieldrin
024S001307	S	04/03/1996	UG/KG	60571	3.4000	U	Dieldrin
024S001401	S	04/02/1996	UG/KG	60571	2.1000	J	Dieldrin
024S001407	S	04/02/1996	UG/KG	60571	18.0000	U	Dieldrin
024S001501	S	04/02/1996	UG/KG	60571	3.5000	U	Dieldrin
024S001507	S	04/02/1996	UG/KG	60571	18.0000	DJ	Dieldrin
024S001601	S	04/02/1996	UG/KG	60571	13.0000	J	Dieldrin
024S001607	S	04/02/1996	UG/KG	60571	3.4000	U	Dieldrin
024S001701	S	04/03/1996	UG/KG	60571	4.5000	J	Dieldrin
024S001707	S	04/03/1996	UG/KG	60571	3.4000	U	Dieldrin
024S001801	S	04/03/1996	UG/KG	60571	3.4000	J	Dieldrin

024S001807 S	04/03/1996 UG/KG	60571	3.4000 U	Dieldrin
024S001901 S	04/03/1996 UG/KG	60571	2.3000 J	Dieldrin
024S001907 S	04/03/1996 UG/KG	60571	3.4000 U	Dieldrin
024S002001 S	04/03/1996 UG/KG	60571	3.6000 U	Dieldrin
024S002006 S	04/03/1996 UG/KG	60571	3.5000 U	Dieldrin
024S002101 S	04/03/1996 UG/KG	60571	3.5000 J	Dieldrin
024S002106 S	04/03/1996 UG/KG	60571	3.4000 U	Dieldrin
024S002201 S	04/03/1996 UG/KG	60571	17.0000	Dieldrin
024S002207 S	04/03/1996 UG/KG	60571	3.4000 U	Dieldrin
024S002301 S	06/07/1996 UG/KG	60571	8.4000	Dieldrin
024S002307 S	06/07/1996 UG/KG	60571	3.4000 U	Dieldrin

SAMPLE_ID	SAMPL_TYPE	SAMPL_DATE	CONC_UNITS	CAS_NO	RESULT	VQUAL	PARAM
008S000407	S	04/04/1996	MG/KG	7440382	0.2700	UJ	Arsenic
008S000807	S	04/04/1996	MG/KG	7440382	0.2800	J	Arsenic
008S000401	S	04/04/1996	MG/KG	7440382	0.5100	J	Arsenic
008S000307	S	03/26/1996	MG/KG	7440382	0.5300	J	Arsenic
008S000607	S	04/04/1996	MG/KG	7440382	0.8700	J	Arsenic
008S000106	S	03/28/1996	MG/KG	7440382	0.9400	J	Arsenic
008S000601	S	04/04/1996	MG/KG	7440382	1.0000	J	Arsenic
008S000311	S	03/26/1996	MG/KG	7440382	1.1000	J	Arsenic
008S000101	S	03/26/1996	MG/KG	7440382	1.3000	J	Arsenic
008S000801	S	04/04/1996	MG/KG	7440382	1.4000	J	Arsenic
008S000707	S	04/04/1996	MG/KG	7440382	1.8000	J	Arsenic
008S000301	S	03/26/1996	MG/KG	7440382	2.1000	J	Arsenic
008S000701	S	04/04/1996	MG/KG	7440382	2.2000	J	Arsenic
008S000109	S	03/28/1996	MG/KG	7440382	2.5000	J	Arsenic
008S000307	S	03/26/1996	UG/KG	50328	49.0000	U	Benzo(a)pyrene
008S000106	S	03/28/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000109	S	03/28/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000407	S	04/04/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000607	S	04/04/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000707	S	04/04/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000801	S	04/04/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000807	S	04/04/1996	UG/KG	50328	50.0000	U	Benzo(a)pyrene
008S000101	S	03/26/1996	UG/KG	50328	51.0000	U	Benzo(a)pyrene
008S000301	S	03/26/1996	UG/KG	50328	51.0000	U	Benzo(a)pyrene
008S000311	S	03/26/1996	UG/KG	50328	51.0000	U	Benzo(a)pyrene
008S000401	S	04/04/1996	UG/KG	50328	51.0000	U	Benzo(a)pyrene
008S000701	S	04/04/1996	UG/KG	50328	52.0000	U	Benzo(a)pyrene
008S000601	S	04/04/1996	UG/KG	50328	180.0000		Benzo(a)pyrene
008S000407	S	04/04/1996	UG/KG	60571	1.7600	U	Dieldrin
008S000807	S	04/04/1996	UG/KG	60571	1.7600	U	Dieldrin
008S000106	S	03/28/1996	UG/KG	60571	1.7700	U	Dieldrin
008S000707	S	04/04/1996	UG/KG	60571	1.7700	U	Dieldrin
008S000801	S	04/04/1996	UG/KG	60571	1.7700	U	Dieldrin
008S000607	S	04/04/1996	UG/KG	60571	1.7800	U	Dieldrin
008S000101	S	03/26/1996	UG/KG	60571	1.8100	U	Dieldrin
008S000601	S	04/04/1996	UG/KG	60571	2.0300	J	Dieldrin
008S000401	S	04/04/1996	UG/KG	60571	2.0600		Dieldrin
008S000109	S	03/28/1996	UG/KG	60571	3.4800	J	Dieldrin
008S000701	S	04/04/1996	UG/KG	60571	4.9000		Dieldrin
008S000311	S	03/26/1996	UG/KG	60571	134.0000	D	Dieldrin
008S000307	S	03/26/1996	UG/KG	60571	496.0000	D	Dieldrin
008S000301	S	03/26/1996	UG/KG	60571	2010.0000	DJ	Dieldrin

SAMPLE_ID	SAMPL_TYPE	SAMPL_DATE	CONC_UNITS	CAS_NO	RESULT	VQUAL	PARAM
024S000105	S	08/29/1995	MG/KG	7440382	0.2200	U	Arsenic
024S000305	S	08/30/1995	MG/KG	7440382	0.2200	U	Arsenic
024S000405	S	08/30/1995	MG/KG	7440382	0.2200	U	Arsenic
024S000205	S	08/29/1995	MG/KG	7440382	0.3100	U	Arsenic
024S000505	S	08/30/1995	MG/KG	7440382	0.3100	U	Arsenic
024S000901	S	08/29/1995	MG/KG	7440382	0.4000	U	Arsenic
024S000801	S	08/29/1995	MG/KG	7440382	0.4400	U	Arsenic
024S000701	S	08/29/1995	MG/KG	7440382	0.4600	U	Arsenic
024S000501	S	08/30/1995	MG/KG	7440382	0.4700	U	Arsenic
024S000301	S	08/30/1995	MG/KG	7440382	0.5700	U	Arsenic
024S000201	S	08/26/1995	MG/KG	7440382	0.6100	U	Arsenic
024S000401	S	08/30/1995	MG/KG	7440382	1.2000	U	Arsenic
024S000801	S	08/29/1995	UG/KG	50328	29.0000	J	Benzo(a)pyrene
024S000901	S	08/29/1995	UG/KG	50328	54.0000	J	Benzo(a)pyrene
024S000505	S	08/30/1995	UG/KG	50328	140.0000	U	Benzo(a)pyrene
024S000701	S	08/29/1995	UG/KG	50328	140.0000	U	Benzo(a)pyrene
024S000105	S	08/29/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000205	S	08/29/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000210	S	08/29/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000305	S	08/30/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000401	S	08/30/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000405	S	08/30/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000501	S	08/30/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000510	S	08/30/1995	UG/KG	50328	150.0000	U	Benzo(a)pyrene
024S000201	S	08/26/1995	UG/KG	50328	180.0000	U	Benzo(a)pyrene
024S000301	S	08/30/1995	UG/KG	50328	180.0000		Benzo(a)pyrene
024S000901	S	08/29/1995	UG/KG	60571	0.7200	J	Dieldrin
024S000201	S	08/26/1995	UG/KG	60571	1.0000	J	Dieldrin
024S000801	S	08/29/1995	UG/KG	60571	2.0000	J	Dieldrin
024S000105	S	08/29/1995	UG/KG	60571	2.3000	J	Dieldrin
024S000701	S	08/29/1995	UG/KG	60571	2.3000	J	Dieldrin
024S000401	S	08/30/1995	UG/KG	60571	3.1000	J	Dieldrin
024S000210	S	08/29/1995	UG/KG	60571	3.3000	J	Dieldrin
024S000205	S	08/29/1995	UG/KG	60571	3.4000	UJ	Dieldrin
024S000405	S	08/30/1995	UG/KG	60571	3.4000	UJ	Dieldrin
024S000505	S	08/30/1995	UG/KG	60571	3.4000	U	Dieldrin
024S000510	S	08/30/1995	UG/KG	60571	3.4000	U	Dieldrin
024S000305	S	08/30/1995	UG/KG	60571	3.5000	UJ	Dieldrin
024S000501	S	08/30/1995	UG/KG	60571	3.5000	UJ	Dieldrin
024S000301	S	08/30/1995	UG/KG	60571	36.0000	J	Dieldrin

SAMPLE_ID	SAMPI	SAMPL_DATE	CONC_UNITS	CAS_NO	RESULT	VQUAL	PARAM
024S002401	S	03/09/1999	MG/KG	7440382	0.5500	U	Arsenic
024S002501	S	03/10/1999	MG/KG	7440382	0.4700	U	Arsenic
024S002507	S	03/10/1999	MG/KG	7440382	0.5700	U	Arsenic
024S002601	S	03/10/1999	MG/KG	7440382	0.5700	U	Arsenic
024S002607	S	03/10/1999	MG/KG	7440382	0.5100	U	Arsenic
024S002701	S	03/10/1999	MG/KG	7440382	1.2000	J	Arsenic
024S002707	S	03/10/1999	MG/KG	7440382	0.5100	U	Arsenic
024S002801	S	03/09/1999	MG/KG	7440382	1.3000	J	Arsenic
024S002807	S	03/09/1999	MG/KG	7440382	0.5600	U	Arsenic
024S002901	S	03/09/1999	MG/KG	7440382	1.1000	J	Arsenic
024S002907	S	03/09/1999	MG/KG	7440382	0.5100	U	Arsenic
024S003001	S	03/10/1999	MG/KG	7440382	0.5700	J	Arsenic
024S003007	S	03/10/1999	MG/KG	7440382	0.5600	U	Arsenic
024S002401	S	03/09/1999	UG/KG	50328	370.0000	U	Benzo(a)pyrene
024S002501	S	03/10/1999	UG/KG	50328	350.0000	U	Benzo(a)pyrene
024S002507	S	03/10/1999	UG/KG	50328	350.0000	U	Benzo(a)pyrene
024S002601	S	03/10/1999	UG/KG	50328	350.0000	U	Benzo(a)pyrene
024S002607	S	03/10/1999	UG/KG	50328	340.0000	U	Benzo(a)pyrene
024S002701	S	03/10/1999	UG/KG	50328	380.0000	U	Benzo(a)pyrene
024S002707	S	03/10/1999	UG/KG	50328	340.0000	U	Benzo(a)pyrene
024S002801	S	03/09/1999	UG/KG	50328	360.0000	U	Benzo(a)pyrene
024S002807	S	03/09/1999	UG/KG	50328	340.0000	UR	Benzo(a)pyrene
024S002901	S	03/09/1999	UG/KG	50328	370.0000	U	Benzo(a)pyrene
024S002907	S	03/09/1999	UG/KG	50328	340.0000	U	Benzo(a)pyrene
024S003001	S	03/10/1999	UG/KG	50328	350.0000	U	Benzo(a)pyrene
024S003007	S	03/10/1999	UG/KG	50328	340.0000	U	Benzo(a)pyrene
024S002401	S	03/09/1999	UG/KG	60571	1.7000	J	Dieldrin
024S002501	S	03/10/1999	UG/KG	60571	3.5000	U	Dieldrin
024S002507	S	03/10/1999	UG/KG	60571	3.5000	U	Dieldrin
024S002601	S	03/10/1999	UG/KG	60571	3.5000	U	Dieldrin
024S002607	S	03/10/1999	UG/KG	60571	3.4000	U	Dieldrin
024S002701	S	03/10/1999	UG/KG	60571	0.9200	J	Dieldrin
024S002707	S	03/10/1999	UG/KG	60571	3.4000	U	Dieldrin
024S002801	S	03/09/1999	UG/KG	60571	3.6000	U	Dieldrin
024S002807	S	03/09/1999	UG/KG	60571	3.4000	U	Dieldrin
024S002901	S	03/09/1999	UG/KG	60571	0.3200	J	Dieldrin
024S002907	S	03/09/1999	UG/KG	60571	3.4000	U	Dieldrin
024S003001	S	03/10/1999	UG/KG	60571	3.5000	U	Dieldrin
024S003007	S	03/10/1999	UG/KG	60571	3.4000	U	Dieldrin

APPENDIX B

Data Validation Report



NAS Pensacola

PREPARED FOR: NAS Pensacola / Sites 8 and 24 OU-13 Sampling
FINAL REVIEWER: Camden Robinson/ Associate Project Chemist/CCI
INITIAL REVIEWER: Camden Robinson/ Associate Project Chemist/CCI
COPIES: Amy Twitty /Project Manager/CCI
DATE: December 18, 2003
SUBJECT: Revised Quality Assessment for Samples Collected June 2003 thru August 2003

This quality assurance memorandum is based upon a review of analytical data generated for water and soil samples and associated field quality control samples collected June 2003 through August 2003 at the Naval Air Station, Pensacola. The samples were collected as a part of the Sites 8 and 24 OU-13 sampling event conducted at the site. Table 1-1 presents a summary of the CCI sample identification numbers, dates of collection, and the analyses performed.

Kemron Environmental Laboratory of Marietta, Ohio served as the laboratory for this Sites 8 and 24 OU-13 sampling event for the following analyses:

- Total and SPLP Benzo(a)pyrene by SW-846 method 8270C,
- Total and SPLP Dieldrin by SW-846 method 8081A,
- Total and SPLP Cadmium by SW-846 method 6010B,
- Total Metals (Arsenic, Cadmium, Iron, Lead, and Manganese) by SW-846 method 6010B

Table 1-1 *Summary Sample Data Reviewed
NAS Pensacola*

Sample Number	Lab Sample ID	Parent Sample ID	Date Sampled	Analysis Required
085-08-PREEB-W-3	L0306569-01		06/23/2003	Metals 6010B Cadmium, Pesticides - CI 8081A Dieldrin, SVOCs 8270C Benzo(a)pyrene
085-08-116-S-9	L0306569-02		06/23/2003	Metals 6010B Cadmium
085-08-117-S-9	L0306569-03		06/23/2003	Metals 6010B Cadmium
085-08-118-S-9	L0306569-04		06/23/2003	Metals 6010B Cadmium
085-08-119-S-1	L0306569-05		06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-120-S-1	L0306569-06		06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-121-S-1	L0306569-07		06/23/2003	Pesticides - CI 8081A Dieldrin

Sample Number	Lab Sample ID	Parent Sample ID	Date Sampled	Analysis Required
085-08-119-S-7	L0306569-08		06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-120-S-7	L0306569-09		06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-121-S-7	L0306569-10		06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-FD5-S-5	L0306569-11	085-08-116-S-9	06/23/2003	Metals 6010B Cadmium
085-08-117-S-9-MS	L0306569-12	085-08-117-S-9	06/23/2003	Metals 6010B Cadmium
085-08-117-S-9-SD	L0306569-13	085-08-117-S-9	06/23/2003	Metals 6010B Cadmium
085-08-FD6-S-6	L0306569-14	085-08-120-S-1	06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-119-S-1-MS	L0306569-15	085-08-119-S-1	06/23/2003	Pesticides - CI 8081A Dieldrin
085-08-119-S-1-SD	L0306569-16	085-08-119-S-1	06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-67-S-1	L0306569-17		06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-68-S-1	L0306569-18		06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-69-S-1	L0306569-19		06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-67-S-10	L0306569-20		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-68-S-8	L0306569-21		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-69-S-8	L0306569-22		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-70-S-7	L0306569-23		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-71-S-7	L0306569-24		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-72-S-7	L0306569-25		06/23/2003	Pesticides - CI 8081A Dieldrin
085-24-FD7-S-7	L0306569-26	085-24-69-S-1	06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-68-S-1-MS	L0306569-27	085-24-68-S-1	06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-68-S-1-SD	L0306569-28	085-24-68-S-1	06/23/2003	SVOCs 8270C Benzo(a)pyrene
085-24-POSTEB-W-3	L0306569-29		06/23/2003	Metals 6010B Cadmium, Pesticides - CI 8081A Dieldrin, SVOCs 8270C Benzo(a)pyrene
085-08-116-S-9-R	L0307602R-01		06/23/2003	Metals SPLP Cadmium
085-08-117-S-9-R	L0307602R-02		06/23/2003	Metals SPLP Cadmium
085-08-118-S-9-R	L0307602R-03		06/23/2003	Metals SPLP Cadmium

Sample Number	Lab Sample ID	Parent Sample ID	Date Sampled	Analysis Required
085-08-FD5-S-5-R	L0307602R-04	085-08-116-S-9	06/23/2003	Metals SPLP Cadmium
085-08-117-S-9-MS-R	L0307602R-05	085-08-117-S-9	06/23/2003	Metals SPLP Cadmium
085-08-117-S-9-SD-R	L0307602R-06	085-08-117-S-9	06/23/2003	Metals SPLP Cadmium
085-08-PREEB-W-4	L0307213-01		07/09/2003	Metals 6010B As, Cd, Fe, Mn, Pb, Pesticides - CI 8081A Dieldrin, SVOCs 8270C Benzo(a)pyrene
085-08-MW-01-W-1	L0307213-02		07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-08-MW-02-W-1	L0307213-03		07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-08-MW-03-W-1	L0307213-04		07/09/2003	Metals 6010B Cd, Fe, Mn, Pb, Pesticides - CI 8081A Dieldrin
085-08-MW-04-W-1	L0307213-05		07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-08-FD-01-W-1	L0307213-06	085-08-MW-01- W-1	07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-08-MW-02-W-1- MS	L0307213-07	085-08-MW-02- W-1	07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-08-MW-02-W-1-SD	L0307213-08	085-08-MW-02- W-1	07/09/2003	Metals 6010B Cd, Fe, Mn, Pb
085-24-MW-01-W-1	L0307213-09		07/09/2003	Metals 6010B Fe, Mn, Pesticides - CI 8081A Dieldrin
085-08-MW-02-W-1	L0307213-10		07/09/2003	Metals 6010B As, Fe, Mn, Pesticides - CI 8081A Dieldrin, SVOCs 8270C Benzo(a)pyrene
085-24-MW-03-W-1	L0307213-11		07/09/2003	Metals 6010B Fe, Mn, Pesticides - CI 8081A Dieldrin
085-24-FD-01-W-1	L0307213-12	085-24-MW-03- W-1	07/09/2003	Metals 6010B Fe, Mn, Pesticides - CI 8081A Dieldrin
085-24-MW-01-W-1- MS	L0307213-13	085-24-MW-01- W-1	07/09/2003	Metals 6010B Fe, Mn, Pesticides - CI 8081A Dieldrin
085-24-MS-01-W-1-SD	L0307213-14	085-24-MW-01- W-1	07/09/2003	Metals 6010B Fe, Mn, Pesticides - CI 8081A Dieldrin
085-24-POSTEB-W-4	L0307213-15		07/09/2003	Metals 6010B As, Cd, Fe, Mn, Pb, Pesticides - CI 8081A Dieldrin, SVOCs 8270C Benzo(a)pyrene
085-08-PREEB-W-3	L0308026-01		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP, SVOCs Benzo(a)pyrene 8270C SPLP
085-08-119-S-1	L0308026-02		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-120-S-1	L0308026-03		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-121-S-1	L0308026-04		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP

Sample Number	Lab Sample ID	Parent Sample ID	Date Sampled	Analysis Required
085-08-119-S-7	L0308026-05		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-120-S-7	L0308026-06		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-121-S-7	L0308026-07		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-FD6-S-6	L0308026-08	085-08-120-S-1	08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-67-S-1	L0308026-09		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-68-S-1	L0308026-10		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-69-S-1	L0308026-11		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-67-S-6	L0308026-12		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-68-S-6	L0308026-13		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-69-S-6	L0308026-14		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-70-S-6	L0308026-15		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-71-S-5	L0308026-16		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-72-S-5.5	L0308026-17		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-FD7-S-7	L0308026-18	085-24-69-S-1	08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-POSTEB-W-4	L0308026-19		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP, SVOCs Benzo(a)pyrene 8270C SPLP
085-08-119-S-1	L0308392-01		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-120-S-1	L0308392-02		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-121-S-1	L0308392-03		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-119-S-7	L0308392-04		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-120-S-7	L0308392-05		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-121-S-7	L0308392-06		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-08-FD6-S-6	L0308392-07	085-08-120-S-1	08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-67-S-1	L0308392-08		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP

Sample Number	Lab Sample ID	Parent Sample ID	Date Sampled	Analysis Required
085-24-68-S-1	L0308392-09		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-69-S-1	L0308392-10		08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP
085-24-67-S-6	L0308392-11		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-68-S-6	L0308392-12		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-69-S-6	L0308392-13		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-70-S-6	L0308392-14		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-71-S-5	L0308392-15		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-72-S-5.5	L0308392-16		08/01/2003	Pesticides - CI Dieldrin 8081A SPLP
085-24-FD7-S-7	L0308392-17	085-24-69-S-1	08/01/2003	SVOCs Benzo(a)pyrene 8270C SPLP

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with CCI Sampling Analysis Plan. All analysis results have been validated or qualified according to general guidance provided in the "National Functional Guidelines for Organic and Inorganic Data Review," EPA 540/OR-99/008, October 1999 and EPA 540/R-94/013, February 1994. Additionally, the data were evaluated for adherence to the Department of Defense (DOD) Quality Systems Manual-Version 2 June 2002.

The findings of this quality assurance report are based upon the comprehensive review of the following results summaries reported according to the CCI Level C (CLP-like data deliverables format): chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, bromofluorobenzene (BFB) mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, ICP interference check sample results, ICP serial dilution results, metals post digestion spikes, and electronic data deliverables.

The analyses were performed acceptably, but require several qualifying statements; it is recommended that the analytical data be used only with the qualifying statements provided below. Any aspects of the data, which are not discussed in this report, should be considered qualitatively and quantitatively valid as reported, based on the deliverables reviewed. A result summary report presenting the validated and qualified results is presented in Attachment I.

General Data Qualifiers

As required by U.S. EPA protocols, all compounds which were qualitatively identified at concentrations below their respective reporting limits (RL) but above the method detection limit

(MDL) have been qualified with "J" qualifiers on the data summary reports to indicate that they are quantitative estimates.

Organic Data Qualifiers

Positive results or quantitation limits for samples 085-08-119-S-1, 085-08-120-S-1, 085-08-121-S-1, 085-08-119-S-7, 085-08-120-S-7, 085-08-121-S-7, 085-08-FD6-S-6, 085-24-67-S-1, 085-24-68-S-1, 08-24-69-S-1, 085-24-67-S-6, 085-24-68-S-6, 085-24-69-S-6, 085-24-70-S-6, 085-24-71-S-5, 085-24-72-S-5.5, and 085-24-FD7-S-7 for semivolatile-splp benzo(a)pyrene and pesticides-splp dieldrin analyses should be considered qualitative estimated as a result of technical holding times exceedance. Note the samples had to be re-extracted in order to meet Florida's splp groundwater limits. This has been indicated by placing a "J" qualifying code next to the reported quantitative result or detection limit for these analyses on the associated summary report.

The samples presented below were analyzed or re-analyzed at dilutions for analysis indicated. These dilutions may have resulted in surrogate compounds diluted below the instrument detection limit, therefore surrogate recoveries may not be reported for all diluted analysis. These dilutions were required to prevent saturation of the instrument, to allow quantitation of the compounds within the linear range of the calibration curve, and/or to reduce the effects of the matrix on the target compounds. Positive results for these compounds in the samples below have been reported from the diluted analyses. All other results and quantitation limits have been reported on the sample report summary from the initial analysis. However, higher quantitation limits have resulted for specific semivolatile organic compounds, which were not detected, in these samples. This should be noted when assessing these samples for the qualitative absence of specific semivolatile organic compounds.

Sample ID	Analysis	Dilution Factor
085-24-67-S-1, 085-24-68-S-1, 085-24-69-S-1, 085-24-FD7-S-7, 085-24-68-S-1-MS, 085-24-68-S-1-SD,	SVOC	50x
085-24-69-S-1 and 085-24-FD7-S-7	SVOC-Benzo(a)pyrene SPLP	10x
085-08-120-S-1 and 085-08-FD6-S-6	Pesticides - Dieldrin SPLP	20x

Samples 085-24-69-S-1, 085-08-120-S-1, 085-24-MW-03-W-1 and their blind field duplicate samples 085-24-FD7-S-7, 085-08-FD6-S-6, 085-24-FD-01-W-1 were submitted to the laboratory to

evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met CCI's blind duplicate precision criteria of 25% relative percent difference (RPD) for semivolatile organic and pesticides aqueous, and 40% relative percent difference (RPD) for semivolatile organic and pesticides solid analyses with the exception of benzo(a)pyrene and dieldrin. A "J" qualifier was appended to these compounds for the native samples listed below to indicate that the reported value should be considered quantitative estimates due to the field duplicate RPD exceedances. The RPD was not calculated for the compounds that were not detected in both samples.

Compound	Affected Samples
Benzo(a)pyrene	085-24-69-S-1
Dieldrin	085-08-120-S1, 085-24-MW-03-W-1

Inorganic Data Qualifiers

The positive results reported for cadmium in sample 085-08-117-S-9 should be considered biased low quantitative estimates and may be higher than reported. The associated recoveries for the client specific matrix spike (MS) and matrix spike duplicate (MSD) samples were below the established quality control (QC) limit for this analyte. The bias low MS/MSD recoveries indicate the possible presence of matrix interferences in samples of similar matrix. This has been indicated by placing "J" qualifiers next to the cadmium result for sample 085-08-117-S9 on the data summary tables.

Samples 085-08-116-S-9, 085-08-MW-01-W-1, and 085-24-MW-03-W-1 and their blind field duplicate samples 085-08-FD5-S-5, 085-08-FD-01-W-1, and 085-24-FD-01-W-1 were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. CCI's blind duplicate precision criteria of 25% RPD was met for all metals analyses. The RPD was not calculated for the compounds that were not detected in both samples.

Summary

The organic and inorganic analyses were performed acceptably, but required qualifying statements. This analytical quality assurance report has identified the aspects of the data, which required qualification. These qualifiers are noted on the attached analytical sample summary reports. A support documentation package has been prepared for this quality assurance review and is filed with the NAS Pensacola / Sites 8 and 24 OU-13 sampling project file.

Attachment I

QUALIFIER	
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit
J	The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet the quality control criteria. The presence or absence of the analyte cannot be verified.

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) blank or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
Z	Duplicates RPD showed poor agreement.	Duplicates RPD showed poor agreement
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive—reported compound was not present.	Not applicable.
-	False negative—compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Poor Digestion Spike recovery was not within control limits.
#	Unusual problems found with the data that have been described in Section 2, "Data Validation Findings." The number following the asterisk () will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section 2, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0307602R
 Report Date : December 18, 2003

Sample Number: L0307602-01 PrePrep Method: 1312 Instrument: PE-ICP
 Client ID: 085-08-116-S-9-R Analytical Method: 6010B Prep Date: 08/01/2003 08:25
 Matrix: Leachate Analyst: CRC Cal Date: 11/03/2003 19:49
 Workgroup Number: W0146674 Dilution: 1 Run Date: 11/03/2003 21:08
 Collect Date: 23-JUN-03 Units: mg/L File ID: PE.110303.210812

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SFLP	7440-43-9	0.00407	J	.005	.0025	D006	1

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307602-02 PrePrep Method: 1312 Instrument: PE-ICP
 Client ID: 085-08-117-S-9-R Analytical Method: 6010B Prep Date: 08/01/2003 08:25
 Matrix: Leachate Analyst: CRC Cal Date: 11/03/2003 19:49
 Workgroup Number: W0146674 Dilution: 1 Run Date: 11/03/2003 20:51
 Collect Date: 23-JUN-03 Units: mg/L File ID: PE.110303.205108

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SFLP	7440-43-9	0.257	J	.005	.0025	D006	1

Sample Number: L0307602-03 PrePrep Method: 1312 Instrument: PE-ICP
 Client ID: 085-08-118-S-9-R Analytical Method: 6010B Prep Date: 08/01/2003 08:25
 Matrix: Leachate Analyst: CRC Cal Date: 11/03/2003 19:49
 Workgroup Number: W0146674 Dilution: 1 Run Date: 11/03/2003 21:25
 Collect Date: 23-JUN-03 Units: mg/L File ID: PE.110303.212506

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SFLP	7440-43-9	0.00495	J	.005	.0025	D006	1

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307602-04 PrePrep Method: 1312 Instrument: PE-ICP
 Client ID: 085-08-F05-S-5-R Analytical Method: 6010B Prep Date: 08/01/2003 08:25
 Matrix: Leachate Analyst: CRC Cal Date: 11/03/2003 19:49
 Workgroup Number: W0146674 Dilution: 1 Run Date: 11/03/2003 21:41
 Collect Date: 23-JUN-03 Units: mg/L File ID: PE.110303.214155

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SFLP	7440-43-9	0.00339	J	.005	.0025	D006	1

J This compound was detected at a level above the method detection limit, but below the reporting limit.

C.L.R

REVISED
 DATE DEC 18 2003

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0307602R
 Report Date : December 18, 2003

Sample Number: <u>L0307602-05</u>	PrePrep Method: <u>1312</u>	Instrument: <u>PE-ICP</u>
Client ID: <u>085-08-117-S-9-MR-R</u>	Analytical Method: <u>6010B</u>	Prep Date: <u>08/01/2003 08:25</u>
Matrix: <u>Leachate</u>	Analyst: <u>CRC</u>	Cal Date: <u>11/03/2003 19:49</u>
Workgroup Number: <u>M2146674</u>	Dilution: <u>1</u>	Run Date: <u>11/03/2003 20:56</u>
Collect Date: <u>23-JUN-03</u>	Units: <u>mg/L</u>	File ID: <u>PE.110303.205646</u>

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SPLP	7440-43-9	8.65		.005	.0025	D006	1

Sample Number: <u>L0307602-06</u>	PrePrep Method: <u>1312</u>	Instrument: <u>PE-ICP</u>
Client ID: <u>085-08-117-S-9-SD-R</u>	Analytical Method: <u>6010B</u>	Prep Date: <u>08/01/2003 08:25</u>
Matrix: <u>Leachate</u>	Analyst: <u>CRC</u>	Cal Date: <u>11/03/2003 19:49</u>
Workgroup Number: <u>M2146674</u>	Dilution: <u>1</u>	Run Date: <u>11/03/2003 21:02</u>
Collect Date: <u>23-JUN-03</u>	Units: <u>mg/L</u>	File ID: <u>PE.110303.210228</u>

Analyte	CAS Number	Result	Qual	RL	MDL	EPA HW#	Req. Limit
Cadmium, SPLP	7440-43-9	8.46		.005	.0025	D006	1

C.L.R

REVISED
 DATE DEC 18 2003

Sample Number: L0307213-01
 Client ID: 085-08-FREEB-W-4
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 14:29
 File ID: IR.072003.142900

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6		U	0.0400	0.0200
Manganese, Total	7439-96-5		U	0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-01
 Client ID: 085-08-FREEB-W-4
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DLI

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 13:23
 File ID: EL.071903.132340

Analyte	CAS. Number	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2		U	0.00100	0.000500
Lead, Total	7439-92-1		U	0.00100	0.000500

U This analyte was not detected in the sample.

Sample Number: L0307213-01
 Client ID: 085-08-FREEB-W-4
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 00:39
 File ID: 9G24249.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.00103	0.000515

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	67.3	20	180	
Decachlorobiphenyl	74.4	25	140	

U This analyte was not detected in the sample.

Sample Number: L0307213-01
 Client ID: 085-08-FREEB-W-4
 Matrix: Water
 Workgroup Number: WG145364
 Collect Date: 09-JUL-03

Prep Method: 3520C
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 1
 Units: ug/L

Instrument: HPMS7
 Prep Date: 07/14/2003 10:00
 Cal Date:
 Run Date: 07/16/2003 18:15
 File ID: 7M17683

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8		U	0.104	0.0521

Surrogate	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	43.1	33	95	
2-Fluorobiphenyl	40.5	27	93	
p-Terphenyl-d14	55.9	22	94	

U This analyte was not detected in the sample.

C.R

Sample Number: L0307213-02 Prep Method: 3005A Instrument: IRIS-ICP
 Client ID: 085-08-MW-01-W-1 Analytical Method: 6010B Prep Date: 07/14/2003 08:15
 Matrix: Water Analyst: JYH Cal Date: 07/20/2003 11:06
 Workgroup Number: WG145564 Dilution: 1 Run Date: 07/20/2003 14:52
 Collect Date: 09-JUL-03 Units: mg/L File ID: IR.072003.145200

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6	8.90		0.0400	0.0200
Manganese, Total	7439-96-5	0.238		0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-02 Prep Method: 3015 Instrument: ELAN-ICP
 Client ID: 085-08-MW-01-W-1 Analytical Method: 6020A Prep Date: 07/14/2003 11:00
 Matrix: Water Analyst: JYH Cal Date: 07/19/2003 12:14
 Workgroup Number: WG145553 Dilution: 2 Run Date: 07/19/2003 13:49
 Collect Date: 09-JUL-03 Units: mg/L File ID: EL.071903.134905
 Sample Tag: DL1

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.000653	J	0.00100	0.000500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307213-03 Prep Method: 3005A Instrument: IRIS-ICP
 Client ID: 085-08-MW-02-W-1 Analytical Method: 6010B Prep Date: 07/14/2003 08:15
 Matrix: Water Analyst: JYH Cal Date: 07/20/2003 11:06
 Workgroup Number: WG145564 Dilution: 1 Run Date: 07/20/2003 14:38
 Collect Date: 09-JUL-03 Units: mg/L File ID: IR.072003.143800

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	0.0127		0.00500	0.00250
Iron, Total	7439-89-6	10.3		0.0400	0.0200
Manganese, Total	7439-96-5	0.392		0.0100	0.00100

Sample Number: L0307213-03 Prep Method: 3015 Instrument: ELAN-ICP
 Client ID: 085-08-MW-02-W-1 Analytical Method: 6020A Prep Date: 07/14/2003 11:00
 Matrix: Water Analyst: JYH Cal Date: 07/19/2003 12:14
 Workgroup Number: WG145553 Dilution: 2 Run Date: 07/19/2003 13:08
 Collect Date: 09-JUL-03 Units: mg/L File ID: EL.071903.130826
 Sample Tag: DL1

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.00121		0.00100	0.000500

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Sample Number: L0307213-04
 Client ID: 085-08-MW-03-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:16
 File ID: IR.072003.151600

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6	3.23	J	0.0400	0.0200
Manganese, Total	7439-96-5	0.123	J	0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-04
 Client ID: 085-08-MW-03-W-1
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DL1

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 12:58
 File ID: EL.071903.125819

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.000965	J	0.00100	0.000500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307213-04
 Client ID: 085-08-MW-03-W-1
 Matrix: Water
 Group Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 01:07
 File ID: 9G24250.F

Dieldrin	60-57-1		U	0.00103	0.000515
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Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	45.9	20	180	
Decachlorobiphenyl	67.7	25	140	

U This analyte was not detected in the sample.

Sample Number: L0307213-05
 Client ID: 085-08-MW-04-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:31
 File ID: IR.072003.153100

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6	0.0329	J	0.0400	0.0200
Manganese, Total	7439-96-5	0.0267	J	0.0100	0.00100

J This compound was detected at a level above the method detection limit, but below the reporting limit.

U This analyte was not detected in the sample.

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Sample Number: L0307213-05
 Client ID: 085-08-MW-04-W-1
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DL1

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 13:54
 File ID: EL.071903.135411

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1		U	0.00100	0.000500

U This analyte was not detected in the sample.

Sample Number: L0307213-06
 Client ID: 085-08-FD-01-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:35
 File ID: IR.072003.153500

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6	8.82		0.0400	0.0200
Manganese, Total	7439-96-5	0.237		0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-06
 Client ID: 085-08-FD-01-W-1
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DL1

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 13:59
 File ID: EL.071903.135918

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.00042	J	0.00100	0.000500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

~~Sample Number: L0307213-07
 Client ID: 085-08-MW-02-W-1-M8
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03~~

~~Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L~~

~~Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 14:43
 File ID: IR.072003.144300~~

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	0.0671		0.00500	0.00250
Iron, Total	7439-89-6	13.4		0.0400	0.0200
Manganese, Total	7439-96-5	0.902		0.0100	0.00100

at

Sample Number: L0307213-07
 Client ID: 085-08-MW-02-W-1-MS
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DLI

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 13:13
 File ID: EL.071903.131330

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.135		0.00100	0.000500

Sample Number: L0307213-08
 Client ID: 085-08-MW-02-W-1-SD
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 14:48
 File ID: IR.072003.144800

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	0.0676		0.00500	0.00250
Iron, Total	7439-89-6	13.4		0.0400	0.0200
Manganese, Total	7439-96-5	0.920		0.0100	0.00100

Sample Number: L0307213-08
 Client ID: 085-08-MW-02-W-1-SD
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DLI

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 13:18
 File ID: EL.071903.131835

Analyte	CAS. Number	Result	Qual	RL	MDL
Lead, Total	7439-92-1	0.130		0.00100	0.000500

Sample Number: L0307213-09
 Client ID: 085-24-MW-01-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:40
 File ID: IR.072003.154000

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	0.0306	J	0.0400	0.0200
Manganese, Total	7439-96-5	0.00960	J	0.0100	0.00100

J This compound was detected at a level above the method detection limit, but below the reporting limit.

C.R

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 DATE DEC 15 2003

Sample Number: L0307213-09
 Client ID: 085-24-MW-01-W-1
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 03:56
 File ID: 9024256.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.00103	0.000515

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	55.3	20	180	
Decachlorobiphenyl	76.9	25	140	

U This analyte was not detected in the sample.

Sample Number: L0307213-10
 Client ID: 085-24-MW-02-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:54
 File ID: IR.072003.155400

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	0.0573		0.0400	0.0200
Manganese, Total	7439-96-5	0.00218	J	0.0100	0.00100

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307213-10
 Client ID: 085-24-MW-02-W-1
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DLI

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 14:04
 File ID: EL.071903.140425

Analyte	CAS. Number	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.000823	J	0.00100	0.000300

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307213-10
 Client ID: 085-24-MW-02-W-1
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 01:35
 File ID: 9024251.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00379		0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	51.7	20	180	
Decachlorobiphenyl	66.3	25	140	

C.R

Report Date : November 25, 2003

Sample Number: L0307213-10 Prep Method: 3510C Instrument: HP9
 Client ID: 085-24-MW-02-W-1 Analytical Method: 8081A Prep Date: 07/14/2003 16:20
 Matrix: Water Analyst: ECL Cal Date: 07/15/2003 14:47
 Workgroup Number: WG145181 Dilution: 1 Run Date: 07/16/2003 02:04
 Collect Date: 09-JUL-03 Units: ug/L File ID: 9G24251.R
 Sample Tag: CF1

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00318		0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	40.4	20	180	
Decachlorobiphenyl	78.0	25	140	

Sample Number: L0307213-10 Prep Method: 3520C Instrument: HPMS7
 Client ID: 085-24-MW-02-W-1 Analytical Method: 8270C Prep Date: 07/14/2003 10:00
 Matrix: Water Analyst: CLK Cal Date:
 Workgroup Number: WG145364 Dilution: 1 Run Date: 07/16/2003 18:36
 Collect Date: 09-JUL-03 Units: ug/L File ID: 7M17684

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	0.0553	J	0.105	0.0524

Surrogate	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	53.4	33	95	
2-Fluorobiphenyl	53.5	27	93	
p-Terphenyl-d14	81.6	22	94	

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0307213-11 Prep Method: 3005A Instrument: IRIS-ICP
 Client ID: 085-24-MW-03-W-1 Analytical Method: 6010B Prep Date: 07/14/2003 08:15
 Matrix: Water Analyst: JYH Cal Date: 07/20/2003 11:06
 Workgroup Number: WG145564 Dilution: 1 Run Date: 07/20/2003 15:59
 Collect Date: 09-JUL-03 Units: mg/L File ID: IR.072003.155900

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	0.0099		0.0400	0.0200
Manganese, Total	7439-96-5		U	0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-11 Prep Method: 3510C Instrument: HP9
 Client ID: 085-24-MW-03-W-1 Analytical Method: 8081A Prep Date: 07/14/2003 16:20
 Matrix: Water Analyst: ECL Cal Date: 07/15/2003 14:47
 Workgroup Number: WG145181 Dilution: 1 Run Date: 07/16/2003 02:04
 Collect Date: 09-JUL-03 Units: ug/L File ID: 9G24252.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00149	J	0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	58.2	20	180	
Decachlorobiphenyl	42.6	25	140	

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 DATE DEC 15 2003

Sample Number: L0307213-11
 Client ID: 085-24-MW-03-W-1
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 02:32
 File ID: 9G24252.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00120	J	0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	39.0	20	180	
Decachlorobiphenyl	42.5	25	140	

Sample Number: L0307213-12
 Client ID: 085-24-FD-01-W-1
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 16:13
 File ID: IR.072003.161300

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	0.0520		0.0400	0.0200
Manganese, Total	7439-96-5		U	0.0100	0.00100

U This analyte was not detected in the sample.

Sample Number: L0307213-12
 Client ID: 085-24-FD-01-W-1
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 03:56
 File ID: 9G24255.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	45.6	20	180	
Decachlorobiphenyl	217	25	140	*

* Surrogate or spike compound out of range
 U This analyte was not detected in the sample.

Sample Number: L0307213-13
 Client ID: 085-24-FD-01-W-1-MS
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:45
 File ID: IR.072003.154500

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	4.53		0.0400	0.0200
Manganese, Total	7439-96-5	0.557		0.0100	0.00100

C.R

Sample Number: L0307213-13
 Client ID: 085-24-MW01-W-1-MS
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 04:25
 File ID: 9G24257.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0258		0.00104	0.000521
Surrogate	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	42.8	20	100		
Decachlorobiphenyl	35.9	25	140		

Sample Number: L0307213-14
 Client ID: 085-24-MS-01-W-1-SD
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 15:50
 File ID: IR.072003.155000

Analyte	CAS. Number	Result	Qual	RL	MDL
Iron, Total	7439-89-6	4.26		0.0400	0.0200
Manganese, Total	7439-96-5	0.532		0.0100	0.00100

Sample Number: L0307213-14
 Client ID: 085-24-MS-01-W-1-SD
 Matrix: Water
 Group Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 04:53
 File ID: 9G24258.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0332		0.00103	0.000515
Surrogate	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	54.7	20	180		
Decachlorobiphenyl	65.7	25	140		

Sample Number: L0307213-15
 Client ID: 085-24-POSTEB-W-4
 Matrix: Water
 Workgroup Number: WG145564
 Collect Date: 09-JUL-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/L

Instrument: IRIS-ICP
 Prep Date: 07/14/2003 08:15
 Cal Date: 07/20/2003 11:06
 Run Date: 07/20/2003 16:18
 File ID: IR.072003.161800

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.00500	0.00250
Iron, Total	7439-89-6		U	0.0400	0.0200
Manganese, Total	7439-96-5		U	0.0100	0.00100

U This analyte was not detected in the sample.

C.R

Sample Number: L0307213-15
 Client ID: 085-24-POSTEB-W-4
 Matrix: Water
 Workgroup Number: WG145553
 Collect Date: 09-JUL-03
 Sample Tag: DLI

Prep Method: 3015
 Analytical Method: 6020A
 Analyst: JYH
 Dilution: 2
 Units: mg/L

Instrument: ELAN-ICP
 Prep Date: 07/14/2003 11:00
 Cal Date: 07/19/2003 12:14
 Run Date: 07/19/2003 14:09
 File ID: EL.071903.140931

Analyte	CAS. Number	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2		U	0.00100	0.000500
Lead, Total	7439-92-1		U	0.00100	0.000500

U This analyte was not detected in the sample.

Sample Number: L0307213-15
 Client ID: 085-24-POSTEB-W-4
 Matrix: Water
 Workgroup Number: WG145181
 Collect Date: 09-JUL-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 07/14/2003 16:20
 Cal Date: 07/15/2003 14:47
 Run Date: 07/16/2003 05:49
 File ID: 9C24259.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.00104	0.000521

Surrogate	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	45.3	20	180	
Decachlorobiphenyl	46.2	25	140	

U This analyte was not detected in the sample.

Sample Number: L0307213-15
 Client ID: 085-24-POSTEB-W-4
 Matrix: Water
 Workgroup Number: WG145364
 Collect Date: 09-JUL-03

Prep Method: 3520C
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 1
 Units: ug/L

Instrument: HPMS7
 Prep Date: 07/14/2003 10:00
 Cal Date:
 Run Date: 07/16/2003 18:57
 File ID: 7M17685

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8		U	0.104	0.0516

Surrogate	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	60.6	33	95	
2-Fluorobiphenyl	58.4	27	93	
p-Terphenyl-d14	66.2	22	94	

U This analyte was not detected in the sample.

C.R

REVISED
 DATE DEC 15 2003

Sample Number: L0306569-01
 Client ID: 085-08-PREEB-W-3
 Matrix: Water
 Workgroup Number: WG144302
 Collect Date: 23-JUN-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: SLP
 Dilution: 1
 Units: mg/L

Instrument: PE-ICP
 Prep Date: 06/27/2003 09:50
 Cal Date: 06/30/2003 17:15
 Run Date: 06/30/2003 18:58
 File ID: PE.063003.185839

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.0100	0.00250

U This analyte was not detected in the sample.

Sample Number: L0306569-01
 Client ID: 085-08-PREEB-W-3
 Matrix: Water
 Workgroup Number: WG144129
 Collect Date: 23-JUN-03

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 06/26/2003 11:30
 Cal Date: 06/25/2003 22:49
 Run Date: 06/27/2003 15:55
 File ID: 9G23983.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.100	0.0250

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	60.4	20	180	
Decachlorobiphenyl	52.9	25	140	

U This analyte was not detected in the sample.

Sample Number: L0306569-01
 Client ID: 085-08-PREEB-W-3
 Matrix: Water
 Workgroup Number: WG144676
 Collect Date: 23-JUN-03

Prep Method: 3520C
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 1
 Units: ug/L

Instrument: HPMS7
 Prep Date: 06/30/2003 08:00
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 14:10
 File ID: 7M17640

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8		U	0.109	0.0543

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	48.1	33	95	
2-Fluorobiphenyl	50.0	27	93	
p-Terphenyl-d14	66.4	22	94	

U This analyte was not detected in the sample.

Sample Number: L0306569-02
 Client ID: 085-08-116-S-9
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 89.1

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 11:13
 File ID: IR.070103.111300

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	27.5		0.534	0.0534

Sample Number: L0306569-02
 Client ID: 085-08-116-S-9
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	89.1		1.00	1.00

Sample Number: L0306569-03
 Client ID: 085-08-117-S-9
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 86.8

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 11:18
 File ID: IR.070103.111800

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	222		0.538	0.0538

Sample Number: L0306569-04
 Client ID: 085-08-117-S-9
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	86.8		1.00	1.00

Sample Number: L0306569-04
 Client ID: 085-08-118-S-9
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 96.5

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 11:23
 File ID: IR.070103.112300

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	1.44		0.508	0.0508

C.R

Report Number: L0306569
 Report Date : July 18, 2003

Sample Number: L0306569-04
 Client ID: 085-08-118-S-9
 Matrix: Soil
 Workgroup Number: WGI44460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %
 Percent Solid: 96.5

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	96.5		1.00	1.00

Sample Number: L0306569-05
 Client ID: 085-08-119-S-1
 Matrix: Soil
 Workgroup Number: WGI44128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/03/2003 23:24
 File ID: 9G24095.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	2.41	J	3.63	0.908

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	97.0	39	130	
Decachlorobiphenyl	105	33	143	

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0306569-05
 Client ID: 085-08-119-S-1
 Matrix: Soil
 Workgroup Number: WGI44460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %
 Percent Solid: 90.8

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

Sample Number: L0306569-06
 Client ID: 085-08-120-S-1
 Matrix: Soil
 Workgroup Number: WGI44128
 Collect Date: 23-JUN-03
 Sample Tag: CF1

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 93.1

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/03/2003 23:24
 File ID: 9G24096.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	36.6	J	3.54	0.885

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	106	39	130	
Decachlorobiphenyl	115	33	143	

CR

Sample Number: L0306569-06
 Client ID: 085-08-120-S-1
 Matrix: Soil
 Workgroup Number: WGI44128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 93.1

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/03/2003 23:53
 File ID: 9G24096.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	40.2		3.54	0.885

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	101	39	130	
Decachlorobiphenyl	112	33	143	

Sample Number: L0306569-06
 Client ID: 085-08-120-S-1
 Matrix: Soil
 Workgroup Number: WGI44460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	93.1		1.00	1.00

Sample Number: L0306569-07
 Client ID: 085-08-121-S-1
 Matrix: Soil
 Workgroup Number: WGI44128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 92.6

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 00:21
 File ID: 9G24097.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.56	0.889

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	105	39	130	
Decachlorobiphenyl	111	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-07
 Client ID: 085-08-121-S-1
 Matrix: Soil
 Workgroup Number: WGI44460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	92.7		1.00	1.00

C.R

Report Number: L0306569
 Report Date : July 18, 2003

Sample Number: L0306569-08
 Client ID: 085-08-119-S-7
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 93.9

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 00:49
 File ID: 9G24098.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.51	0.878

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	87.0	39	130	
Decachlorobiphenyl	111	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-08
 Client ID: 085-08-119-S-7
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	93.9		1.00	1.00

Sample Number: L0306569-09
 Client ID: 085-08-120-S-7
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 96.4

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 01:17
 File ID: 9G24099.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.42	0.855

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	87.1	39	130	
Decachlorobiphenyl	141	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-09
 Client ID: 085-08-120-S-7
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	96.4		1.00	1.00

C.R

Sample Number: L0306569-10
 Client ID: 085-08-121-S-7
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 97.2

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 03:10
 File ID: 9G24103.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.39	0.848

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	87.7	39	130	
Decachlorobiphenyl	97.8	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-10
 Client ID: 085-08-121-S-7
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	97.2		1.00	1.00

Sample Number: L0306569-11
 Client ID: 085-08-FD5-S-5
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 90.1

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 10:49
 File ID: IR.070103.104900

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	30.5		0.544	0.0544

Sample Number: L0306569-11
 Client ID: 085-08-FD5-S-5
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.1		1.00	1.00

CR

Sample Number: L0306569-12
 Client ID: 085-08-117-S-9-MS
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 86.8

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 10:54
 File ID: IR.070103.105400

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	238		0.570	0.0570

Sample Number: L0306569-12
 Client ID: 085-08-117-S-9-MS
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	86.8		1.00	1.00

Sample Number: L0306569-13
 Client ID: 085-08-117-S-9-SD
 Matrix: Soil
 Workgroup Number: WG144365
 Collect Date: 23-JUN-03

Prep Method: 3050B
 Analytical Method: 6010B
 Analyst: JYH
 Dilution: 1
 Units: mg/kg
 Percent Solid: 86.8

Instrument: IRIS-ICP
 Prep Date: 06/27/2003 10:55
 Cal Date: 07/01/2003 10:05
 Run Date: 07/01/2003 10:59
 File ID: IR.070103.105900

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9	234		0.554	0.0554

Sample Number: L0306569-13
 Client ID: 085-08-117-S-9-SD
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	86.8		1.00	1.00

C.R

Sample Number: L0306569-14
 Client ID: 085-08-FD6-S-6
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 95.8

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 03:38
 File ID: 9G24104.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.44	0.860

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	92.8	39	130	
Decachlorobiphenyl	106	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-14
 Client ID: 085-08-FD6-S-6
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	95.8		1.00	1.00

Sample Number: L0306569-15
 Client ID: 085-08-119-S-1-MS
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 04:07
 File ID: 9G24105.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	24.7		3.63	0.907

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	101	39	130	
Decachlorobiphenyl	106	33	143	

Sample Number: L0306569-15
 Client ID: 085-08-119-S-1-MS
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

C.F.

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0306569
 Report Date : July 18, 2003

Sample Number: L0306569-16
 Client ID: 085-08-119-S-1-SD
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 04:35
 File ID: 9G24106.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	21.7		3.63	0.908

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	89.6	39	130	
Decachlorobiphenyl	93.8	33	143	

Sample Number: L0306569-16
 Client ID: 085-08-119-S-1-SD
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

Sample Number: L0306569-17
 Client ID: 085-24-67-S-1
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 88.0

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 16:41
 File ID: 7M17647

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	406		284	142

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

Sample Number: L0306569-17
 Client ID: 085-24-67-S-1
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	88.0		1.00	1.00

OK

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0306569

Report Date : July 18, 2003

Sample Number: L0306569-18
 Client ID: 085-24-68-S-1
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 15:15
 File ID: 7M17643

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	276		275	138

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

Sample Number: L0306569-18
 Client ID: 085-24-68-S-1
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

Sample Number: L0306569-19
 Client ID: 085-24-69-S-1
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 89.9

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 17:24
 File ID: 7M17649

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	1010		278	139

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

Sample Number: L0306569-19
 Client ID: 085-24-69-S-1
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	89.9		1.00	1.00

CK

Report Number: L0306569
 Report Date : July 18, 2003

Sample Number: L0306569-20
 Client ID: 085-24-67-S-10
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 85.2

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 05:03
 File ID: 9G24107.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.87	0.966

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	79.2	39	130	
Decachlorobiphenyl	91.5	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-20
 Client ID: 085-24-67-S-10
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	85.3		1.00	1.00

Sample Number: L0306569-21
 Client ID: 085-24-68-S-8
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 95.3

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 05:31
 File ID: 9G24108.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.46	0.865

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	99.0	39	130	
Decachlorobiphenyl	110	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-21
 Client ID: 085-24-68-S-8
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	95.3		1.00	1.00

c-R

Report Number: L0306569
Report Date : July 18, 2003

Sample Number: L0306569-22
Client ID: 085-24-69-S-8
Matrix: Soil
Workgroup Number: WGI44128
Collect Date: 23-JUN-03

Prep Method: 3550B
Analytical Method: 8081A
Analyst: ECL
Dilution: 1
Units: ug/kg
Percent Solid: 93.7

Instrument: HP9
Prep Date: 06/26/2003 13:35
Cal Date: 07/03/2003 19:39
Run Date: 07/04/2003 06:00
File ID: 9G24109.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.52	0.879
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	89.5	39	130		
Decachlorobiphenyl	101	33	143		

U This analyte was not detected in the sample.

Sample Number: L0306569-22
Client ID: 085-24-69-S-8
Matrix: Soil
Workgroup Number: WGI44460
Collect Date: 23-JUN-03

Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: TMM
Dilution: 1
Units: weight %

Instrument: OVEN
Prep Date: 07/02/2003 13:25
Cal Date:
Run Date: 07/02/2003 13:25
File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	93.7		1.00	1.00

Sample Number: L0306569-23
Client ID: 085-24-70-S-7
Matrix: Soil
Workgroup Number: WGI44128
Collect Date: 23-JUN-03

Prep Method: 3550B
Analytical Method: 8081A
Analyst: ECL
Dilution: 1
Units: ug/kg
Percent Solid: 92.8

Instrument: HP9
Prep Date: 06/26/2003 13:35
Cal Date: 07/03/2003 19:39
Run Date: 07/04/2003 06:28
File ID: 9G24110.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.55	0.889
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	98.6	39	130		
Decachlorobiphenyl	108	33	143		

U This analyte was not detected in the sample.

Sample Number: L0306569-23
Client ID: 085-24-70-S-7
Matrix: Soil
Workgroup Number: WGI44460
Collect Date: 23-JUN-03

Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: TMM
Dilution: 1
Units: weight %

Instrument: OVEN
Prep Date: 07/02/2003 13:25
Cal Date:
Run Date: 07/02/2003 13:25
File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	92.8		1.00	1.00

c.f.

Report Number: L0306569
 Report Date : July 18, 2003

Sample Number: L0306569-24
 Client ID: 085-24-71-S-7
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 91.5

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 06:56
 File ID: 9G24111.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.61	0.902

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	81.7	39	130	
Decachlorobiphenyl	91.6	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-24
 Client ID: 085-24-71-S-7
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	91.5		1.00	1.00

Sample Number: L0306569-25
 Client ID: 085-24-72-S-7
 Matrix: Soil
 Workgroup Number: WG144128
 Collect Date: 23-JUN-03

Prep Method: 3550B
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/kg
 Percent Solid: 94.4

Instrument: HP9
 Prep Date: 06/26/2003 13:35
 Cal Date: 07/03/2003 19:39
 Run Date: 07/04/2003 07:24
 File ID: 9G24112.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	3.49	0.872

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	81.4	39	130	
Decachlorobiphenyl	90.3	33	143	

U This analyte was not detected in the sample.

Sample Number: L0306569-25
 Client ID: 085-24-72-S-7
 Matrix: Soil
 Workgroup Number: WG144461
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:55
 Cal Date:
 Run Date: 07/02/2003 13:55
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	94.5		1.00	1.00

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0306569

Report Date : July 18, 2003

Sample Number: L0306569-26
 Client ID: 085-24-FD7-8-7
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 88.2

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 17:03
 File ID: 7M17648

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	339		283	142

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

Sample Number: L0306569-26
 Client ID: 085-24-FD7-8-7
 Matrix: Soil
 Workgroup Number: WG144461
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:55
 Cal Date:
 Run Date: 07/02/2003 13:55
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	88.2		1.00	1.00

Sample Number: L0306569-27
 Client ID: 085-24-68-8-1-MS
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 15:36
 File ID: 7M17644

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	232	J	275	138

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

J This compound was detected at a level above the method detection limit, but below the reporting limit.

ck

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0306569

Report Date : July 18, 2003

Sample Number: L0306569-27
 Client ID: 085-24-68-S-1-MS
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

Sample Number: L0306569-28
 Client ID: 085-24-68-S-1-SD
 Matrix: Soil
 Workgroup Number: WG144670
 Collect Date: 23-JUN-03

Prep Method: 3545
 Analytical Method: 8270C
 Analyst: CLK
 Dilution: 50
 Units: ug/kg
 Percent Solid: 90.8

Instrument: HPMS7
 Prep Date: 06/27/2003 14:30
 Cal Date: 07/07/2003 19:52
 Run Date: 07/08/2003 15:58
 File ID: 7M17645

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8	188	J	275	137

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5		23	120	*
2-Fluorobiphenyl		30	115	*
p-Terphenyl-d14		18	137	*

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0306569-28
 Client ID: 085-24-68-S-1-SD
 Matrix: Soil
 Workgroup Number: WG144460
 Collect Date: 23-JUN-03

Prep Method: D2216-90
 Analytical Method: D2216-90
 Analyst: TMM
 Dilution: 1
 Units: weight %

Instrument: OVEN
 Prep Date: 07/02/2003 13:25
 Cal Date:
 Run Date: 07/02/2003 13:25
 File ID:

Analyte	CAS. Number	Result	Qual	RL	MDL
Percent Solids	10-02-6	90.8		1.00	1.00

Sample Number: L0306569-29
 Client ID: 085-24-POSTEB-W-3
 Matrix: Water
 Workgroup Number: WG144302
 Collect Date: 23-JUN-03

Prep Method: 3005A
 Analytical Method: 6010B
 Analyst: SLP
 Dilution: 1
 Units: mg/L

Instrument: PE-ICP
 Prep Date: 06/27/2003 09:50
 Cal Date: 06/30/2003 17:15
 Run Date: 06/30/2003 19:09
 File ID: PE.063003.190950

Analyte	CAS. Number	Result	Qual	RL	MDL
Cadmium, Total	7440-43-9		U	0.0100	0.00250

U This analyte was not detected in the sample.

CR

Report Number: L0306569

Report Date : July 18, 2003

Sample Number: L0306569-29
Client ID: 085-24-POSTEB-W-3
Matrix: Water
Workgroup Number: WG144129
Collect Date: 23-JUN-03

Prep Method: 3510C
Analytical Method: 8081A
Analyst: ECL
Dilution: 1
Units: ug/L

Instrument: HP9
Prep Date: 06/26/2003 11:30
Cal Date: 06/25/2003 22:49
Run Date: 06/27/2003 16:23
File ID: 9G23984.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1		U	0.100	0.0250

Analyte	% Recovery	Lower	Upper	Qual
2,4,5,6-Tetrachloro-m-xylene	59.2	20	180	
Decachlorobiphenyl	58.0	25	140	

U This analyte was not detected in the sample.

Sample Number: L0306569-29
Client ID: 085-24-POSTEB-W-3
Matrix: Water
Workgroup Number: WG144676
Collect Date: 23-JUN-03

Prep Method: 3520C
Analytical Method: 8270C
Analyst: CLK
Dilution: 1
Units: ug/L

Instrument: HPMS7
Prep Date: 06/30/2003 08:00
Cal Date: 07/07/2003 19:52
Run Date: 07/08/2003 14:32
File ID: 7M17641

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo(a)pyrene	50-32-8		U	0.105	0.0526

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	52.3	33	95	
2-Fluorobiphenyl	50.6	27	93	
p-Terphenyl-d14	69.5	22	94	

U This analyte was not detected in the sample.

OK

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392

Report Date : August 29, 2003

Sample Number: L0308392-01
 Client ID: 085-08-119-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 21:46
 File ID: 9G24853.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.126	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	112	20	180		
Decachlorobiphenyl	127	25	140		

Sample Number: L0308392-01
 Client ID: 085-08-119-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 22:14
 File ID: 9G24853.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.125	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	53.0	20	180		
Decachlorobiphenyl	39.6	25	140		

Sample Number: L0308392-02
 Client ID: 085-08-120-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 22:14
 File ID: 9G24854.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.512	R	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	45.2 R	20	180		
Decachlorobiphenyl	195 J	25	140	*	

Sample Number: L0308392-02
 Client ID: 085-08-120-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 22:42
 File ID: 9G24854.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.509	R	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	43.3 R	20	180		
Decachlorobiphenyl	43.5 J	25	140		

I Semiquantitative result (out of instrument calibration range)

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392
 Report Date : August 29, 2003

Sample Number: L0308392-02
 Client ID: 085-08-120-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CFDL1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 20
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 23:14
 File ID: 9G24895.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.571	J	0.206	0.0515
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene		20	180	DL	
Decachlorobiphenyl		25	140	DL	

DL Surrogate or spike compound was diluted out

Sample Number: L0308392-02
 Client ID: 085-08-120-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: DL1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 20
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 23:43
 File ID: 9G24895.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.544	J	0.206	0.0515
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene		20	180	DL	
Decachlorobiphenyl		25	140	DL	

DL Surrogate or spike compound was diluted out

Sample Number: L0308392-03
 Client ID: 085-08-121-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 22:42
 File ID: 9G24855.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0251	J	0.0102	0.00255
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	49.7	20	180		
Decachlorobiphenyl	118	25	140		

Sample Number: L0308392-03
 Client ID: 085-08-121-S-1
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 23:10
 File ID: 9G24855.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0198	J	0.0102	0.00255
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	54.0	20	180		
Decachlorobiphenyl	44.4	25	140		

Report Number: L0308392

Report Date : August 29, 2003

Sample Number: L0308392-04
 Client ID: 085-08-119-S-7
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 23:38
 File ID: 9G24856.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00563	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	47.6	20	180		
Decachlorobiphenyl	86.7	25	140		

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0308392-05
 Client ID: 085-08-120-S-7
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/25/2003 23:38
 File ID: 9G24857.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0267	J	0.0104	0.00260
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	45.4	20	180		
Decachlorobiphenyl	291	25	140	*	

Sample Number: L0308392-05
 Client ID: 085-08-120-S-7
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/26/2003 00:06
 File ID: 9G24857.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0227	J	0.0104	0.00260
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	51.5	20	180		
Decachlorobiphenyl	39.2	25	140		

Sample Number: L0308392-06
 Client ID: 085-08-121-S-7
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 19:25
 Run Date: 08/26/2003 00:34
 File ID: 9G24858.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00485	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	47.1	20	180		
Decachlorobiphenyl	59.4	25	140		

J This compound was detected at a level above the method detection limit, but below the reporting limit.

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392
 Report Date : August 29, 2003

Sample Number: L0308392-07
 Client ID: 085-008-FD6-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CFI

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 01:58
 File ID: 9G24862.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.474	SR	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	59.9 R	20	180		
Decachlorobiphenyl	116 L	25	140		

I Semiquantitative result (out of instrument calibration range)

Sample Number: L0308392-07
 Client ID: 085-008-FD6-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 02:26
 File ID: 9G24862.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.470	SR	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	47.7 R	20	180		
Decachlorobiphenyl	36.4 L	25	140		

I Semiquantitative result (out of instrument calibration range)

Sample Number: L0308392-07
 Client ID: 085-008-FD6-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CFDLI

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 20
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 23:43
 File ID: 9G24896.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.538	S	0.206	0.0515
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene		20	180	DL	
Decachlorobiphenyl		25	140	DL	

DL Surrogate or spike compound was diluted out

Sample Number: L0308392-07
 Client ID: 085-008-FD6-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: DL1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 20
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/27/2003 00:11
 File ID: 9G24896.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.496	S	0.206	0.0515
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene		20	180	DL	
Decachlorobiphenyl		25	140	DL	

DL Surrogate or spike compound was diluted out

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392
 Report Date : August 29, 2003

Sample Number: L0308392-08	Prep Method: 3510C	Instrument: HPMS7
Client ID: 085-24-67-S-1	Analytical Method: 8270C	Prep Date: 08/22/2003 10:50
Matrix: Leachate	Analyst: RDC	Cal Date: 07/16/2003 14:00
Workgroup Number: WG148172	Dilution: 1	Run Date: 08/25/2003 23:43
Collect Date: 01-AUG-03	Units: ug/L	File ID: 7M18084
Sample Tag: 01		

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo (a) pyrene	50-32-8	U	J	0.200	0.100

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	46.6	33	95	
2-Fluorobiphenyl	40.1	27	93	
p-Terphenyl-d14	40.1	22	94	

U This analyte was not detected in the sample.

Sample Number: L0308392-09	Prep Method: 3510C	Instrument: HPMS7
Client ID: 085-24-68-S-1	Analytical Method: 8270C	Prep Date: 08/22/2003 10:50
Matrix: Leachate	Analyst: RDC	Cal Date: 07/16/2003 14:00
Workgroup Number: WG148172	Dilution: 1	Run Date: 08/26/2003 00:06
Collect Date: 01-AUG-03	Units: ug/L	File ID: 7M18085
Sample Tag: 01		

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo (a) pyrene	50-32-8	U	J	0.200	0.100

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	60.9	33	95	
2-Fluorobiphenyl	51.0	27	93	
p-Terphenyl-d14	49.0	22	94	

U This analyte was not detected in the sample.

Sample Number: L0308392-10	Prep Method: 3510C	Instrument: HPMS7
Client ID: 08-24-69-S-1	Analytical Method: 8270C	Prep Date: 08/22/2003 10:50
Matrix: Leachate	Analyst: RDC	Cal Date: 07/16/2003 14:00
Workgroup Number: WG148172	Dilution: 10	Run Date: 08/26/2003 17:30
Collect Date: 01-AUG-03	Units: ug/L	File ID: 7M18101
Sample Tag: 01		

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo (a) pyrene	50-32-8	1.05	J	2.00	1.00

Analyte	% Recovery	Lower	Upper	Qual
Nitrobenzene-d5	62.3	33	95	
2-Fluorobiphenyl	55.4	27	93	
p-Terphenyl-d14	54.7	22	94	

J This compound was detected at a level above the method detection limit, but below the reporting limit.

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392
 Report Date : August 29, 2003

Sample Number: L0308392-11
 Client ID: 085-24-67-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CF1

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 02:26
 File ID: 9G24863.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0391	J	0.0102	0.00255
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	52.9	20	180		
Decachlorobiphenyl	88.8	25	140		

Sample Number: L0308392-11
 Client ID: 085-24-67-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 02:54
 File ID: 9G24863.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0368	J	0.0102	0.00255
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	47.2	20	180		
Decachlorobiphenyl	31.7	25	140		

Sample Number: L0308392-12
 Client ID: 085-24-68-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 03:22
 File ID: 9G24864.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00955	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	49.3	20	180		
Decachlorobiphenyl	40.4	25	140		

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0308392-13
 Client ID: 085-24-69-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 03:51
 File ID: 9G24865.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00796	J	0.0102	0.00255
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	53.1	20	180		
Decachlorobiphenyl	38.5	25	140		

J This compound was detected at a level above the method detection limit, but below the reporting limit.

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392
 Report Date : August 29, 2003

Sample Number: L0308392-14
 Client ID: 085-24-70-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CFI

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 03:51
 File ID: 9G24866.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0444	5	0.0104	0.00260
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	56.4	20	180		
Decachlorobiphenyl	151	25	140	*	

Sample Number: L0308392-14
 Client ID: 085-24-70-S-6
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 04:19
 File ID: 9G24866.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0417	5	0.0104	0.00260
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	45.1	20	180		
Decachlorobiphenyl	43.4	25	140		

Sample Number: L0308392-15
 Client ID: 085-24-71-S-5
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: CFI

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 04:19
 File ID: 9G24867.F

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0354	5	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	55.5	20	180		
Decachlorobiphenyl	108	25	140		

Sample Number: L0308392-15
 Client ID: 085-24-71-S-5
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 04:47
 File ID: 9G24867.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.0326	5	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	49.9	20	180		
Decachlorobiphenyl	39.2	25	140		

KEMRON ENVIRONMENTAL SERVICES

Report Number: L0308392

Report Date : August 29, 2003

Sample Number: L0308392-16
 Client ID: 085-24-72-S-5.5
 Matrix: Leachate
 Workgroup Number: WG148072
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8081A
 Analyst: ECL
 Dilution: 1
 Units: ug/L

Instrument: HP9
 Prep Date: 08/22/2003 11:30
 Cal Date: 08/25/2003 18:57
 Run Date: 08/26/2003 05:15
 File ID: 9G24868.R

Analyte	CAS. Number	Result	Qual	RL	MDL
Dieldrin	60-57-1	0.00769	J	0.0103	0.00258
Analyte	% Recovery	Lower	Upper	Qual	
2,4,5,6-Tetrachloro-m-xylene	46.4	20	180		
Decachlorobiphenyl	33.4	25	140		

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: L0308392-17
 Client ID: 085-24-FD7-S-7
 Matrix: Leachate
 Workgroup Number: WG148172
 Collect Date: 01-AUG-03
 Sample Tag: 01

Prep Method: 3510C
 Analytical Method: 8270C
 Analyst: RDC
 Dilution: 10
 Units: ug/L

Instrument: HPMS7
 Prep Date: 08/22/2003 10:50
 Cal Date: 07/16/2003 14:00
 Run Date: 08/26/2003 17:53
 File ID: 7M18102

Analyte	CAS. Number	Result	Qual	RL	MDL
Benzo (a) pyrene	50-32-8	1.24	J	2.00	1.00
Analyte	% Recovery	Lower	Upper	Qual	
Nitrobenzene-d5	57.8	33	95		
2-Fluorobiphenyl	48.8	27	93		
p-Terphenyl-d14	48.8	22	94		

J This compound was detected at a level above the method detection limit, but below the reporting limit.



115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 804-9182
Fax No: (770) 804-9282

CHAIN-OF-CUSTODY RECORD

COC NUMB.

171578-030801-01

PROJECT NAME: NAS Pensacola		PROJECT NUMBER: 171578.31.02.09.07		LAB NAME AND CONTACT: Jane/Sample Custody		FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M HILL, Inc.		RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)	
PROJECT PHASE/SITE/TASK: Sites 8 and 24		CTO OR DO NUMBER: CTO-0085		LAB PO NUMBER: PO #4296		FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.		RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181	
PROJECT CONTACT: Amy Twitty		PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035		LAB TEL NO AND FAX NO: (800) 373-4071		FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova		RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181	

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)				COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)	
								Bioscience SPLP by method 1312/8270C	Dieldrin SPLP by method 1312/8081A	# of Bottles				
1	085-08-PREEB-W-3	PRE-EQUIP. RINSATE	W	08/01/03	0700	C	3		1	1	2	EB	SPLP	
2	085-08-119-S-1	08S03, 0-1' bls	S	08/01/03	0705	C	3			1	1	N	SPLP	
3	085-08-120-S-1	14.7' NE of 08S03, 0-1' bls	S	08/01/03	0735	C	3			1	1	N	SPLP	
4	085-08-121-S-1	15' NE of 08S03, 0-1' bls	S	08/01/03	0725	C	3			1	1	N	SPLP	
5	085-08-119-S-7	08S03, 5-7' bls	S	08/01/03	0715	C	3			1	1	N	SPLP	
6	085-08-120-S-7	14.7' NE of 08S03, 5-7' bls	S	08/01/03	0737	C	3			1	1	N	SPLP	
7	085-08-121-S-7	15' NE of 08S03, 5-7' bls	S	08/01/03	0730	C	3			1	1	N	SPLP	
8	085-08-FD6-S-6	Field Duplicate 6	S	08/01/03	—	C	2			1	1	FD	SPLP	
9	085-24-67-S-1	24S10, 0-1' bls	S	08/01/03	0820	C	2		1		1	N	SPLP	
10	085-24-68-S-1	30' NW of 24S10, 0-1' bls	S	08/01/03	0800	C	2		1		1	N	SPLP	

23 SAMPLER(S) AND COMPANY: (please print)
Taj Goodpaster, CH2M Hill, Inc. Phyllis Zeranque, CH2M Hill, Inc.

24 RELINQUISHED BY: **Phyllis Zeranque**

25 COURIER AND SHIPPING NUMBER:
Fed Ex 8390-8406-4911

26 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
code sealed, 4x5 intact, 5x5 recd 8/2/03, stored in locked cooler over weekend cooler.

Printed Name and Signature: Phyllis Zeranque	DATE: 8/1/03	TIME: 1000	Printed Name and Signature: MICALYN HARRIS/Micalyn Harris	DATE: 8/4/03	TIME: 0800
Printed Name and Signature:			Printed Name and Signature:		
Printed Name and Signature:			Printed Name and Signature:		

CHAIN-OF-CUSTODY RECORD

COC NUMBER:

171578-030801-02

PROJECT NAME: NAS Pensacola		PROJECT NUMBER: 171578.31.02.09.07	LAB NAME AND CONTACT: Jane/Sample Custody Kemron, 109 Starlite Park, Marietta, OH 45750		FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.	RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
PROJECT PHASE/SITE/TASK: Sites 8 and 24		CTO OR DO NUMBER: CTO-0085	LAB PO NUMBER: PO #4296		FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
PROJECT CONTACT: Amy Twitty		PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	LAB TEL NO AND FAX NO: (800) 373-4071		FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova	RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)				COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Benzo(a)pyrene SPLP by method 1312/8270C	Dieldrin SPLP by method 1312/6901A	# of Bottles			
1	085-24-69-S-1	20' S of 24S10, 0-1' bls	S	08/01/03	0835	C	2	1		1	N	SPLP	
2	085-24-67-S-76	24S10, 6-8' bls 5-6	S	08/01/03	0825	C	2		1	1	N	SPLP	
3	085-24-68-S-76	30' NW of 24S10, 6-8' bls 5-6	S	08/01/03	0805	C	2		1	1	N	SPLP	
4	085-24-69-S-76	20' S of 24S10, 6-8' bls 5-6	S	08/01/03	0840	C	2		1	1	N	SPLP	
5	085-24-70-S-76	24S12, 5-7' bls 5-6	S	08/01/03	0900	C	2		1	1	N	SPLP	
6	085-24-71-S-75	13' E of 24S12, 5-7' bls 7-5	S	08/01/03	0910	C	2		1	1	N	SPLP	
7	085-24-72-S-75.5	12.5' S of 24S12, 5-7' bls 5-5.5	S	08/01/03	0920	C	2		1	1	N	SPLP	
8	085-24-FD7-S-7	24S10, 0-1' bls	S	08/01/03	—	C	2		1		FD	SPLP	
9	085-24-POSTER-W-3	POST-EQUIP. RINSATE	S	08/01/03	—	C	2		1	1	2	N	SPLP NO SAMPLE
10	085-24-FREED-W-4	PRE-EQUIP. RINSATE	S	08/01/03	—	C	2		1	1	2	N	SPLP NO SAMPLE

SAMPLER(S) AND COMPANY: (please print) Taj Goodpaster, CH2M Hill, Inc. Phyllis Zerangue, CH2M Hill, Inc.	COURIER AND SHIPPING NUMBER: Fed Ex 8390-8406-4911	SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): COC sealed, SVS intact, SVS rec'd 8/10 stored in locked cooler over weekend 8/10/03
---	--	--

RELINQUISHED BY Printed Name and Signature: <i>Phyllis Zerangue</i>	DATE 8/1/03	TIME 1000	RECEIVED BY Printed Name and Signature: MICALYN HARRIS/Micalyn Harris	DATE 8/4/03	TIME 0800
Printed Name and Signature:			Printed Name and Signature:		
Printed Name and Signature:			Printed Name and Signature:		



115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 804-9182
Fax No: (770) 804-9282

CHAIN-OF-CUSTODY RECORD

COC NUMBER

171578-030801-03

PROJECT NAME: NAS Pensacola		PROJECT NUMBER: 171578.31.02.09.07		LAB NAME AND CONTACT: Jane/Sample Custody Kemron, 109 Starlite Park, Marietta, OH 45750		FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.		RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)	
PROJECT PHASE/SITE/TASK: Sites 8 and 24		CTO OR DO NUMBER: CTO-0085		LAB PO NUMBER: PO #4296		FAX AND MAIL: Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.		RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181	
PROJECT CONTACT: Amy Twitty		PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035		LAB TEL NO AND FAX NO: (800) 373-4071		FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova		RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181	

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)				COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Benz(a)pyrene SPLP by method 1312&270C	Dieldrin SPLP by method 1312&881A	# of Bottles			
1	085-24-POSTEB-W-4	POST-EQUIP. RINSATE	S	08/01/03	0925	C	2		1	1	2	N	SPLP
2													
3													
4													
5													
6													
7													
8													
9													
10													

SAMPLER(S) AND COMPANY (please print): Taj Goodpaster, CH2M Hill, Inc. Phyllis Zepangue, CH2M Hill, Inc.		COURIER AND SHIPPING NUMBER: Fed Ex 8390-8406-4911		SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): COC sealed, vials intact, vials rec'd 8/7/03, stored in locked cooler over weekend cooler 31 ma	
RELINQUISHED BY Printed Name and Signature: <i>Phyllis Zepangue</i>		DATE 8/1/03		TIME 1000	
RECEIVED BY Printed Name and Signature: <i>MICALYN HARRIS / Micaelyn Harris</i>		DATE 8/7/03		TIME 0800	
Printed Name and Signature:		DATE:		TIME:	
8800					



115 Perimeter Center Place, Suite 700
Atlanta, GA 30348-1278
Tel No: (770) 604-9182
Fax No: (770) 604-9282

CHAIN-OF-CUSTODY RECORD

COC NUMBER:

171578-030623-01

¹ PROJECT NAME: NAS Pensacola	² PROJECT NUMBER: 171578.31.02.09.07	³ LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	¹¹ FAX AND MAIL, COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M HILL, Inc.	¹⁴ RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
⁵ PROJECT PHASE/SITE/TASK: Sites 8 and 24	⁶ CTO OR DO NUMBER: CTO-0085	⁹ LAB PO NUMBER: PO #4296	¹² FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	¹⁵ RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
⁴ PROJECT CONTACT: Amy Twitty	⁷ PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	¹⁰ LAB TEL NO AND FAX NO: (800) 373-4071	¹³ FAX AND MAIL, COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova	¹⁶ RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	²² ANALYSES REQUIRED (Include Method Numbers)					COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Cadmium only by 6010B	Benzene(a)pyrene by 8270C	Dieldrin by 8081A	# of Bottles			
1	085-08- 08 -PREEB-W-3	PRE-EQUIP. RINSATE	W	06/23/03	1030	C	14	1	1	1	3	EB		
2	085-08-116-S-9	08S01, 7-9' bls	S	06/23/03	1035	C	14	1			1	N		
3	085-08-117-S-9	12.5' W of 08S01, 7-9' bls	S	06/23/03	1145	C	14	1			1	N		
4	085-08-118-S-9	19' NE of 08S01, 7-9' bls	S	06/23/03	1115	C	14	1			1	N		
5	085-08-119-S-1	08S03, 0-1' bls	S	06/23/03	1340	C	142			1	1	N		
6	085-08-120-S-1	14.7' NE of 08S03, 0-1' bls	S	06/23/03	1425	C	142			1	1	N		
7	085-08-121-S-1	15' SE of 08S03, 0-1' bls	S	06/23/03	1400	C	142			1	1	N		
8	085-08-119-S-7	08S03, 5-7' bls	S	06/23/03	1350	C	142			1	1	N		
9	085-08-120-S-7	14.7' NE of 08S03, 5-7' bls	W	06/23/03	1430	C	142			1	1	N		
10	085-08-121-S-7	15' SE of 08S03, 5-7' bls	S	06/23/03	1410	C	142			1	1	N		

²³ SAMPLER(S) AND COMPANY: (please print) Ryan Bitely, CH2M Hill, Inc. Phyllis Zerangue, CH2M Hill, Inc.			²⁴ COURIER AND SHIPPING NUMBER: FedX 839084064771			²⁵ SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):			
²⁶ RELINQUISHED BY Printed Name and Signature: Phyllis Zerangue			DATE 6-23-03	TIME 1800	²⁷ RECEIVED BY Printed Name and Signature: MICALYN HARRIS			DATE 6/24/03	TIME 1021
Printed Name and Signature: MICALYN HARRIS			DATE 6-24-03	TIME 1021	Printed Name and Signature:				
Printed Name and Signature:					Printed Name and Signature:				

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115 Perimeter Center Place, Suite 700
 Atlanta, GA 30346-1278
 Tel No: (770) 804-9182
 Fax No: (770) 804-9282

CHAIN OF-CUSTODY RECORD

COC R:

171578-030623-02

PROJECT NAME: NAS Pensacola		PROJECT NUMBER: 171578.31.02.09.07	LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.	RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
PROJECT PHASE/SITE/TASK: Sites 8 and 24		CTO OR DO NUMBER: CTO-0085	LAB PO NUMBER: PO #4296	FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
PROJECT CONTACT: Amy Twitty		PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	LAB TEL NO AND FAX NO: (800) 373-4071	FAX AND MAIL; COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova	RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)				COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Cadmium only by 60108	Benzene(a)pyrene by 8270C	Dieldrin by 8081A	# of Bottles		
1	085-08-FD5-S-5	Field Duplicate 5	S	06/23/03	—	C	142	1			1	FD	085-08-116-S-9
2	085-08-117-S-9-MS	12.4' W of 08S01, 7-9' bls	S	06/23/03	1145	C	142	1			1	MS	
3	085-08-117-S-9-SD	12.4' W of 08S01, 7-9' bls	S	06/23/03	1145	C	142	1			1	MSD	
4	085-08-FD6-S-6	Field Duplicate 6	S	06/23/03	—	C	142			1	1	FD	085-08-120-S-1
5	085-08-119-S-1-MS	08S03, 0-1' bls	S	06/23/03	1440	C	142			1	1	MS	
6	085-08-119-S-1-SD	08S03, 0-1' bls	S	06/23/03	1440	C	142			1	1	MSD	
7	085-24-67-S-1	24S10, 0-1' bls	S	06/23/03	1510	C	142			1	1	N	
8	085-24-68-S-1	30' ^{NW} N of 24S10, 0-1' bls	S	06/23/03	1630	C	142			1	1	N	
9	085-24-69-S-1	20' S of 24S10, 0-1' bls	S	06/23/03	1555	C	142			1	2	N	
10	085-24-67-S-1210	24S10, 10-12' bls	S	06/23/03	1542	C	142			1	1	N	

29 SAMPLER(S) AND COMPANY: (please print)
 Ryan Bitely, CH2M Hill, Inc.
 Phyllis Zerangue, CH2M Hill, Inc.

30 COURIER AND SHIPPING NUMBER:
 Fed X 8340 8406 4771

31 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY		DATE	TIME	RECEIVED BY		DATE	TIME
Phyllis Zerangue		6-23-03	1800	MICALYN HARRIS		6-24-03	1021
MICALYN HARRIS		6-24-03	1021				



115 Perimeter Center Place, Suite 700
 Atlanta, GA 30346-1278
 Tel No: (770) 604-9182
 Fax No: (770) 604-9232

CHAIN-OF-CUSTODY RECORD

COC NUMBER:
171578-030623-03

2 PROJECT NAME: NAS Pensacola	3 PROJECT NUMBER: 171578.31.02.09.07	4 LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	11 FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.	14 RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
5 PROJECT PHASE/SITE/TASK: Sites 8 and 24	6 CTO OR DO NUMBER: CTO-0085	7 LAB PO NUMBER: PO #4296	12 FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	15 RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
8 PROJECT CONTACT: Amy Twitty	9 PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	10 LAB TEL NO AND FAX NO: (800) 373-4071	11 FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova	16 RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

25 ANALYSES REQUIRED (Include Method Numbers)

17	18	19	20	21	22	23	24	25	26	27	28		
ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	Cadmium only by 6010B	Benz(a)pyrene by 8270C	Dieldrin by 8081A	# of Bottles	COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
1	085-24-68-S-11B	30' N of 24S10, 10-12' bis NW 6-8	S	06/23/03	1645	C	142			1	2	N	
2	085-24-69-S-12B	20' S of 24S10, 10-12' bis NW 6-8	S	06/23/03	1615	C	142			1	2	N	
3	085-24-70-S-7	24S12, 5-7' bis	S	06/23/03	1725	C	142			1	2	N	
4	085-24-71-S-7	125' N of 24S12, 5-7' bis E	S	06/23/03	1710	C	142			1	2	N	
5	085-24-72-S-7	125' S of 24S12, 5-7' bis N	S	06/23/03	1745	C	142			1	2	N	
6	085-24-FD7-S-7	24S10, 0-1' bis	S	06/23/03	-	C	142		1		1	FD	085-24-69-S-1
7	085-24-68-S-1-MS	20' N of 24S10, 0-1' bis NW	S	06/23/03	1630	C	142		1		2	MS	
8	085-24-68-S-1-SD	20' N of 24S10, 0-1' bis NW	S	06/23/03	1630	C	142		1		2	SD	
9	085-24-POSTEB-W-3	POST-EQUIP. RINSATE	S	06/23/03	1720	C	142	1	1	1	3	N	
10	085-24-PREEB-W-4	PRE-EQUIP. RINSATE	S	06/23/03		C	142	1	1	1	3	N	

29 SAMPLER(S) AND COMPANY: (please print)
 Ryan Bitely, CH2M Hill, Inc.
 Phyllis Zerangue, CH2M Hill, Inc.

30 COURIER AND SHIPPING NUMBER:
 Fed X 8390 8406 4771

31 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Phyllis Zerangue Phyllis Zerangue	6-23-03	1800	MICALYN HARRIS Micalyn Harris	6-24-03	1021
MICALYN HARRIS Micalyn Harris	6-24-03	1021			



115 Perimeter Center Place, Suite 700
Atlanta, GA 30348-1278
Tel No: (770) 804-9182
Fax No: (770) 804-8342

CHAIN-OF-CUSTODY RECORD

¹ COC NUMBER:
171578-030623-01

² PROJECT NAME: NAS Pensacola	³ PROJECT NUMBER: 171578-31.02-09.07	⁴ LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	¹¹ FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.	¹² RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
⁵ PROJECT PHASE/SITE/TAKE: Sites 8 and 24	⁶ CTO OR DO NUMBER: CTO-6085	⁷ LAB PO NUMBER: PO #4296	¹³ FAX AND MAIL: Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	¹⁴ RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
⁸ PROJECT CONTACT: Amy Twitty	⁹ PROJECT TEL. NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	¹⁰ LAB TEL. NO AND FAX NO: (800) 373-4071	¹⁵ FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tadana Romanova	¹⁶ RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	M TYP (CALCULATED)	²⁵ ANALYSES REQUIRED (include Method Numbers)					COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Cadmium only by 6010B	Lead/arsenic by 6010C	Delrin by 6081A	# of Baffles			
1	085-00-PRER-W-3	PRE-EQUIP. RINSATE	W	06/23/03	1030	C	14	1	1	1	3	EB		
	085-08-116-S-6	08S01, 7-9' bls	S	06/23/03	1145	C	14	1	1	1	1	N	SPLP	
	085-08-119-S-6	12-5' W of 08S01, 7-9' bls	S	06/23/03	1145	C	14	1	1	1	1	N		
	085-08-119-S-7	08S03, 5-7' bls	S	06/23/03	1350	C	14	1	1	1	1	N		
5	085-08-119-S-1	08S03, 0-1' bls	S	06/23/03	1340	C	14				1	N		
6	085-08-124-S-1	14.7' NE of 08S03, 0-1' bls	S	06/23/03	1425	C	14				1	N		
7	085-08-121-S-1	15' SE of 08S03, 0-1' bls	S	06/23/03	1400	C	14				1	N		
8	085-08-119-S-7	08S03, 5-7' bls	S	06/23/03	1350	C	14				1	N		
9	085-08-120-S-7	14.7' NE of 08S03, 5-7' bls	S	06/23/03	1430	C	14				1	N		
10	085-08-121-S-7	15' SE of 08S03, 5-7' bls	S	06/23/03	1410	C	14				1	N		

¹⁷ SAMPLER(S) AND COMPANY: (please print)
Ryan Bitely, CH2M Hill, Inc.
Phyllis Zerangue, CH2M Hill, Inc.

¹⁸ COLLECTOR AND SHIPPING NUMBER:
FedX 8390 8400 4771

¹⁹ SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Phyllis Zerangue	6-23-03	1800	MICALYN HARRIS	6/24/03	1021
MICALYN HARRIS	6-24-03	1021			



115 Perimeter Center Place, Suite 700
 Atlanta, GA 30346-1878
 Tel No: (770) 604-0152
 Fax No: (770) 604-6822

CHAIN-OF-CUSTODY RECORD

DOC NUMBER:
171578-030623-02

PROJECT NAME: NAS Pensacola	PROJECT NUMBER: 171578.31.02.09.07	LAB NAME AND CONTACT: Kertron, 109 Starlite Park, Marietta, OH 45750	FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M HILL, Inc.	RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8308 (phone), 850-939-0035 (fax)
PROJECT PHASE/SITE/TASK: Sites 8 and 24	CTO OR DO NUMBER: CTO-0085	LAB PO NUMBER: PO #4296	FAX AND MAIL: Preliminary reports TO: Christelle Newsome, CH2M HILL, Constructors, Inc.	RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone: 770-604-9182 Fax: 770-604-9181
PROJECT CONTACT: Amy Twitty	PROJECT TEL NO AND FAX NO: Phone-850.939.8300 Fax-850.939.0035	LAB TEL NO AND FAX NO: (800) 373-4071	FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bennie Hogue/Tafiana Romanova	RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone-770-604-9182 Fax-770-604-9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see notes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)			# of Bores	COMMENTS/ SCREENING READINGS	LAB ID (for lab use)	
								Cobaltium only by 6019B	Benzo(a)pyrene by #279C	Dieldrin by 8181A				
1	[REDACTED]	[REDACTED]	S	06/23/03	1445	C	14 ^h	1			1	FD	SPLP	
2	[REDACTED]	[REDACTED]	S	06/23/03	1445	C	14 ^h	1			1	MS		
3	[REDACTED]	[REDACTED]	S	06/23/03	1555	C	14 ^h	1			1	MSD		
4	085-08-FD6-S-6	Field Duplicate 6	S	06/23/03	-	C	14 ^h	1			1	FD		
5	085-08-119-S-1-MS	08S03, 0-1' bls	S	06/23/03	1440	C	14 ^h	1			1	MS		
6	085-08-119-S-1-SD	08S03, 0-1' bls	S	06/23/03	1440	C	14 ^h	1			1	MSD		
7	085-24-67-S-1	24S10, 0-1' bls	S	06/23/03	1510	C	14 ^h	1			1	N		
8	085-24-68-S-1	30' N of 24S10, 0-1' bls	S	06/23/03	1630	C	14 ^h	1			2	N		
9	085-24-69-S-1	20' S of 24S10, 0-1' bls	S	06/23/03	1555	C	14 ^h	1			2	N		
10	085-24-67-S-12 ¹⁰	24S10, 10-12' bls	S	06/23/03	1542	C	14 ^h	1			1	N		

SAMPLER(S) AND COMPANY: (please print) Ryan Bitely, CH2M HILL, Inc. Phyllis Zerangue, CH2M HILL, Inc.
 COURIER AND SHIPPING NUMBER: Fed X 8340 8406 4771
 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Phyllis Zerangue	6-23-03	1800	MICHAEL HARRIS	6-24-03	1021
MICHAEL HARRIS	6-24-03	1021			



115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 604-9182
Fax No: (770) 604-4882

CHAIN-OF-CUSTODY RECORD

COC NUMBER:

171578-030623-03

PROJECT NAME: NAS Pensacola	PROJECT NUMBER: 171578.31.02.09.07	LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	FAX AND MAIL: COC Reports, Preliminary Data, & EDO TO: Amy Twitty, CH2M HILL, Inc.	RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
PROJECT PHASE/SITE/TASK: Sites 8 and 24	CTO OR DO NUMBER: CTO-0085	LAB PO NUMBER: PO #4296	FAX AND MAIL: Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone: 770-604-9182 Fax: 770.604.9181
PROJECT CONTACT: Amy Twitty	PROJECT TEL NO AND FAX NO: Phone: 850.939.8300 Fax: 850.939.0035	LAB TEL NO AND FAX NO: (800) 373-4071	FAX AND MAIL: COC Reports, Preliminary Data, & EDO TO: Bonnie Hague/Tatiana Romanova	RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone: 770-604-9182 Fax: 770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see notes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see notes on SOP)	TAT (calendar days)	ANALYSIS REQUIRED (include Method Numbers)				COMMENTS/ SCREENING READINGS	LAB ID (For lab's use)
								Calculation only by 6910R	Reanalysis by 8276C	Duplicate by 8931A	# of bottles		
1	085-24-68-S-12-B	NW 30' N of 24S10, 10-12' bis 6-B	S	06/23/03	1645	C	12			1	2	N	
2	085-24-69-S-12-B	20' S of 24S10, 10-12' bis 12-B	S	06/23/03	1615	C	12			1	2	N	
3	085-24-70-S-7	24S12, 5-7' bis	S	06/23/03	1725	C	14			1	2	N	
4	085-24-71-S-7	12.5' E of 24S12, 5-7' bis	S	06/23/03	1710	C	14			1	2	N	
5	085-24-72-S-7	12.5' S of 24S12, 5-7' bis	S	06/23/03	1745	C	14			1	2	N	
6	085-24-FD7-S-7	24S10, 0-1' bis	S	06/23/03	—	C	14		1		1	FD	
7	085-24-68-S-1-MS	NW 30' N of 24S10, 0-1' bis	S	06/23/03	1630	C	14		1		2	MS	
8	085-24-68-S-1-SD	NW 30' N of 24S10, 0-1' bis	S	06/23/03	1630	C	14		1		2	SD	
9	085-24-POSTEB-W-3	POST-EQUIP. RINSA TE	S	06/23/03	1720	C	14	1	1	1	3	N	
10	085-24-PRBEB-W-3	PRE-EQUIP. RINSA TE	S	06/23/03		C	14	1	1	1	3	N	

SAMPLER(S) AND COMPANY (please print): Ryan Bitely, CH2M Hill, Inc. Phyllis Zerangue, CH2M Hill, Inc.		CARRIER AND SHIPPING NUMBER: Fed X 8340 8406 4771		SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):	
RELINQUISHED BY Printed Name and Signature: Phyllis Zerangue		DATE 6-23-03	TIME 1800	RECEIVED BY Printed Name and Signature: MICALYN HARRIS	
Printed Name and Signature: MICALYN HARRIS		DATE 6-24-03	TIME 1021		



115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1279
Tel No: (770) 604-9182
Fax No: (770) 604-9181

CHAIN-OF-CUSTODY RECORD

COC NUMBER:
171578-030623-03

PROJECT NAME: NAS Petrecola	PROJECT NUMBER: 171578-31-02-09-07	LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M HILL, Inc.	RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
PROJECT PHASE/DATE/TASK: Sites 8 and 24	CTO OR DO NUMBER: CTO-0085	LAB PO NUMBER: PO #4296	FAX AND MAIL: Preliminary reports TO: Christelle Newsum, CH2M HILL, Constructors, Inc.	RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
PROJECT CONTACT: Amy Twitty	PROJECT TEL. NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	LAB TEL. NO AND FAX NO: (800) 373-4071	FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue/Tatiana Romanova	RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PROUVRHL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (include Method Numbers)					COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Calcium only by 6010B	Barium by 8270C	Strontium by 8070A	# of Readings			
1	085-24-68-S-12 ²	^{NW} 20' N of 24S10, 18-12' bls	S	06/23/03	1645	C	14 ²				1	1	N	
2	085-24-69-S-12 ⁸	^{SW} 20' S of 24S10, 18-12' bls	S	06/23/03	1615	C	14 ²				1	2	N	
3	085-24-70-S-7	24S12, 5-7' bls	S	06/23/03	1725	C	14 ²				1	2	N	
4	085-24-71-S-7	^E 12.5' N of 24S12, 5-7' bls	S	06/23/03	1710	C	14 ²				1	2	N	
5	085-24-72-S-7	^W 12.5' S of 24S12, 5-7' bls	S	06/23/03	1745	C	14 ²				1	2	N	
6	085-24-FD7-S-7	24S10, 0-1' bls	S	06/23/03	—	C	14 ²		1			1	FD	
7	085-24-68-S-1-MS	^{NW} 20' N of 24S10, 0-1' bls	S	06/23/03	1630	C	14 ²		1			2	MS	
8	085-24-68-S-1-SD	^{NW} 20' N of 24S10, 0-1' bls	S	06/23/03	1630	C	14 ²		1			2	SD	
9	085-24-POSTER-W-3	POST-EQUIP. RINSATE	S	06/23/03	1720	C	14 ²	1	1	1	3		N	
10	085-24-POSTER-W-4	PRE-EQUIP. RINSATE	S	06/23/03		C	14 ²	1	1	1	3		N	

SAMPLER(S) AND COMPANY: (please print)
Ryan Ditley, CH2M HILL, Inc.
Phyllis Zerangue, CH2M HILL, Inc.

COURIER AND SHIPPING NUMBER:
Fed X 8940 8406 4771

SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Phyllis Zerangue / <i>[Signature]</i>	6-23-03	1800	MICAYLA HARRIS / <i>[Signature]</i>	6-24-03	1021



115 Perimeter Center Place, Suite 700
 Atlanta, GA 30348-1278
 Tel No: (770) 804-9182
 Fax No: (770) 804-9282

CHAIN-OF-CUSTODY RECORD

COC NUMBER:
171578-030709-02

¹ PROJECT NAME: NAS Pensacola	² PROJECT NUMBER: 171578.31.02.09.07	³ LAB NAME AND CONTACT: Kemron, 109 Starlite Park, Marietta, OH 45750	¹¹ FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Amy Twitty, CH2M Hill, Inc.	¹⁴ RECIPIENT 1 (Address, Tel No., and Fax No.): 1766 Sea Lark Lane, Navarre, FL 32566 850-939-8300 (phone), 850-939-0035 (fax)
⁴ PROJECT PHASE/SITE/TASK: Sites 8 and 24	⁵ CTO OR DO NUMBER: CTO-0085	⁶ LAB PO NUMBER: PO #4296	¹² FAX AND MAIL Preliminary reports TO: Christelle Newsome, CH2M Hill, Constructors, Inc.	¹⁵ RECIPIENT 2 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181
⁷ PROJECT CONTACT: Amy Twitty	⁸ PROJECT TEL NO AND FAX NO: Phone=850.939.8300 Fax=850.939.0035	⁹ LAB TEL NO AND FAX NO: (800) 373-4071	¹¹ FAX AND MAIL: COC Reports, Preliminary Data, & EDD TO: Bonnie Hogue, CH2M Hill	¹⁶ RECIPIENT 3 (Address, Tel No., and Fax No.): 115 Perimeter Center Place, NE, Suite 700, Atlanta, Ga. 30346 Phone=770-604-9182 Fax=770.604.9181

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	TAT (calendar days)	²⁵ ANALYSES REQUIRED (Include Method Numbers)										COMMENTS/ SCREENING READINGS	LAB ID (for lab's use)
								Co, Fe, Mn, & Pb by 6010B	Fe & Mn by 6010B	As, Fe, & Mn by 6010B	As, Cd, Fe, Mn, & Pb by 6010B	Benzo(a)pyrene by 8276C	Dieldrin by 8061A	# of Batches					
1	085-24-MW-03-W-1	Site 24, MW-03	W	07/09/03	1145	C	14		1						2	3	N		
2	085-24-FD-01-W-1	Site 24 Field Duplicate 1	W	07/09/03	—	C	14		1						2	3	FD	085-24-MW-03-W-1	
3	085-24-MW-01-W-1-MS	Site 24, MW-02, MS	W	07/09/03	1525	C	14		1						2	3	MS		
4	085-24-MS-01-W-1-SD	Site 24, MW-01, SD	W	07/09/03	1525	C	14		1						2	3	SD		
5	085-24-POSTEB-W-4	POST-EQUIP. RINSATE	W	07/09/03	1540	C	14						1	2	2	5	EB		
6																			
7																			
8																			
9																			
10																			

²⁹ SAMPLER(S) AND COMPANY: (please print) Ryan Bitely, CH2M Hill, Inc. Phyllis Zerangue, CH2M Hill, Inc.	³⁰ COURIER AND SHIPPING NUMBER: FEDEX 834106413193	³¹ SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
---	--	---

²² RELINQUISHED BY	DATE	TIME	²³ RECEIVED BY	DATE	TIME
Printed Name and Signature: <i>Ryan Bitely</i>	07/09/03	1700	Printed Name and Signature: FEDEX		
Printed Name and Signature: <i>Phyllis Zerangue</i>			Printed Name and Signature: Brenda Gregory/Brenda Gregory	7/10/03	1019
Printed Name and Signature: 8200			Printed Name and Signature:		

Heartland Environmental Services, Inc.
Data Validation Report
(provided on CD)

APPENDIX C

Soil Boring Logs and Well Completion Logs



Site	Site 8	BORING NUMBER	08-MW-01	SHEET 1 OF 1
SOIL BORING LOG				

PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	DRILLING CONTRACTOR : Zebra Environmental Corp.
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/23/2003 END : 06/23/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION		
	RECOVERY (%)	TEST RESULTS		
		6"-6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION.
				OVA Unfiltered OVA Filtered OVA Corrected
			0'-3" Asphalt	
			3"-1.5' Red clayey silty sand; sub-grade material; 10% moisture content.	
			1.5'-3' Tan silty sand; 10% moisture content.	
			3'-18" Brown sand; saturated at 11'. * Debris begins at 10' and continues to total depth 18'; glass, wire, metal , rubber, faint solvent (paint odor).	
			18' End of Boring	



Site	Site 8	BORING NUMBER	08-MW-02
		SHEET 1	OF 1
SOIL BORING LOG			

PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	DRILLING CONTRACTOR : Zebra Environmental Corp.
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/23/2003 END : 06/23/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (%)	#/TYPE	STANDARD	SOIL DESCRIPTION	COMMENTS
					PENETRATION	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					TEST RESULTS		
					6"-6"-6"-6" (N)	0'-3" Asphalt 3"-1.5" Red clayey silty sand; sub-grade material; 10% moisture content. 1.5'-3" Tan slightly silty sand; 10% moisture content 3'-18" Brown sand; water table at 11'; saturated below * Purple glass at 4' and some wood at 3 ft bls; no other debris	<input type="checkbox"/> OVA Unfiltered <input type="checkbox"/> OVA Filtered <input type="checkbox"/> OVA Corrected
						18" End of Boring	



Site	Site 8	BORING NUMBER	08-MW-03
		SHEET 1	OF 1
SOIL BORING LOG			

PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	DRILLING CONTRACTOR : Zebra Environmental Corp.
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/24/2003 END : 06/24/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
				6"-6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
						OVA Unfiltered OVA Filtered OVA Corrected
					0'-3" Asphalt	
					3"-1.5' Red clayey silty sand, sub-grade material.	
					1.5'-5' Brown slightly silty sand.	
					5'-18' Tan sand. * No debris in boring	
					18' End of Boring	



Site	Site 8	BORING NUMBER	08-MW-04
		SHEET 1	OF 1
SOIL BORING LOG			

PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	DRILLING CONTRACTOR : Zebra Environmental Corp.
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/23/2003 END : 06/23/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
				6"-6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVA Unfiltered OVA Filtered OVA Corrected
					0'-3" Asphalt	
					3"-5' Brown slighly silty sand	
					5'-18" Tan sand	
					* No debris; down gradient well.	
					18' End of Boring	



Site Site 24	BORING NUMBER 24-MW-01	SHEET 1 OF 1
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SOIL BORING LOG

PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	
DRILLING CONTRACTOR : Zebra Environmental Corp.	
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/24/2003 END : 06/24/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION	COMMENTS
				6"-6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
					0'-3" Grass 3"-5' Brown slightly silty sand with roots.	OVA Unfiltered OVA Filtered OVA Corrected
					5'-15' Tan sand * No debris or other contact.	
					15' End of Boring	



Site **Site 24** BORING NUMBER **24-MW-02** SHEET **1** OF **1**

SOIL BORING LOG

PROJECT : 171578.31.02.04.02 LOCATION : NAS Pensacola , OU-13, Site 8
 ELEVATION : DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 WATER LEVELS : START : 06/24/2003 END : 06/24/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)		STANDARD	SOIL DESCRIPTION	COMMENTS
INTERVAL (FT)	RECOVERY (%)	PENETRATION	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
		TEST RESULTS		
#/TYPE	6"-6"-6" (N)			OVA Unfiltered OVA Filtered OVA Corrected
			0'-3" Grass	
			3"-3' Reddish brown silty sand with roots.	
			3'-15' Tan sand.	
			18' End of Boring	



Site	Site 24	BORING NUMBER	24-MW-03	SHEET 1 OF 1
SOIL BORING LOG				

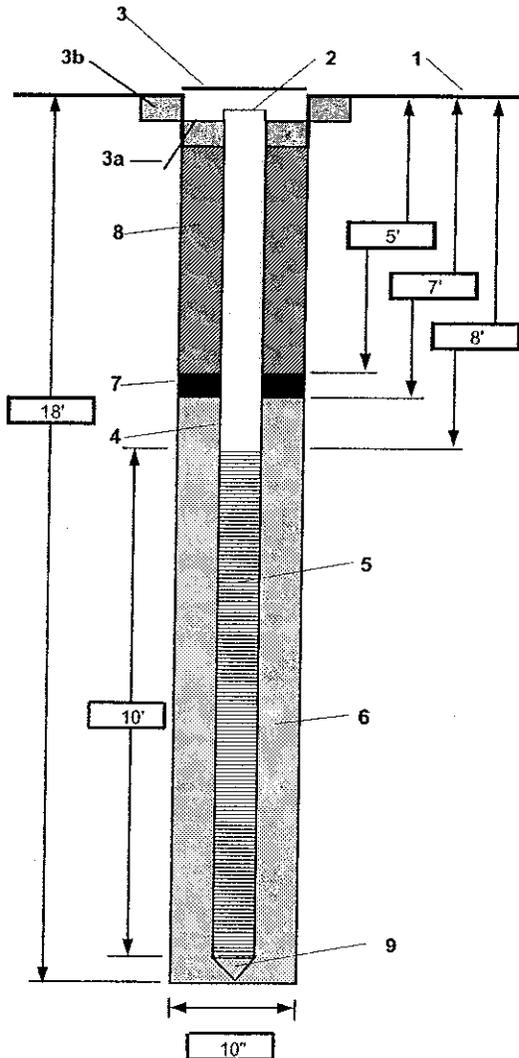
PROJECT : 171578.31.02.04.02	LOCATION : NAS Pensacola , OU-13, Site 8
ELEVATION :	DRILLING CONTRACTOR : Zebra Environmental Corp.
DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)	
WATER LEVELS :	START : 06/24/2003 END : 06/24/2003 LOGGER : Ryan Bitely

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS		
	RECOVERY (%)	#/TYPE			DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.		
					OVA Unfiltered	OVA Filtered	OVA Corrected
				0'-3" Grass			
				3"-5" Reddish brown silty sand with roots.			
				5'-15" Tan sand; no debris.			
				18' End of Boring			



	SITE Site 8	WELL ID 08-MW-01
--	-----------------------	----------------------------

LOCATION : NAS Pensacola , OU-13, Site 8
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 DRILLING START DATE: 06/23/2003 DRILLING END DATE: 06/23/2003 LOGGER: Ryan Bitely



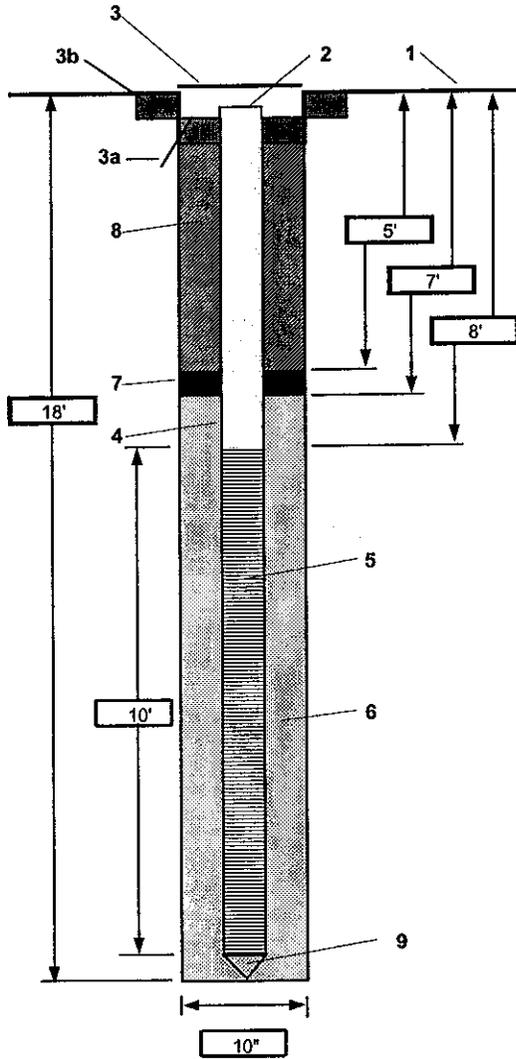
1- Ground elevation at well		27.91
2- Top of casing elevation		27.73
a) vent hole		No
3- Wellhead protection cover type		Flush Mount Manhole
a) weep hole		No
b) concrete pad dimensions		2'x2'x4"
4- Dia./type of well casing		2" PVC Casing
5- Type/slot size of screen		Schedule 40 PVC .01 slot size of screen
6- Type screen filter		20/30 Sand and 30/65 on top
a) Quantity used		6, 50 lb bag; with 1/2 bag on top
7- Type of seal		Bentonite Granules
a) Quantity used		1, 50 lb bag
8- Grout		
a) Grout mix used		1 Bag Portland Cement
b) Method of placement		Tremmie
c) Vol. of well casing grout		1.5 cu ft
Development method		Grundfos Submersible Pump
Development time		1.5 hrs
Estimated purge volume		110 gals
9- Well Point		6"
Comments	_____	



SITE
Site 8

WELL ID
08-MW-02

LOCATION : NAS Pensacola , OU-13, Site 8
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 DRILLING START DATE: 06/23/2003 DRILLING END DATE: 06/23/2003 LOGGER: Ryan Bitely

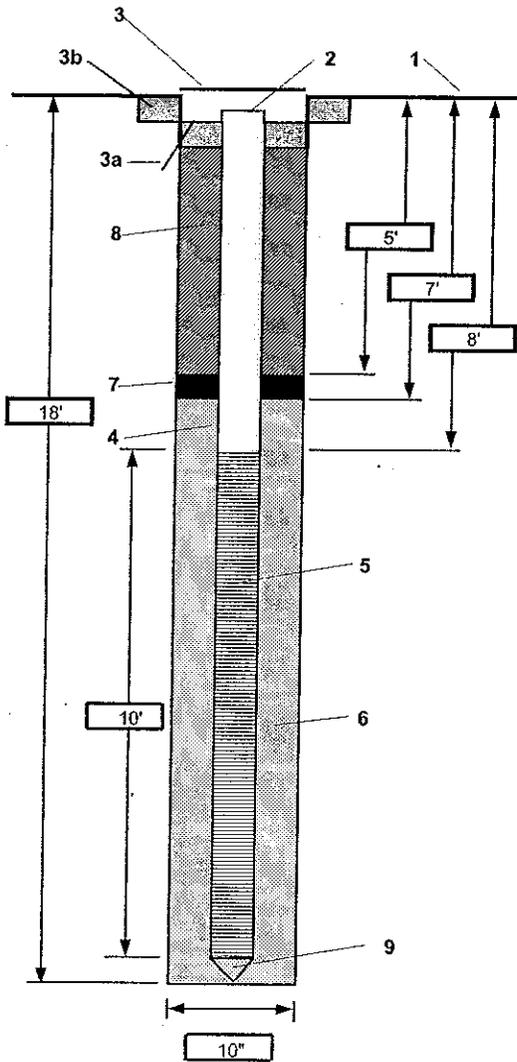


1- Ground elevation at well	27.85
2- Top of casing elevation	27.705
a) vent hole	No
3- Wellhead protection cover type	Flush Mount Manhole
a) weep hole	No
b) concrete pad dimensions	2'x2'x4"
4- Dia./type of well casing	2" PVC Casing
5- Type/slot size of screen	Schedule 40 PVC .01 slot size of screen
6- Type screen filter	20/30 Sand and 30/65 on top
a) Quantity used	6, 50lb bags with 1/2 bag on top
7- Type of seal	Bentonite Granules
a) Quantity used	1, 50 lb bag
8- Grout	
a) Grout mix used	1 Bag Portland Cement
b) Method of placement	Tremmie
c) Vol. of well casing grout	1.5 cu ft
Development method	Grundfos Submersible Pump
Development time	2 hrs
Estimated purge volume	240 gals
9- Well Point	6"
Comments	



	SITE Site 8	WELL ID 08-MW-03
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LOCATION : NAS Pensacola , OU-13, Site 8
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 DRILLING START DATE: 06/24/2003 DRILLING END DATE: 06/24/2003 LOGGER: Ryan Bitely



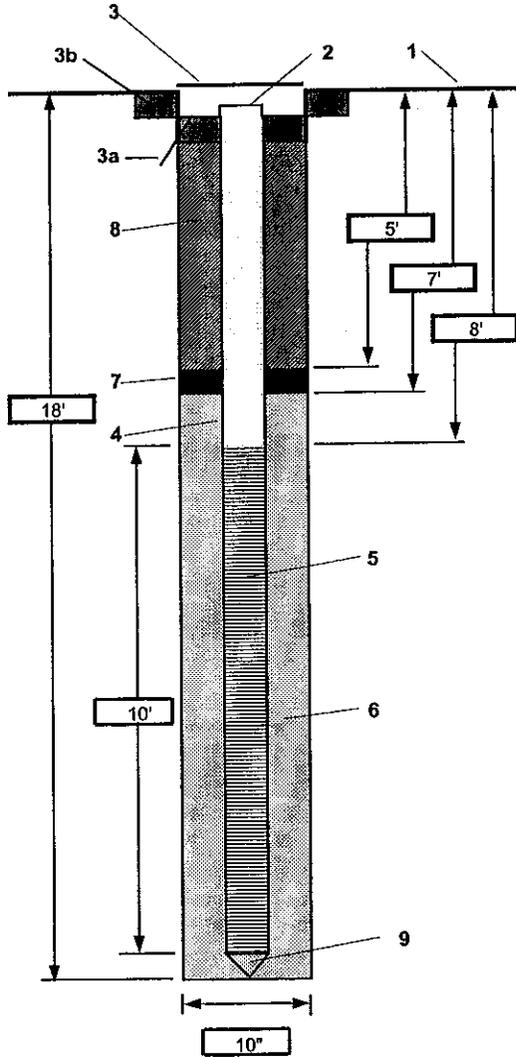
1- Ground elevation at well	28.23
2- Top of casing elevation	28.13
a) vent hole	No
3- Wellhead protection cover type	Flush Mount Manhole
a) weep hole	No
b) concrete pad dimensions	2'x2'x4"
4- Dia./type of well casing	2" PVC Casing
5- Type/slot size of screen	Schedule 40 PVC .01 slot size of screen
6- Type screen filter	20/30 Sand and 30/65 on top
a) Quantity used	6, 50 lb bag; with 1/2 bag on top
7- Type of seal	Bentonite Granules
a) Quantity used	1, 50 lb bag
8- Grout	
a) Grout mix used	1 Bag Portland Cement
b) Method of placement	Tremmie
c) Vol. of well casing grout	1.5 cu ft
Development method	Grundfos Submersible Pump
Development time	1.5 hrs
Estimated purge volume	110 gals
9- Well Point	6"

Comments _____



	SITE Site 8	WELL ID 08-MW-04
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LOCATION : NAS Pensacola , OU-13, Site 8
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 DRILLING START DATE: 06/23/2003 DRILLING END DATE: 06/23/2003 LOGGER: Ryan Bitely



1- Ground elevation at well	28.55
2- Top of casing elevation	28.16
a) vent hole	No
3- Wellhead protection cover type	Flush Mount Manhole
a) weep hole	No
b) concrete pad dimensions	2'x2'x4"
4- Dia./type of well casing	2" PVC Casing
5- Type/slot size of screen	Schedule 40 PVC .01 slot size of screen
6- Type screen filter	20/30 Sand and 30/65 on top
a) Quantity used	6, 50 lb bag; with 1/2 bag on top
7- Type of seal	Bentonite Granules
a) Quantity used	1, 50 lb bag
8- Grout	
a) Grout mix used	1 Bag Portland Cement
b) Method of placement	Tremmie
c) Vol. of well casing grout	1.5 cu ft
Development method	Grundfos Submersible Pump
Development time	2 hrs
Estimated purge volume	240 gals
9- Well Point	6"
Comments	



SITE

Site 24

WELL ID

24-MW-01

LOCATION : NAS Pensacola , OU-13, Site 24

PROJECT NUMBER : 171578.31.02.04.02

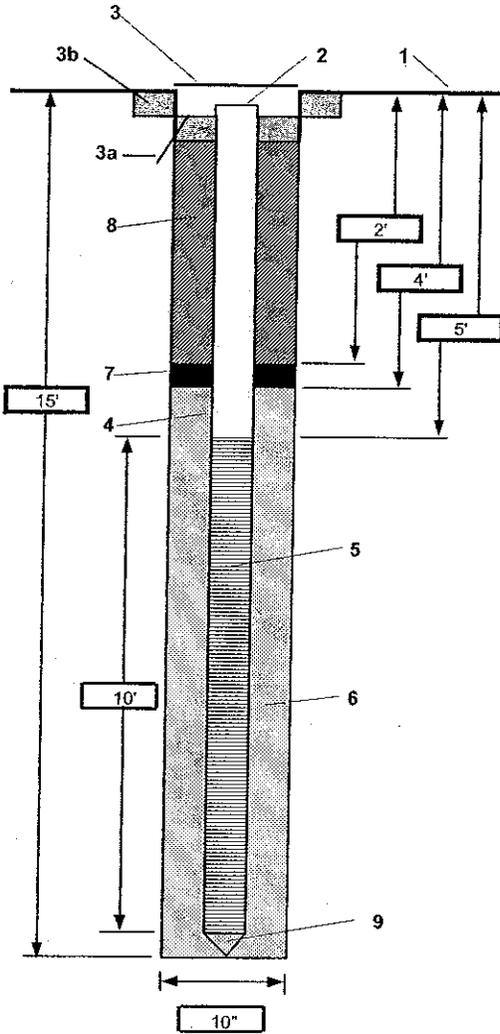
DRILLING CONTRACTOR : Zebra Environmental Corp.

DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)

DRILLING START DATE: 06/23/2003

DRILLING END DATE: 06/23/2003

LOGGER: Ryan Bitely

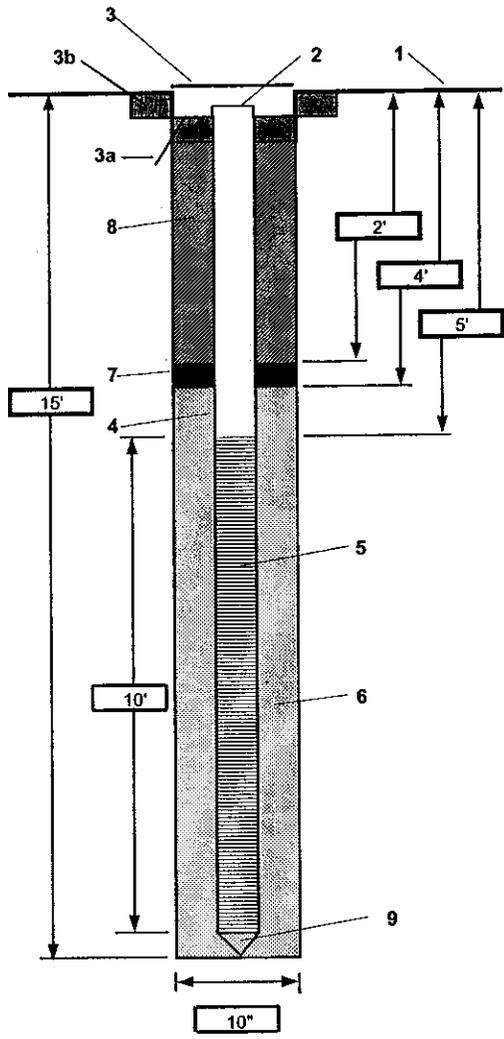


1- Ground elevation at well	27.6
2- Top of casing elevation	27.35
a) vent hole	No
3- Wellhead protection cover type	Flush Mount Manhole
a) weep hole	No
b) concrete pad dimensions	2'x2'x4"
4- Dia./type of well casing	2" PVC Casing
5- Type/slot size of screen	Schedule 40 PVC .01 slot size of screen
6- Type screen filter	20/30 Sand and 30/65 on top
a) Quantity used	5 1/2, 50 lb bags with 1/2 bag on top
7- Type of seal	Bentonite Granules
a) Quantity used	1, 50 lb bag
8- Grout	
a) Grout mix used	1 Bag Portland Cement
b) Method of placement	Tremmie
c) Vol. of well casing grout	.5 cu ft
Development method	Grundfos Submersible Pump
Development time	1 hr
Estimated purge volume	55 gals
9- Well Point	6"
Comments	



	SITE Site 24	WELL ID 24-MW-02
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LOCATION : NAS Pensacola , OU-13, Site 24
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" hollow-stem auger (HSA)
 DRILLING START DATE: 06/23/2003 DRILLING END DATE: 06/23/2003 LOGGER: Ryan Bitely

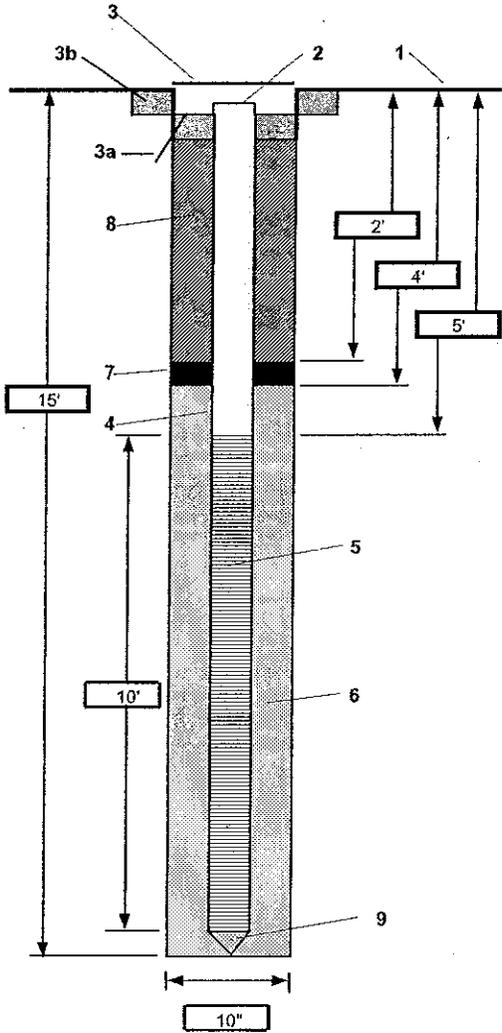


1- Ground elevation at well 2- Top of casing elevation a) vent hole 3- Wellhead protection cover type a) weep hole b) concrete pad dimensions 4- Dia./type of well casing 5- Type/slot size of screen 6- Type screen filter a) Quantity used 7- Type of seal a) Quantity used 8- Grout a) Grout mix used b) Method of placement c) Vol. of well casing grout Development method Development time Estimated purge volume 9- Well Point Comments	<table border="0"> <tr><td>25.3</td><td>_____</td></tr> <tr><td>25.205</td><td>_____</td></tr> <tr><td>No</td><td>_____</td></tr> <tr><td>Flush Mount Manhole</td><td>_____</td></tr> <tr><td>No</td><td>_____</td></tr> <tr><td>2'x2'x4"</td><td>_____</td></tr> <tr><td>2"</td><td>_____</td></tr> <tr><td>PVC Casing</td><td>_____</td></tr> <tr><td>Schedule 40 PVC</td><td>_____</td></tr> <tr><td>.01 slot size of screen</td><td>_____</td></tr> <tr><td>20/30 Sand and 30/65 on top</td><td>_____</td></tr> <tr><td>5 1/2, 50 lb bags; with 1/2 bag on top</td><td>_____</td></tr> <tr><td>Bentonite Granules</td><td>_____</td></tr> <tr><td>1, 50 lb bag</td><td>_____</td></tr> <tr><td>1 Bag Portland Cement</td><td>_____</td></tr> <tr><td>Tremmie</td><td>_____</td></tr> <tr><td>.5 cu ft</td><td>_____</td></tr> <tr><td>Grundfos Submersible Pump</td><td>_____</td></tr> <tr><td>1 hr</td><td>_____</td></tr> <tr><td>120 gals</td><td>_____</td></tr> <tr><td>6"</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>	25.3	_____	25.205	_____	No	_____	Flush Mount Manhole	_____	No	_____	2'x2'x4"	_____	2"	_____	PVC Casing	_____	Schedule 40 PVC	_____	.01 slot size of screen	_____	20/30 Sand and 30/65 on top	_____	5 1/2, 50 lb bags; with 1/2 bag on top	_____	Bentonite Granules	_____	1, 50 lb bag	_____	1 Bag Portland Cement	_____	Tremmie	_____	.5 cu ft	_____	Grundfos Submersible Pump	_____	1 hr	_____	120 gals	_____	6"	_____	_____	_____	_____	_____	_____	_____	_____	_____
25.3	_____																																																		
25.205	_____																																																		
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2'x2'x4"	_____																																																		
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1, 50 lb bag	_____																																																		
1 Bag Portland Cement	_____																																																		
Tremmie	_____																																																		
.5 cu ft	_____																																																		
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1 hr	_____																																																		
120 gals	_____																																																		
6"	_____																																																		
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SITE	Site 24	WELL ID	24-MW-03
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LOCATION : NAS Pensacola , OU-13, Site 24
 PROJECT NUMBER : 171578.31.02.04.02
 DRILLING CONTRACTOR : Zebra Environmental Corp.
 DRILLING METHOD AND EQUIPMENT USED : Drill rig using 8" follow-stem auger (HSA)
 DRILLING START DATE: 06/24/2003 DRILLING END DATE: 06/24/2003 LOGGER: Ryan Bitely



1- Ground elevation at well 2- Top of casing elevation a) vent hole 3- Wellhead protection cover type a) weep hole b) concrete pad dimensions 4- Dia./type of well casing 5- Type/slot size of screen 6- Type screen filter a) Quantity used 7- Type of seal a) Quantity used 8- Grout a) Grout mix used b) Method of placement c) Vol. of well casing grout Development method Development time Estimated purge volume 9- Well Point Comments	<table border="0"> <tr><td>24.9</td><td>_____</td></tr> <tr><td>24.89</td><td>_____</td></tr> <tr><td>No</td><td>_____</td></tr> <tr><td>Flush Mount Manhole</td><td>_____</td></tr> <tr><td>No</td><td>_____</td></tr> <tr><td>2'x2'x4"</td><td>_____</td></tr> <tr><td>2"</td><td>_____</td></tr> <tr><td>PVC Casing</td><td>_____</td></tr> <tr><td>Schedule 40 PVC</td><td>_____</td></tr> <tr><td>.01 slot size of screen</td><td>_____</td></tr> <tr><td>20/30 Sand and 30/65 on top</td><td>_____</td></tr> <tr><td>5 1/2, 50 lb bags with 1/2 bag on top</td><td>_____</td></tr> <tr><td>Bentonite Granules</td><td>_____</td></tr> <tr><td>1, 50 lb bag</td><td>_____</td></tr> <tr><td>1 Bag Portland Cement</td><td>_____</td></tr> <tr><td>Tremmie</td><td>_____</td></tr> <tr><td>.5 cu ft</td><td>_____</td></tr> <tr><td>Grundfos Submersible Pump</td><td>_____</td></tr> <tr><td>1 hr</td><td>_____</td></tr> <tr><td>120 gals</td><td>_____</td></tr> <tr><td>6"</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>	24.9	_____	24.89	_____	No	_____	Flush Mount Manhole	_____	No	_____	2'x2'x4"	_____	2"	_____	PVC Casing	_____	Schedule 40 PVC	_____	.01 slot size of screen	_____	20/30 Sand and 30/65 on top	_____	5 1/2, 50 lb bags with 1/2 bag on top	_____	Bentonite Granules	_____	1, 50 lb bag	_____	1 Bag Portland Cement	_____	Tremmie	_____	.5 cu ft	_____	Grundfos Submersible Pump	_____	1 hr	_____	120 gals	_____	6"	_____	_____	_____	_____	_____	_____	_____	_____	_____
24.9	_____																																																		
24.89	_____																																																		
No	_____																																																		
Flush Mount Manhole	_____																																																		
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1 hr	_____																																																		
120 gals	_____																																																		
6"	_____																																																		
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APPENDIX D

Field Data Sheets

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	07/09/2003	Casing Diameter	
Field Personnel	Ryan Bitely and Phyllis Zerangue	Casing Material	
Site Name	Site 8	Measuring Point Elevation	
Job Number	171578	Height of Riser (above land surface)	
Well ID #	08-MW-01	Land Surface Elevation	
Weather Conditions	Sunny and hot	Screened Interval	
Air Temperature	95 °	Dedicated Pump or Bailer	
Total Well Depth (TWD)	18.22	Steel Guard Pipe Around Casing	
Depth to Groundwater (DGW)	9.01	Locking Cap	
Length of Water Column (LWC) = TWD - DGW =	9.21	Protective Post/Abutment	
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	
Standard Evacuation Volume =	1.50	Well Yield	
Method of Well Evacuation	Grundfos pump @ 1.0 gpm	Comments/Observations:	
Method of Sample Collection	Grundfos pump with Teflon Tubing	H ₂ O-NA	
Total Volume of Water Removed (gallons)	4.50		

Field Parameters

Volume Purged (gallons)	Start	1.5	3	4.5					
Depth to Water	9.01	9.08	9.08	9.08					
Pumping Rate (gpm)	1	1	1	1					
Time (military)	935	941	947	953					
pH	6.32	6.3	6.3	6.29					
Specific Conductivity (mS/cm)	0.362	0.355	0.352	0.349					
Temperature (°C)	26.59	26.66	26.72	26.75					
Turbidity (NTU)	63	-10	0	0					
Dissolved Oxygen (mg/L)	0	0	0	0					
ORP	-499	-59	-65	-70					
Salinity	0.01	0.01	0.01	0.01					

Additional Comments/Observations

Collect Sample @ 1000
 ID# 085-08-MW-01-W-1 and Field Duplicate 085-08-FD-01-W-1

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	07/09/2003	Casing Diameter	
Field Personnel	Ryan Bitely and Phyllis Zerangue	Casing Material	
Site Name	Site 8	Measuring Point Elevation	
Job Number	171578	Height of Riser (above land surface)	
Well ID #	08-MW-02	Land Surface Elevation	
Weather Conditions	Sunny and hot	Screened Interval	
Air Temperature	95 °	Dedicated Pump or Bailer	
Total Well Depth (TWD)	18.26	Steel Guard Pipe Around Casing	
Depth to Groundwater (DGW)	8.91	Locking Cap	
Length of Water Column (LWC) = TWD - DGW =	9.35	Protective Post/Abutment	
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	
Standard Evacuation Volume =	1.52	Well Yield	
Method of Well Evacuation	Grundfos pump @ 1.0 gpm	Comments/Observations:	
Method of Sample Collection	Grundfos pump with Teflon Tubing	H ₂ O-NA	
Total Volume of Water Removed (gallons)	4.57		

Field Parameters

	Start	1.52	3.05	4.57						
Volume Purged (gallons)										
Depth to Water	8.9	8.92	8.91	8.91						
Pumping Rate (gpm)	1	1	1	1						
Time (military)	848	854	900	906						
pH	6.08	6.12	6.13	6.13						
Specific Conductivity (mS/cm)	0.38	0.374	0.368	0.366						
Temperature (°C)	25.81	25.98	26.08	26.14						
Turbidity (NTU)	0	0	0	0						
Dissolved Oxygen (mg/L)	0	0	0	0						
ORP	-26	-38	-40	-41						
Salinity	0.02	0.02	0.01	0.01						

Additional Comments/Observations

Collect Sample @ 0910
 For metals and MS/MSD
 085-08-MW-02-W-1 and 085-08-MW-02-W-1-MS/MSD
 Collect Equipment Blank 085-08-Preb-W-4with 1 metals, 2 8270C and 2 8081A bottles @920

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	07/09/2003	Casing Diameter	
Field Personnel	Ryan Bitely and Phyllis Zerangue	Casing Material	
Site Name	Site 8	Measuring Point Elevation	
Job Number	171578	Height of Riser (above land surface)	
Well ID #	08-MW-03	Land Surface Elevation	
Weather Conditions	Sunny and hot	Screened Interval	
Air Temperature	95 °	Dedicated Pump or Bailer	
Total Well Depth (TWD)	18.52	Steel Guard Pipe Around Casing	
Depth to Groundwater (DGW)	9.59	Locking Cap	
Length of Water Column (LWC) = TWD - DGW =	8.93	Protective Post/Abutment	
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	
Standard Evacuation Volume =	1.46	Well Yield	
Method of Well Evacuation	Grundfos pump @ 1.0 gpm	Comments/Observations:	
Method of Sample Collection	Grundfos pump with Teflon Tubing	H ₂ O-NA	
Total Volume of Water Removed (gallons)	4.37		

Field Parameters

	Start	1.46	2.91	4.37					
Volume Purged (gallons)	9.59	9.58	9.58	9.58					
Depth to Water	1	1	1	1					
Pumping Rate (gpm)	1008	1014	1020	1026					
Time (military)	6.45	6.08	6.06	6.07					
pH	0.257	0.252	0.253	0.253					
Specific Conductivity (mS/cm)	25.84	26.04	26.09	26.1					
Temperature (°C)	80.7	-10	-10	-10					
Turbidity (NTU)	3.71	0	0	0					
Dissolved Oxygen (mg/L)	-18	-2	4	6					
ORP	0.01	0.01	0.01	0.01					
Salinity									

Additional Comments/Observations

Collect Sample @ 1030	
ID# 085-08-MW-03-W-1	

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	07/09/2003	Casing Diameter	
Field Personnel	Ryan Bitely and Phyllis Zerangue	Casing Material	
Site Name	Site 8	Measuring Point Elevation	
Job Number	171578	Height of Riser (above land surface)	
Well ID #	08-MW-04	Land Surface Elevation	
Weather Conditions	Sunny and hot	Screened Interval	
Air Temperature	95°	Dedicated Pump or Bailer	
Total Well Depth (TWD)	18	Steel Guard Pipe Around Casing	
Depth to Groundwater (DGW)	9.3	Locking Cap	
Length of Water Column (LWC) = TWD - DGW =	8.7	Protective Post/Abutment	
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	
Standard Evacuation Volume =	1.42	Well Yield	
Method of Well Evacuation	Grundfos pump @ 1.0 gpm	Comments/Observations:	
Method of Sample Collection	Grundfos pump with Teflon Tubing	H ₂ O-NA	
Total Volume of Water Removed (gallons)	4.25		

Field Parameters

	Start	1.42	2.84	4.25					
Volume Purged (gallons)	Start	1.42	2.84	4.25					
Depth to Water	9.3	9.34	9.33	9.33					
Pumping Rate (gpm)	1	1	1	1					
Time (military)	1045	1051	1057	1103					
pH	6.02	6.02	6.04	6.05					
Specific Conductivity (mS/cm)	0.398	0.388	0.395	0.393					
Temperature (°C)	25.39	25.51	25.5	25.52					
Turbidity (NTU)	236	-10	-10	20.3					
Dissolved Oxygen (mg/L)	3.22	2.21	2.06	1.97					
ORP	120	155	158	161					
Salinity	0.02	0.02	0.02	0.02					

Additional Comments/Observations

Collect Sample @ 1105
 ID# 085-08-MW-04-W-1

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	07/09/2003	Casing Diameter	
Field Personnel	Ryan Bitely and Phyllis Zerangue	Casing Material	
Site Name	Site 24	Measuring Point Elevation	
Job Number	171578	Height of Riser (above land surface)	
Well ID #	24-MW-01	Land Surface Elevation	
Weather Conditions	Sunny and hot	Screened Interval	
Air Temperature	95 °	Dedicated Pump or Bailer	
Total Well Depth (TWD)	14.6	Steel Guard Pipe Around Casing	
Depth to Groundwater (DGW)	8.21	Locking Cap	
Length of Water Column (LWC) = TWD - DGW =		Protective Post/Abutment	6.39
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	
Standard Evacuation Volume =	1.04	Well Yield	
Method of Well Evacuation	Grundfos pump @ 1.0 gpm	Comments/Observations:	
Method of Sample Collection	Grundfos pump with Teflon Tubing	H ₂ O-NA	
Total Volume of Water Removed (gallons)	3.12		

Field Parameters

	Start	1.04	2.08	3.12					
Volume Purged (gallons)									
Depth to Water	8.21	8.23	8.25	8.24					
Pumping Rate (gpm)	1	1	1	1					
Time (military)	1508	1512	1516	1520					
pH	6.95	6.11	6.11	6.1					
Specific Conductivity (mS/cm)	0.304	0.303	0.308	0.305					
Temperature (°C)	25.67	25.68	25.67	25.67					
Turbidity (NTU)	102	0	0	0					
Dissolved Oxygen (mg/L)	5.42	4.52	4.46	4.4					
ORP	81	136	144	147					
Salinity	0.01	0.01	0.01	0.01					

Additional Comments/Observations

Collect Sample @ 1525
ID# 085-24-MW-01-W-1 and MS/MSD
Collect Post Equipment Blank 085-24-EB-W-04

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy) 07/09/2003
 Field Personnel Ryan Bitely and Phyllis Zerangue
 Site Name Site 24
 Job Number 171578
 Well ID # 24-MW-02
 Weather Conditions Sunny and hot
 Air Temperature 95°
 Total Well Depth (TWD) 14.88
 Depth to Groundwater (DGW) 6.04
 Length of Water Column (LWC) = TWD - DGW = 8.84
 1 Casing Volume = LWC x 0.163
 Standard Evacuation Volume = 1.44
 Method of Well Evacuation Grundfos pump @ 1.0 gpm
 Method of Sample Collection Grundfos pump with Teflon Tubing
 Total Volume of Water Removed (gallons) 4.32

Casing Diameter _____
 Casing Material _____
 Measuring Point Elevation _____
 Height of Riser (above land surface) _____
 Land Surface Elevation _____
 Screened Interval _____
 Dedicated Pump or Bailer _____
 Steel Guard Pipe Around Casing _____
 Locking Cap _____
 Protective Post/Abutment _____
 Well Integrity Satisfactory _____
 Well Yield _____
 Comments/Observations: _____
H₂O-NA

Field Parameters

Volume Purged (gallons)	Start	1.44	2.88	4.32					
Depth to Water	6.04	6.1	6.1	6.11					
Pumping Rate (gpm)	1	1	1	1					
Time (military)	1200	1206	1212	1218					
pH	7.11	7.03	7.03	7.02					
Specific Conductivity (mS/cm)	0.948	0.933	0.936	0.935					
Temperature (°C)	23.87	23.9	23.85	23.83					
Turbidity (NTU)	78	80.4	13.8	6.7					
Dissolved Oxygen (mg/L)	5.97	5.14	5.02	4.91					
ORP	92	97	99	101					
Salinity	0.04	0.04	0.04	0.04					

Additional Comments/Observations

Collect Sample @ 1225
 ID# 085-24-MW-02-W-1

Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy) 07/09/2003
 Field Personnel Ryan Bitely and Phyllis Zerangue
 Site Name Site 24
 Job Number 171578
 Well ID # 24-MW-03
 Weather Conditions Sunny and hot
 Air Temperature 95°
 Total Well Depth (TWD) 14.5
 Depth to Groundwater (DGW) 5.72
 Length of Water Column (LWC) = TWD - DGW = 8.78
 1 Casing Volume = LWC x 0.163
 Standard Evacuation Volume = 1.43
 Method of Well Evacuation Grundfos pump @ 1.0 gpm
 Method of Sample Collection Grundfos pump with Teflon Tubing
 Total Volume of Water Removed (gallons) 4.29

Casing Diameter _____
 Casing Material _____
 Measuring Point Elevation _____
 Height of Riser (above land surface) _____
 Land Surface Elevation _____
 Screened Interval _____
 Dedicated Pump or Bailer _____
 Steel Guard Pipe Around Casing _____
 Locking Cap _____
 Protective Post/Abutment _____
 Well Integrity Satisfactory _____
 Well Yield _____
 Comments/Observations: _____
H₂O-NA

Field Parameters

	Start	1.43	2.86	4.29						
Volume Purged (gallons)	Start	1.43	2.86	4.29						
Depth to Water	5.72	5.8	5.79	5.8						
Pumping Rate (gpm)	1	1	1	1						
Time (military)	1120	1126	1132	1138						
pH	6.83	6.97	6.96	6.96						
Specific Conductivity (mS/cm)	0.72	0.696	0.675	0.67						
Temperature (°C)	23.8	23.87	23.86	23.84						
Turbidity (NTU)	109	22.6	7.7	7.7						
Dissolved Oxygen (mg/L)	6.85	5.96	5.68	5.58						
ORP	105	97	99	101						
Salinity	0.03	0.03	0.03	0.03						

Additional Comments/Observations

Collect Sample @ 1145
 ID# 085-24-MW-03-W-1 and Collect Field Duplicate 085-MW-FD-01-W-1

APPENDIX E

Project Photographs

NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 4-3-2002

Site: 8, Viewing: East Side of Building 3561 Near Sample 08S03



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 4-3-2002

Site: 8, Perspective: West

Viewing: East Side of Building 3561 Near Sample 08S03



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 4-3-2002

Site: 8, Viewing: West Side of Building 3561



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-13-2002

Site: 8, Perspective: Northeast

Viewing: DPT Drilling West of 08S01



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-13-2002

Site: 8, Perspective: North-northeast

Viewing: DPT Drilling West of 08S01



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-13-2002

Site: 8, Perspective: West

Viewing: DPT Drilling West of 08S01



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-13-2002

Site: 8, Perspective: North

Viewing: Grouting Borehole at 08S104

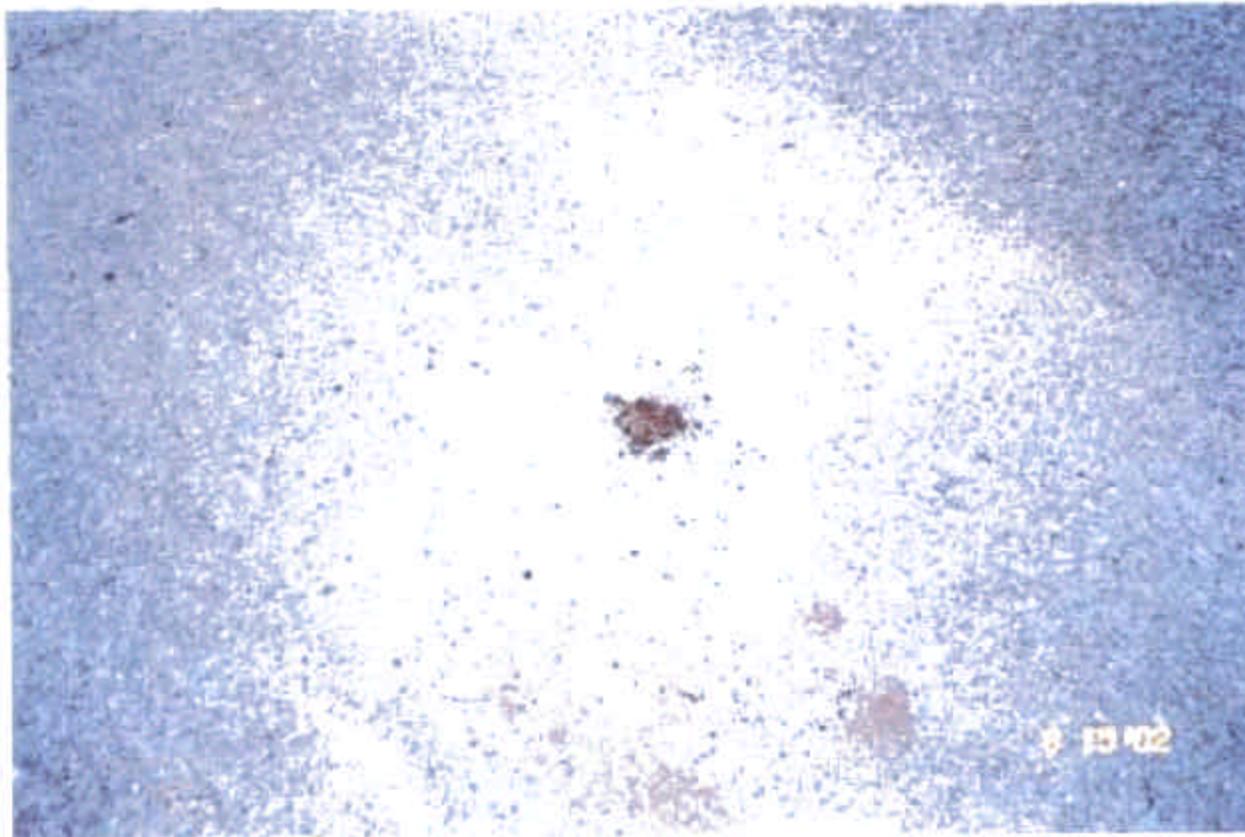


NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-15-2002

Site: 8, Perspective: Down

Viewing: Completed Borehole West of Building 3561



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: Southwest

Viewing: Soil Sampling Near 24S12



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: West

Viewing: Sampling Stakes in Tree Line Just East of John Towers Road



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: South

Viewing: Soil Sampling Activities Near 24S10



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: North

Viewing: Soil Sampling North of 24S10



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: East

Viewing: Soil Sampling Area near 24S12. Cemetery in Background



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: East

Viewing: Sampling Vehicle Along John Towers Road West of 24S12



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: South

Viewing: Sampling Vehicle Along John Towers Road West of 24S12



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: East

Viewing: Soil Sampling Area near 24S12. Cemetery in Background



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 8-14-2002

Site: 24, Perspective: South

Viewing: Soil Sampling Area South of 24S12



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: North of Building 3561
Viewing: Monitoring Well Installation



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: North of Building 3561
Viewing: Monitoring Well Installation



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: West of Building 3561
Viewing: Soil Sampling



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: East of Building 3561
Viewing: Soil Sampling



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: East of Building 3561
Viewing: Soil Sampling



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 6-23-2003

Site: 8 Perspective: East of Building 3561

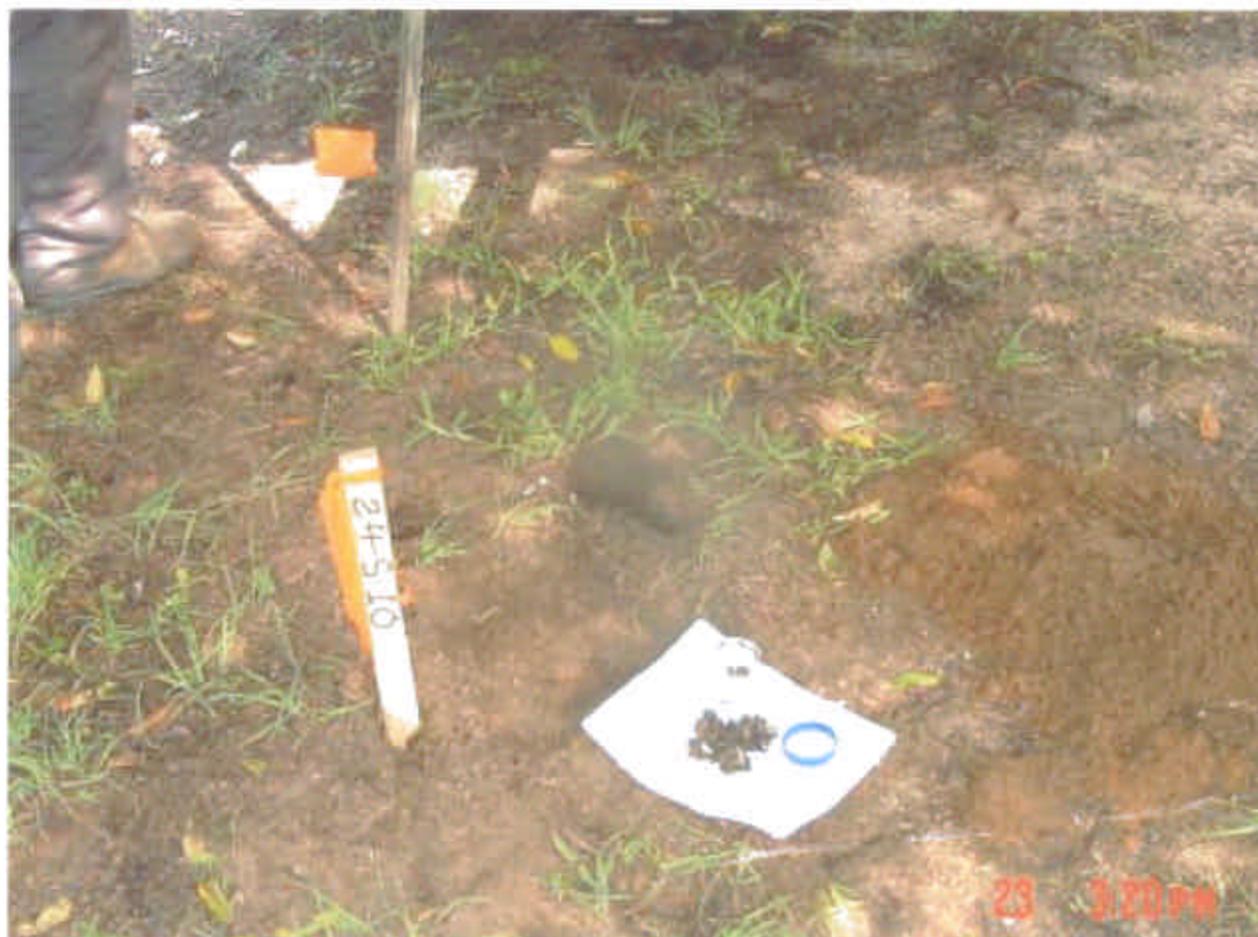
Viewing: Monitoring Well Installation



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 8 Perspective: East of Building 3561
Viewing: Monitoring Well Installation



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 24 Perspective: East of John H. Towers Road
Viewing: Soil Sampling



NAS Pensacola CTO-0085, N62467-98-D-0995

Photographed by: Amy Twitty Date: 6-23-2003

Site: 24 Perspective: East of John H. Towers Road

Viewing: Soil Sampling



NAS Pensacola CTO-0085, N62467-98-D-0995
Photographed by: Amy Twitty Date: 6-23-2003
Site: 24 Perspective: East of John H. Towers Road
Viewing: Soil Sampling



APPENDIX F

October 15, 2003 FDEP Email

Twitty, Amy/NVR

From: Vaught, Tracie [Tracie.Vaught@dep.state.fl.us]
Sent: October 15, 2003 1:05 PM
To: Allison D. Harris (E-mail); Twitty, Amy/NVR; Barbara Albrecht (E-mail); Bill Hill (E-mail); Brian Caldwell (E-mail); Gena D. Townsend (E-mail); Gerald Walker (E-mail); Greg Campbell (E-mail); Gus Caampana (E-mail); Tom Dillon (E-mail)
Subject: PAH Situation at Site 24, OU 13

Per the emails below please state in the report for OU13 that the PAH's are not site related, or do not include that information at all. I will discuss further next week at the meeting.

Tracie Vaught
F.D.E.P.
Project Manager
(850)245-8998 Work
(850)245-8976 Fax

-----Original Message-----

From: Bahr, Tim
Sent: Wednesday, October 15, 2003 11:11 AM
To: Vaught, Tracie
Cc: Crane, Jim; Nuzie, Eric
Subject: RE: August 2003 NASP Partnering Team meeting minutes

Tracie, if based on your technical review, you concur that the elevated PAHs are the result of area-wide anthropogenic roadway activities and not related to the SWMU site discharge(s), then I recommend that they not be included in the evaluation of OU 13.

Tim

-----Original Message-----

From: Vaught, Tracie
Sent: Tuesday, October 14, 2003 4:12 PM
To: Bahr, Tim
Subject: FW: August 2003 NASP Partnering Team meeting minutes

Attached is a memo that I will need input on from you. It is site that has surface soil exceedences for Benzo(a)pyrene adjacent to a road adjacent to the site. Can you read the memo and let me know what your thoughts are on this matter?

The good news is that the newly installed monitoring well, which is downgradient from the contaminated soil, was sampled and the groundwater is not contaminated with Benzo(a)pyrene.

Tracie Vaught
F.D.E.P.
Project Manager
(850)245-8998 Work
(850)245-8976 Fax

-----Original Message-----

From: Amy.Twitty@ch2m.com (mailto: Amy.Twitty@ch2m.com)

Sent: Monday, October 13, 2003 2:00 PM
To: Vaught, Tracie; BECaldwell@aol.com; HillWJ@EFDSOUTH.NAVFAC.NAVY.mil
Subject: RE: August 2003 NASP Partnering Team meeting minutes

okay, but here is the draft for review in case it helps.

-----Original Message-----

From: Vaught, Tracie (mailto:Tracie.Vaught@dep.state.fl.us)
Sent: Mon 10/13/2003 5:59 AM
To: BECaldwell@aol.com; Twitty, Amy/NVR
Cc:
Subject: RE: August 2003 NASP Partnering Team meeting minutes

Never mind on sending the memo you were going to send to me regarding the PAH data for OU 13. I will wait and see what Brian brings to the meeting.

Brian and Amy,

What I could use is a list of questions you will need answers for from the state that may result from this topic.

Thanks Much
Tracie Vaught
F.D.E.P.
Project Manager
(850)245-8998 Work
(850)245-8976 Fax

-----Original Message-----

From: BECaldwell@aol.com (mailto:BECaldwell@aol.com)
Sent: Friday, October 10, 2003 4:59 PM
To: Vaught, Tracie; WalkerG@ttnus.com; atwitty@ch2m.com; hillwj@efdsouth.navy.mil; campbellga@pwcpens.navy.mil; aharris@ensafe.com; PSTODDARD@ensafe.com; tom.dillon@noaa.gov; townsend.gena@epamail.epa.gov; GusBell@aol.com; fraley.gregory@epa.gov; gwillfley@ch2mhill.com
Subject: Re: August 2003 NASP Partnering Team meeting minutes

I don't think you are solely responsible for that item. I had a deliverable to get to you by Oct 1 that would give you info on the relationships between PAHs and roadways to help you guys in the OU13 situation. I was to receive info from Amy and Greg F., compile my info from NASP Site 29, and give that to you. I have compiled very good info from ATSDR and others, but have not gotten anything yet from Greg F. ; Amy has sent material earlier to all of us - namely photos of the sampled soil showing asphalt contained in it. I'll be ready to discuss my research, and I hope Greg F. will forward his on to me so I have that too.

Brian

APPENDIX G

Survey Report

Survey Data
OU13, NAS Pensacola

Note: Horizontal Datum is NAD (North American Datum) 83 (1990) SPC FL. N., US Survey FT.
Vertical Datum is NGVD (National Geodetic Vertical Datum) 1929.

August 6-7, 2002

Description	North Coordinate (feet NAD)	East Coordinate (feet NAD)	Ground Elevation (feet NGVD)
Survey Control Points			
Re Bar & Cap	504415.167	1088879.945	25.322
PK & Washer	504105.593	1088967.356	28.825
Scribed "X" in Concrete	503966.423	1089057.446	28.345
PK & Washer (in paint stripe)	503965.911	1089303.188	27.272
Grid for Soil Boring 08S01			
01 - 50' east	503919.40	1089063.21	28.7
01 - 25' east	503922.38	1089038.36	28.2
01 - 25' north	503950.51	1089016.88	27.8
01 - 50' north	503975.23	1089020.32	27.7
01 - 50' west	503932.81	1088964.11	27.6
01 - 25' west	503929.38	1088988.84	27.6
08S01 (midpoint)	503925.70	1089013.59	27.8
01 - 25' south	503901.01	1089010.06	28.0
01 - 50' south	503876.25	1089006.55	28.2
01 - 75' south	503851.47	1089003.03	28.3
01 - 100' south	503826.68	1088999.73	28.1
Grid for Soil Boring 08S03			
03 - 50' north	503907.03	1089252.73	28.2
03 - 25' north	503882.57	1089249.50	28.2
03 - 50' east	503851.89	1089295.51	28.3
03 - 25' east	503854.48	1089270.61	28.1
03 - 25' south	503832.11	1089242.60	28.3
03 - 50' south	503807.50	1089239.71	28.2
08S03 (midpoint)	503857.00	1089245.65	28.3

August 6-7, 2002

Description	North Coordinate (feet NAD)	East Coordinate (feet NAD)	Ground Elevation (feet NGVD)
Grid for Soil Boring 24S12			
12 - 25' west	504322.73	1088849.60	25.5
12 - 25' south	504293.32	1088870.32	25.2
12 - 25' east	504314.01	1088898.61	23.7
24S12 (midpoint)	504317.84	1088874.00	24.8
12 - 25' north	504343.00	1088877.71	24.9
Grid for Soil Boring 24S10			
10 - 25' south	504406.38	1088877.07	25.7
10 - 25' east	504428.41	1088905.74	24.5
24S10 (midpoint)	504430.96	1088881.00	25.1
10 - 25' west	504434.00	1088856.32	26.1
10 - 25' north	504455.83	1088884.84	25.6

July 1, 2003

Description	North Coordinate (feet NAD)	East Coordinate (feet NAD)	Top of Casing Elevation (feet NGVD)	Flushmount Rim Elevation (feet NGVD)	Ground Elevation (feet NGVD)
Survey Control Points					
Re Bar & Cap	504415.167	1088879.945	---	---	25.322
PK & Washer	504105.593	1088967.356	---	---	28.825
Scribed "X"	503966.423	1089057.446	---	---	28.345
PK & Washer	503965.911	1089303.188	---	---	27.272
Monitoring Wells					
08MW03	503854.66	1089246.71	28.13	28.38	28.23
08MW04	504030.73	1089453.91	28.16	28.67	28.55
08MW01	503922.31	1089012.14	27.73	27.94	27.91
08MW02	504079.19	1089144.53	27.705	27.92	27.85
24MW03	504313.22	1088872.52	24.89	25.09	24.9
24MW02	504431.97	1088880.78	25.205	25.40	25.3
24MW01	504521.90	1089172.56	27.35	27.72	27.6

Survey Data
OU13, NAS Pensacola

September 17, 2003

Description	North Coordinate (feet NAD)	East Coordinate (feet NAD)	Ground Elevation (feet NGVD)
Survey Control Points			
Re Bar & Cap	504415.167	1088879.945	25.322
PK & Washer	504105.593	1088967.356	28.825
PK & Washer	503965.911	1089303.188	27.272
Soil Borings			
24-SB-67	504431.28	1088883.30	25.2
24-SB-68	504460.71	1088878.88	25.7
24-SB-69	504411.43	1088878.70	25.2
24-SB-70	504312.82	1088875.31	24.6
24-SB-71	504313.27	1088884.99	24.4
24-SB-72	504300.17	1088866.62	24.8
08-SB-119	503855.22	1089244.91	27.9
08-SB-120	503868.27	1089253.08	27.9
08-SB-121	503853.94	1089261.38	27.9

Prepared By:

Kenneth R. Wengler
3011 S.W. Williston Road
Gainesville, FL 32608-3928
(352) 335-7991

Not Valid Unless Signed and Sealed with Embossed Stamp.

CH2M HILL, Inc.
6060 S. Willow Drive
Greenwood Village, CO 80111-5112
Florida Certificate of Authorization
No. 200271007
Expiration: February 28, 2005

Certification:

I hereby certify that this is an accurate representation of a field survey made under my responsible charge and meets the minimum technical standards as set forth by the Florida Board of Professional Land Surveyors In Chapter 61G17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes.

By:


Kenneth R. Wengler, Fla. Reg. No. 3413
Date 01/08/04

Survey Dates: August 6-7, 2002; July 1, 2003; September 17, 2003

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APPENDIX H

**Transportation and Disposal Log, and
Waste Manifests**

CTO 085 T&D Log

OU 13, NAS

CTO No	Project No	Project Name	Site Description	Container Type	Container Design	Waste Profile Sample No	Contractor	Transporter	Date Transported Start	Date Transported End	Transporter EPA ID	Load ID	Disposal Facility	Disp Fac EPA ID	Media	Waste Type (Haz, Nonhaz, TSCA)	Waste Code/ Haz Waste No	Disposal Date Start	Disposal Date End	Manifest Number First	Manifest Number Last	Disposal Treatment Method (Enter disposal quantity under appropriate method)					Certif of Disposal	Destruct Date	Comments/Notes	File Status (see note)
																						Incineration	Recycle	Landfill	Other	Unit				
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-S-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Soil	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	1000 lbs	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 8	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended
0085	171578	NAS Pensacola	Site 24	Drum	N/A	085-WASTE-W-01	Jamson Environmental, Inc.	Freehold Cartage, Inc.	10/22/2003	10/22/2003	NJD054126164	not provided	Waste Management - SpringHill Landfill	not provided	Water	Nonhaz	N/A	11/19/2003	11/19/2003	0085A11	0085A11	N/A	N/A	1	N/A	55 gal	11/19/2003	N/A	Composite sample taken	work ended

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 0001470

2. Page 1 of 1

3. Generator's Name and Mailing Address
 Pensacola Naval Air Station
 100 Federal Boulevard
 Pensacola, FL 32508

4. Generator's Phone (050) 452-4811

5. Transporter 1 Company Name

A. US EPA ID Number

A. Transporter's Name

Fragland Carbons, Inc.

0001470

0001470

7. Transporter 2 Company Name

B. US EPA ID Number

B. Transporter's Name

9. Designated Facility Name and Site Address

10. US EPA ID Number

C. Facility's Phone

Waste Management-Springhill Landfill
 4966 Highway 273
 Campbellton, FL 32426

00501263-7100

11. Waste Shipping Name and Description

12. Container No.	13. Total Quantity	14. Unit Wt/Vol
a. Non-PCRA Regulated Waste	1.1 DM	685 G
b. Non-PCRA Regulated Waste	5.0 DM	6000 EP
c.		
d.		

D. Additional Descriptions for Materials Listed Above
 01 IDW WATER IN TBM BOLE

E. Handling Codes for Wastes Listed Above

13. Special Handling Instructions and Additional Information

Please send certificate of disposal to generator and to Jackson Environmental 11817 Wynona Road, The Woodlands, FL 32592-2961. Emergency Contact: P. Bartman (813) 966-3310. HQ: 065038

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulation for reporting, storage, transport or disposal of hazardous wastes.

Printed/Typed Name

LOUIE G. ROSS

Signature

Louie G. Ross

Month Day Year

10 22 01

17. Transporter 1 Acknowledgment of Receipt of Materials

Printed/Typed Name

James D. [Signature]

Signature

James D. [Signature]

Month Day Year

10 22 01

18. Transporter 2 Acknowledgment of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

10 22 01

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

10 22 01



WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? YES NO

Profile Number: WMA _____

RCRA CERCLA TSCA

Renewal Date: _____

1. Generator Information

1. Generator Name: <u>Farmco's Bay Air Station</u>	2. SIC Code: _____
3. Facility Street Address: <u>130 Rockford Boulevard</u>	4. Phone: <u>(850) 482-8811 X-103</u>
5. Facility City: <u>Panama</u>	6. State/Province: <u>Florida</u>
7. Zip/Postal Code: <u>32303</u>	8. Generator USEPA ID # _____
9. County: _____	10. State/Province ID # _____
11. Customer Name: <u>Smith Environmental, Inc.</u>	12. Customer Phone: <u>(813) 488-8910</u>
13. Customer Contact: <u>Michael LaSura</u>	14. Customer Fax: <u>813-955-2221</u>
15. Billing Address: <u>11017 Shady Road, Monroeville, FL 33557</u>	<input type="checkbox"/> Bank of America

2. Waste Stream Information

1. Description

a. Name of Waste: LDH

b. Process Generating Waste: Monitor well installation in a CERCLA DOT mixed area and formaldehyde
Site assessment data indicates constituents of concern are cadmium, diiodin, arsenic, and benzene/organic
Analytical attached

c. Color	d. Strong Odor (describe):	e. Physical State @ 70°F <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> Sludge <input type="checkbox"/> Other	f. Layers <input checked="" type="checkbox"/> Single Layer <input type="checkbox"/> Multiple	g. Free liquid range to 100 % h. pH Range 6.5 to %
Water				

l. Liquid Flash Point: < 70°F 70-99°F 100-159°F 160-199°F ≥ 200°F Not applicable

j. Chemical Composition: list all chemicals including hazardous organics, acids, and UNCG present in any concentration and their approximate amounts

Constituents	Concentration Range	Constituents	Concentration Range
Cadmium	ND	Benzene-Pyrene	ND
Diiodin	ND		
Arsenic	ND		

3. CERCLA/RCRA/HSR/MSHA/OSHA REGULATIONS

k. Corrosive Pyrophoric Explosive Radioactive
 Carcinogen Infectious Shock Sensitive Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) YES NO

m. Does the waste represented by this profile contain dioxin? (list in Section B.1.j) YES NO

n. Does the waste represented by this profile contain asbestos? YES NO
 If yes: friable non-friable

o. Does the waste represented by this profile contain benzene? YES NO
 If yes, concentration: _____ ppm
 Is the waste subject to the benzene waste operations HCBHAP? YES NO

p. Is the waste subject to RCRA Subpart CC controls? YES NO
 If no, does the waste meet the organic LDR Exemption? YES NO
 If no, does the waste contain < 500 ppmw volatile organic (VO)? YES NO
 Volatile organic concentration: _____ ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? YES NO

r. Does the waste contain debris? (list in Section B.1.j) YES NO

2. Quantity of Waste
 Estimated Annual Volume: 10 Tons Yards Drums Other (specify) _____

3. Shipping Information

a. Packaging:
 Bulk Solid; Type/Size: _____ Bulk Liquid; Type/Size: _____
 Drum; Type; Size: 55-gallon drum Other: _____

b. Shipping Frequency: Units 11x55 Per Month Quarter Year One time Other _____

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) YES NO

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

d. Reportable Quantity (lbs., kg): _____ * Hazard Class/ID #: _____
 f. USDOT Shipping Name: Non-RCRA Regulated Waste
 g. Personal Protective Equipment Requirements: _____
 h. Transporter/Transfer Station: Freehold Cartage, Inc.

C. Generator's Certificate of Waste Characteristics (to be completed by generator or state before)

1. Is this a USEPA hazardous waste (40 CFR Part 261.7)? If the answer is no, skip to 2. YES NO
 - a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) _____
 - b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.) YES NO
 - c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) YES NO
2. Is this a state hazardous waste? YES NO
 Identify ALL state hazardous waste codes _____
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? YES NO
 If yes, attach Record of Decision (ROD), 104/105 or 122 order or court order that governs the clean-up activity. For state mandated clean-up, provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? YES NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 76.17 (7 USC, 14 in Chemical Composition - B.1.)? YES NO
 - a. If yes, were the PCBs reported into the U.S.? YES NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? YES NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? YES NO

Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WWM to obtain a sample from any waste shipment for purposes of verification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: William H. Taylor, Jr. Title: Chief, Env. Div.
 Name (Type or Print): William H. Taylor, Jr. Company Name: NYS PERASAC, Inc. Date: 10/15/13
 Check if additional information is attached. Indicate the number of attached pages _____

D. WWM Management Decision FOR WWM USE ONLY

<p>1. Management Method <input type="checkbox"/> Landfill <input type="checkbox"/> Non-hazardous Solidification <input type="checkbox"/> Bioremediation <input type="checkbox"/> Incineration <input type="checkbox"/> Hazardous Stabilization <input type="checkbox"/> Other (Specify) _____</p> <p>2. Proposed Ultimate Management Facility: _____</p> <p>3. Precautions, Special Handling Procedures, or Limitation on Approval: _____</p>	<p>4. Waste Form: _____</p> <p>5. Source: _____</p> <p>6. System Type: _____ <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved</p> <p>Special Waste Decision: _____ Date: _____</p> <p>Salvageperson's Signature: _____ Date: _____</p> <p>Division Approval Signature (Optional): _____ Date: _____</p> <p>Special Waste Approval Person Signature: _____ Date: _____</p>
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GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT NAME OR TYPE

Service Agreement on File? YES NO
 Disposal Non-Disposal TSDA

Profile Number: WMA _____
Renewal Date: / /

- 1. Generator Name: Parsons Model Air Station
2. SIC Code:
3. Facility Street Address: 190 Radford Boulevard
4. Phone: (850) 1-800-851-3303
5. Facility City: Tallahassee
6. State/Province: FL 0684
7. Zip Code: 32309
8. County:
9. Generator UICFAP: 00001000
10. State/Province ID#:
11. Customer Name: Jamison Environmental, Inc.
12. Customer Phone: (913) 1-800-8810
13. Customer Contact: Michael Leslie
14. Customer Fax: (913) 888-3323
15. Billing Address: 11517 E. Hwy 104, The Woodlands, TX 77380 (15 min. or less)

1. Description
a. Name of Waste: HW
b. Process Generating Waste: Monitor and installation in a CERCLA DOT mixed area and for other uses. 6th Assessment data indicates constituents of concern are cadmium, lead, arsenic and benzene. Analysis attached.

Table with 5 columns: a. Color, b. Strong odor (describe), c. Physical State @ 70°F (Solid, Liquid, Gas, Sludge, Other), d. Layers (Single Layer, Multi-layer), e. Free liquid impregnated (in %).

f. Liquid Flash Point: <73°F 73-99°F 100-139°F 140-199°F >200°F Not applicable
g. Chemical Composition (List all constituents including hazardous metals, acids, and UICF) present in any concentration and submit representative analysis)

Table with 4 columns: Constituent, Concentration Range, Constituent, Concentration Range. Rows include Arsenic (12.2 ug/kg), Cadmium (104.71 mg/L), and Lead (NO).

- k. Oxidizer Pyrophoric Explosive Radioactive
 Carcinogen Infectious Shock Sensitive Water Reactive
l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.) YES NO
m. Does the waste represented by this profile contain dioxin? (list in Section B.1.) YES NO
n. Does the waste represented by this profile contain asbestos? YES NO
o. Does the waste represented by this profile contain benzene? YES NO
p. Is the waste subject to RCRA Subpart DD control? YES NO
q. Does the waste contain any Class I or Class II ozone-depleting substances? YES NO
r. Does the waste contain debris? (list in Section B.1.) YES NO

2. Quantity of Waste
Estimated Annual Volume: 0 Tons Yards Drums Other (specify) _____

3. Shipping Information
a. Packaging: Bulk Solid, Type/Size: _____ Bulk Liquid, Type/Size: _____
 Drum, Type/Size: 55-gallon drum Other: _____
b. Shipping Frequency: Units: 0 Per Month Quarter Year One-time Other _____
c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (if no, skip d, e, and f) YES NO

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

d. Reportable Quantity (lbs./kgs.): _____ e. Hazard Class/ID #: _____
 f. USDOT Shipping Name: Non-RCRA Regulated Waste
 g. Personal Protective Equipment Requirements: _____
 h. Transporter/Transfer Station: Freehold Cartage, Inc.

C. Generator's Certification (Please check appropriate responses, and date below)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2. YES NO
 a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) _____
 b. If a characterized hazardous waste, do underlying hazardous constituents (UHCh) apply? (If yes, list in Section B.1.) YES NO
 c. Does the waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) YES NO
2. Is this a state hazardous waste? YES NO
 Identify ALL state hazardous waste codes: _____
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? YES NO
 If yes, attach Record of Decision (ROD), 104/106 or 102 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? YES NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 781? (If yes, list in Chemical Composition - B.1.) YES NO
 a. If yes, were the PCBs imported into the U.S.? YES NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? YES NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? YES NO

Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WMA to obtain a sample from any waste shipment for purposes of identification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: William H. Taylor, Jr. Title: Chief Env. Div.
 Name (Type or Print): William H. Taylor, Jr. Company Name: NIS PETSOGLIA Date: 10/16/03
 Check if additional information is attached. Indicate the number of attached pages: _____

1. WMA Recommended Method			FOR WMA USE ONLY	
1.	Management Method <input type="checkbox"/> Landfill <input type="checkbox"/> Non-hazardous Solidification <input type="checkbox"/> Bioremediation <input type="checkbox"/> Incineration <input type="checkbox"/> Hazardous Stabilization <input type="checkbox"/> Other (Specify) _____			
2.	Proposed Ultimate Management Facility: _____			
3.	Precautions, Special Handling Procedures, or Limitation on Approval: _____			
4.	Waste Form _____	5. Source _____	6. System Type _____	
	Special Waste Decision _____		<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved	
	Salesperson's Signature: _____		Date: _____	
	Division Approval Signature (Optional): _____		Date: _____	
	Special Waste Approval Person Signature: _____		Date: _____	

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. N. J. A.	Manifest Document No. 0-0-8-5-21	2. Page 1 of 1	
3. Generator's Name and Mailing Address Pensacola Naval Air Station 190 Radford Boulevard Pensacola, FL 32508					
4. Generator's Phone (850) 452-4611					
5. Transporter 1 Company Name Freehold Cartage, Inc.	6. US EPA ID Number N. J. D. 0-5-4-1-2-6-1-6-4	A. Transporter's Phone (800) 458-5239			
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone			
9. Designated Facility Name and Site Address Waste Management-SpringHill Landfill 4945 Highway 273 Campbellton, FL 32426	10. US EPA ID Number N/A	C. Facility's Phone (850) 263-7200			
11. Waste Shipping Name and Description		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-RCRA Regulated Waste VA24506 DEMUS ^{SLD 75}		11	DM	6056	
b. Non-RCRA Regulated Waste VA24507 ^{DEMUS}		6	DM	6000	EP
c.					
d.					
D. Additional Descriptions for Materials Listed Above a) IDW Water b) IDW Soil <i>Janzen</i>		E. Handling Codes for Wastes listed Above <i>64</i>			
15. Special Handling Instructions and Additional Information Please send certificate of disposal to generator and to Jamson Environmental 11817 Elyssa Road, Theodosassa, FL 33520-2991. Emergency Contact P. Eastman (813) 986-3310. WO # 045030					
16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Printed/Typed Name Lannie G. Ross		Signature <i>Lannie G. Ross</i>		Month Day Year 1.01.2003	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name James Delinger		Signature <i>James Delinger</i>		Month Day Year 1.01.2003	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name		Signature		Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.					
Printed/Typed Name Lannie G. Ross		Signature <i>Lannie G. Ross</i>		Month Day Year 1.01.2003	

GENERATOR

RCRA

WASTE

ORIGINAL - RETURN TO GENERATOR



Springhill Landfill
4945 Hwy 273
Campbellton, FL 32426
850-263-7100

Springhill Landfill Waste Management Certificate Of Disposal

Company (Customer Billed): Jamson

Address: 11817 Elyssa Road Thonotoassa, Florida

Generator: NAS Pensacola **Profile Number:** VA2457

Total Tons: 4.75 **Total Drums Dry:** 6 **Total Drums Liquid:** 11

Attachment: Scale Ticket # 369727

Date of Disposal: November 19, 2003

Springhill Landfill, Waste Management, 4945 Hwy 273; Campbellton, Florida 32426; hereby declares the above profiled material has been disposed of at Springhill Landfill on the date listed above.

Thank you for using Springhill Landfill. We sincerely appreciate your business. We hope your experience with us has been to your satisfaction.

Certified And Prepared By:
Carrie Moss
Lead Scale Operator/Special Waste Coordinator
Springhill Landfill
Email: cmoss@wm.com

A handwritten signature in black ink that reads 'Carrie Moss'. The signature is written in a cursive style and is positioned below the typed name and contact information.

Kemron Report L03037214
(provided on CD)