

Final

Phase I RCRA Facility Investigation Report

SWMU 28

Naval Activity Puerto Rico
EPA I.D. No. PR2170027203
Ceiba, Puerto Rico



Prepared for

Department of the Navy
Atlantic Division
Naval Facilities Engineering Command

Norfolk, Virginia

Contract No. N62470-02-D-3052
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FINAL

**PHASE I RCRA FACILITY INVESTIGATION REPORT
SWMU 28 – BUNDY WWTP SLUDGE DRYING BEDS**

**NAVAL ACTIVITY PUERTO RICO
EPA I.D. NO. PR2170027203
CEIBA, PUERTO RICO**

CONTRACT TASK ORDER 0121

November 9, 2007

Prepared for:

**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
*Norfolk, Virginia***

Under the:

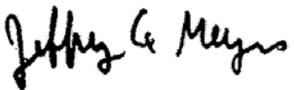
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LIST OF ACRONYMS AND ABBREVIATIONS

AFWTF	Atlantic Fleet Weapons Training Facility
AOC	Areas of Concern
AQUIRE	Aquatic Toxicity Information Retrieval
Baker	Baker Environmental, Inc.
bgs	below ground surface
CCME	Canadian Council of Ministers of the Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy Program
COPC	Chemicals of Potential Concern
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
CSF	Carcinogenic Slope Factor
CTO	Contract Task Order
DPT	Direct Push Technology
DRMO	Defense Restoration and Marketing Office
DRO	Diesel Range Organics
ECO-SSLs	Ecological Soil Screening Levels
ECP	Environmental Condition of Property
EC ₅₀	Median Effect Concentration
ERA	Ecological Risk Assessment
F	Fahrenheit
FCVS	Final Chronic Values
GPS	Global Positioning System
GRO	Gasoline Range Organics
HI	Hazard Index
HSWA	Hazardous and Solid Waste Amendments (to RCRA)
IAS	Initial Assessment Study
ILCR	Incremental Lifetime Cancer Risk
Inc.	Incorporated
IR	Installation Restoration
kg	Kilograms
LANTDIV	Department of the Navy, Atlantic Division
LC	Median Lethal Concentration
LD ₅₀	Lethal Dose – Median, Acute
LOAEL	Lowest Observed Adverse Effects Level
LOEC	Lowest Observed Effect Concentration
MCL	Maximum Contaminant Level
mg	Milligrams

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

mgd	Million Gallons per Day
mg/kg	Milligrams per Kilogram
MHSPE	Ministry of Housing, Spatial Planning and Environment
MRL	Method Reporting Limit
NAWQC	National Ambient Water Quality Criteria
NAPR	Naval Activity Puerto Rico
NAVFAC	Naval Facilities Engineering Command Atlantic Division
NEESA	Navel Energy and Environmental Support Activity
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NSRR	Naval Station Roosevelt Roads
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
PRG	Preliminary Remediation Goal
QA/QC	Quality Assurance/Quality Control
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RFI	RCRA Facility Investigation
SCV	Secondary Chronic Values
SDG	Sample Delivery Group
SQUIRTS	Screening Quick Reference Tables
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

This document presents the results from the performance of a Phase I Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) at the Solid Waste Management Unit (SWMU) 28 - Bundy Waste Water Treatment Plant (WWTP) Sludge Drying Beds located at Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico.

This document was prepared by Baker Environmental, Inc. (Baker), for the Naval Facilities Engineering Command Atlantic Division (NAVFAC). This RFI Report is being developed under Contract Task Order (CTO) 121 under the NAVFAC Atlantic Division (LANTDIV) Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Contract Number N62470-02-D-3052.

1.1 Purpose

This report has been prepared to document the findings of the 2006 Phase I RFI field work. The data is compared against current evaluation criteria to identify chemicals of potential concern (COPC) and conducting preliminary screening of human health and ecological criteria.

1.2 Objectives

The objectives of the RFI are to determine if any contaminants are present from past operation of the sludge drying beds, to the extent practical, from the completion of field activities (surface soil, subsurface soil and groundwater sampling) as described in the 2006 RFI Work Plan (Baker, 2006a);

Specific elements of the 2006 field effort performed to support this RFI include:

- Surface soil sampling at nine locations; four borings advanced in the eastern and southern portions of the sludge drying beds; five additional samples collected along the western perimeter of the sludge drying bed area;
- Subsurface soil sampling collected at two depths from four locations (except one location, where only 1 depth was collected); borings advanced in the eastern and southern portions of the sludge drying beds;
- The installation of three temporary monitoring wells at three of the four subsurface soil sampling locations; and
- Groundwater sampling at the three temporary monitoring wells.

1.3 Organization of the RFI Report

This report is organized into seven sections. Section 1.0 of this document discusses the purpose and objectives of this RFI. Section 2.0 provides a description of the current conditions of the site, including the history of SWMU 28, and a summary of previous investigations. Section 3.0 provides a description of the physical characteristics of the study area including climatology, topography, geology, hydrology, and hydrogeology. The scope of field investigation that was conducted in 2006 is provided in Section 4.0 (work plan summary) – this includes a surface and subsurface soil sampling and analysis program, a temporary monitoring well installation program, a groundwater sampling and analysis program, a quality assurance/quality control (QA/QC) sampling program, as well as other investigation considerations. The nature and extent of

contamination as determined from the results is reported in Section 5.0. Section 6.0 presents the conclusions and recommendations from the RFI, while Section 7.0 lists relevant report references.

2.0 FACILITY BACKGROUND

This section provides the history and description of NAPR and SWMU 28, as well as the current conditions at SWMU 28.

2.1 NAPR Description and History

NAPR occupies over 8,890 acres of the northern portion of the east coast of Puerto Rico, along Vieques Passage with Vieques Island lying to the east about 10 miles off the harbor entrance, see Figure 2-1. NAPR also occupies the immediately adjacent islands of Piñeros and Cabeza de Perro. The northern entrance to NAPR is about 35 miles east along the coast road (Route 3) from San Juan. The property consists of 3,938 acres of upland (developable) property and 4,955 acres of environmentally sensitive areas including wetlands, mangrove, and wildlife habitat. The closest large town is Fajardo (population approximately 37,000), which is about 5 miles north of NAPR off Route 3. Ceiba (population approximately 17,000) adjoins the west boundary of NAPR.

The facility was commissioned in 1943 as a Naval Operations Base and re-designated Naval Station Roosevelt Roads (NSRR) in 1957. NSRR operated until March 31, 2004 when NSRR underwent operational closure. On April 1, 2004 NSRR was re-designated as NAPR. The current primary mission of NAPR is to protect the physical assets remaining, comply with environmental regulations, and sustain the value of the property until final disposal of the property.

On October 20, 1994, a Final RCRA Part B permit was issued by USEPA Region II to NSRR. This permit listed 52 SWMUs and 4 AOCs and contained requirements for RFI activities at 24 of these SWMUs and three of these AOCs. An additional 25 SWMUs and 2 AOCs were added to the program over the years. Prior to 1993, environmental activities at NSRR, exclusive of underground storage tanks (USTs), were conducted in compliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations under the Department of the Navy's Installation Restoration (IR) Program. The RCRA Part B permit, issued for the Defense Reutilization and Marketing Office (DRMO) at NSRR, included provisions for corrective action under the Hazardous and Solid Waste Amendments (HSWA) to RCRA.

The USEPA issued a RCRA 7003 Administrative Order (EPA Docket No. RCRA-02-2007-7301), which became effective on January 29, 2007. SWMU 28 is identified as one of three SMWUs/treatment plants containing sludge drying beds that now warrant Phase I RFIs, because of the NAPR closure. Figure 2-2 shows all 77 SWMUs and 6 AOCs currently listed under the RCRA 7003 Administrative Order on Consent.

2.2 SWMU 28 Description and History

SWMU 28 consists of the domestic sewage treatment plant serving the Bundy training area. The focus of this investigation is limited to the sludge drying beds located adjacent to the treatment plant, see Figure 2-3. Based on information available (verbal statements, and Navy letters of August 31, 1993 and June 30, 1992), this unit does not manage or generate RCRA hazardous wastes or constituents. NAPR has no knowledge or evidence of systematic and routine releases of hazardous wastes or constituents from this SWMU.

2.3 Current Conditions/Usage

The Bundy sludge drying beds are utilized on a limited basis due to the minimal amount of flow moving through the plant since the operational closure of Naval Station Roosevelt Roads on March 31, 2004 and the transition of the facility into caretaker status. A total of seven concrete sludge drying beds are located centrally in the plant. These beds are split to three beds to the west and four beds to the east as shown on Figure 2-3. The area between the two sets of drying beds is covered in concrete. Grassy areas surround the sludge drying beds with a steep grade uphill to the west of the beds.

2.4 Previous Investigations

SWMU 28 was identified in the RCRA/ Hazardous and Solid Waste Amendments (HSWA) Permit dated October 20, 1994. No RFI was required for this SWMU based on verbal statements and Navy letters of August 31, 1993 and June 30, 1992 stating that no knowledge or evidence of systematic and routine releases of hazardous wastes or constituents was known from this SWMU.

On September 15, 2006 the Phase I RFI Work Plans (Baker, 2006a) were developed and later approved by the USEPA on October 20, 2006. Mobilization for the RFI field activities occurred November 12, 2006 with demobilization on November 20, 2006.

3.0 PHYSICAL CHARACTERISTICS OF STUDY AREA

The physical setting of NAPR was documented in the 1984 IAS (NEESA, 1984). This information is summarized in the paragraphs that follow.

3.1 Climatology

The climate associated with NAPR is characterized as warm and humid, with frequent showers occurring throughout the year. A major factor affecting the weather is the pattern of trade winds associated with the Bermuda High, the center of which is in the vicinity of 30° North, 30° West. The prevailing wind direction reflects the easterly trade winds. The area receives a surface flow varying between the northeast to the southeast about 75 percent of the year, and as much as 95 percent of the time in July when the easterly winds are strongest. The differential heating of the land and sea during the day tends to give a more northerly component to the flow on the northern side of the island and a more southerly component on the southern side. During the night, a land breeze causes a prevailing southeasterly flow in the north and a prevailing northeasterly flow over the southern coast. The mean annual wind velocity is 5.5 knots, with a minimum in November and a maximum in August. Gales associated with westward moving disturbances in the trade winds or hurricanes passing either north or south of the area have the highest probability of occurrence from June through October.

Uniform temperatures prevail, with small diurnal ranges as a result of insular exposure and the relatively small land areas. The warmest months are August and September, while the coolest are January and February. Mean annual maximum temperatures range from 82.0° Fahrenheit (F) in January to 88.2° F in August. The mean annual minimum temperatures vary from 64.0° F in January to 73.2° F in June. The highest maximum temperature recorded was 95.0° F, while the lowest minimum was 59.0° F. Rain usually occurs at least nine days in every month, with an average of 60 inches per year although a dry winter season occurs from December through April. About 22 thunderstorm-days occur per year, with maximum frequencies of 3 days per month from May through October.

In late summer, the mean sky cover begins a steady decrease from a monthly maximum average of 6.5-tenths coverage in September to a minimum monthly average of 4.4-tenths coverage in February. From March through August, the monthly average cloud cover increases steadily from 4.5- to 6.0 tenths coverage during the period. Over the open sea, a maximum of clouds (usually broken stratocumulus) occurs during early morning, with the skies clearing or becoming scattered with cumulus by afternoon. Completely clear or overcast skies are rare during daylight hours, while clear skies frequently occur at night.

The hurricane season is from mid-June through mid-September; maximum winds exceed 95 knots during severe hurricanes. An average of two tropical storms per year occurs in the study area, one of which usually reaches hurricane intensity.

3.2 Topography

The regional area of NAPR consists of an interrupted, narrow coastal plain with small valleys extending from the Sierra de Luquillo range, which has been severely eroded by streams into valleys several hundreds of feet deep. Slopes of up to 60° are common.

In the immediate area of NAPR, elevations range from sea level to approximately 295 feet. Immediately to the north of the NAPR boundary, the hills rise abruptly to heights of 800 to 1,050 feet above sea level, with the tallest peak located within 2 kilometers of the NAPR boundary.

There is a series of three hilly areas on NAPR, two of which separate the southern airfield area from the Port/Industrial, Housing, and Personnel Support areas. The third set of hills is in the Bundy area. These ridgelines not only separate sections of NAPR, but also dictate the degree of allowable development. The ridgeline south of the airfield provides an excellent barrier, which effectively decreases the aircraft-generated noise reaching the Unaccompanied Enlisted Personnel Housing areas to an acceptable level. Relief is low along the shoreline and lagoons and mangrove swamps are common.

3.3 Geology, Hydrology, and Hydrogeology

Subsections 3.3.1 through 3.3.4 below present descriptions of the geologic, hydrologic, and hydrogeologic conditions across NAPR. These are generally applicable, but may or may not be specifically-applicable, to the SWMU 28 area. In 2004, Baker conducted a series of Phase II Environmental Condition of Property (ECP) investigations across NAPR (NAVFAC, 2004). Subsection 3.3.4 discusses hydrogeologic information most relevant to SWMU 28 gained from the ECP investigations.

3.3.1 Soils

The soil associations found at NAPR are predominantly of two types typical of humid areas, namely the Swamps-Marshes Association and the Mabi-Rio-Arriba-Cayagua Association, as well as the Descalabrado-Guayama Association, which is typical of dry areas. In addition, isolated areas of the Caguabo-Mucara-Naranjito Association, the Coloso-Toa-Bajura Association, and the Jacana Amelia-Fraternidad Association are found at NAPR.

The Swamps-Marshes and Mabi-Rio-Arriba-Cayagua associations cover over one half of NAPR's surface area and are equally distributed. Primarily the Descalabrado-Guayama and Caguabo-Mucara-Naranjito associations cover the remaining area.

The Swamps-Marshes Association consists of deep, very poorly drained soils. This association is found in level or nearly level areas that are slightly above sea level but are wet, and when the tide is high, are covered or affected by saltwater or brackish water. The soils are sandy or clayey, and contain organic materials from decaying mangrove trees. Coral, shells, and marl at varying depths underlie them. The high concentration of salt inhibits the growth of all vegetation except mangrove trees, and in small-scattered patches, other salt-tolerant plants.

The Mabi-Rio-Arriba-Cayagua Association consists generally of deep, somewhat poorly drained and moderately well drained, nearly level to moderately steep soils found on foot and side slopes, terraces, and alluvial fans. Soils of this association at NAPR are basically clayey.

The Descalabrado-Guayama Association generally consists of shallow, well drained, strongly sloping to very steep soils on volcanic uplands. Soils of this association are found primarily in the hilly areas located directly inland and adjacent to the soils of the Swamps-Marshes Association.

The Caguabo-Mucara-Naranjito Association consists generally of shallow and moderately deep, well drained, sloping to very steep soils on volcanic uplands. This association consists of soils that formed in residual material weathered from volcanic rocks. This association is represented at NAPR by soils of the Sabana series, which are found on the side slopes and the hilly terrain west of Langley Drive in the Fort Bundy area. These soils are suited for pasture and woodland. Steep slopes, susceptibility to erosion, and depth to bedrock are the main limitations for farming and for recreation and urban areas.

The Coloso-Toa-Bajura Association consists of deep, moderately well drained to poorly drained, nearly level soils found on floodplains. This soil association extends along the western boundary of NAPR and around the airfield. The soils of this association formed in fine-textured and moderately fine-textured sediment of mixed origin on floodplains. The Coloso soils are deep and somewhat poorly drained; the Toa soils are deep and moderately well drained; and the Bajura soils and Maunabo soils are deep and poorly drained. The Reilly soils, also part of this association, are shallow sand and gravel and are excessively drained; they lie adjacent to streams. The minor soils are Talante, Vivi, Fortuna, Vega Alta, and Vega Baja. The Talante, Vivi, Fortuna, and Vega Baja soils are found on floodplains, while the Vega Alta soils occupy slightly higher positions on terraces.

The Jacana-Amelia-Fraternidad Association consists generally of moderately deep and deep, well drained and moderately well drained, nearly level to strongly sloping soils on terraces, alluvial fans, and foot slopes. This association is represented at NAPR by soils of the Jacana series, which consist of moderately deep, well-drained soils found on the foot slopes and low rolling hills along Langley Drive and just east of the airfield. These soils formed in fine-textured sediment and residuum derived from basic volcanic rocks.

3.3.2 Regional Geology

The underlying geology of NAPR area is predominantly volcanic (composed of lava and tuff), as well as sedimentary (rocks derived from discontinuous beds of limestone). These rocks all range in age from early Cretaceous to middle Eocene. The volcanic rocks and interbedded limestone have been complexly faulted, folded, metamorphosed, and variously intruded by dioritic rocks. This complex geological structuring occurred sometime after the deposition of the limestone during the middle Tertiary, when Puerto Rico was separated from the other major Antillean Islands by block faulting, and was arched, uplifted, and tilted to the northeast. Culebra, Vieques, and the Virgin Islands are part of the Puerto Rican block; they are separated from the main island simply because of the drowning that resulted from the tilting.

In addition to the predominant volcanic and sedimentary rock, unconsolidated alluvial and older deposits from the Quaternary period underlie the northwestern and western sectors of the base.

The primary geologic formations on and near NAPR are various beach deposits, alluvium, quartz diorite and granodiorite, quartz keratophyre, the Daguao Formation, and the Figuera Lava. The Peña Pobre fault zone traverses NAPR.

3.3.3 Regional Hydrology

The surface waters that flow across the northeastern plain of Puerto Rico, where NAPR is located, originate on the eastern slopes of the Sierra De Luquillo Mountains. Surface runoff is channeled into various rivers and streams that eventually flow into the Caribbean Sea. The Daguao River and Quebrada Seca Stream (a tributary to Rio Daguao) collect surface waters from the hills immediately north of NAPR and, in periods of heavy rain, flooding on NAPR occurs. The Daguao-Quebrada Seca watershed comprises an area of approximately 7.6 square miles (4,900 acres), and the river falls some 700 feet from its source to sea level. Increased development in the town of Ceiba, especially in areas adjacent to NAPR's northern boundary, has significantly increased the surface runoff reaching NAPR, causing ponding and erosion in the Boxer Drive area. Boxer Drive, for a major portion of its length, is subject to surface water flooding, as are Hangar 200 and AIMD Hangar 379 and adjacent apron areas. This condition has

been alleviated by the construction of a new highway (Route 3) immediately outside the fence and the realignment of Boxer Drive both with attendant storm water management features.

In the low-lying shore areas, seawater flooding results from storms, wind, and abnormally high tides. The tidal ranges in the NAPR area are rather small, with a maximum spring range of less than three feet. The tides are semidiurnal and have a usual range of about one-foot in the main harbor of NAPR.

Little information exists concerning the hydrogeology of NAPR. The only known potential sources of groundwater lie in lenticular beds of clay, sand and gravel, and rock fragments, which occur at a depth of less than 30 meters. No wells have been developed on site from these layers. Some wells had been developed up gradient of NAPR in Ceiba, some three kilometers from base headquarters, but were abandoned due to high levels of salinity.

The quality of surface waters is variable, reflecting the drainage area through which the water flows. Generally, surface waters have high turbidities and bio-organics (naturally occurring organics, such as decay products of vegetable and animal matter) due to the periodic heavy rains that can easily erode soils from steep slopes, exposed areas and disturbed streambeds. Water from alluvial aquifers along the coast of NAPR is of a calcium bicarbonate type, and has high concentrations of iron and manganese. The source of these minerals is unknown, but they may be derived from buried swamp or lagoon deposits.

A seawater-freshwater interface is present in the aquifers throughout the coastal areas of Puerto Rico, usually within a short distance inland of the coastline.

The NAPR potable water treatment plant receives raw water from the Rio Blanco through a 27-inch reinforced concrete pipe that replaced the old, open channel. The intake is located at the foot of the El Yunque rain forest. This buried raw water line traverses a distance of 14 miles from the intake to the NAPR boundary. A raw water reservoir is located at the water treatment plant and has a 45 million gallon capacity. Additionally, there are two fire protection storage reservoirs with a total capacity of 520,000 gallons.

NAPR has been served for over 30 years by the present treatment facility. The plant (Building 88) has a capacity of 4.0 million gallons per day (mgd). Water flows by gravity into a 45 million-gallon raw water storage basin from which the plant draws its supply at a rate of 1.3 mgd on average. Treatment consists of pre-chlorination, coagulation sedimentation, filtration, and post-chlorination.

3.3.4 Site-Specific Hydrogeology

In 2004, Baker conducted a Phase II ECP investigation involving 20 sites throughout NAPR. Some consistent stratigraphic trends were observed during the ECP. The site-specific hydrogeology can be better understood in the context of NAPR regional geology. For the sake of simplicity, the NAPR regional geology can be divided into three regions:

- Upland areas
- Near-shore flat lands
- Inland flat lands

The upland areas of NAPR includes the hills encompassing the Tow Way Fuel Farm and hospital areas, and the hills encompassing the area behind the Exchange, the former Atlantic Fleet Weapons Training Facility (AFWTF) Command, and Fort Bundy area. These upland areas are

underlain by bedrock (predominately Gabbro) and exhibit varying degrees of weathering. Typically, the bedrock is overlain by a relatively thin residual soil (i.e., residuum). Residuum is unconsolidated soil, originating from weathered-in-place bedrock. This residuum generally consists of sand, silt, and clay.

The near-shore areas include the mangrove swamp areas as well as the shores of Ensenada Honda and Puerca Bay. The near-shore areas are typically underlain by marine sand layers (with coral and shell fragments), silt and clay layers, and occasional peat layers. In some near-shore areas, particularly by the harbor and Camp Moscrip in the southeastern portion of the base, fill material overlays the marine layers. The fill consists of rock fragments, debris (e.g., brick), sand, silt, and clay.

The inland flat land area generally encompasses the airfield and golf course areas. The inland flat land area is typically underlain by relatively thick residuum. The residuum generally consists predominately of clay. Fill material overlays the residuum in some areas, particularly the airfield, and generally consists of sand and gravel with lesser amounts of silt and clay.

SWMU 28 is located in the hilly upland areas of NAPR. The stratigraphic sequence, observed during the 2006 RFI investigation, indicated mostly fill material and rock fragments mixed with silt and clay. Bedrock refusal utilizing the Geoprobe was encountered at 28SB01 at 12 feet below ground surface (bgs), at 28SB02 at 14 feet bgs, at 28SB03 at 14 feet bgs, and at 28SB04 at 4.8 feet bgs. Groundwater was encountered at these borings prior to refusal, with the exception of 28SB01. At this location, a larger 6620 Geoprobe rig was brought in to auger into rock and find water. Bedrock was very hard and a total of three additional feet was drilled to 15 feet bgs. No water bearing zones were observed during drilling, but water did accumulate in the temporary well after 24 hours. Groundwater yields at SWMU 28 were not measured quantitatively, but were observed to be very low.

Static water levels were not observed prior to sampling. Water levels collected during groundwater sampling are presented on Figure 3-1 and indicate a general flow direction to the south/southeast. Although water levels were not considered static, this flow direction would be the predicted flow direction following topography to the Caribbean Sea to the south/southwest.

4.0 2006 RCRA FACILITY INVESTIGATION ACTIVITIES

The areas around the sludge drying beds were investigated at SWMU 28 during November 2006. Section 4.1 discusses soil boring advancement and temporary monitoring well installation. Section 4.2 discusses the soil and groundwater sampling and analysis program and Section 4.3 presents a discussion of the QA/QC sampling programs involved with the Phase I RFI. Analytical results are discussed in detail in Section 5.0. Figure 4-1 depicts the sampling locations at SWMU 28.

No significant deviations to the approved work plan were performed during the Phase I RFI at SWMU 28. Some additional auger drilling at 28SB01 to find groundwater was the only deviation to the proposed direct push sampling and boring methods stated in the work plan.

4.1 Soil Boring Advancement and Temporary Well Installation

Surface and subsurface soil samples were collected using direct-push technology (DPT) through the use of a Geoprobe® Macro Core Sampler in conjunction with a Geoprobe® 66DT track-mounted rig. In addition, hollow stem augering was performed using the Geoprobe® 66DT track-mounted rig at 28SB01 to attempt to find groundwater into weathered bedrock. GeoEnviroTech of San Juan, Puerto Rico was the DPT contractor. As presented in the Final RFI Work Plan (Baker, 2006a), a total of four soil borings (28SB01 through 28SB04) were advanced at SWMU 28 (Figure 4-1). In addition, five surface soils samples (28SS01 through 28SS05) were also collected from SWMU 28. The four soil borings were advanced in the eastern and southern portions of the sludge drying beds. The additional surface soil samples were collected along the northern most perimeter of the sludge drying beds. Each boring site was field located with a survey grade Global Positioning System (GPS) receiver. An elevation was obtained from the top of the PVC casing for water level elevation calculations and a spot ground surface elevation. Soil boring logs have been produced and are provided in Appendix A.

No elevated PID levels were observed at the four soil borings. A clearly defined groundwater zone was observed at borings 28SB02 and 28SB03. Boring 28SB01 did not encounter a significant groundwater zone, and was subsequently drilled three feet into bedrock to locate water. 28SB04 was only drilled to 4.8 feet bgs where bedrock refusal was encountered, therefore groundwater was not observed in this borehole.

Temporary monitoring wells were installed in three of the four borings. Soil boring 28SB04 was not used as a temporary monitoring well location. Temporary monitoring well materials were installed by hand by placing one inch diameter 10-foot long PVC screens threaded to an appropriate length of PVC casing. 28TW01 was the only exception, for this temporary monitoring well a 2-inch diameter PVC screen and casing was used since the boring was augered to a diameter of 8 inches versus the 2.5-inch diameter Geoprobe borings.

GeoEnviroTech personnel pulled all well materials from the three bore holes upon completion of groundwater sampling. Spent well materials were decontaminated and subsequently disposed. Soil produced by drilling, that was not sampled, was placed back into the open boreholes following the removal of well materials. The remaining borehole annulus was grouted to ground surface with bentonite grout.

4.2 Environmental Sampling and Analysis Program

Table 4-1 provides a summary of the soil and groundwater sampling and analytical program performed for the 2006 RFI program at SWMU 28. In addition, this table shows information

related to field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples (since these are collected concurrent with the environmental samples). Other QA/QC samples (trip blanks, field blanks, and equipment rinsates) were collected and analyzed in accordance with Table 4-2. Also, analytical methods/descriptions, parameter lists, and Contract Required Quantitation Levels (CRQL) are presented in Table 4-3.

4.2.1 Surface and Subsurface Soils

Surface soil samples were collected at soil borings 28SB01 through 28SB04 and from surface soils sample locations 28SS01 through 28SS05 from a depth of 0 to 0.5-foot bgs. Subsurface soil samples were collected at the four soil borings from two foot intervals above the water table. Two subsurface soil samples were collected from each boring with the exception of 28SB04 which had only one subsurface soil sample collected an obstruction encountered at 4.8 feet bgs. Subsurface soil samples were collected from below the surface soil sample (generally 1 to 3 feet bgs) and from just above the water table (generally 9 to 11 feet bgs).

Each of the surface and several of the subsurface soil samples were screened in the field using a PID; screening results were recorded in a field logbook. Soil samples for volatile organic compound (VOC) analysis were placed in pre-preserved vials (one containing methanol and two containing sodium bisulfate) consisting of TerraCore sampling kits.

Nine surface soil samples and seven subsurface soil primary environmental samples were submitted to Severn Trent Laboratory in Savannah, Georgia for analysis of Appendix IX VOCs, SVOCs, PCBs, and metals, as well as low level PAHs, TPH GRO and DRO, sulfide and cyanide.

4.2.2 Groundwater

Three groundwater samples were collected, one from each of the temporary wells installed. All of the samples were submitted to the analytical laboratory for Appendix IX VOCs, SVOCs, PCBs, and total and dissolved metals, as well as low level PAHs, TPH GRO and DRO, sulfide and cyanide.

4.2.3 Water Levels

Temporary monitoring wells were checked with an electronic interface probe to determine if free product hydrocarbons were present. Following the determination that free product was not present, water levels were collected using an electronic water level meter. Measurements were taken following well completion and then typically the morning of each day following completion. Water level measurements and corresponding groundwater elevations are presented on Table 4-4. Groundwater sampling activities typically began within the next day or two following well completion. Slow recovery in most temporary monitoring wells had the result of impractical lengths of time for stabilization, and as a result, sampling of the groundwater occurred prior to stabilization. Water level elevations were calculated using the sampling event measurements and are presented on Figure 3-1. The predicted ground water flow direction would be toward the Caribbean Sea to the south/southeast.

4.3 Quality Assurance/Quality Control Sampling and Analysis Program

4.3.1 Field Duplicates

A total of sixteen soils samples were collected as part of the 2006 RFI field sampling activity at SWMU 28. The RFI Work Plan specifies one duplicate sample to be collected for every ten

primary soil samples collected. Thus, two field duplicate samples (28SS04D and 28SS05D) were collected concurrently. Each was analyzed for Appendix IX VOCs, SVOCs, PCBs and total metals, as well as low level PAHs, TPH GRO and DRO, sulfide and cyanide. One groundwater duplicate sample was collected at 28TW02. Duplicate samples are useful in evaluating the field sampling methodology.

4.3.2 Trip Blanks

One trip blank sample accompanied each cooler containing the samples for Appendix IX VOC and/or TPH GRO analysis. A total of four trip blank samples were prepared: 28TB01 was submitted on November 14, 2006; 28TB02 was submitted on November 15, 2006; 27TB01 was submitted on November 16, 2006; and 29TB02 were submitted on November 20, 2006. Trip blank samples 28TB01 and 28TB02 were submitted with the soil samples and 28TB02, 27TB01, and 29TB02 were submitted with water samples from SWMU 28. Trip blank sample results are used to determine whether cross-contamination occurred during sampling and/or shipping.

4.3.3 Matrix Spike/Matrix Spike Duplicates

A total of sixteen soil samples were collected as part of the 2006 RFI field sampling activity. The RFI Work Plan specifies one matrix spike/matrix spike duplicate sample be collected for every 20 primary samples collected (for each matrix). Therefore, one QA/QC soil sample, 28SS05MS/MSD, were collected from the surface soil to evaluate the matrix effect upon the analytical methodology. Separate MS and MSD samples of groundwater were collected at sample location 28TW02.

4.3.4 Field Blanks

Field blank samples were collected from two different source waters encountered during this investigation. One field blank sample (2006FB01) was collected from lab grade deionized water used as the source water for the final rinse stage of the decontamination procedure. The other field blank sample (2006FB02) was from an NAPR potable water source used for soil and groundwater sample collection equipment washing. No store bought distilled water was purchased during this investigation, so a third field blank for store bought distilled water was not necessary.

Field blank samples are always analyzed for the same parameters as the related environmental samples. Therefore, both field blank samples were sent to the laboratory for analysis of Appendix IX VOCs, SVOCs, PCBs and total metals, as well as low level PAHs, and TPH GRO and DRO. Field blank testing is useful in determining if other water sources used in the cleaning/decontamination procedures associated with the sampling event are free of contamination.

4.3.5 Equipment Rinsates

Three decontaminated equipment rinsate samples were collected, submitted, and analyzed as part of the QA/QC program. 2006ER01 is rinsate of the stainless steel spoon associated with the soil sampling activities. In addition, 2006ER02 is rinsate from the Macrocore[®] Acetate liner used during soil sampling. Finally, 2006ER04 is rinsate from silicon/polyethylene tubing associated with groundwater sampling.

Equipment rinsate samples are always analyzed for the same parameters as the related environmental samples. Therefore, each equipment rinsate samples was analyzed for of

Appendix IX VOCs, SVOCs, PCBs and total metals, as well as low level PAHs, and TPH GRO and DRO. Results from equipment rinsate samples are useful in determining if the sampling equipment was contaminant-free during the field investigation.

5.0 NATURE AND EXTENT OF CONTAMINATION

This section discusses the nature of SWMU 28 contamination determined from chemical analysis of environmental samples from the November 2006 RFI. The laboratory analytical data went through a formal data validation process. Complete validated data tables for the 2006 RFI field effort are included in Appendix B; in addition, relevant portions of the data validation reports for the 2006 RFI Sample Delivery Groups (SDGs) are provided in Appendix C; a summary discussion of the necessary laboratory level data adjustments to the 2006 data is presented in Section 5.5.

The 2006 PID field screening results are presented first (not validated). While these readings were taken to protect the field team from excessive exposure and to assist with temporary well location selection, they also provide the reader with an initial insight into historical impacts and potential geographic “hot spots”. PID readings during the Phase I RFI for SWMU 28 indicated no contamination above background, as shown in Appendix A on the boring logs

5.1 Human Health and Ecological Screening Values

Detected results for surface soils, subsurface soils, and groundwater media are discussed in the following sections. Detected compounds for each media are compared to applicable regulatory and background criteria. These criteria, and the rationale for their usage for comparison to a specific media, are described in detail below.

5.1.1 Human Health

Applicable human health criteria for soils include USEPA Region IX Industrial PRGs and USEPA Region IX Residential PRGs (USEPA, 2004), and the upper limit of means background levels (inorganics only) (Baker, 2006b). Applicable human health criteria for groundwater are USEPA Region IX Tap Water PRGs (USEPA, 2004), Federal Drinking Water Maximum Contaminant Levels (MCLs), and any inorganic background levels present in the groundwater at NAPR (Baker, 2006b).

The USEPA Region IX PRGs are tools for determining preliminary COPCs for human health risk assessments as part of evaluating and cleaning up contaminated sites. They are risk based concentrations derived from standardized equations (representing ingestion, dermal contact, and inhalation exposure pathways), combining exposure information assumptions and USEPA toxicity data. The PRGs contained in the Region IX PRG Table are generic; they are calculated without site-specific information. Region IX PRGs should be viewed as Agency guidelines, not legally enforceable standards. The PRGs for potentially carcinogenic chemicals are based on a target Incremental Lifetime Cancer Risk (ILCR) of 1×10^{-6} . The PRGs for noncarcinogens are based on a target hazard quotient of 1.0. In order to account for cumulative risk from multiple chemicals in a medium, it is necessary to derive the PRGs based on a target hazard quotient of 0.1. Noncarcinogenic PRGs based on a target hazard quotient of 0.1 and the most recent toxicological criteria available, results in a set of values that can be used as screening criteria. In order to yield a hazard index (HI) of 0.1, the noncarcinogenic PRGs were divided by a factor of ten. For potential carcinogens, the toxicity criteria applicable to the derivation of PRG values are oral and inhalation Cancer Slope Factors (CSFs); for noncarcinogens, they are chronic oral and inhalation reference doses (RfDs). These toxicity criteria are subject to change as more updated information and results from the most recent toxicological/epidemiological studies become available. The PRG table is updated annually to reflect such changes. It should be noted that the most recent update was in October 2004 (USEPA, 2004).

Also, it should be noted that even though subsurface soil analytical results from below 10 feet would not be used in human health risk assessments due to the unlikely exposure route below that depth, all subsurface soil analytical results were screened against the PRGs for completeness.

5.1.2 Ecological

5.1.2.1 Soil

USEPA ecological soil screening levels (Eco-SSLs) for terrestrial plants and invertebrates (available at <http://www.epa.gov/ecotox/ecossl/>) were preferentially used as soil screening values. For a given metal, if an Eco-SSL has been established for both terrestrial plants and invertebrates, the lowest value was selected as the soil screening value. For those chemicals lacking an Eco-SSL, the literature-based toxicological benchmarks listed below were used as soil screening values.

- Toxicological thresholds for earthworms and microorganisms (Efroymson et al., 1997a)
- Toxicological thresholds for plants (Efroymson et al., 1997b)

When more than one screening value was available from Efroymson et al. (1997a and 1997b), the lowest value was selected as the surface soil screening value. For those chemicals lacking an Eco-SSL or a toxicological threshold from Efroymson et al. (1997a and 1997b), the following literature-based values, listed in their order of decreasing preference, were used as soil screening values:

- Toxicity reference values for plants and invertebrates listed in USEPA, 1999.
- Soil standards developed by the Ministry of Housing, Spatial Planning and Environment (MHSPE, 2000), assuming a minimum default soil organic carbon content of 2.0 percent.
- Canadian soil quality guidelines (agricultural land use) developed by the Canadian Council of Ministers of the Environment (CCME, 2006).

CCME soil quality guidelines were given the lowest preference since they are background-based values that do not represent effect concentrations.

In addition, the upper limit of means background levels (inorganics only) (Baker, 2006b) were used to compare the soil concentrations to those present at NAPR in unimpacted soil. Both surface soil background levels and subsurface soil background levels for a silt soil type (most prevalent soil type at SWMU 28) were used in screening.

As a general rule, screening of soil results for ecological purposes would include surface soil, as well as subsurface soil results from the 1 – 2 foot depth range. At SWMU 28, three samples were collected at depths of 1- 3 feet (see Table 4-1). For the sake of completeness, these three samples will also undergo ecological screening.

5.1.2.2 Groundwater

Groundwater concentrations were compared to ecological surface water screening values in case of groundwater discharge to surface water. Chronic saltwater NAWQC (USEPA, 2006) were selected for use as surface water screening values. USEPA NAWQC for cadmium, copper, chromium, lead, mercury, selenium, and zinc are expressed as dissolved concentrations. As a measure of conservatism in this screening-level ERA, they were converted to total recoverable

concentrations using the appropriate conversion factors (USEPA, 2006). For those chemicals lacking a saltwater NAWQC, surface water screening values were identified from the following information listed in their order of decreasing preference:

- Final Chronic Values (FCVs) for saltwater contained in Ecotox Thresholds (USEPA, 1996a)
- Chronic screening values for saltwater contained in Ecological Risk Assessment Bulletins – Supplement to Risk Assessment Guidelines (RAGS) (USEPA, 2001)
- Minimum chronic toxicity test endpoints (No Observed Effect Concentration [NOEC] and Maximum Acceptable Toxicant Concentration [MATC] values) for saltwater species reported in the ECOTOX Database System (Aquatic Toxicity Information Retrieval [AQUIRE] database) (USEPA, 2003)
- Chronic Lowest Observable Effect Levels (LOELs) for saltwater contained in National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQUIRTs) (Buchman, 1999)

The order of preference was selected based on their level of protection. For example, FCVs would be expected to offer a greater degree of protection than a single species NOEC, MATC, or LOEL since their derivation considers a larger toxicological database. In the absence of FCVs, USEPA Region IV chronic screening values, chronic test endpoints, and chronic LOELs, screening values were derived from the acute literature values listed below:

- Acute LOELs for saltwater contained in NOAA SQUIRTs (Buchman, 1999)
- Acute toxicity test endpoints (No Observed Effect Concentration [NOEC], Lowest Observed Effect Concentration [LOEC], median lethal concentration [LC₅₀], and median effective concentration [EC₅₀] values) for saltwater species contained in the ECOTOX Database System (AQUIRE database) (USEPA, 2003).
- LC₅₀ values for saltwater species contained in Superfund Chemical Matrix (USEPA, 1996b)

Chronic-based screening values were extrapolated from acute NOEC, LOEC, LOEL, LC₅₀, and EC₅₀ values as follows:

- An uncertainty factor of 10 was used to convert an acute NOEC, LOEC, or LOEL to a chronic-based screening value.
- An uncertainty factor of 100 was used to convert an EC₅₀ or LC₅₀ to a chronic-based screening value.

When acute toxicity data were used to extrapolate a chronic screening value, NOECs were given preference over LOECs/LOELs, LOECs/LOELs were given preference over LC₅₀ and EC₅₀ values, and EC₅₀ values were given preference over LC₅₀ values. When more than one value was available from the literature for a given test endpoint (e.g., NOEC), the minimum value was conservatively used to extrapolate a chronic screening value. In some cases, chronic and acute LOELs for chemical classes (e.g., PAHs) were available from Buchman (1999). A LOEL based

on a chemical class was used to derive a chronic screening value only if that chemical lacked literature-based benchmarks and/or toxicity test endpoints.

For those chemicals lacking saltwater toxicological thresholds and literature values, surface water screening values were identified or developed from freshwater values using the sources and procedures discussed in the preceding paragraphs with one exception. This exception involved the consideration of freshwater Secondary Chronic Values (SCVs) developed by the USEPA (1996a) and Suter II (1996).

NAPR base wide groundwater background criteria (inorganics only) were also used in the comparison (Baker, 2006b), when available.

5.2 Surface Soils

Nine surface soil samples were collected and analyzed during the 2006 Phase I RFI. All nine surface soil samples were analyzed for Appendix IX VOCs, SVOCs, PCBs, and metals, as well as low level PAHs, TPH DRO and GRO and sulfide and cyanide. A detected results table for the combined surface soil data set is presented in Table 5-1. Results are compared to USEPA Region IX Residential Soil PRGs, Industrial Soil PRGs, ecological surface soil screening values and NAPR Basewide Background (inorganics only) criteria.

Five VOCs were detected in the surface soil. Four of them were only detected at low, estimated concentrations, and all were well below the listed criteria. Acetone, detected in all surface soil samples, is believed to be non-site related. No SVOCs were detected in the surface soil. Three PAHs were found, and all were estimated concentrations. Aroclor 1260 was found in four of the nine samples with the maximum concentration of 510 ug/kg at 28SB02-00 above the USEPA Region IX Residential Soil PRG. Low GRO concentrations were noted at various locations, and one surface soil location (28SS02) had a DRO concentration of 11 mg/kg. Nineteen inorganic compounds were detected in the surface soil at SWMU 28, and most of these were found at all locations. Antimony was only found at two locations (28SB02-00, and 28SB03-00). Thallium and cyanide were only found at estimated concentrations at 28SS05, with each one detected in only one of the duplicate samples from this location.

Aroclor 1260 exceeded the Region IX PRG for residential surface soil only. It is unknown why this compound is present at 28SB01-00, 28SB02-00, 28SB03-00, and 28SB04-00.

Eleven inorganic parameters exceeded one or more of the criteria. They are:

- Arsenic
- Barium
- Chromium
- Cobalt
- Copper
- Lead
- Tin
- Vanadium
- Zinc
- Mercury
- Sulfide

Vanadium and arsenic exceeded the PRGs at all locations. However, arsenic only exceeded the background screening level at two locations, 28SB02-00 and 28SB04-00, and vanadium did not exceed its background screening level. Mercury exceeded the residential PRG and background screening value at two locations, 28SB02-00, and 28SB03-00.

Barium, chromium, cobalt, copper, vanadium, zinc, and mercury exceeded ecological surface soil screening values, but only barium, zinc, and mercury exceeded their background surface soil screening values. At three locations the background levels were exceeded by a large factor: 28SB01-00 (barium only), and 28SB02-00 and 28SB03-00 (zinc and mercury only). The other exceedances are likely to be representative of background at the detected concentrations.

Lead and tin exceeded their background concentrations at a few locations, but no other screening criteria.

Based on the exceedances of background and regulatory screening concentrations in the surface soil at 28SB01 through 28SB04 located on the southern and eastern edge of the drying beds, it appears that PCB and inorganic contamination has occurred in the surface soil at SWMU 28 due to Navy activities.

5.3 Subsurface Soils

Seven subsurface soils samples were collected and analyzed as part of the 2006 RFI field activities. All seven subsurface soil samples were analyzed for Appendix IX VOCs, SVOCs, PCBs, and metals, as well as low level PAHs, TPH DRO and GRO and sulfide and cyanide. A detected results table for the subsurface soil data set is presented in Table 5-2. Results are compared to USEPA Region IX Residential Soil PRGs, Industrial Soil PRGs, and NAPR Basewide Background (metals only) criteria for silt subsurface soil. Selected sample results were also compared to the ecological surface soil screening concentrations due to the fact that the soil samples were obtained from depths of 1 to 3 feet, and anything above 2 feet bgs is ecologically significant.

One VOC, acetone, was detected in the subsurface soil at one location (28SB03) in low concentrations. Acetone is believed to be non-site related. One SVOC, bis(2-ethylhexyl) phthalate was detected at one location, 28SB03-03. No PCBs or PAH compounds were detected in the subsurface soil. Very low GRO was found at one location, 28SB04-01. Thirteen inorganic compounds were detected in the subsurface soil at SWMU 28, and most of these were found at all locations.

No organic parameters exceeded any screening criteria. Only four inorganic parameters exceeded one or more of the criteria. They are:

- Arsenic
- Barium
- Chromium
- Vanadium

Arsenic and vanadium exceeded their respective PRGs in all seven samples at all four locations, but neither exceeded its background screening level for silt subsurface soil. Barium exceeded both the ecological surface soil screening level and its background screening level, at one location only. Chromium and vanadium both exceeded the ecological surface soil screening (select samples only) levels, but not the background levels for silt type soil in the subsurface.

It is probable that subsurface soils may have been slightly impacted by barium contamination. Only the exceedance at location at 28SB03-01 is ecologically significant, however; and its significance may be limited due to the fact that it was found from 1-3 feet bgs, and only soils shallower than 2 feet bgs are to be included in an ERA.

5.4 Groundwater

A total of three groundwater samples were collected and analyzed as part of the 2006 RFI field activities. All samples were submitted to the analytical laboratory for Appendix IX VOCs, SVOCs, PCBs and total and dissolved metals, as well as low level PAHs, and TPH GRO and DRO and sulfide and cyanide.

A detected results table for the groundwater data set is presented in Table 5-3. Results are compared to USEPA Region IX Tap Water PRGs, Federal Drinking Water MCLs, surface water screening levels (see Section 5.1), and NAPR Basewide Background (metals only) criteria for groundwater.

One VOC and the two TPH compounds were detected in the groundwater at very low, estimated concentrations. None were above any criteria. No SVOCs, PAHs, or PCBs were detected in the groundwater.

Sixteen inorganic parameters were detected in the total inorganic analyses, and ten inorganic parameters were detected in the dissolved analyses. Thirteen metals exceeded one or more screening criteria:

- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Lead
- Nickel
- Silver
- Vanadium
- Zinc
- Mercury

Ten of these metals exceeded a human health or ecological screening value, or both, as well as the background screening levels for those compounds. Among these metals, only cadmium, cobalt and copper concentrations did not exceed their respective background screening levels. Almost all of these exceedances occurred in the unfiltered sample from location 28TW01. These compounds are likely to be present at SWMU 28 as a result of Navy activities. However, the groundwater sample collected at 28TW01 may not be truly representative of the contamination in the water-bearing zone because it is believed that elevated metals concentrations resulted from fines originating from the overlying bedrock during the drilling process. This is evident from the finding of only 2 metals exceeding their PRGs (but below their background levels) in the dissolved fraction (in contrast to the total fraction) of the groundwater sample from 28TW01. As discussed in Section 4.1, this temporary well was installed with a screen partially within the

bedrock water-bearing zone, but without a sand pack or annular seal, and without well development.

5.5 2006 Laboratory Data Validation Summary

More specific data validation findings, as they relate to each SDG, are discussed in Sections 5.5.2 through 5.5.4 below. Data validation reports are included in Appendix C. In addition, the Puerto Rican Chemist Certifications for each STL SDG are presented in Appendix C.

5.5.1 Summary of Detected Compounds in Field QA/QC Samples

Field generated QA/QC samples for the 2006 field effort consisted of trip blanks, field blanks, equipment rinsates, and environmental duplicates. Trip blanks were only analyzed for VOCs and GRO. Other blanks were analyzed for all fractions requested in this investigation including Appendix IX VOCs, SVOCs, PCBs, and total and dissolved metals, as well as low level PAHs, TPH DRO and GRO and sulfide and cyanide. Table 5-4 presents the detected compounds found in the trip blanks, equipment rinsates, and field blanks.

All trip blanks were non-detect for VOCs and GRO.

Detections in the field blanks included three VOCs (chlorodibromomethane, chloroform, and dibromochloromethane) in 2006FB02, two SVOCs (1,4-dichlorobenzene and diethyl phthalate) in 2006FB01, one PAH (fluoranthene), TPH DRO, and two metals (copper and lead) in 2006FB02.

Analysis of the three equipment rinsate samples resulted in the detection of one VOC (toluene) two SVOCs (1,4-dichlorobenzene and diethyl phthalate), one PAH (naphthalene), and two metals (nickel and zinc). The detections of the two SVOCs detected in the equipment rinsate samples are at the same ranges as those detected in the lab grade deionized water (2006FB01) and are not considered equipment related.

5.5.2 STL Savannah SDG 22001-3

This SDG (22001-3) is relevant to the analytical findings associated with the 2006 soil sampling. Laboratory analyses were performed by Severn Trent Laboratories, (Savannah, Georgia). Validation services were provided by Environmental Data Services, Inc. (Williamsburg, Virginia). Validation conclusions are as follows:

VOCs

- Two volatile organic compounds (acrolein and isobutanol) had unacceptable relative response factor and percent difference values during initial calibration which resulted in their respective non-detect results in trip blank sample 28TB01 to be further qualified as rejected.
- A number of volatile organic compounds had unacceptable relative response factor and percent difference values during continuing calibration, which resulted in the qualification of nearly all of the non-detect results to be qualified as estimated for the following: acrolein, 3-chloro-1-propene, pentachloroethane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 2-chloro-1,3-butadiene, chloroethane, acetone, 1,1,1-trichloroethane, 4-methyl-2-pentanone, 2-hexanone, idomethane, methyl methacrylate, dichlorodifluoromethane, bromomethane, carbon disulfide, trans-1,2-dichloroethane, and 1,2-dibromo-3-chloropropane. In addition, isobutanol had non-detect results in samples 28SB03-3 and 28SS04 that were further qualified as rejected.
- The standard area performance test did not meet internal standards for response and retention time in samples 28SB04-00 and 28SS03, which resulted in the results for the associated analytes to be qualified as estimated. Acetone was the only constituent with a detected concentration that was qualified as estimated for this validation measure.

SVOCs

- One semi-volatile organic compound (4-nitroquinoline-1-oxide) had unacceptable relative response factor and percent relative standard deviation values during initial GC/MS calibration, which resulted in further qualifying all of its non-detect results as rejected.
- A number of compounds had unacceptable percent difference and relative response factor values during continuing GC/MS calibration, which resulted in qualifying some of the results as estimated. This measure effected the following compounds: 4-nitroquinoline-1-oxide, 1,4-dioxane, 2,4-dinitrophenol, a,a-dimethylphenethylamine, 0,0,0-triethylphosphorothioate, phorate, dimethoate, 2-picoline, n-nitrosodiethylamine, ethylmethanesulfonate, n-nitrosomorpholine, methapyrilone, hexachlorophene, aramite, diallate, 2-picoline, diallate, and hexachloropropene. In addition, the non-detect results for hexachlorophene were further qualified as rejected in 9 samples.

PAHs

- The method blank was found to contain naphthalene, which resulted in its detected concentrations to be qualified as non-detects in six samples.
- The field blank sample (2006FB02) was found to contain fluoranthene, which resulted in their detected concentrations in six samples to be qualified as non-detects.
- The standard area performance test did not meet internal standards for response and retention time in sample 28SB03-03, which resulted in the non-detected results for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene to be further qualified as rejected.

DROs

- The field blank sample (2006FB01) was found to contain DRO C10-28, which resulted in the detected concentration in seven samples to be qualified as non-detects.

Metals

- The CRDL standards exhibited high percent recovery for mercury, which resulted in the non-detects in 17 samples to be qualified as estimated and the detected concentration in sample 28SB02-00 to be qualified as a non-detect. The low percent recovery for tin which resulted in qualifying its non-detect results in 6 samples as estimated.
- The method and continuing calibration blanks exhibited contamination that resulted in the results for copper and nickel in various samples to be qualified as non-detects.
- The percent recovery for the inductively coupled plasma interference check sample resulted in the zinc, cadmium, and silver results in a number of samples to be considered estimated values.
- The MS/MSD samples exhibited percent recovery and relative percent difference values outside acceptable limits for antimony, mercury, barium, lead, nickel, chromium, and

vanadium in a number of samples, which resulted in the results to be considered estimated values.

- The inductively coupled plasma serial dilution sample exhibited unacceptable percent difference values for barium, cobalt, vanadium, and nickel in a number of samples that resulted in qualifying these results as estimated values.
- The field blank contamination in 2006FB02 resulted in the detected concentrations for copper in 6 samples to be qualified as estimated and the detected concentrations in two additional samples 28SB01-05 and 28SB04-01 to be rejected.

Data Validation Summary for SDG 22001-3

The majority of the data validation measures for this SDG involved the qualification of non-detected results as either estimated or rejected primarily due to issues identified during initial and continuing GC/MS calibration. One potentially important data validation issue noted in this SDG is with the method and field blanks. For example, fluoranthene was detected in one of the field blank sample (2006FB02), which resulted in the detected value for this PAH to be qualified as a non-detect in six samples. This particular validation measure has minimal impact on the data quality objectives since the source of the water used in the field blank was tap water, which was used as the initial rinse of the field equipment. The method blank was found to contain naphthalene, which resulted in the detected concentration in six samples to be qualified as non-detects. However, the results for naphthalene were found to be valid in the remaining 12 samples. In addition, the results of contamination of DRO in field blank sample 2006FB01 resulted in the qualification of detected results in seven samples to be changed to non-detects. Since this measure impacted only the DRO analysis in seven of the 18 samples in this SDG. Overall, the changes in the results due to the application of the data validation qualifies are not expected to significantly compromise the data quality objectives for this SDG.

5.5.3 STL Savannah SDG 22012-4

This SDG (22012-4) is relevant to the analytical findings associated with the 2006 groundwater sampling. Laboratory analyses were performed by Severn Trent Laboratories, (Savannah, Georgia). Validation services were provided by Environmental Data Services, Inc. (Williamsburg, Virginia). Validation conclusions are as follows:

VOCs

- The volatile organic compounds acrolein and isobutanol had unacceptable relative response factor and percent difference values during initial GC/MS calibration, which resulted in qualifying their non-detect results as rejected in five groundwater samples.
- The volatile organic compounds: bromomethane, acrolein, iodomethane, isobutanol, chloroethane, and vinyl acetate, had unacceptable relative response factor and percent difference values during continuing GC/MS calibration, which resulted in qualifying their non-detect results as estimated in various samples.

SVOCs

- The MS/MSD sample exhibited percent recovery and relative percent difference values outside acceptable limits for 3,3'-dichlorobenzidine, which resulted in the non-detected result in sample 28TW02 to be further qualified as estimated.
- Some semi-volatile organic compounds had unacceptable relative response factor and percent relative standard deviation values during initial GC/MS calibration, which resulted in the non-detect results for 4-nitroquinoline-1-oxide to be rejected in samples 28TW03 and 28TW01.
- The unacceptable relative response factor and percent difference values during continuing GC/MS calibration resulted in qualifying some semi-volatile organic non-detect results in four samples as estimated.

Metals

- The CRDL standards associated exhibited low percent recovery for tin, which resulted in the results for tin in various samples to be considered estimated.
- The method and continuing calibration blanks was contaminated with copper, nickel, and thallium, which resulted in the detected values in various samples to be considered non-detects.
- The percent recovery in the inductively coupled plasma interference check sample was outside acceptable limits for various metals, which resulted in the chromium, cadmium silver and zinc results in various samples to be qualified as estimated.
- The inductively coupled plasma serial dilution sample exhibited unacceptable percent difference for cobalt in four samples that resulted in the results to be qualified as estimated.
- The field blank sample (2006FB02) detected copper at levels, which resulted in the results in four samples to be qualified as either estimated or rejected. The detected concentration for copper in sample 28TW02DF and 28TW03F were qualified as non-detects, while the detected concentration in sample 28TW03 was rejected.

Data Validation Summary for SDG 22012-4

The majority of the data validation measures for this SDG involved the qualification of non-detected results as estimated or rejected values primarily due to issues identified during initial and continuing GC/MS calibration. The only potentially important data validation issue noted in this SDG is with regards to the metals. For example, the method and continuing calibration blanks were contaminated with copper, nickel and thallium, which resulted in some of the detected concentrations of these metals to be qualified as non-detects. In addition, the field blank sample (2006FB02) had copper contamination, which resulted in the detected levels of copper in three samples to be either qualified as non-detects or was rejected. As noted above, the source of the water used in the field blank was tap water, which was used as the initial rinse of the field equipment. In addition, the rejected and non-detected results for copper were all in the same range as the detection limit. Overall, the changes in the results due to the application of the data

validation qualifies are not expected to significantly compromise the data quality objectives for this SDG.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The objectives of the Phase I RFI were to:

- Determine if any contaminants are present from operation of the Bundy WWTP sludge drying beds, to the extent practical, from the completion of field activities (surface soil, subsurface soil, and groundwater sampling) as described in the Phase I RFI Work Plan;
- Screen for potential human health risks posed by the site; and
- Screen for potential ecological risks posed by the site.

It is evident from the analyses of samples obtained during the Phase I RFI investigation that there has been some impact on the environment due to Navy activities at SWMU 28. Aroclor 1260 was detected in the surface soil at four of the nine locations, and several inorganic compounds are present in excess of human health and ecological screening values, as well as their background concentrations in both the surface soil and groundwater media.

The bulk of the exceedances in the surface soils are located to the south and east of the sludge drying beds. No significant contamination was found in the surface soil on the north or west side of the drying beds. The mercury exceedances at those locations are quite close to background concentrations, and may be found to lie within the background data set for mercury should a statistical comparison be conducted.

The subsurface soil did not exhibit much contamination above background for compounds that exceeded the human health or ecological screening criteria, with the exception of barium at location 28SB03-03 (ecological exceedance). Since this sample was obtained from 1-3 feet bgs, it may not be ecologically significant because only depths of up to 2 feet are included in an ERA.

The highest groundwater concentrations were found in 28TW01, located south of the drying beds. This well was also the only one drilled into the bedrock below the site. Ten inorganic compounds exceeded the human health or ecological screening values and their respective background concentrations. It is questionable whether it can be concluded that contamination from the operation of the SWMU has reached the groundwater at this site because of the questionable quality of sample obtained from this location, as discussed in Section 5.4.

6.2 Recommendations

Impact on the environment was found during the Phase I RFI investigation at SWMU 28 in areas to the south and east of the sludge drying beds. A Full RFI Investigation is recommended in order to delineate the site contamination above screening levels in both surface soil and groundwater, as well as evaluate the potential for human health and ecological risk. It is further recommended that the proposed permanent wells be screened across the bedrock interface (to maximize the groundwater yield), provided with a sand pack, an annular seal, and be developed before sampling.

7.0 REFERENCES

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TABLES

TABLE 4-1

**SUMMARY OF 2006 RFI SURFACE SOIL, SUBSURFACE SOIL, AND GROUNDWATER SAMPLING AND ANALYSIS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample Media	Site ID	Sample ID	Sample Depth (ft bgs)	Field Screening (PID)	Analysis Requested										Comments
					App. IX VOCs	App. IX SVOCs	App. IX PCBs	Low Level PAHs	App. IX Metals (Total)	App. IX Metals (Dissolved)	Sulfide	Cyanide	TPH DRO	TPH GRO	
Surface Soil	28SB01	28SB01-00	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SB02	28SB02-00	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SB03	28SB03-00	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SB04	28SB04-00	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SS01	28SS01	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SS02	28SS02	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SS03	28SS03	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
	28SS04	28SS04	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
		28SS04D	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	Duplicate
	28SS05	28SS05	0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	
28SS05D		0.0 - 1.0	X	X	X	X	X	X		X	X	X	X	Duplicate	
		28SS05MS/MSD	0.0 - 1.0	X	X	X	X	X		X	X	X	X	Matrix Spike/Matrix Spike Duplicate	
Subsurface Soil	28SB01	28SB01-03	5.0 - 7.0	X	X	X	X	X	X		X	X	X	X	
		28SB01-05	9.0 - 11.0	X	X	X	X	X	X		X	X	X	X	
	28SB02	28SB02-02	1.0 - 3.0	X	X	X	X	X	X		X	X	X	X	
		28SB02-03	9.0 - 11.0	X	X	X	X	X	X		X	X	X	X	
	28SB03	28SB03-01	5.0 - 7.0	X	X	X	X	X	X		X	X	X	X	
		28SB03-03	1.0 - 3.0	X	X	X	X	X	X		X	X	X	X	
28SB04	28SB04-01	1.0 - 3.0	X	X	X	X	X	X		X	X	X	X		
Groundwater	28TW01	28TW01	NA	NA	X	X	X	X	X	X	X	X	X	X	
	28TW02	28TW02	NA	NA	X	X	X	X	X	X	X	X	X	X	
		28TW02D	NA	NA	X	X	X	X	X	X	X	X	X	X	Duplicate
		28TW02MS	NA	NA	X	X	X	X	X	X	X	X	X	X	Matrix Spike
		28TW02MSD	NA	NA	X	X	X	X	X	X	X	X	X	X	Matrix Spike Duplicate
28TW03	28TW03	NA	NA	X	X	X	X	X	X	X	X	X	X		
Totals					25	25	25	25	25	6	25	25	25	25	

Notes:

ft bgs - feet below ground surface

PID - Photoionization Detector

NA - Not Applicable.

TABLE 4-2

**SUMMARY OF 2006 RFI QUALITY ASSURANCE / QUALITY CONTROL SAMPLING AND ANALYSIS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample ID	Analysis Requested							Comments
	App. IX VOCs	App. IX SVOCs	App. IX PCBs	Low Level PAHs	App. IX Metals (Total)	TPH DRO	TPH GRO	
Trip Blank Samples								
28TB01	X						X	
28TB02	X						X	
AOCATB-02	X						X	
29TB02	X						X	
27TB01	X						X	
29TB01	X						X	
42TB03	X						X	
Equipment Rinsate Samples								
2006ER01	X	X	X	X	X	X	X	Stainless Steel Spoon
2006ER02	X	X	X	X	X	X	X	Geoprobe Acetate Liner
2006ER04	X	X	X	X	X	X	X	Silicon/Polyethylene Tubing
Field Blank Samples								
2006FB01	X	X	X	X	X	X	X	Lab Grade Deionized Water
2006FB02	X	X	X	X	X	X	X	NAPR Potable Water
Totals	12	5	5	5	5	5	12	

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Appendix IX - VOCs	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Acetone	25	50	8260B (5030)(low level)
Acetonitrile	40	200	8260B (5030)(low level)
Acrolein	20	100	8260B (5030)(low level)
Acrylonitrile	20	100	8260B (5030)(low level)
Benzene	1.0	5.0	8260B (5030)(low level)
Bromodichloromethane	1.0	5.0	8260B (5030)(low level)
Bromoform	1.0	5.0	8260B (5030)(low level)
Bromomethane	1.0	10	8260B (5030)(low level)
Carbon Disulfide	1.0	5.0	8260B (5030)(low level)
Carbon Tetrachloride	1.0	5.0	8260B (5030)(low level)
Chlorobenzene	1.0	5.0	8260B (5030)(low level)
Chloroethane	1.0	10	8260B (5030)(low level)
Chloroform	1.0	5.0	8260B (5030)(low level)
Chloromethane	1.0	10	8260B (5030)(low level)
Chloroprene	1.0	5.0	8260B (5030)(low level)
3-Chloro-1-propene	1.0	5.0	8260B (5030)(low level)
1,2-Dibromo-3-chloropropane	1.0	10	8260B (5030)(low level)
Dibromochloromethane	1.0	5.0	8260B (5030)(low level)
1,2-Dibromoethane	1.0	5.0	8260B (5030)(low level)
Dibromomethane	1.0	5.0	8260B (5030)(low level)
trans-1,4-Dichloro-2-butene	2.0	10	8260B (5030)(low level)
Dichlorodifluoromethane	1.0	5.0	8260B (5030)(low level)
1,1-Dichloroethane	1.0	5.0	8260B (5030)(low level)
1,2-Dichloroethane	1.0	5.0	8260B (5030)(low level)
trans-1,2-dichloroethene	1.0	5.0	8260B (5030)(low level)
1,1-Dichloroethene	1.0	5.0	8260B (5030)(low level)
Methylene Chloride	5.0	5.0	8260B (5030)(low level)
1,2-Dichloropropane	1.0	5.0	8260B (5030)(low level)
cis-1,3-Dichloropropene	1.0	5.0	8260B (5030)(low level)
trans-1,3-Dichloropropene	1.0	5.0	8260B (5030)(low level)
Ethyl benzene	1.0	5.0	8260B (5030)(low level)
Ethyl methacrylate	1.0	5.0	8260B (5030)(low level)
2-Hexanone	10	25	8260B (5030)(low level)

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Appendix IX - VOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Iodomethane	5.0	5.0	8260B (5030)(low level)
Isobutanol	40	200	8260B (5030)(low level)
Methacrylonitrile	20	100	8260B (5030)(low level)
2-Butanone	10	25	8260B (5030)(low level)
Methyl methacrylate	1.0	5.0	8260B (5030)(low level)
4-Methyl-2-pentanone	10	25	8260B (5030)(low level)
Pentachloroethane	5.0	25	8260B (5030)(low level)
Propionitrile	20	100	8260B (5030)(low level)
Stryene	1.0	5.0	8260B (5030)(low level)
1,1,1,2-Tetrachloroethane	1.0	5.0	8260B (5030)(low level)
1,1,2,2-Tetrachloroethane	1.0	5.0	8260B (5030)(low level)
Tetrachloroethene	1.0	5.0	8260B (5030)(low level)
Toluene	1.0	5.0	8260B (5030)(low level)
1,1,1-Trichloroethane	1.0	5.0	8260B (5030)(low level)
1,1,2-Trichloroethane	1.0	5.0	8260B (5030)(low level)
Trichloroethene	1.0	5.0	8260B (5030)(low level)
Trichlorofluoromethane	1.0	5.0	8260B (5030)(low level)
1,2,3-Trichloropropane	1.0	5.0	8260B (5030)(low level)
Vinyl Acetate	2.0	10	8260B (5030)(low level)
Vinyl Chloride	1.0	10	8260B (5030)(low level)
Xylene	2.0	10	8260B (5030)(low level)
Appendix IX - SVOCs	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Acenaphthene	10	330	8270C
Acenaphthylene	10	330	8270C
Acetophenone	10	330	8270C
2-Acetylaminofluorene	10	330	8270C
4-Aminobiphenyl	20	330	8270C
Aniline	20	660	8270C
Anthracene	10	330	8270C
Aramite	10	330	8270C
Benzo(a)anthracene	10	330	8270C

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Appendix IX - SVOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Benzo(b)fluoranthene	10	330	8270C
Benzo(k)fluoranthene	10	330	8270C
Benzo(g,h,i)perylene	10	330	8270C
Benzo(a)pyrene	10	330	8270C
Benzyl alcohol	10	330	8270C
Bis(2-chloroethoxy)methane	10	330	8270C
Bis(2-chloroethyl)ether	10	330	8270C
Bis(2-ethylhexyl)phthalate	10	330	8270C
4-Bromophenyl phenyl ether	10	330	8270C
Butylbenzylphthalate	10	330	8270C
4-Chloroaniline	20	660	8270C
4-Chloro-3-methylphenol	10	330	8270C
2-Chloronaphthalene	10	330	8270C
2-Chlorophenol	10	330	8270C
4-Chlorophenyl phenyl ether	10	330	8270C
Chrysene	10	330	8270C
3&4 Methylphenol	10	330	8270C
2-Methylphenol	10	330	8270C
Diallylate	10	330	8270C
Dibenzofuran	10	330	8270C
Di-n-butyl phthalate	10	330	8270C
Dibenzo(a,h)anthracene	10	330	8270C
o-Dichlorobenzene	10	330	8270C
m-Dichlorobenzene	10	330	8270C
p-Dichlorobenzene	10	330	8270C
3,3'-Dichlorobenzidine	20	660	8270C
2,4-Dichlorophenol	10	330	8270C
2,6-Dichlorophenol	10	330	8270C
Diethylphthalate	10	330	8270C
p-(Dimethylamino)azobenzene	10	330	8270C
7,12-Dimethyl benz(a)anthracene	10	330	8270C
3,3-Dimethyl benzidine	20	1,700	8270C
2,4-Dimethylphenol	10	330	8270C

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Appendix IX - SVOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
alpha, alpha-Dimethylphenethylamine	2,000	67,000	8270C
Dimethyl phthalate	10	330	8270C
m-Dinitrobenzene	10	330	8270C
4,6-Dinitro-2-methylphenol	50	1,700	8270C
2,4-Dinitrophenol	50	1,700	8270C
2,4-Dinitrotoluene	10	330	8270C
2,6-Dinitrotoluene	10	330	8270C
Di-n-octylphthalate	10	330	8270C
1,4-Dioxane	10	330	8270C
Dinoseb	10	330	8270C
Ethylmethanesulfonate	10	330	8270C
Fluoranthene	10	330	8270C
Fluorene	10	330	8270C
Hexachlorobenzene	10	330	8270C
Hexachlorobutadiene	10	330	8270C
Hexachlorocyclopentadiene	10	330	8270C
Hexachloroethane	10	330	8270C
Hexachlorophene	5,000	170,000	8270C
Hexachloropropene	10	330	8270C
Indeno(1,2,3-cd)pyrene	10	330	8270C
Isophorone	10	330	8270C
Isosafrole	10	330	8270C
Methapyrilene	2,000	67,000	8270C
3-Methylcholanthrene	10	330	8270C
Methyl methanesulfonate	10	330	8270C
2-Methylnaphthalene	10	330	8270C
Naphthalene	10	330	8270C
1,4-Naphthoquinone	10	330	8270C
1-Naphthylamine	10	330	8270C
2-Naphthylamine	10	330	8270C
2-Nitroaniline	50	1,700	8270C
3-Nitroaniline	50	1,700	8270C
4-Nitroaniline	50	1,700	8270C

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Appendix IX - SVOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Nitrobenzene	10	330	8270C
2-Nitrophenol	10	330	8270C
4-Nitrophenol	50	1,700	8270C
4-Nitroquinoline-1-oxide	20	3,300	8270C
n-Nitrosodi-n-butylamine	10	330	8270C
n-Nitrosodiethylamine	10	330	8270C
n-Nitrosodimethylamine	10	330	8270C
n-Nitrosodiphenylamine	10	330	8270C
n-Nitrosodi-n-propylamine	10	330	8270C
n-Nitrosomethylethylamine	10	330	8270C
n-Nitrosomorpholine	10	330	8270C
n-Nitrosopiperidine	10	330	8270C
n-Nitrosopyrrolidine	10	330	8270C
5-Nitro-o-toluidine	10	330	8270C
bis-(2-chloroisopropyl)ether	10	330	8270C
Pentachlorobenzene	10	330	8270C
Pentachloronitrobenzene	10	330	8270C
Pentachlorophenol	50	1,700	8270C
Phenacetin	10	330	8270C
Phenanthrene	10	330	8270C
Phenol	10	330	8270C
1,4-Phenylenediamine	2,000	1,700	8270C
2-Picolin	10	330	8270C
Pronamide	10	330	8270C
Pyrene	10	330	8270C
Pyridine	50	330	8270C
Safrole	10	330	8270C
1,2,4,5-Tetrachlorobenzene	10	330	8270C
2,3,4,6-Tetrachlorophenol	10	330	8270C
o-Toluidine	20	330	8270C
1,2,4-Trichlorobenzene	10	330	8270C
2,4,5-Trichlorophenol	10	330	8270C
2,4,6-Trichlorophenol	10	330	8270C
1,3,5-Trinitrobenzene	10	330	8270C

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Low Level PAHs	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Acenaphthene	0.2	6.7	8270C
Acenaphthylene	0.2	6.7	8270C
Anthracene	0.2	6.7	8270C
Benzo(a)anthracene	0.2	6.7	8270C
Benzo(b)fluoranthene	0.2	6.7	8270C
Benzo(k)fluoranthene	0.2	6.7	8270C
Benzo(g,h,i)perylene	0.2	6.7	8270C
Benzo(a)pyrene	0.2	6.7	8270C
Chrysene	0.2	6.7	8270C
Dibenzo(a,h)anthracene	0.2	6.7	8270C
Fluoranthene	0.2	6.7	8270C
Fluorene	0.2	6.7	8270C
Indeno(1,2,3-cd)pyrene	0.2	6.7	8270C
1-Methylnaphthalene	0.2	6.7	8270C
2-Methylnaphthalene	0.2	6.7	8270C
Naphthalene	0.2	6.7	8270C
Phenanthrene	0.2	6.7	8270C
Pyrene	0.2	6.7	8270C
Appendix IX - PCBs	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Aroclor-1016	1.0	33	8082
Aroclor-1221	2.0	67	8082
Aroclor-1232	1.0	33	8082
Aroclor-1242	1.0	33	8082
Aroclor-1248	1.0	33	8082
Aroclor-1254	1.0	33	8082
Aroclor-1260	1.0	33	8082

TABLE 4-3

**PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Total Petroleum Hydrocarbons	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
Diesel Range Organics (DRO)	100	3300	5030B/8015B
Gasoline Range Organics (GRO)	50	250	3550B/8015B
Appendix IX - Metals (Total)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (mg/kg)	
Antimony	20	2.0	6010 (Inductively Coupled Plasma)
Arsenic	10	1.0	6010 (Inductively Coupled Plasma)
Barium	10	1.0	6010 (Inductively Coupled Plasma)
Beryllium	4.0	0.4	6010 (Inductively Coupled Plasma)
Cadmium	5.0	0.5	6010 (Inductively Coupled Plasma)
Chromium	10	1.0	6010 (Inductively Coupled Plasma)
Cobalt	10	1.0	6010 (Inductively Coupled Plasma)
Copper	20	2.0	6010 (Inductively Coupled Plasma)
Lead	5.0	0.5	6010 (Inductively Coupled Plasma)
Mercury	0.2	0.02	7470/7471 (Cold Vapor AA)
Nickel	40	4.0	6010 (Inductively Coupled Plasma)
Selenium	10	1.0	6010 (Inductively Coupled Plasma)
Silver	10	1.0	6010 (Inductively Coupled Plasma)
Thallium	10	1.0	6010 (Inductively Coupled Plasma)
Tin	10	5.0	6010 (Inductively Coupled Plasma)
Vanadium	10	1.0	6010 (Inductively Coupled Plasma)
Cyanide	0.010	1.0	9012 (Colorimetric)
Sulfide	1.0	25	9030 (Titrimetric, Iodine)
Zinc	20	2.0	6010 (Inductively Coupled Plasma)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, will be higher.

µg/L - micrograms per liter

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

NA - Not Applicable

TABLE 4-4

**GROUNDWATER ELEVATION SUMMARY
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Well Identification	Northing	Easting	Elevation (msl) Ground Surface	Elevation (msl) Top of PVC	Total Well Depth (ft)	Date of Water Level Measurement	Depth to Groundwater (ft)	Groundwater Elevation (msl)
SWMU 28								
28-TW01	792752.2802	921483.2625	111.09	111.09	15.0	11/17/06	7.28	103.81
28-TW02	792738.5225	921539.3126	110.47	109.50	14.0	11/17/06	6.19	103.31
28-TW03	792836.8847	921527.1027	108.84	110.67	14.0	11/17/06	6.48	104.19

TABLE 5-1

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - SURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample ID	USEPA Region IX	USEPA Region IX	Selected Ecological	NAPR ⁽¹⁾ Basewide	28SS01 0.0 - 1.0 11/14/06	28SS02 0.0 - 1.0 11/14/06	28SS03 0.0 - 1.0 11/14/06	28SS04 0.0 - 1.0 11/15/06	28SS04D 0.0 - 1.0 11/15/06	28SS05 0.0 - 1.0 11/14/06
Sample Depth (ft bgs)	Residential	Industrial	Surface Soil	Background						
Sampling Date	Soil PRGs	Soil PRGs	Screening Values							
Volatiles (ug/kg)										
Acetone	1,412,657 ⁽¹⁰⁾	5,432,098 ⁽¹⁰⁾	NE	NE	440 J	350 J	160 J	380	340	170 J
Benzene	643	1,409	101 ⁽³⁾	NE	7.8 U	5.6 U	6.0 UJ	2.3 J	2.1 J	6.5 U
Iodomethane	NE	NE	NE	NE	7.8 U	5.6 U	6.0 UJ	1.5 J	8.0 UJ	6.5 U
Isobutanol	1,251,392 ⁽¹⁰⁾	40,000,000	NE	NE	310 R	220 R	240 R	290 R	250 R	260 R
Methyl Ethyl Ketone	2,231,120 ⁽¹⁰⁾	11,326,440 ⁽¹⁰⁾	NE	NE	26 J	23 J	30 U	23 J	26 J	32 U
Semivolatiles (ug/kg) (none detected)										
PAHs (ug/kg)										
Benzo[a]anthracene	621	2,110	1,200 ⁽⁴⁾	NE	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Chrysene	62,146	210,962	1,200 ⁽⁴⁾	NE	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Pyrene	231,595 ⁽¹⁰⁾	2,912,620 ⁽¹⁰⁾	1,200 ⁽⁴⁾	NE	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
PCBs (ug/kg)										
Aroclor 1260	220	740	2,510 ⁽⁵⁾	NE	55 U	43 U	45 U	51 U	50 U	47 U
TPH (mg/kg)										
Diesel Range Organics	NE	NE	NE	NE	6.3 U	11	4.5 U	5.1 U	5.0 U	4.7 U
Gasoline Range Organics	NE	NE	NE	NE	0.29 J	0.43	0.25 J	0.27 J	0.34	0.39

TABLE 5-1

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - SURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

	USEPA	<i>USEPA</i>	Selected						
Sample ID	Region IX	<i>Region IX</i>	Ecological	<u>NAPR</u> ⁽¹⁾	28SS05D	28SB01-00	28SB02-00	28SB03-00	28SB04-00
Sample Depth (ft bgs)	Residential	<i>Industrial</i>	Surface Soil	<u>Basewide</u>	0.0 - 1.0				
Sampling Date	Soil PRGs	<i>Soil PRGs</i>	Screening Values	<u>Background</u>	11/14/06	11/13/06	11/13/06	11/13/06	11/13/06
Volatiles (ug/kg)									
Acetone	1,412,657 ⁽¹⁰⁾	5,432,098 ⁽¹⁰⁾	NE	NE	150 J	25 J	120 J	56 J	450 J
Benzene	643	1,409	101 ⁽³⁾	NE	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Iodomethane	NE	NE	NE	NE	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Isobutanol	1,251,392 ⁽¹⁰⁾	40,000,000	NE	NE	300 R	240 U	210 J	230 U	220 R
Methyl Ethyl Ketone	2,231,120 ⁽¹⁰⁾	11,326,440 ⁽¹⁰⁾	NE	NE	38 U	30 U	33 U	29 U	24 J
Semivolatiles (ug/kg) (none detected)									
PAHs (ug/kg)									
Benzo[a]anthracene	621	2,110	1,200 ⁽⁴⁾	NE	10 U	7.0 U	11 J	41 U	2.0 J
Chrysene	62,146	210,962	1,200 ⁽⁴⁾	NE	10 U	1.1 J	11 J	41 U	3.0 J
Pyrene	231,595 ⁽¹⁰⁾	2,912,620 ⁽¹⁰⁾	1,200 ⁽⁴⁾	NE	2.1 J	1.6 J	14 J	9.8 J	3.4 J
PCBs (ug/kg)									
Aroclor 1260	220	740	2,510 ⁽⁵⁾	NE	50 U	49	510	180	21 J
TPH (mg/kg)									
Diesel Range Organics	NE	NE	NE	NE	5.7 U	3.5 U	5.3 U	4.0 U	5.2 U
Gasoline Range Organics	NE	NE	NE	NE	0.28 J	0.24 U	0.13 J	0.13 J	0.16 J

TABLE 5-1

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - SURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

	USEPA Region IX Residential Soil PRGs	<i>USEPA Region IX Industrial Soil PRGs</i>	Selected Ecological Surface Soil Screening Values	<u>NAPR</u> ⁽¹⁾ <u>Basewide</u> <u>Background</u>	28SS01 0.0 - 1.0 11/14/06	28SS02 0.0 - 1.0 11/14/06	28SS03 0.0 - 1.0 11/14/06	28SS04 0.0 - 1.0 11/15/06	28SS04D 0.0 - 1.0 11/15/06	28SS05 0.0 - 1.0 11/14/06
Inorganics (mg/kg)										
Antimony	3.13 ⁽¹⁰⁾	40.88 ⁽¹⁰⁾	78 ⁽⁶⁾	2.46	6.5 UJ	4.4 UJ	4.9 UJ	5.8 UJ	5.6 UJ	5.3 UJ
Arsenic	0.39	1.59	18 ⁽⁶⁾	2.65	1.7 J	1.2 J	1.8 J	1.7 J	1.5 J	1.8 J
Barium	537 ⁽¹⁰⁾	6658 ⁽¹⁰⁾	330 ⁽⁶⁾	199	150 J	180 J	<u>220 J</u>	<u>240</u>	<u>230</u>	<u>210 J</u>
Beryllium	15.44 ⁽¹⁰⁾	1,941	40 ⁽⁶⁾	0.590	0.30 J	0.36 J	0.40 J	0.34 J	0.35 J	0.36 J
Cadmium	3.7 ⁽¹⁰⁾	45.14 ⁽¹⁰⁾	32 ⁽⁶⁾	5.76	0.11 J	0.050 J	0.11 J	0.22 J	0.24 J	0.23 J
Chromium	211	448	0.4 ⁽⁷⁾	49.8	15	21	20	18	17	20
Cobalt	903	1,921	13 ⁽⁶⁾	46.2	13 J	10 J	15 J	12	12	14 J
Copper	312.86 ⁽¹⁰⁾	4087.67 ⁽¹⁰⁾	70 ⁽⁶⁾	168	49 J	26 J	58 J	47 J	44 J	56 J
Lead	400 ⁽²⁾	800 ⁽²⁾	120 ⁽⁶⁾	22.0	4.9	1.3	4.1	5.0	4.7	5.8
Nickel	156.43 ⁽¹⁰⁾	2043.92 ⁽¹⁰⁾	30 ⁽⁸⁾	20.7	13 U	10 J	9.8 U	12 U	11 U	11 U
Selenium	39.11 ⁽¹⁰⁾	511 ⁽¹⁰⁾	1 ⁽⁸⁾	1.18	0.40 J	2.2 U	0.40 J	0.43 J	0.31 J	0.37 J
Silver	39.11 ⁽¹⁰⁾	510.99 ⁽¹⁰⁾	560 ⁽⁶⁾	NE	3.3 U	2.2 U	2.4 U	0.32 J	0.33 J	0.29 J
Thallium	0.52 ⁽¹⁰⁾	6.75 ⁽¹⁰⁾	1 ⁽⁸⁾	NE	3.3 U	2.2 U	2.4 U	2.9 U	2.8 UJ	2.6 U
Tin	4692 ⁽¹⁰⁾	100,000.00	50 ⁽⁸⁾	3.76	16 UJ	11 UJ	12 UJ	14 UJ	14 U	13 UJ
Vanadium	7.82 ⁽¹⁰⁾	102.2 ⁽¹⁰⁾	2 ⁽⁸⁾	287	87 J	54 J	98 J	69	68	86 J
Zinc	2346 ⁽¹⁰⁾	100,000	50 ⁽⁸⁾	115	47	28	51	68 J	68 J	77
Mercury - 7471A	2.35 ⁽¹⁰⁾	30.66 ⁽¹⁰⁾	0.1 ⁽⁷⁾	0.109	0.039 J	0.040 J	<u>0.20 J</u>	<u>0.13 J</u>	<u>0.12 J</u>	<u>0.12 J</u>
Cyanide Total - 9012A	120 ⁽¹⁰⁾	1200 ⁽¹⁰⁾	0.9 ⁽⁹⁾	NE	0.83 U	0.64 U	0.68 U	0.76 U	0.76 U	0.41 J
Sulfide - 9034	NE	NE	NE	37	42 U	32 U	<u>50</u>	39 U	38 U	36 U

TABLE 5-1

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - SURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

	USEPA Region IX Residential Soil PRGs	USEPA Region IX Industrial Soil PRGs	Selected Ecological Surface Soil Screening Values	NAPR ⁽¹⁾ Basewide Background	28SS05D 0.0 - 1.0 11/14/06	28SB01-00 0.0 - 1.0 11/13/06	28SB02-00 0.0 - 1.0 11/13/06	28SB03-00 0.0 - 1.0 11/13/06	28SB04-00 0.0 - 1.0 11/13/06
Inorganics (mg/kg)									
Antimony	3.13 ⁽¹⁰⁾	40.88 ⁽¹⁰⁾	78 ⁽⁶⁾	2.46	5.4 UJ	3.9 UJ	1.2 J	1.2 J	4.6 UJ
Arsenic	0.39	1.59	18 ⁽⁶⁾	2.65	2.4 J	1.4 J	2.7	1.9 J	3.2
Barium	537 ⁽¹⁰⁾	6658 ⁽¹⁰⁾	330 ⁽⁶⁾	199	230 J	980 J	270 J	220 J	120 J
Beryllium	15.44 ⁽¹⁰⁾	1,941	40 ⁽⁶⁾	0.590	0.39 J	0.56 J	0.43 J	0.40 J	0.25 J
Cadmium	3.7 ⁽¹⁰⁾	45.14 ⁽¹⁰⁾	32 ⁽⁶⁾	5.76	0.25 J	0.18 J	2.2 J	1.2 J	0.30 J
Chromium	211	448	0.4 ⁽⁷⁾	49.8	22	11 J	27 J	31	19
Cobalt	903	1,921	13 ⁽⁶⁾	46.2	16 J	7.3	7.9	8.3 J	12 J
Copper	312.86 ⁽¹⁰⁾	4087.67 ⁽¹⁰⁾	70 ⁽⁶⁾	168	63 J	19 J	84 J	67 J	47 J
Lead	400 ⁽²⁾	800 ⁽²⁾	120 ⁽⁶⁾	22.0	6.5	4.4 J	5.4 J	5.5	9.8
Nickel	156.43 ⁽¹⁰⁾	2043.92 ⁽¹⁰⁾	30 ⁽⁸⁾	20.7	11 J	5.9 J	11 J	12 J	9.2 U
Selenium	39.11 ⁽¹⁰⁾	511 ⁽¹⁰⁾	1 ⁽⁸⁾	1.18	0.39 J	2.0 U	0.79 J	0.55 J	0.25 J
Silver	39.11 ⁽¹⁰⁾	510.99 ⁽¹⁰⁾	560 ⁽⁶⁾	NE	0.30 J	1.4 J	19 J	16 J	1.4 J
Thallium	0.52 ⁽¹⁰⁾	6.75 ⁽¹⁰⁾	1 ⁽⁸⁾	NE	0.17 J	2.0 U	2.3 U	2.3 U	2.3 U
Tin	4692 ⁽¹⁰⁾	100,000.00	50 ⁽⁸⁾	3.76	13 UJ	9.8 UJ	4.6 J	3.4	1.1 UJ
Vanadium	7.82 ⁽¹⁰⁾	102.2 ⁽¹⁰⁾	2 ⁽⁸⁾	287	110 J	35 J	45 J	45 J	64 J
Zinc	2346 ⁽¹⁰⁾	100,000	50 ⁽⁸⁾	115	86	36 J	300 J	160	77
Mercury - 7471A	2.35 ⁽¹⁰⁾	30.66 ⁽¹⁰⁾	0.1 ⁽⁷⁾	0.109	0.080 J	0.70 J	5.1 J	8.0	0.21 J
Cyanide Total - 9012A	120 ⁽¹⁰⁾	1200 ⁽¹⁰⁾	0.9 ⁽⁹⁾	NE	0.74 U	0.52 U	0.62 U	0.60 U	0.56 U
Sulfide - 9034	NE	NE	NE	37	38	26 U	33	47	29 U

TABLE 5-1

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - SURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Notes:

- (1) NAPR Basewide Surface Soil Background - Upper Limit of Means (Mean + 2 standard deviations) from Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, PR, Baker Environmental Inc., October 17, 2006
- (2) USEPA action level for lead in soils
- (3) The screening value shown is an average of the target and intervention soil standards. The value is based on a default organic carbon content of 0.02 (2 percent), which represents a minimum value (adjustment range is 2 to 30 percent) (MHSPE, 2000)
- (4) Plant-based surface soil screening value for benzo(a)pyrene used as a surrogate (USEPA, 1999)
- (5) Toxicological threshold for earthworms (USEPA, 1999)
- (6) Ecological soil screening level (<http://www.epa.gov/ecotox/ecossl/>)
- (7) Toxicological threshold for earthworms (Efroymson et al., 1997a)
- (8) Toxicological threshold for plants (Efroymson et al., 1997b)
- (9) Soil quality guideline (CCME, 2006)
- (10) Noncarcinogenic PRGs based on a target hazard quotient of 0.1 for conservative screening purposes
- UJ - Reported quantitation limit is qualified as estimated
- J - Analyte present - Reported value is estimated
- U - Not detected
- R - Validator rejected analytical result
- NA - Not Analyzed
- ND - Not Detected
- NE - Not Established
- PRG - Preliminary Remedial Goal
- NAPR - Naval Activity Puerto Rico
- ft bgs - feet below ground surface
- CCME - Canadian Council of Ministers of the Environment
- mg/kg - milligram per kilogram
- ug/kg - microgram per kilogram

TABLE 5-2

Revised: Nov 9, 2007

**SUMMARY OF DETECTED RESULTS - SUBSURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample ID	USEPA	USEPA	Selected	NAPR ⁽²⁾	28SB01-03	28SB01-05	28SB02-01	28SB02-05	28SB03-03	28SB03-01	28SB04-01
	Region IX	Region IX	Ecological								
Sample Depth (ft bgs)	Residential	Industrial	Surface Soil	Basewide	(5.0 - 7.0)	(9.0 - 11.0)	(1.0 - 3.0)	(9.0 - 11.0)	(5.0 - 7.0)	(1.0 - 3.0)	(1.0 - 3.0)
Sampling Date	Soil PRGs	Soil PRGs	Screening Values ⁽¹⁾	Background	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
Volatiles (ug/kg)											
Acetone	1,412,657 ⁽⁸⁾	5,432,098 ⁽⁸⁾	NE	NE	48 U	43 U	40 U	44 U	17 J	24 J	52 UJ
Semivolatiles (ug/kg)											
Bis(2-ethylhexyl) phthalate	34,741	123,121	6,010 ⁽⁴⁾	NE	350 U	340 U	360 U	410 U	370 U	100 J	360 U
PAHs (ug/kg) (none detected)											
PCBs (ug/kg) (none detected)											
TPH (mg/kg)											
Gasoline Range Organics	NE	NE	NE	NE	0.23 U	0.27 U	0.23 U	0.20 U	0.27 U	0.19 U	0.079 J
Inorganics (mg/kg)											
Arsenic	0.39	1.59	18 ⁽⁵⁾	6.66	0.86 J	0.55 J	1.4 J	1.2 J	1.0 J	2.3	1.4 J
Barium	537 ⁽⁸⁾	6657 ⁽⁸⁾	330 ⁽⁵⁾	207	<u>250 J</u>	<u>210 J</u>	<u>230 J</u>	64 J	<u>250 J</u>	<u>380 J</u>	<u>230 J</u>
Beryllium	15.44 ⁽⁸⁾	1941 ⁽⁸⁾	40 ⁽⁵⁾	0.963	0.78 J	0.46 J	0.51 J	0.35 J	0.57 J	0.64 J	0.61 J
Chromium	211	448	0.4 ⁽⁶⁾	47.9	1.4 J	1.1 J	6.2 J	5.7 J	11	21	8.1
Cobalt	903	1,921	13 ⁽⁵⁾	63.1	4.9	7.1	6.7	6.4	7.9 J	12 J	7.3 J
Copper	313 ⁽⁸⁾	4088 ⁽⁸⁾	70 ⁽⁵⁾	120	4.1 UJ	5.4 R	11 R	4.8 U	14 R	27 J	10 R
Lead	400 ⁽³⁾	800 ⁽³⁾	120 ⁽⁵⁾	6.2	0.27 J	0.47 J	0.83 J	1.6 J	1.1	4.4 J	1.1
Nickel	156 ⁽⁸⁾	2044 ⁽⁸⁾	30 ⁽⁷⁾	26.5	0.98 J	1.2 J	3.4 J	2.6 J	8.2 U	8.6 UJ	8.4 J
Selenium	39 ⁽⁸⁾	511 ⁽⁸⁾	1 ⁽⁷⁾	1.19	2.1 U	1.8 U	2.0 U	0.24 J	2.0 U	0.39 J	2.1 U
Vanadium	7.82 ⁽⁸⁾	102.2 ⁽⁸⁾	2 ⁽⁷⁾	256	26 J	33 J	31 J	23 J	31 J	53 J	28 J
Zinc	2346 ⁽⁸⁾	100,000	50 ⁽⁷⁾	92	27 J	47 J	19 J	7.9 J	17	21	19
Mercury -7471A	2.35 ⁽⁸⁾	30.66 ⁽⁸⁾	0.1 ⁽⁶⁾	0.067	0.021 J	0.020 UJ	0.014 J	0.019 J	0.021 J	0.016 J	0.030 J
Sulfide - 9034	NE	NE	NE	NE	27 U	210	28 U	46	28 U	29 U	35

TABLE 5-2

Revised: Nov 9, 2007

**SUMMARY OF DETECTED RESULTS - SUBSURFACE SOIL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Notes:

- ⁽¹⁾ Surface Soil Screening values compared to 28SB02-02, 28SB03-01, and 28SB04-01 only, since they were from 1 to 3 feet bgs, and anything above 2 feet is ecologically significant
- ⁽²⁾ NAPR Basewide Subsurface Soil Background - SILT - Upper Limit of Means from Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, PR, Baker Environmental Inc., October 17, 2006
- ⁽³⁾ USEPA action level for lead in soils
- ⁽⁴⁾ The screening value shown is an average of the target and intervention soil standards. The value is based on a default organic carbon content of 0.02 (2 percent), which represents a minimum value (adjustment range is 2 to 30 percent) (MHSPE, 2000)
- ⁽⁵⁾ Ecological soil screening level (<http://www.epa.gov/ecotox/ecossl/>)
- ⁽⁶⁾ Toxicological threshold for earthworms (Efroymson et al., 1997a)
- ⁽⁷⁾ Toxicological threshold for plants (Efroymson et al., 1997b)
- ⁽⁸⁾ Noncarcinogenic PRGs based on a target hazard quotient of 0.1 for conservative screening purposes

U - Not detected

UJ - Reported quantitation limit is qualified as estimated

J - Analyte present - Reported value is estimated

NE - Not Established

PRG - Preliminary Remedial Goal

ft bgs - feet below ground surface

NAPR - Naval activity Puerto Rico

mg/kg - milligram per kilogram

ug/kg - microgram per kilogram

TABLE 5-3

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - GROUNDWATER
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample ID Sampling Date	USEPA Region IX Tap Water PRGs	USEPA MCLs	Selected Ecological Surface Water Screening Values	NAPR ⁽¹⁾ Basewide Background	28TW01 11/17/06	28TW02 11/14/06	28TW02D 11/14/06	28TW03 11/15/06
Volatiles (ug/L)								
Acetone	548 ⁽¹¹⁾	NE	1,000 ⁽²⁾	NE	9.6 J	25 U	25 U	25 U
Semivolatiles (ug/L) (none detected)								
PAHs (ug/L) (none detected)								
PCBs (ug/L) (none detected)								
TPH (ug/L)								
Diesel Range Organics	NE	NE	NE	NE	0.14	0.10 U	0.096 U	0.82
Gasoline Range Organics	NE	NE	NE	NE	0.016 J	0.050 U	0.050 U	0.050 U
Inorganics (ug/L)								
Arsenic	0.045	10	36 ⁽³⁾	18.89	<u>29</u>	10 U	10 U	7.0 J
Barium	260 ⁽¹¹⁾	2,000	50,000 ⁽⁴⁾	686	<u>12000</u>	350	340	<u>1400</u>
Beryllium	7 ⁽¹¹⁾	4	310 ⁽⁵⁾	2.21	<u>78</u>	4.0 U	4.0 U	2.0 J
Cadmium	1.8 ⁽¹¹⁾	5	8.85 ⁽³⁾	55.83	4.1 J	5.0 U	5.0 U	0.30 J
Chromium	11 ^(11,12)	100	50.4 ⁽³⁾	162.41	<u>1700</u>	10 U	10 U	61
Cobalt	73 ⁽¹¹⁾	NE	45 ⁽⁶⁾	633.21	550 J	0.58 J	0.62 J	26
Copper	150 ⁽¹¹⁾	1,300.00	3.73 ⁽³⁾	593.00	380 J	20 U	20 U	29 R
Lead	NE	15 ⁽¹³⁾	8.52 ⁽³⁾	26.25	<u>45</u>	5.0 U	5.0 U	4.5 J
Nickel	73 ⁽¹¹⁾	NE	8.28 ⁽³⁾	84.1	<u>280</u>	40 U	40 U	40 U
Selenium	18 ⁽¹¹⁾	50.00	71.1 ⁽³⁾	33.98	2.3 J	10 U	10 U	3.5 J
Silver	18.2 ⁽¹¹⁾	NE	0.23 ⁽⁷⁾	2.00	<u>5.1 J</u>	10 U	10 U	10 U
Tin	2,190 ⁽¹¹⁾	NE	NE	20.68	26 UJ	10 UJ	10 UJ	3.1 J
Vanadium	3.6 ⁽¹¹⁾	NE	120 ⁽⁸⁾	484.66	<u>820</u>	10 U	10 U	130
Zinc	1,090 ⁽¹¹⁾	NE	85.6 ⁽³⁾	547.53	<u>1400 J</u>	5.8 J	12 J	61 J
Mercury - 7470A (ug/L)	1.1 ⁽¹¹⁾	2.00	1.15 ⁽³⁾	0.29	<u>4.6</u>	0.20 U	0.20 U	0.40 U
Sulfide - 9034 (mg/L)	NE	NE	NE	NE	1.1	1.0 U	1.0 U	1.0 U

TABLE 5-3

Revised: November 9, 2007

**SUMMARY OF DETECTED RESULTS - GROUNDWATER
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Sample ID Sampling Date	USEPA Region IX	USEPA	Selected Ecological	NAPR ⁽¹⁾	28TW01 11/17/06	28TW02 11/14/06	28TW02D 11/14/06	28TW03 11/15/06
	Tap Water PRGs	MCLs	Surface Water Screening Values	Basewide Background				
Dissolved Inorganics (ug/L)								
Antimony Dissolved	1.46 ⁽¹¹⁾	6.00	500 ⁽⁹⁾	15.40	1.2 J	20 U	20 U	20 U
Arsenic, Dissolved	0.05	10	36 ⁽¹⁰⁾	20.41	1.5 J	1.6 J	0.85 J	3.6 J
Barium, Dissolved	260 ⁽¹¹⁾	2,000	50,000 ⁽⁴⁾	260	40	340 J	330 J	710 J
Beryllium Dissolved	7 ⁽¹¹⁾	4	310 ⁽⁵⁾	2.21	4.0 U	4.0 U	4.0 U	0.16 J
Chromium, Dissolved	11 ^(11,12)	100	50 ⁽¹⁰⁾	9.0	1.6 J	10 U	10 U	5.5 J
Cobalt, Dissolved	73 ⁽¹¹⁾	NE	45 ⁽⁶⁾	580.5	13	2.9 J	0.73 J	13
Nickel, Dissolved	73 ⁽¹¹⁾	NE	8.2 ⁽¹⁰⁾	84.1	40 U	1.2 J	0.51 J	4.0 J
Selenium, Dissolved	18 ⁽¹¹⁾	50	71 ⁽¹⁰⁾	33.98	1.5 J	10 U	10 U	1.8 J
Vanadium, Dissolved	3.6 ⁽¹¹⁾	NE	120 ⁽⁸⁾	265.61	25	10 U	10 U	19
Zinc, Dissolved	1,090 ⁽¹¹⁾	NE	81 ⁽¹⁰⁾	360.64	7.8 J	7.2 J	10 J	15 J

**SUMMARY OF DETECTED RESULTS - GROUNDWATER
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

Notes:

- (1) NAPR Basewide Groundwater Background - Upper Limit of Means (Mean + 2 standard deviations) Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, PR, Baker Environmental, Inc., October 17, 2006
- (2) Minimum acute value (96-hour LC₅₀ for *Lumbriculus variegatus* [oligochaete]) with a safety factor of 100
- (3) USEPA National recommended water quality criterion (total recoverable saltwater CCC derived by dividing the dissolved CCC value by the USEPA recommended conversion factor) (USEPA, 2006)
- (4) Minimum acute value (96-hour LC₅₀ for *Americanysis bahia* [opposum shrimp]) with a safety factor of 100 (values expressed as a total recoverable concentration) (USEPA, 2003)
- (5) Minimum acute value (96-hour LC₅₀ for *Fundulus heteroclitus* [mummichog]) with a safety factor of 100 (value expressed as a total recoverable concentration) (USEPA, 2003).
- (6) Minimum acute value (96-hour LC₅₀ for *Nitocra spinipes* [Harpacticoid copepod]) with a safety factor of 100 (value expressed as a total recoverable concentration) (USEPA, 2003)
- (7) USEPA Region 4 chronic screening value (USEPA, 2001)
- (8) Minimum chronic value (28-day NOEC for *Pimephales promelas* [fathead minnow]) based on growth (value expressed as a total recoverable concentration)
- (9) Proposed CCC (value expressed as a total recoverable concentration) (Buchman, 1999)
- (10) USEPA National recommended water quality criterion (dissolved saltwater CCC) (USEPA, 2006)
- (11) Noncarcinogenic PRGs based on a target hazard quotient of 0.1 for conservative screening purposes
- (12) Tap-Water PRG value for hexavalent chromium presented
- (13) USEPA Action Level for lead in drinking water
- U - Not detected
 UJ - Reported quantitation limit is qualified as estimated
 J - Analyte present - Reported value is estimated
 NE - Not Established
 ug/l - micrograms per liter

TABLE 5-4

SUMMARY OF DETECTED RESULTS - QUALITY ASSURANCE / QUALITY CONTROL
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RCRA FACILITY INVESTIGATION
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID Sampling Date	Equipment Rinsates			Field Blanks		Trip Blanks			
	2006ER01 11/13/2006	2006ER02 11/15/2006	2006ER04 11/16/2006	2006FB01 11/18/2006	2006FB02 11/18/2006	28TB01 11/14/06	28TB02 11/15/2006	29TB02 11/17/06	27TB01 11/16/06
Volatiles (ug/L)									
Chlorodibromomethane	1.0 U	1.0 U	1.0 U	1.0 U	2.8	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	160	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorobromomethane	1.0 U	1.0 U	1.0 U	1.0 U	18	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	2.3	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Semivolatiles (ug/L)									
14-Dichlorobenzene	9.4 UJ	0.56 J	10 U	0.53 J	10 U	NA	NA	NA	NA
Diethyl phthalate	0.82 J	10 UJ	10 U	0.69 J	10 U	NA	NA	NA	NA
PAHs (ug/L)									
Fluoranthene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.080 J	NA	NA	NA	NA
PCBs (ug/L) (none detected)									
TPH (mg/L)									
Diesel Range Organics	0.096 UJ	0.10 UJ	0.10 U	0.052 J	0.10 U	NA	NA	NA	NA
Metals (ug/L)									
Copper	20 U	20 U	20 U	20 U	79	NA	NA	NA	NA
Lead	5.0 U	5.0 U	5.0 U	5.0 U	0.69 J	NA	NA	NA	NA
Nickel	40 U	0.26 J	0.19 J	40 U	40 U	NA	NA	NA	NA
Zinc	3.7 J	20 U	20 U	20 U	20 U	NA	NA	NA	NA

Notes:

U - Not detected

UJ - Reported quantitation limit is qualified as estimated

J - Analyte present - Reported value is estimated

NA - Not Analyzed

FIGURES



1 inch = 4 miles



FIGURE 2-1
 REGIONAL LOCATION MAP
 PHASE I RFI
 SWMU 28

NAVAL ACTIVITY PUERTO RICO
 PUERTO RICO



LEGEND

- SWMUs

- AREA OF WHICH THIS INVESTIGATION PERTAINS TO

- AOCs

SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

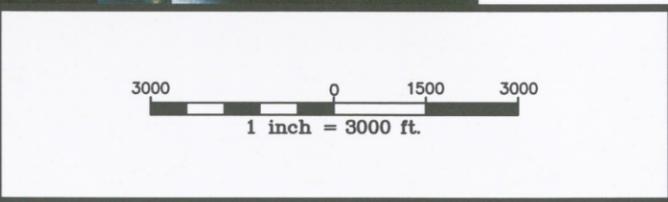


FIGURE 2-2
NAPR LOCATION MAP
PHASE I RFI WORK PLAN FOR
SWMU 28
NAVAL ACTIVITY PUERTO RICO
PUERTO RICO

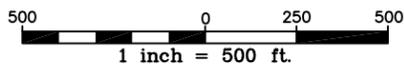


K:\CH2M_HILL... PHASE 1 RFI\SWMU_28\107872RFI_28-03



LEGEND

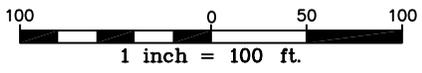
- SWMU 28



**FIGURE 2-3
SWMU 28 LOCATION MAP**

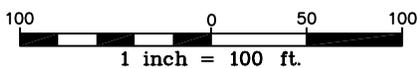
NAVAL ACTIVITY PUERTO RICO
PUERTO RICO

SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.



LEGEND	
	- SITE BOUNDARY
	- TEMPORARY MONITORING WELL LOCATION
	- GROUNDWATER ELEVATION

FIGURE 3-1
 GROUNDWATER ELEVATIONS (11/17/06)
 SWMU 28-BUNDY WWTP SLUDGE
 DRYING BEDS
 PHASE I RFI SWMU 28
 NAVAL ACTIVITY PUERTO RICO
 PUERTO RICO



LEGEND

-  - SITE BOUNDARY
-  - SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION
-  - SURFACE SOIL SAMPLE LOCATION

FIGURE 4-1
RFI SOIL AND GROUNDWATER
SAMPLING LOCATIONS
SWMU 28-BUNDY WWTP SLUDGE
DRYING BEDS
PHASE I RFI SWMU 28
NAVAL ACTIVITY PUERTO RICO
PUERTO RICO

APPENDIX A
2006 FIELD ACTIVITIES

APPENDIX A.1
SWMU 28 FIELD LOG BOOK NOTES

2

NAPR

- Mon. Nov. 13, 2006 Today's Tasks:
- Sample prep. SWMU 28 (MKD)
- Weather Conditions:
- AM: P. Sunny, lt. breeze, humid near 80
- PM: Cloudy, Scat Shwrs, high 80's
- 0600 Arrive at NAPR gate to obtain passes
- 0700 Meet Pedro, get the key to room,
- 0710 Prep. for soil sampling at SWMU 28.
- 0755 Relocate (MKD) to gate to meet Geo Envir Tech.
- 0807 Driller on site.
- 0814 Obtain vehicle passes.
- 0833 Back at PWD bldg.
- 0855 Relocate to SWMU 28.
- 0942 Setup at 28SB04. MEK located
- 1018 MEK off site. Probe refusal at ~ 4.8 ft bgs. Off; tried again. Hit utility line; immediately stopped. didn't impact plant. Refusal at 3rd location (3 ft bgs). MEK said to collect soil & 1 subsurface at SB04. Relocate to SB01.
- 1220 Lunch break. Can't get to

MKD

11/13

3

NAPR

- (cont.) SB03 w/ truck rig. JHB & 66DT will get, along w/ deeper drilling TB05 at SB01 (augers).
- 1305 Return to SWMU 28. I need to collect soil samples from SB01.
- 1330 Collect 28SB02.00
- 1331 Rig sets up at 28SB03.
- 1540 Complete SB02 sampling. Relocate to SWMU 42.
- 1550 MEK & I agree to drill at SWMU 42. I get coolers of jars & ice.
- 1632 Back at SWMU 42. Driller have just completed 42SB03.
- 1710 Drillers depart site while I collect subsurface soil samples at SB03. Will need to collect surface tomorrow.
- 1750 Relocate to PWD.
- 1805 Depart Base - done for the day

11/13

MKD

4

NMR

28-SB04

Time	Depth (ft)	ID	Recovery (%)	PID	
				PS	BG
0947	0-4	S-1	2.4	0	0
				0	0
				0	0
0952	4- 8 4.8	S-2	0.1		

28-SB01

Time	Depth	ID	Recovery	PID	
				PS	BG
1020	0-4	S-1	3.6	0	0
				0	0
				0	0
				0	0
1032	4-8	S-2	0.0	0	0
				0	0
				0	0
1040	8-10	S-3	2.0	0	0

MID

11/13

5

Geoprobe 5400

	Description	
1	^{silt; approx 0-0.5} ROCK FRAG, some fine sand, trace silt & clay; brown; gray; damp	-00
2		-01
3		
4	little clay; brown; moist	
5	ROCK FRAG, gray; wet - probe refusal	d.B
6		
7		
8		
9		
10		

	Description	
1	ROCK FRAG	
2		
3		
4	ROCK FRAG; < SAND; little to some silt; brown; gray; damp (FILL)	
5		
6		-02
7		
8		
9		

11/13

MID

6

NAPR

28-SB01 Cont.

Time	Depth	ID	Recovery	PID	
				PS	BG
1050	10-12	S-1	2.0	0	0
				0	0
				0	0

28-SB02

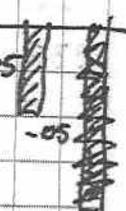
Time	Depth	ID	Recovery	PID	
				PS	BG
1125	0-4	S-1	3.8	0	0
				0	0
				0	0
1135	4-8	S-2	2.0	-	-
				0	0
				0	0
				-	-
1140	8-12	S-3	2.0		
1150	12-14	S-4	2.0		

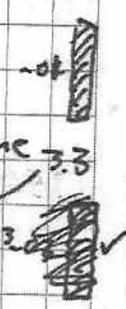
NA69

11/13

NAPR

7

Description	
10	SILT, some rock frag; c sand; brown; gray; dry (RESIDUM) 
11	
12	Refusal @ 12.0 ft

Description	
1	SILT; dk brown; moist
2	
3	
4	ROCK FRAG; c SAND, little to some
5	SILT, silt, trace clay; brown; gray; damp (FILL) 
6	
7	SILT, trace rock frag; c sand, clay; dk gray; moist
8	
9	some s/c sand, trace rock frag; clay; wet ~ 10'
10	
11	
12	ROCK FRAG at bottom
13	Refusal @ 14'
14	

11/13

NA69

8

NAPR

285B03

Time	Depth	ID	Recovery	PS	BG
1335	0-4	S-1	3.7	0	0
				0	0
				0	0
1340	4-8	S-2	3.3	-	-
				0	0
				0	0
1345	8-12	S-3	2.5	0	0
1350	12-14	S-4	2.0		
TW03	Well set @	11-14'	1" sch 40 PVC		
	Riser	0-11'			
TW02	Well screen	11-14'			
	Riser	0-11'			

MID

11/13

9

NAPR

	Description	
1	SILT 0-0.2	-00
2	SILT; ROCK FRAG, trace clay; brown; gray; damp (FILL)	-01 -02
3		
4		
5		
6		-03
7		
8	SILT, little rock frag; sand, trace clay; wet (MARINE?)	7.4
9		
10		
11	trace rock frag	
12	some sand; rock frag; green-gray wet	
13	ROCK FRAG; green-gray; wet	13.7
14	Refusal @ 14'	
15		

11/13

MID

52

NAPR

Sat. Nov. 18, 2006. Today's Tasks -

Groundwater sampling

Weather Conditions -

AM: M. sunny, low 80's (calm)

PM:

0615 Arrive at PWD. Prepare for ground-water sampling (16TW06 and complete 27TW02).

0644 Relocate to SWMU 16.

0657 16TW06 DTW = 1.95' (T/PVC)

0705 Collect 16TW06 for explosives

0712 WQP Readings:

Temp 27.6°C

sp Cond 2.35 mS/cm

D.O. 2.1 mg/L

pH 7.33 SU

ORP 167.0 mV

0718 DTW = 6.61' (T/PVC)

0722 Relocate to SWMU 27.

0752 Begin collection of add'l sample from 27TW01. DTW =

0754 Collected ~ 1.3 L before TW01 went dry.

0803 27TW02 DTW = 1.72' (T/PVC)

0805 Begin add'l sample collection from

MWD

11/18

NAPR

53

(cont) 27TW02

0808 Got ~ 2L from 27TW02 before it went dry.

0831 Back at 16TW06 to collect aa/ac samples per MEK instructions.

0840 Collected an add'l 1.75 L before 16TW06 went dry.

0924 Relocate to SWMU 68 to supervise temp. well abandonment. MEK says that the drillers (Jesse & William) were here at 0800 and have abandoned wells at SWMU 28.

0945 SWMU 68 abandonment complete. Relocate to SWMU 42.

1005 Abandoned 3 TWs at SWMU 42. Relocate to SWMU 27.

1031 Pulled 1L from 27TW01 & 1.5 L from TW02

1058 Complete SWMU 27 abandonment

1120 I was able to complete 4th bottle for 16TW06. Driller abandons well.

1124 Relocate to SWMU 29. DWH asked me to gauge 29TW02 right

11/18

MWD

Weather: Mostly cloudy.
~80°F

11/14/06

SWMU - 2B

0740. Arrived on site. Begin prep.

Temp. Well 2

SWL @ 0752 = 6.49 ft.

0803 - Begin Samplings

ZBTW02

" D

" MS

" MSD

Pumping @ ~250 ml/min.

SWL @ 1050 = 6.77 ft (Post Sample)

Temp. ^{°C}	Cond. ^{ms}	pH	ORP	Turb.
28.05	1.731	6.79	-121	182

A. Pat

11/14/06
SWMU-28

Temp Well 3

SL @ 0900 = 6.79 ft

1055 - Basin Sampling.
2BTW03

1105 - Run Dry before last VOA filled.
(Water very carbonated, cannot fill
VOA's without many bubbles)

AA

11/14/06
SWMU-68

Temp Well 5

SL @ 1626 = 12.19 ft

1630 - Basin Sampling.
6BTL05

" D
" MS
" ASD

Pumped @ Max speed.
No Meter Measurements Taken.

AA

APPENDIX A.2
CHAIN-OF-CUSTODY FORMS

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

**SEVERN
TRENT**

STL[®]

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

28-001

○ Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE CTO-121/SWMO 28		PROJECT NO. CTO-121	PROJECT LOCATION (STATE) PR	MATRIX TYPE	REQUIRED ANALYSIS						PAGE 1	OF 2		
STL (LAB) PROJECT MANAGER Kathy Smith		P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	8260 B VOCs	8270 C SVOCs	8270 C LLPAH	8082 PCBs	8015 B DRO/	8015 B GAO/	6010 B Metals	STANDARD REPORT DELIVERY		
CLIENT (SITE) PM Mark Kimes		CLIENT PHONE 412-337-7465	CLIENT FAX		APX LST	APX LST	APX LST						DATE DUE 28 day TAT	
CLIENT NAME Baker		CLIENT E-MAIL mkimes@mbakercorp.com											EXPEDITED REPORT DELIVERY (SURCHARGE)	
CLIENT ADDRESS 100 Airside Dr. Moon Twp, PA 15108													DATE DUE	
COMPANY CONTRACTING THIS WORK (if applicable) CH2M Hill													NUMBER OF COOLERS SUBMITTED PER SHIPMENT: 3	
SAMPLE		SAMPLE IDENTIFICATION			NUMBER OF CONTAINERS SUBMITTED						REMARKS			
DATE	TIME													
11/13/06	1020	28 SB01-00			3	1	1	1	3	1	1			
	1032	28 SB01-03			3	1	1	1	3	1	1			
	1050	28 SB01-05			3	1	1	1	3	1	1			
	1330	28 SB02-00			3	1	1	1	3	1	1			
	1125	28 SB02-02			3	1	1	1	3	1	1			
	1135	28 SB02-03			3	1	1	1	3	1	1			
	1445	28 SB03-00			3	1	1	1	3	1	1			
	1335	28 SB03-01			3	1	1	1	3	1	1			
	1340	28 SB03-03			3	1	1	1	3	1	1			
	1050	28 SB04-00			3	1	1	1	3	1	1			
	0947	28 SB04-01			3	1	1	1	3	1	1			
11/14/06	0955	28 SS01			3	1	1	1	3	1	1			
RELINQUISHED BY: (SIGNATURE) EMPTY CONTAINERS		DATE	TIME	RELINQUISHED BY: (SIGNATURE) Mad E. K.		DATE	TIME	RELINQUISHED BY: (SIGNATURE)		DATE	TIME			
						11/14/06	1500							
RECEIVED BY: (SIGNATURE) Mad E. K.		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME			
		11/13/06	0630											
LABORATORY USE ONLY														
RECEIVED FOR LABORATORY BY: (SIGNATURE) KL		DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. 280-22001	LABORATORY REMARKS							
		11/16/06	0921											

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

SEVERN
TRENT

STL[®] FEDEX

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

28-002

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE <i>Swm 28 REI</i>	PROJECT NO. <i>CTO-121</i>	PROJECT LOCATION (STATE) <i>PR</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE <i>1</i> OF <i>1</i>									
STL (LAB) PROJECT MANAGER <i>Kathy Smith</i>	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT...)	<i>B260 B VOCs</i>	<i>App IX List</i>	<i>B270C SVOCs</i>	<i>App IX List</i>	<i>B270C WPAHs</i>	<i>B082 PCBs</i>	<i>B015 B DRO</i>	<i>3030 B</i>	<i>B015 B GRCO</i>	<i>3550 B</i>	<i>6010 B Metals</i>	<i>App IX List</i>	<i>7474 Hg</i>	<i>Sulfide</i>	<i>9030 B</i>	<i>Cyanide</i>	<i>9012 B</i>	STANDARD REPORT DELIVERY <input checked="" type="radio"/>	DATE DUE <i>28 Day TAT</i>	
CLIENT (SITE) PM <i>Mark Kimes</i>	CLIENT PHONE <i>412-337-7465</i>	CLIENT FAX		EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>																			DATE DUE _____
CLIENT NAME <i>Baker</i>	CLIENT E-MAIL <i>m.kimes@mbakercorp.com</i>			NUMBER OF COOLERS SUBMITTED PER SHIPMENT:																			
CLIENT ADDRESS <i>100 Airside Dr. Moon Twp., PA 15108</i>	COMPANY CONTRACTING THIS WORK (if applicable) <i>CH₂M Hill</i>			REMARKS																			

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS				
DATE	TIME							B260 B VOCs	App IX List	B270C SVOCs	App IX List	B270C WPAHs	B082 PCBs	B015 B DRO	3030 B	B015 B GRCO	3550 B		6010 B Metals	App IX List	7474 Hg	Sulfide
<i>11/15/06</i>	<i>0740</i>	<i>285504</i>	<i>G</i>	<i>X</i>			<i>3</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>1</i>							
<i>11/15/06</i>	<i>0740</i>	<i>285504D</i>	<i>G</i>	<i>X</i>			<i>3</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>1</i>							

RELINQUISHED BY: (SIGNATURE) <i>Mark E. Kimes</i>	DATE <i>11/15/06</i>	TIME <i>1500</i>	RELINQUISHED BY: (SIGNATURE)	DATE <i>11/15/06</i>	TIME <i>1500</i>	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) <i>Mark E. Kimes</i>	DATE <i>11/13/06</i>	TIME <i>0630</i>	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY								
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>KL</i>	DATE <i>11/16/06</i>	TIME <i>0921</i>	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. <i>680-22012</i>	LABORATORY REMARKS		

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD



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28-003

Alternate Laboratory Name/Location

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PROJECT REFERENCE <i>Swmw 28 RFD</i>		PROJECT NO. <i>CTO-121</i>	PROJECT LOCATION (STATE) <i>PR</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE <i>1</i>	OF <i>1</i>																				
STL (LAB) PROJECT MANAGER <i>Kathy Smith</i>		P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	<i>0260 B VOCs</i>	<i>Appix List</i>	<i>0270C SVOCs</i>	<i>Appix List</i>	<i>0270C LLAHs</i>	<i>8082 PCBs</i>	<i>6010 B Metals Total</i>	<i>Appix List 7430 A-H</i>	<i>6010 B Metals Diss</i>	<i>Appix List 7440 A-H</i>	<i>9012 B Cyanide</i>	<i>9031/9030 B</i>	<i>Sulfide</i>	<i>8015B DRO</i>	<i>5030B</i>	<i>8015B GPO</i>	<i>3330B</i>	STANDARD REPORT DELIVERY <input checked="" type="radio"/>	DATE DUE <i>28 Day TAT</i>	EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>	DATE DUE	NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	REMARKS									
CLIENT (SITE) PM <i>Mark Kimes</i>		CLIENT PHONE <i>412-337-7465</i>	CLIENT FAX																			PRESERVATIVE														
CLIENT NAME <i>Baker</i>		CLIENT E-MAIL <i>m.kimes@mbakercorp.com</i>																																		
CLIENT ADDRESS <i>100 Airside Dr, Moon Twp, PA 15108</i>		COMPANY CONTRACTING THIS WORK (if applicable) <i>Ch M Hill</i>																																		
SAMPLE		SAMPLE IDENTIFICATION						NUMBER OF CONTAINERS SUBMITTED																												
DATE	TIME																																			
<i>11/14/06</i>	<i>0803</i>	<i>28TWφ2</i>		<i>GX</i>						<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>3</i>																	
	<i>0803</i>	<i>28 TW φ 2 D</i>		<i>GX</i>						<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>3</i>																	
	<i>0803</i>	<i>28 TW φ 2 MS</i>		<i>GX</i>						<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>3</i>																	
	<i>0803</i>	<i>28 TW φ 2 MSD</i>		<i>GX</i>						<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>3</i>																	
<i>11/15/06</i>	<i>1500</i>	<i>28TBφ2</i>		<i>GX</i>						<i>✓</i>									<i>✓</i>																	
RELINQUISHED BY: (SIGNATURE) <i>Mad E. Hill</i>		DATE <i>11/13/06</i>	TIME <i>0630</i>	RELINQUISHED BY: (SIGNATURE) <i>Mad E. Hill</i>		DATE <i>11/15/06</i>	TIME <i>1500</i>	RELINQUISHED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME																					
RECEIVED BY: (SIGNATURE) <i>Mad E. Hill</i>		DATE <i>11/13/06</i>	TIME <i>0630</i>	RECEIVED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME	RECEIVED BY: (SIGNATURE)		DATE	TIME																					
LABORATORY USE ONLY																																				
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>680</i>		DATE <i>11/16/06</i>	TIME <i>0921</i>	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. <i>680-2202</i>	LABORATORY REMARKS																													

TEMP: 0.0
4.0
TEMP:

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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28-004

○ Alternate Laboratory Name/Location

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Fax:

PROJECT REFERENCE	PROJECT NO. CTO-121	PROJECT LOCATION (STATE) PR	MATRIX TYPE	REQUIRED ANALYSIS							PAGE	OF		
STL (LAB) PROJECT MANAGER Kathy Smith	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT,...)	8260B VOCs	8270C SVOCs	8270C LL-PAHs	8082 PCBs	6010 B Metals/TOM	6010 B Metals/Diss	9012 B CANVIOE	8015B DRD	8015B GRP	3550B	STANDARD REPORT DELIVERY <input checked="" type="radio"/>
CLIENT (SITE) PM Mark Kimes	CLIENT PHONE 412-337-7465	CLIENT FAX		HE	APPX LIST	APPX LIST	APPX LIST	APPX LIST	APPX LIST	APPX LIST	APPX LIST	APPX LIST	APPX LIST	DATE DUE 20 Day DAT
CLIENT NAME Baker	CLIENT E-MAIL mkimes@mbakercorp.com													EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>
CLIENT ADDRESS 100 Airside Dr., Moon Twp., PA 15108														DATE DUE
COMPANY CONTRACTING THIS WORK (if applicable)														NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT,...)	NUMBER OF CONTAINERS SUBMITTED							REMARKS	
DATE	TIME							HE	PRE	HE	HE	HE	HE	HE		HE
11/15/06	1055	28TW03	G					2	2	2	1	1	1	2	2	
11/15/06	1000	28TB03	G													

TEMP: 0-50

RELINQUISHED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RELINQUISHED BY: (SIGNATURE) Mark E. Kimes	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) Mark E. Kimes	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) KL	DATE	TIME	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. 680-2200	LABORATORY REMARKS
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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Savannah, GA 31404

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PROJECT REFERENCE <i>Swmu 28 RFI</i>	PROJECT NO. <i>CTO-121</i>	PROJECT LOCATION (STATE) <i>PR</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE <i>1</i>	OF <i>1</i>							
STL (LAB) PROJECT MANAGER <i>Kathy Smith</i>	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	<i>8260B VOCs</i>	<i>APIX LIST</i>	<i>8270C SVOCs</i>	<i>APIX LIST</i>	<i>8270C LL PAHs</i>	<i>8092 PCBs</i>	<i>8015B DRO</i>	<i>5030B</i>	<i>8015B GRO</i>	<i>3550B</i>	<i>6010B Total Metals</i>	<i>APIX LIST/7471A#9</i>	<i>6010B Diss Metals</i>	<i>APIX List/7471A#9</i>	<i>9030B sulfide</i>	<i>9012B Cyanide</i>	STANDARD REPORT DELIVERY <input checked="" type="radio"/>	DATE DUE <i>28 day TAT</i>	
CLIENT (SITE) PM <i>Mark Kimes</i>	CLIENT PHONE <i>412-337-7465</i>	CLIENT FAX																			EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>	DATE DUE _____
CLIENT NAME <i>Baker</i>	CLIENT E-MAIL <i>mkimes@mbakercorp.com</i>																					DATE DUE _____
CLIENT ADDRESS <i>100 Airside Dr., Moon Twp., PA 15108</i>																					NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	
COMPANY CONTRACTING THIS WORK (if applicable) <i>CH2M Hill</i>																						

PRESERVATIVE

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS				
DATE	TIME							1	2	3	4	5	6	7	8	9	10		11	12		
<i>11/17/06</i>	<i>1500</i>	<i>28 TWO I</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>					

TEMP: 1.0

RELINQUISHED BY: (SIGNATURE) <i>Mark Kimes</i>	DATE <i>11/20/06</i>	TIME <i>1200</i>	RELINQUISHED BY: (SIGNATURE) <i>Mark Kimes</i>	DATE <i>11/20/06</i>	TIME <i>1200</i>	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) <i>Mark Kimes</i>	DATE <i>11/13/06</i>	TIME <i>0630</i>	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>LL</i>	DATE <i>11/20/06</i>	TIME <i>0919</i>	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. <i>6880-22139</i>	LABORATORY REMARKS
--	-------------------------	---------------------	---	------------------	---	--------------------

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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2006-001

Alternate Laboratory Name/Location

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Fax:

PROJECT REFERENCE	PROJECT NO. C70-121	PROJECT LOCATION (STATE) PR	MATRIX TYPE	REQUIRED ANALYSIS										PAGE	OF								
STL (LAB) PROJECT MANAGER Kathy Smith	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	0260B VOCs	App IX LIST	0270 C SVOCs	App IX LIST	0270 C LLPAHs	0082 PCBs	6010 B Metals Total	App X List / App A Hg	6010 B Metals Diss	App IX LIST / App A Hg	9012 B CYANIDE	SULFIDE	8015 B DEO	5030 B	9015 B GFO	3550 B	EXPLOSIVES	8330	STANDARD REPORT DELIVERY	DATE DUE 20 Day TAT
CLIENT (SITE) PM Mark Kimes	CLIENT PHONE 412 337 7465	CLIENT FAX		0260B VOCs	App IX LIST	0270 C SVOCs	App IX LIST	0270 C LLPAHs	0082 PCBs	6010 B Metals Total	App X List / App A Hg	6010 B Metals Diss	App IX LIST / App A Hg	9012 B CYANIDE	SULFIDE	8015 B DEO	5030 B	9015 B GFO	3550 B	EXPLOSIVES	8330	EXPEDITED REPORT DELIVERY (SURCHARGE)	DATE DUE
CLIENT NAME Baker	CLIENT E-MAIL m.kimes@nbakercorp.com			0260B VOCs	App IX LIST	0270 C SVOCs	App IX LIST	0270 C LLPAHs	0082 PCBs	6010 B Metals Total	App X List / App A Hg	6010 B Metals Diss	App IX LIST / App A Hg	9012 B CYANIDE	SULFIDE	8015 B DEO	5030 B	9015 B GFO	3550 B	EXPLOSIVES	8330	NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	
CLIENT ADDRESS 100 Airside Dr Moon Twp. PA 15108				0260B VOCs	App IX LIST	0270 C SVOCs	App IX LIST	0270 C LLPAHs	0082 PCBs	6010 B Metals Total	App X List / App A Hg	6010 B Metals Diss	App IX LIST / App A Hg	9012 B CYANIDE	SULFIDE	8015 B DEO	5030 B	9015 B GFO	3550 B	EXPLOSIVES	8330	REMARKS	
COMPANY CONTRACTING THIS WORK (if applicable) CH2M Hill				PRESERVATIVE																			

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS							
DATE	TIME							1	2	3	4	5	6	7	8	9	10		11	12					
11/13/06	1100	2006ERO1	G	X			one	2	2	2	1		1	2	2		2								

TEMP.: 0.0

RELINQUISHED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RELINQUISHED BY: (SIGNATURE) Maul E. K	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE) Maul E. K	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	11/13/06	0630		11/16/06	1500			

LABORATORY USE ONLY						
RECEIVED FOR LABORATORY BY: (SIGNATURE) KL	DATE	TIME	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. 678-2200	LABORATORY REMARKS
	11/16/06	0916				

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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2006-002

Alternate Laboratory Name/Location

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PROJECT REFERENCE <i>QA/QC</i>	PROJECT NO. <i>CTO-121</i>	PROJECT LOCATION (STATE) <i>PR</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE <i>1</i>	OF <i>1</i>			
STL (LAB) PROJECT MANAGER <i>Kathy Smith</i>	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	<i>8240 B VOCs</i>	<i>APP IX LST</i>	<i>8270 C SVOCs</i>	<i>APP IX LST</i>	<i>8270 C LLPATH</i>	<i>8092 PCBs</i>	<i>60100 Metals Total</i>	<i>APP IX LST / 7470 Hg</i>	<i>8015B DRO</i>	<i>8015B GPO</i>	<i>3550 B</i>	<i>EXPLOSIVES</i>	<i>8330</i>	STANDARD REPORT DELIVERY <input checked="" type="radio"/>	DATE DUE <i>28 day TAT</i>
CLIENT (SITE) PM <i>Mark Kimes</i>	CLIENT PHONE <i>412 337 7465</i>	CLIENT FAX		<i>PRESERVATIVE</i>											EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="radio"/>	DATE DUE		
CLIENT NAME <i>Baker</i>	CLIENT E-MAIL <i>mkimes@mbakercorp.com</i>													NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	DATE DUE			
CLIENT ADDRESS <i>100 Airside Dr. Moon Twp, PA 15108</i>														COMPANY CONTRACTING THIS WORK (if applicable) <i>CH2M Hill</i>				

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS
DATE	TIME							1	2	3	4	5	6	7	8	9	10	
<i>11/14/06</i>	<i>1700</i>	<i>2006 ER02</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			
<i>11/15/06</i>	<i>1700</i>	<i>2006 ER03</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			
<i>11/17/06</i>	<i>1700</i>	<i>2006 ER05</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			
<i>11/18/06</i>	<i>1700</i>	<i>2006 FB01</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			
<i>11/18/06</i>	<i>1700</i>	<i>2006 FB02</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			
<i>11/16/06</i>		<i>2006 ER04</i>	<i>G X</i>					<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>			

11/21/06 1.0
6.0
TEMP: *9.0*
0.0/0.0/0.0/1.0/1.0/1.0
0.0/0.0/0.0/0.0/4.0/6.0/1.0

RELINQUISHED BY: (SIGNATURE) <i>Empty Containers</i>	DATE	TIME	RELINQUISHED BY: (SIGNATURE) <i>Joe E. King</i>	DATE <i>11/20/06</i>	TIME <i>1200</i>	RELINQUISHED BY: (SIGNATURE) <i>0.0/0.0/1.0</i>	DATE <i>0.0/0.0/1.0</i>	TIME
RECEIVED BY: (SIGNATURE) <i>Empty Containers</i>	DATE <i>11/13/06</i>	TIME <i>0630</i>	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY								
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>KL</i>	DATE <i>11/21/06</i>	TIME <i>0919</i>	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	STL SAVANNAH LOG NO. <i>680-22139</i>	LABORATORY REMARKS		

APPENDIX A.3
SOIL BORING LOGS AND WELL CONSTRUCTION RECORDS

TEST BORING RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28

PROJ. NO.: 107872

BORING NO.: 28-SB01

COORDINATES: EAST: 921483.2625

NORTH: 792752.2802

ELEVATION: SURFACE: 111.09

Rig:	Geoprobe Track Rig 5400 DT				Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
	Macro Sampler	Casing	Augers	Core Barrel				
Size (ID)	1-5/8" I.D.				11/13/2006	0.0 - 12.0	Pt. Cloudy, Rain, 80s	
Length	4'							
Type								
Hammer Wt.								
Fall								

Remarks:

<u>SAMPLE TYPE</u>					<u>DEFINITIONS</u>			
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample					SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level BKG/PS = Background/Point Source ppm = parts per million			
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)	
1						ROCK FRAGMENTS (FILL)		
2	S-1	3.6			0			
3							108.09	
4	4.0					ROCK FRAGMENTS and COARSE SAND, little to some silt; brown and gray; damp (FILL)		
5								
6	S-2	4.0		28SB01-03 (5-7')	0	*Collect soil sample from 5' to 7'		
7								
8	8.0							
9								
10	S-3	2.0		28SB01-05 (9-11')	0	*Collect soil sample from 9' to 11'		
						SILT, some rock fragments and coarse sand	101.09	

DRILLING COMPANY: GeoEnviroTech, Inc.

BAKER REP.: Mark DeJohn

DRILLER: William Rodrigez

BORING NO.: 28-SB01

SHEET 1 O 2

TEST BORING RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28

SO NO.: 107872

BORING NO.: 28-SB01

<u>SAMPLE TYPE</u>						<u>DEFINITIONS</u>	
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background	
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11						Continued from Sheet 1	
12	12.0 S-3	2.0			0	SILT, some rock fragments and coarse sand; brown and gray; dry (RESIDUM); Refusal at 12'	12.0 99.09
13						End of Boring at 12.0'	
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING COMPANY: GeoEnviroTech, Inc.

DRILLER: William Rodrigez

BAKER REP.: Mark DeJohn

BORING NO.: 28-SB01 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico SWMU 28 (Bundy Waste Water Treatment Plant)
 PROJ. NO.: 107872 BORING NO.: SB01/TW01
 COORDINATES: EAST: 921483.2625 NORTH: 792752.2802
 ELEVATION: SURFACE: 111.09 TOP OF PVC CASING: 111.09

Rig: Geoprobe Track Rig 6620 DT					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
MC Sampler	Casing	Augers	Core Barrel					
Size (ID)	1-5/8" I.D.	--	4-1/4"	--	11/15/2006	0.0 - 15.0	Pt. Sunny, 80s	
Length	5'	--	5'	--				
Type	--	--	HS	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Direct Push P = Piston N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC Riser	2"	0	5.0
						Schedule 40 PVC Screen	2"	5.0	15.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
1						Advance Geoprobe Drive Point, No Samples Collected		106.09	
2									
3									
4									
5	5.0								
6									
7									
8									
9									
10	10.0								

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: Jessie/Abraham

BAKER REP.: Joe Burawa
 BORING NO.: SB01/TW01 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico SWMU 28 (Bundy Waste Water Treatment Plant)

SO NO.: 107872 BORING NO.: SB01/TW01

SAMPLE TYPE						DEFINITIONS		
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background		
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11						Continued from Sheet 1		
12					Advance Geoprobe Drive Point, No Samples Collected			
13					hard material from 12' to 15'			
14	14.0				Drive Point Refusal at 14'			
15	15.0	A-N			Auger to 15'	15'		96.09
16						End of Boring at 15.0'		
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: Jessie/Abraham

BAKER REP.: Joe Burawa
 BORING NO.: SB01/TW01 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28
 PROJ. NO.: 107872 BORING NO.: 28-SB02/TW02
 COORDINATES: EAST: 921539.3126 NORTH: 792738.5225
 ELEVATION: SURFACE: 110.47 TOP OF PVC CASING: 109.50

Rig: Geoprobe Track Rig 5400 DT					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
MC Sampler	Casing	Augers	Core Barrel					
Size (ID)	1-5/8" I.D.	--	--	--	11/13/2006	0.0 - 14.0	Pt. Cloudy, Rain, 80s	
Length	4'	--	--	--				
Type	--	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Direct Push P = Piston N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC Riser	1"	0	11.0
						Schedule 40 PVC Screen	1"	11.0	14.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1						SILT; dark brown; moist			109.47
2	S-1	3.8		28SB02-01 (1-3)	0.0	ROCK FRAGMENTS and COARSE SAND, little to some silt, trace clay; brown and gray; damp (FILL)			
3						*Collect soil sample from 1' to 3'			107.17
4	4.0					SILT, trace rock fragments and coarse sand and clay; dark gray; moist			
5							1" PVC Riser		
6	S-2	2.0			0.0				
7									
8	8.0								
9	S-3	2.8		28SB02-05 (9-11)	0.0	*Collect soil sample from 9' to 11'			
10						SILT, some fine to coarse sand; wet			100.47

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: William Rodriguez

BAKER REP.: Mark DeJohn
 BORING NO.: 28-SB02/TW02 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28

SO NO.: 107872

BORING NO.: 28-SB02/TW02

SAMPLE TYPE						DEFINITIONS			
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample						SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background			
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
11	S-3	2.8			0.0	Continued from Sheet 1 SILT, some fine to coarse sand, trace rock fragments and clay; wet	Top of 1" PVC Screen at 11'	99.47	
12									12.0
13	S-4	2.0			0.0	Refusal at 14', rock fragment in bottom	Open Borehole 14'	96.47	
14									14.0
15						End of Boring at 14.0'			
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: William Rodrigez

BAKER REP.: Mark DeJohn
 BORING NO.: 28-SB02/TW02 SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28
 PROJ. NO.: 107872 BORING NO.: 28-SB03/TW03
 COORDINATES: EAST: 921527.1027 NORTH: 792836.8847
 ELEVATION: SURFACE: 108.84 TOP OF PVC CASING: 110.67

Rig: Geoprobe Track Rig 5400 DT					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
MC Sampler	Casing	Augers	Core Barrel					
Size (ID)	1-5/8" I.D.	--	--	--	11/13/2006	0.0 - 14.0	Pt. Cloudy, Rain, 80s	
Length	4'	--	--	--				
Type	--	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE						WELL INFORMATION			
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Direct Push P = Piston N = No Sample						Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
						Schedule 40 PVC Riser	1"	0	11.0
						Schedule 40 PVC Screen	1"	11.0	14.0
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Well Installation Detail		Elevation (Ft. MSL)
1	S-1	3.7		28SB03	0.0	SILT 0.2'	1" PVC Riser		108.64
2				(0-1)		SILT and ROCK FRAGMENTS, trace clay; brown and gray; damp (FILL)			
3				28SB03		(1-3)			
4				4.0					
5	S-2	3.3		28SB03	0.0	7.4'	Open Borehole		101.44
6				(5-7)					
7									
8	S-3	2.5			0.0	SILT, little rock fragments and coarse sand, trace clay; wet (MARINE?)			
9									
10									

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: William Rodrigez

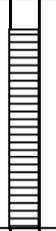
BAKER REP.: Mark DeJohn
 BORING NO.: 28-SB03/TW03 SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28

SO NO.: 107872

BORING NO.: 28-SB03/TW03

SAMPLE TYPE					DEFINITIONS				
S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample					SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level ps/bg = point source/background				
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Well Installation Detail	Elevation (Ft. MSL)	
11	S-3	2.8			0.0	Continued from Sheet 1		97.84	
12						12.0		12.0'	Same as Above; trace rock fragments after 11'
13	S-4	2.0			0.0	SILT, some coarse sand and rock fragments; green-gray; wet		95.14	
14						14.0		13.7'	ROCK FRAGMENT; green-gray; wet
15						End of Boring at 14.0'			
16						Refusal at 14.0'			
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING CO.: GeoEnviroTech, Inc.
 DRILLER: William Rodrigez

BAKER REP.: Mark DeJohn
 BORING NO.: 28-SB03/TW03 SHEET 2 OF 2

TEST BORING RECORD

PROJECT: Roosevelt Roads Puerto Rico, SWMU 28

PROJ. NO.: 107872

BORING NO.: 28-SB04

COORDINATES: EAST: 921458.7943

NORTH: 792755.1394

ELEVATION: SURFACE: 110.83

Rig: Geoprobe Track Rig 5400 DT					Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Macro Sampler	Casing	Augers	Core Barrel					
Size (ID)	1-5/8" I.D.				11/13/2006	0.0 - 4.8	Pt. Cloudy, Rain, 80s	
Length	4'							
Type								
Hammer Wt.								
Fall								
Remarks:								
<p align="center"><u>SAMPLE TYPE</u></p> <p>S = Split Spoon A = Auger T = Shelby Tube W = Wash R = Air Rotary C = Core D = Denison P = Piston N = No Sample</p>					<p align="center"><u>DEFINITIONS</u></p> <p>SPT = Standard Penetration Test (ASTM D1586) PID = Photo Ionization Detector Measurement MSL = Mean Sea Level BKG/PS = Background/Point Source ppm = parts per million</p>			
Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)	
1	S-1	2.4		28SB04	0	SILT; dark brown	0.5	
2				ROCK FRAGMENTS, some fine to coarse sand, trace silt and clay; brown, gray; damp				
3				*Collect soil samples from 0 to 1' and 1' to 3'				
4				(0-1')		little clay; brown and moist after 3'		
4.0				28SB04				
5	S-2	0.1		-01		Refusal at 4.8'		
4.8				(1-3')		Rock Fragment; gray; wet	4.8	
6						End of Boring at 4.8'		
7								
8								
9								
10								

DRILLING COMPANY: GeoEnviroTech, Inc.

BAKER REP.: Mark DeJohn

DRILLER: William Rodrigez

BORING NO.: 28-SB04

SHEET 1 OF 1

APPENDIX B
SUMMARY OF ANALYTICAL RESULTS

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS01	28SS02	28SS03	28SS04	28SS04D	28SS05
Lab Sample Number	680-22001-43	680-22001-44	680-22001-45	680-22012-53	680-22012-54	680-22001-46
Sampling Date	11/14/06	11/14/06	11/14/06	11/15/06	11/15/06	11/14/06
Matrix	Solid	Solid	Solid	Solid	Solid	Solid
Method - 8260B (ug/kg)						
1112-Tetrachloroethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
111-Trichloroethane	7.8 UJ	5.6 UJ	6.0 UJ	7.3 U	8.0 U	6.5 UJ
1122-Tetrachloroethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
112-Trichloroethane	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
11-Dichloroethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
11-Dichloroethene	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
123-Trichloropropane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
12-Dibromo-3-Chloropropane	16 U	11 U	12 U	15 UJ	16 UJ	13 U
12-Dichloroethane	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
12-Dichloropropane	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
2-Chloro-1,3-butadiene	7.8 UJ	5.6 UJ	6.0 UJ	7.3 U	8.0 U	6.5 UJ
2-Hexanone	39 UJ	28 UJ	30 UJ	36 UJ	40 UJ	32 UJ
3-Chloro-1-propene	7.8 U	5.6 U	6.0 UJ	7.3 UJ	8.0 UJ	6.5 U
Acetone	440 J	350 J	160 J	380	340	170 J
Acetonitrile	310 U	220 U	240 U	290 U	320 U	260 U
Acrolein	160 UJ	110 UJ	120 UJ	150 UJ	160 UJ	130 UJ
Acrylonitrile	160 U	110 U	120 U	150 U	160 U	130 U
Benzene	7.8 U	5.6 U	6.0 UJ	2.3 J	2.1 J	6.5 U
Bromoform	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Bromomethane	7.8 U	5.6 U	6.0 U	7.3 UJ	8.0 UJ	6.5 U
Carbon disulfide	7.8 U	5.6 U	6.0 U	7.3 UJ	8.0 UJ	6.5 U
Carbon tetrachloride	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Chlorobenzene	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Chlorodibromomethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Chloroethane	7.8 UJ	5.6 UJ	6.0 U	7.3 UJ	8.0 UJ	6.5 UJ
Chloroform	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Chloromethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
cis-1,3-Dichloropropene	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Dibromomethane	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Dichlorobromomethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Dichlorodifluoromethane	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Ethyl methacrylate	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Ethylbenzene	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Ethylene Dibromide	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Iodomethane	7.8 U	5.6 U	6.0 UJ	1.5 J	8.0 UJ	6.5 U
Isobutanol	310 R	220 R	240 R	290 R	250 R	260 R
Methacrylonitrile	160 U	110 U	120 U	150 U	160 U	130 U
Methyl Ethyl Ketone	26 J	23 J	30 U	23 J	26 J	32 U
methyl isobutyl ketone	39 UJ	28 UJ	30 UJ	36 UJ	40 UJ	32 UJ
Methyl methacrylate	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Methylene Chloride	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Pentachloroethane	39 UJ	28 UJ	30 UJ	36 UJ	40 UJ	32 UJ
Propionitrile	160 U	110 U	120 U	150 U	160 U	130 U
Styrene	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Tetrachloroethene	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Toluene	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
trans-1,2-Dichloroethene	7.8 U	5.6 U	6.0 U	7.3 UJ	8.0 UJ	6.5 U
trans-1,3-Dichloropropene	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
trans-1,4-Dichloro-2-butene	16 U	11 U	12 U	15 U	16 U	13 U
Trichloroethene	7.8 U	5.6 U	6.0 UJ	7.3 U	8.0 U	6.5 U
Trichlorofluoromethane	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Vinyl acetate	16 U	11 U	12 U	15 U	16 U	13 U
Vinyl chloride	7.8 U	5.6 U	6.0 U	7.3 U	8.0 U	6.5 U
Xylenes Total	16 U	11 U	12 U	15 U	16 U	13 U

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS01	28SS02	28SS03	28SS04	28SS04D	28SS05
Lab Sample Number	680-22001-43	680-22001-44	680-22001-45	680-22012-53	680-22012-54	680-22001-46
Sampling Date	11/14/06	11/14/06	11/14/06	11/15/06	11/15/06	11/14/06
Matrix	Solid	Solid	Solid	Solid	Solid	Solid
Method - 8270C (ug/kg)						
11'-Biphenyl	550 U	430 U	450 U	510 U	500 U	470 U
1245-Tetrachlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
124-Trichlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
12-Dichlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
135-Trinitrobenzene	550 UJ	430 UJ	450 UJ	510 U	500 U	470 U
13-Dichlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
13-Dinitrobenzene	550 U	430 U	450 U	510 U	500 U	470 U
14-Dichlorobenzene	550 U	430 U	450 UJ	510 UJ	500 UJ	470 U
14-Dioxane	550 U	430 U	450 U	510 U	500 U	470 UJ
14-Naphthoquinone	550 U	430 U	450 U	510 U	500 U	470 U
1-Naphthylamine	550 U	430 U	450 U	510 U	500 U	470 U
2346-Tetrachlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
245-Trichlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
246-Trichlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
24-Dichlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
24-Dimethylphenol	550 U	430 U	450 U	510 U	500 U	470 U
24-Dinitrophenol	2900 UJ	2200 UJ	2300 U	2600 UJ	2600 UJ	2400 U
24-Dinitrotoluene	550 U	430 U	450 U	510 U	500 U	470 U
26-Dichlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
26-Dinitrotoluene	550 U	430 U	450 U	510 U	500 U	470 U
2-Acetylaminofluorene	550 U	430 U	450 U	510 U	500 U	470 U
2-Chloronaphthalene	550 U	430 U	450 U	510 U	500 U	470 U
2-Chlorophenol	550 U	430 U	450 U	510 U	500 U	470 U
2-Methylphenol	550 U	430 U	450 U	510 U	500 U	470 U
2-Naphthylamine	550 U	430 U	450 U	510 U	500 U	470 U
2-Nitroaniline	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
2-Nitrophenol	550 U	430 U	450 U	510 U	500 U	470 U
2-Picoline	550 U	430 U	450 U	510 U	500 U	470 U
2-Toluidine	550 U	430 U	450 U	510 U	500 U	470 U
3 & 4 Methylphenol	550 U	430 U	450 U	510 U	500 U	470 U
33'-Dichlorobenzidine	1100 U	860 U	890 U	1000 U	990 U	940 U
33'-Dimethylbenzidine	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
3-Methylcholanthrene	550 U	430 U	450 U	510 U	500 U	470 U
3-Nitroaniline	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
46-Dinitro-2-methylphenol	2900 U	2200 U	2300 U	2600 U	2600 UJ	2400 U
4-Aminobiphenyl	550 U	430 U	450 U	510 U	500 U	470 U
4-Bromophenyl phenyl ether	550 U	430 U	450 U	510 U	500 U	470 U
4-Chloro-3-methylphenol	550 U	430 U	450 U	510 U	500 U	470 U
4-Chloroaniline	1100 U	860 U	890 U	1000 U	990 U	940 U
4-Chlorophenyl phenyl ether	550 U	430 U	450 U	510 U	500 U	470 U
4-Nitroaniline	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
4-Nitrophenol	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
4-Nitroquinoline-1-oxide	5500 R	4300 R	4500 R	5100 R	5000 R	4700 R
712-Dimethylbenz(a)anthracene	550 U	430 U	450 U	510 U	500 U	470 U
Acetophenone	550 U	430 U	450 U	510 U	500 U	470 U
alphaalpha-Dimethyl phenethylamine	110000 U	87000 U	90000 UJ	100000 UJ	100000 UJ	96000 U
Aniline	1100 U	860 U	890 U	1000 U	990 U	940 U
Aramite Total	550 U	430 U	450 UJ	510 U	500 U	470 U
Benzyl alcohol	550 U	430 U	450 U	510 U	500 U	470 U
Bis(2-chloroethoxy)methane	550 U	430 U	450 U	510 U	500 U	470 U
Bis(2-chloroethyl)ether	550 U	430 U	450 U	510 U	500 U	470 U

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS01	28SS02	28SS03	28SS04	28SS04D	28SS05
Lab Sample Number	680-22001-43	680-22001-44	680-22001-45	680-22012-53	680-22012-54	680-22001-46
Sampling Date	11/14/06	11/14/06	11/14/06	11/15/06	11/15/06	11/14/06
Matrix	Solid	Solid	Solid	Solid	Solid	Solid
Method - 8270C (ug/kg)						
Bis(2-ethylhexyl) phthalate	550 U	430 U	450 U	510 U	500 U	470 U
bis(chloroisopropyl) ether	550 U	430 U	450 U	510 U	500 U	470 U
Butyl benzyl phthalate	550 U	430 U	450 U	510 U	500 U	470 U
Diallate	550 U	430 U	450 U	510 U	500 U	470 U
Dibenzofuran	550 U	430 U	450 U	510 U	500 U	470 U
Diethyl phthalate	550 U	430 U	450 U	510 U	500 U	470 U
Dimethoate	550 U	430 U	450 U	510 UJ	500 U	470 U
Dimethyl phthalate	550 U	430 U	450 U	510 U	500 U	470 U
Di-n-butyl phthalate	550 U	430 U	450 U	510 U	500 U	470 U
Di-n-octyl phthalate	550 U	430 U	450 U	510 U	500 U	470 U
Dinoseb	550 U	430 U	450 U	510 U	500 U	470 U
Disulfoton	550 U	430 U	450 U	510 U	500 U	470 U
Ethyl methanesulfonate	550 U	430 U	450 U	510 U	500 U	470 U
Famphur	550 U	430 U	450 U	510 U	500 U	470 U
Hexachlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
Hexachlorobutadiene	550 U	430 U	450 U	510 U	500 U	470 U
Hexachlorocyclopentadiene	550 U	430 U	450 U	510 U	500 U	470 U
Hexachloroethane	550 U	430 U	450 U	510 U	500 U	470 U
Hexachlorophene	290000 U	220000 U	230000 U	260000 U	260000 UJ	240000 UJ
Hexachloropropene	550 U	430 U	450 U	510 U	500 U	470 U
Isophorone	550 U	430 U	450 U	510 U	500 U	470 U
Isosafrole	550 U	430 U	450 U	510 U	500 U	470 U
Methapyrilene	110000 UJ	87000 UJ	90000 U	100000 U	100000 UJ	96000 U
Methyl methanesulfonate	550 U	430 U	450 U	510 U	500 U	470 U
Methyl parathion	550 U	430 U	450 U	510 U	500 UJ	470 U
Nitrobenzene	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitro-o-toluidine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosodiethylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosodimethylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosodi-n-butylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosodi-n-propylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosodiphenylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosomethylethylamine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosomorpholine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosopiperidine	550 U	430 U	450 U	510 U	500 U	470 U
N-Nitrosopyrrolidine	550 U	430 U	450 U	510 U	500 U	470 U
oo'o"-Triethylphosphorothioate	550 U	430 U	450 U	510 UJ	500 U	470 U
Parathion	550 U	430 U	450 U	510 U	500 U	470 U
p-Dimethylamino azobenzene	550 U	430 U	450 U	510 U	500 U	470 U
Pentachlorobenzene	550 U	430 U	450 U	510 U	500 U	470 U
Pentachloronitrobenzene	550 U	430 U	450 U	510 U	500 U	470 U
Pentachlorophenol	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
Phenacetin	550 U	430 U	450 U	510 U	500 U	470 U
Phenol	550 U	430 U	450 U	510 U	500 U	470 U
Phorate	550 U	430 U	450 U	510 UJ	500 U	470 U
p-Phenylene diamine	2900 U	2200 U	2300 U	2600 U	2600 U	2400 U
Pronamide	550 U	430 U	450 U	510 U	500 U	470 U
Pyridine	550 U	430 U	450 U	510 U	500 U	470 U
Safrole Total	550 U	430 U	450 U	510 U	500 U	470 U
Sulfotepp	550 U	430 U	450 U	510 U	500 U	470 U
Thionazin	550 U	430 U	450 U	510 U	500 U	470 U

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS01	28SS02	28SS03	28SS04	28SS04D	28SS05
Lab Sample Number	680-22001-43	680-22001-44	680-22001-45	680-22012-53	680-22012-54	680-22001-46
Sampling Date	11/14/06	11/14/06	11/14/06	11/15/06	11/15/06	11/14/06
Matrix	Solid	Solid	Solid	Solid	Solid	Solid
Method - 8270_LL (ug/kg)						
1-Methylnaphthalene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
2-Methylnaphthalene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Acenaphthene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Acenaphthylene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Anthracene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Benzo[a]anthracene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Benzo[a]pyrene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Benzo[b]fluoranthene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Benzo[ghi]perylene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Benzo[k]fluoranthene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Chrysene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Dibenz(ah)anthracene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Fluoranthene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Fluorene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Indeno[123-cd]pyrene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Naphthalene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Phenanthrene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Pyrene	11 U	8.7 U	9.1 U	10 U	10 U	9.6 U
Method - 8015B (mg/kg)						
Diesel Range Organics	6.3 U	11	4.5 U	5.1 U	5.0 U	4.7 U
Gasoline Range Organics	0.29 J	0.43	0.25 J	0.27 J	0.34	0.39
Method - 8081A_8082 (ug/kg)						
Aroclor 1016	55 U	43 U	45 U	51 U	50 U	47 U
Aroclor 1221	110 U	87 U	91 U	100 U	100 U	96 U
Aroclor 1232	55 U	43 U	45 U	51 U	50 U	47 U
Aroclor 1242	55 U	43 U	45 U	51 U	50 U	47 U
Aroclor 1248	55 U	43 U	45 U	51 U	50 U	47 U
Aroclor 1254	55 U	43 U	45 U	51 U	50 U	47 U
Aroclor 1260	55 U	43 U	45 U	51 U	50 U	47 U
Method - 6020 (mg/kg)						
Antimony	6.5 UJ	4.4 UJ	4.9 UJ	5.8 UJ	5.6 UJ	5.3 UJ
Arsenic	1.7 J	1.2 J	1.8 J	1.7 J	1.5 J	1.8 J
Barium	150 J	180 J	220 J	240	230	210 J
Beryllium	0.30 J	0.36 J	0.40 J	0.34 J	0.35 J	0.36 J
Cadmium	0.11 J	0.050 J	0.11 J	0.22 J	0.24 J	0.23 J
Chromium	15	21	20	18	17	20
Cobalt	13 J	10 J	15 J	12	12	14 J
Copper	49 J	26 J	58 J	47 J	44 J	56 J
Lead	4.9	1.3	4.1	5.0	4.7	5.8
Nickel	13 U	10 J	9.8 U	12 U	11 U	11 U
Selenium	0.40 J	2.2 U	0.40 J	0.43 J	0.31 J	0.37 J
Silver	3.3 U	2.2 U	2.4 U	0.32 J	0.33 J	0.29 J
Thallium	3.3 U	2.2 U	2.4 U	2.9 U	2.8 UJ	2.6 U
Tin	16 UJ	11 UJ	12 UJ	14 UJ	14 U	13 UJ
Vanadium	87 J	54 J	98 J	69	68	86 J
Zinc	47	28	51	68 J	68 J	77
Mercury - 7471A	0.039 J	0.040 J	0.20 J	0.13 J	0.12 J	0.12 J
Cyanide Total - 9012A	0.83 U	0.64 U	0.68 U	0.76 U	0.76 U	0.41 J
Sulfide - 9034	42 U	32 U	50	39 U	38 U	36 U

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS05D	28SB01-00	28SB02-00	28SB03-00	28SB04-00
Lab Sample Number	680-22001-47	680-22001-32	680-22001-35	680-22001-38	680-22001-41
Sampling Date	11/14/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid	Solid	Solid	Solid	Solid
Method - 8260B (ug/kg)					
1112-Tetrachloroethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
111-Trichloroethane	7.6 UJ	6.0 U	6.6 UJ	5.7 U	5.6 U
1122-Tetrachloroethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
112-Trichloroethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
11-Dichloroethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
11-Dichloroethene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
123-Trichloropropane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
12-Dibromo-3-Chloropropane	15 U	12 U	13 U	11 U	11 UJ
12-Dichloroethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
12-Dichloropropane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
2-Chloro-1,3-butadiene	7.6 UJ	6.0 U	6.6 UJ	5.7 U	5.6 UJ
2-Hexanone	38 UJ	30 U	33 UJ	29 U	28 U
3-Chloro-1-propene	7.6 U	6.0 UJ	6.6 U	5.7 UJ	5.6 UJ
Acetone	150 J	25 J	120 J	56 J	450 J
Acetonitrile	300 U	240 U	260 U	230 U	220 U
Acrolein	150 UJ	120 UJ	130 UJ	110 UJ	110 UJ
Acrylonitrile	150 U	120 U	130 U	110 U	110 U
Benzene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Bromoform	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Bromomethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Carbon disulfide	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Carbon tetrachloride	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Chlorobenzene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Chlorodibromomethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Chloroethane	7.6 UJ	6.0 U	6.6 UJ	5.7 U	5.6 U
Chloroform	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Chloromethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
cis-1,3-Dichloropropene	7.6 U	6.0 UJ	6.6 U	5.7 UJ	5.6 U
Dibromomethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Dichlorobromomethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Dichlorodifluoromethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Ethyl methacrylate	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Ethylbenzene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Ethylene Dibromide	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Iodomethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Isobutanol	300 R	240 U	210 J	230 U	220 R
Methacrylonitrile	150 U	120 U	130 U	110 U	110 U
Methyl Ethyl Ketone	38 U	30 U	33 U	29 U	24 J
methyl isobutyl ketone	38 UJ	30 U	33 UJ	29 U	28 U
Methyl methacrylate	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Methylene Chloride	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Pentachloroethane	38 UJ	30 UJ	33 UJ	29 UJ	28 U
Propionitrile	150 U	120 U	130 U	110 U	110 U
Styrene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Tetrachloroethene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 UJ
Toluene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
trans-1,2-Dichloroethene	7.6 U	6.0 UJ	6.6 U	5.7 U	5.6 U
trans-1,3-Dichloropropene	7.6 U	6.0 U	6.6 U	5.7 UJ	5.6 U
trans-1,4-Dichloro-2-butene	15 U	12 U	13 U	11 U	11 UJ
Trichloroethene	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Trichlorofluoromethane	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Vinyl acetate	15 U	12 U	13 U	11 U	11 U
Vinyl chloride	7.6 U	6.0 U	6.6 U	5.7 U	5.6 U
Xylenes Total	15 U	12 U	13 U	11 U	11 UJ

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS05D	28SB01-00	28SB02-00	28SB03-00	28SB04-00
Lab Sample Number	680-22001-47	680-22001-32	680-22001-35	680-22001-38	680-22001-41
Sampling Date	11/14/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid	Solid	Solid	Solid	Solid
Method - 8270C (ug/kg)					
11'-Biphenyl	500 U	350 U	410 U	400 U	380 U
1245-Tetrachlorobenzene	500 U	350 U	410 U	400 U	380 U
124-Trichlorobenzene	500 U	350 U	410 U	400 U	380 U
12-Dichlorobenzene	500 U	350 U	410 U	400 U	380 U
135-Trinitrobenzene	500 UJ	350 UJ	410 UJ	400 UJ	380 U
13-Dichlorobenzene	500 U	350 U	410 U	400 U	380 U
13-Dinitrobenzene	500 U	350 U	410 U	400 U	380 U
14-Dichlorobenzene	500 U	350 U	410 U	400 U	380 U
14-Dioxane	500 UJ	350 U	410 U	400 U	380 UJ
14-Naphthoquinone	500 U	350 U	410 U	400 U	380 U
1-Naphthylamine	500 U	350 U	410 U	400 U	380 U
2346-Tetrachlorophenol	500 U	350 U	410 U	400 U	380 U
245-Trichlorophenol	500 U	350 U	410 U	400 U	380 U
246-Trichlorophenol	500 U	350 U	410 U	400 U	380 U
24-Dichlorophenol	500 U	350 U	410 U	400 U	380 U
24-Dimethylphenol	500 U	350 U	410 U	400 U	380 U
24-Dinitrophenol	2600 U	1800 U	2100 U	2100 U	2000 U
24-Dinitrotoluene	500 U	350 U	410 U	400 U	380 U
26-Dichlorophenol	500 U	350 U	410 U	400 U	380 U
26-Dinitrotoluene	500 U	350 U	410 U	400 U	380 U
2-Acetylaminofluorene	500 U	350 U	410 U	400 U	380 U
2-Chloronaphthalene	500 U	350 U	410 U	400 U	380 U
2-Chlorophenol	500 U	350 U	410 U	400 U	380 U
2-Methylphenol	500 U	350 U	410 U	400 U	380 U
2-Naphthylamine	500 U	350 U	410 U	400 U	380 U
2-Nitroaniline	2600 U	1800 U	2100 U	2100 U	2000 U
2-Nitrophenol	500 U	350 U	410 U	400 U	380 U
2-Picoline	500 U	350 U	410 U	400 U	380 U
2-Toluidine	500 U	350 U	410 U	400 U	380 U
3 & 4 Methylphenol	500 U	350 U	410 U	400 U	380 U
33'-Dichlorobenzidine	1000 U	690 U	830 U	800 U	760 U
33'-Dimethylbenzidine	2600 U	1800 U	2100 U	2100 U	2000 U
3-Methylcholanthrene	500 U	350 U	410 U	400 U	380 U
3-Nitroaniline	2600 U	1800 U	2100 U	2100 U	2000 U
46-Dinitro-2-methylphenol	2600 U	1800 U	2100 U	2100 U	2000 U
4-Aminobiphenyl	500 U	350 U	410 U	400 U	380 U
4-Bromophenyl phenyl ether	500 U	350 U	410 U	400 U	380 U
4-Chloro-3-methylphenol	500 U	350 U	410 U	400 U	380 U
4-Chloroaniline	1000 U	690 U	830 U	800 U	760 U
4-Chlorophenyl phenyl ether	500 U	350 U	410 U	400 U	380 U
4-Nitroaniline	2600 U	1800 U	2100 U	2100 U	2000 U
4-Nitrophenol	2600 U	1800 U	2100 U	2100 U	2000 U
4-Nitroquinoline-1-oxide	5000 R	3500 R	4100 R	4000 R	3800 R
712-Dimethylbenz(a)anthracene	500 U	350 U	410 U	400 U	380 U
Acetophenone	500 U	350 U	410 U	400 U	380 U
alphaalpha-Dimethyl phenethylamine	10000 UJ	70000 U	84000 U	81000 U	77000 U
Aniline	1000 U	690 U	830 U	800 U	760 U
Aramite Total	500 UJ	350 U	410 U	400 U	380 U
Benzyl alcohol	500 U	350 U	410 U	400 U	380 U
Bis(2-chloroethoxy)methane	500 U	350 U	410 U	400 U	380 U
Bis(2-chloroethyl)ether	500 U	350 U	410 U	400 U	380 U

SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SS05D	28SB01-00	28SB02-00	28SB03-00	28SB04-00
Lab Sample Number	680-22001-47	680-22001-32	680-22001-35	680-22001-38	680-22001-41
Sampling Date	11/14/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid	Solid	Solid	Solid	Solid
Method - 8270C (ug/kg)					
Bis(2-ethylhexyl) phthalate	500 U	350 U	140 J	76 J	380 U
bis(chloroisopropyl) ether	500 U	350 U	410 U	400 U	380 U
Butyl benzyl phthalate	500 U	350 U	410 U	400 U	380 U
Diallate	500 U	350 U	410 U	400 U	380 U
Dibenzofuran	500 U	350 U	410 U	400 U	380 U
Diethyl phthalate	500 U	350 U	410 U	400 U	380 U
Dimethoate	500 U	350 U	410 U	400 U	380 U
Dimethyl phthalate	500 U	350 U	410 U	400 U	380 U
Di-n-butyl phthalate	500 U	350 U	410 U	400 U	380 U
Di-n-octyl phthalate	500 U	350 U	410 U	400 U	380 U
Dinoseb	500 U	350 U	410 U	400 U	380 U
Disulfoton	500 U	350 U	410 U	400 U	380 U
Ethyl methanesulfonate	500 U	350 U	410 U	400 U	380 U
Famphur	500 U	350 U	410 U	400 U	380 U
Hexachlorobenzene	500 U	350 U	410 U	400 U	380 U
Hexachlorobutadiene	500 U	350 U	410 U	400 U	380 U
Hexachlorocyclopentadiene	500 U	350 U	410 U	400 U	380 U
Hexachloroethane	500 U	350 U	410 U	400 U	380 U
Hexachlorophene	260000 U	180000 R	210000 R	210000 R	200000 UJ
Hexachloropropene	500 U	350 U	410 U	400 U	380 U
Isophorone	500 U	350 U	410 U	400 U	380 U
Isosafrole	500 U	350 U	410 U	400 U	380 U
Methapyrilene	100000 U	70000 U	84000 U	81000 U	77000 U
Methyl methanesulfonate	500 U	350 U	410 U	400 U	380 U
Methyl parathion	500 U	350 U	410 U	400 U	380 U
Nitrobenzene	500 U	350 U	410 U	400 U	380 U
N-Nitro-o-toluidine	500 U	350 U	410 U	400 U	380 U
N-Nitrosodiethylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosodimethylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosodi-n-butylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosodi-n-propylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosodiphenylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosomethylethylamine	500 U	350 U	410 U	400 U	380 U
N-Nitrosomorpholine	500 U	350 U	410 U	400 U	380 U
N-Nitrosopiperidine	500 U	350 U	410 U	400 U	380 U
N-Nitrosopyrrolidine	500 U	350 U	410 U	400 U	380 U
oo'o"-Triethylphosphorothioate	500 U	350 U	410 U	400 U	380 U
Parathion	500 U	350 U	410 U	400 U	380 U
p-Dimethylamino azobenzene	500 U	350 U	410 U	400 U	380 U
Pentachlorobenzene	500 U	350 U	410 U	400 U	380 U
Pentachloronitrobenzene	500 U	350 U	410 U	400 U	380 U
Pentachlorophenol	2600 U	1800 U	2100 U	2100 U	2000 U
Phenacetin	500 U	350 U	410 U	400 U	380 U
Phenol	500 U	350 U	410 U	400 U	380 U
Phorate	500 U	350 U	410 U	400 U	380 U
p-Phenylene diamine	2600 U	1800 U	2100 U	2100 U	2000 U
Pronamide	500 U	350 U	410 U	400 U	380 U
Pyridine	500 U	350 U	410 U	400 U	380 U
Safrole Total	500 U	350 U	410 U	400 U	380 U
Sulfotepp	500 U	350 U	410 U	400 U	380 U
Thionazin	500 U	350 U	410 U	400 U	380 U

**SURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR**

Sample ID	28SS05D	28SB01-00	28SB02-00	28SB03-00	28SB04-00
Lab Sample Number	680-22001-47	680-22001-32	680-22001-35	680-22001-38	680-22001-41
Sampling Date	11/14/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid	Solid	Solid	Solid	Solid
Method - 8270_LL (ug/kg)					
1-Methylnaphthalene	10 U	7.0 U	42 U	41 U	7.8 U
2-Methylnaphthalene	10 U	7.0 U	42 U	41 U	7.8 U
Acenaphthene	10 U	7.0 U	42 U	41 U	7.8 U
Acenaphthylene	10 U	7.0 U	42 U	41 U	7.8 U
Anthracene	10 U	7.0 U	42 U	41 U	7.8 U
Benzo[a]anthracene	10 U	7.0 U	11 J	41 U	2.0 J
Benzo[a]pyrene	10 U	7.0 U	42 U	41 U	7.8 U
Benzo[b]fluoranthene	10 U	7.0 U	42 U	41 U	7.8 U
Benzo[ghi]perylene	10 U	7.0 U	42 U	41 U	7.8 U
Benzo[k]fluoranthene	10 U	7.0 U	42 U	41 U	7.8 U
Chrysene	10 U	1.1 J	11 J	41 U	3.0 J
Dibenz(ah)anthracene	10 U	7.0 U	42 U	41 U	7.8 U
Fluoranthene	10 U	1.5 U	42 U	41 U	7.8 U
Fluorene	10 U	7.0 U	42 U	41 U	7.8 U
Indeno[123-cd]pyrene	10 U	7.0 U	42 U	41 U	7.8 U
Naphthalene	10 U	7.0 U	42 U	41 U	7.8 U
Phenanthrene	10 U	7.0 U	42 U	41 U	7.8 U
Pyrene	2.1 J	1.6 J	14 J	9.8 J	3.4 J
Method - 8015B (mg/kg)					
Diesel Range Organics	5.7 U	3.5 U	5.3 U	4.0 U	5.2 U
Gasoline Range Organics	0.28 J	0.24 U	0.13 J	0.13 J	0.16 J
Method - 8081A_8082 (ug/kg)					
Aroclor 1016	50 U	35 U	42 U	40 U	38 U
Aroclor 1221	100 U	70 U	84 U	81 U	78 U
Aroclor 1232	50 U	35 U	42 U	40 U	38 U
Aroclor 1242	50 U	35 U	42 U	40 U	38 U
Aroclor 1248	50 U	35 U	42 U	40 U	38 U
Aroclor 1254	50 U	35 U	42 U	40 U	38 U
Aroclor 1260	50 U	49	510	180	21 J
Method - 6020 (mg/kg)					
Antimony	5.4 UJ	3.9 UJ	1.2 J	1.2 J	4.6 UJ
Arsenic	2.4 J	1.4 J	2.7	1.9 J	3.2
Barium	230 J	980 J	270 J	220 J	120 J
Beryllium	0.39 J	0.56 J	0.43 J	0.40 J	0.25 J
Cadmium	0.25 J	0.18 J	2.2 J	1.2 J	0.30 J
Chromium	22	11 J	27 J	31	19
Cobalt	16 J	7.3	7.9	8.3 J	12 J
Copper	63 J	19 J	84 J	67 J	47 J
Lead	6.5	4.4 J	54 J	55	9.8
Nickel	11 J	5.9 J	11 J	12 J	9.2 U
Selenium	0.39 J	2.0 U	0.79 J	0.55 J	0.25 J
Silver	0.30 J	1.4 J	19 J	16 J	1.4 J
Thallium	0.17 J	2.0 U	2.3 U	2.3 U	2.3 U
Tin	13 UJ	9.8 UJ	46 J	34	11 UJ
Vanadium	110 J	35 J	45 J	45 J	64 J
Zinc	86	36 J	300 J	160	77
Mercury - 7471A	0.080 J	0.70 J	5.1 J	8.0	0.21 J
Cyanide Total - 9012A	0.74 U	0.52 U	0.62 U	0.60 U	0.56 U
Sulfide - 9034	38	26 U	33	47	29 U

**SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR**

Sample ID	28SB01-03	28SB01-05	28SB02-02	28SB02-03	28SB03-01	28SB03-03	28SB04-01
Lab Sample Number	680-22001-33	680-22001-34	680-22001-36	680-22001-37	680-22001-39	680-22001-40	680-22001-42
Sampling Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid						
Method - 8260B (ug/kg)							
1112-Tetrachloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
111-Trichloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 UJ	5.2 U
1122-Tetrachloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 UJ
112-Trichloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
11-Dichloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
11-Dichloroethene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
123-Trichloropropane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
12-Dibromo-3-Chloropropane	9.6 U	8.6 U	7.9 U	8.8 U	8.9 U	11 U	10 UJ
12-Dichloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
12-Dichloropropane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
2-Chloro-1,3-butadiene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 UJ	5.2 U
2-Hexanone	24 U	21 U	20 U	22 U	22 U	28 UJ	26 UJ
3-Chloro-1-propene	4.8 UJ	4.3 UJ	4.0 UJ	4.4 UJ	4.4 UJ	5.6 U	5.2 U
Acetone	48 U	43 U	40 U	44 U	17 J	24 J	52 UJ
Acetonitrile	190 U	170 U	160 U	180 U	180 U	220 U	210 U
Acrolein	96 UJ	86 UJ	79 UJ	88 UJ	89 UJ	110 UJ	100 UJ
Acrylonitrile	96 U	86 U	79 U	88 U	89 U	110 U	100 U
Benzene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Bromoform	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Bromomethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Carbon disulfide	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Carbon tetrachloride	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Chlorobenzene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Chlorodibromomethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Chloroethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 UJ	5.2 UJ
Chloroform	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Chloromethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
cis-1,3-Dichloropropene	4.8 UJ	4.3 UJ	4.0 UJ	4.4 UJ	4.4 UJ	5.6 U	5.2 U
Dibromomethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Dichlorobromomethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Dichlorodifluoromethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Ethyl methacrylate	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Ethylbenzene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Ethylene Dibromide	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Iodomethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Isobutanol	190 U	170 U	160 U	180 U	180 U	220 R	210 R
Methacrylonitrile	96 U	86 U	79 U	88 U	89 U	110 U	100 U
Methyl Ethyl Ketone	24 U	21 U	20 U	22 U	22 U	28 U	26 U
methyl isobutyl ketone	24 U	21 U	20 U	22 U	22 U	28 UJ	26 UJ
Methyl methacrylate	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Methylene Chloride	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Pentachloroethane	24 UJ	21 UJ	20 UJ	22 UJ	22 UJ	28 UJ	26 UJ
Propionitrile	96 U	86 U	79 U	88 U	89 U	110 U	100 U
Styrene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Tetrachloroethene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Toluene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
trans-1,2-Dichloroethene	4.8 UJ	4.3 UJ	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
trans-1,3-Dichloropropene	4.8 U	4.3 U	4.0 UJ	4.4 UJ	4.4 UJ	5.6 U	5.2 U
trans-1,4-Dichloro-2-butene	9.6 U	8.6 U	7.9 U	8.8 U	8.9 U	11 U	10 U
Trichloroethene	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Trichlorofluoromethane	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Vinyl acetate	9.6 U	8.6 U	7.9 U	8.8 U	8.9 U	11 U	10 U
Vinyl chloride	4.8 U	4.3 U	4.0 U	4.4 U	4.4 U	5.6 U	5.2 U
Xylenes Total	9.6 U	8.6 U	7.9 U	8.8 U	8.9 U	11 U	10 U

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SB01-03	28SB01-05	28SB02-02	28SB02-03	28SB03-01	28SB03-03	28SB04-01
Lab Sample Number	680-22001-33	680-22001-34	680-22001-36	680-22001-37	680-22001-39	680-22001-40	680-22001-42
Sampling Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid						
Method - 8270C (ug/kg)							
11'-Biphenyl	350 U	340 U	360 U	410 U	370 U	390 U	360 U
1245-Tetrachlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
124-Trichlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
12-Dichlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
135-Trinitrobenzene	350 UJ	340 UJ	360 U	410 UJ	370 UJ	390 UJ	360 UJ
13-Dichlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
13-Dinitrobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
14-Dichlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
14-Dioxane	350 U	340 U	360 UJ	410 U	370 U	390 U	360 U
14-Naphthoquinone	350 U	340 U	360 U	410 U	370 U	390 U	360 U
1-Naphthylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2346-Tetrachlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
245-Trichlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
246-Trichlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
24-Dichlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
24-Dimethylphenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
24-Dinitrophenol	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
24-Dinitrotoluene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
26-Dichlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
26-Dinitrotoluene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Acetylaminofluorene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Chloronaphthalene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Chlorophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Methylphenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Naphthylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Nitroaniline	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
2-Nitrophenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Picoline	350 U	340 U	360 U	410 U	370 U	390 U	360 U
2-Toluidine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
3 & 4 Methylphenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
33'-Dichlorobenzidine	710 U	690 U	730 U	820 U	740 U	780 U	720 U
33'-Dimethylbenzidine	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
3-Methylcholanthrene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
3-Nitroaniline	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
46-Dinitro-2-methylphenol	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
4-Aminobiphenyl	350 U	340 U	360 U	410 U	370 U	390 U	360 U
4-Bromophenyl phenyl ether	350 U	340 U	360 U	410 U	370 U	390 U	360 U
4-Chloro-3-methylphenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
4-Chloroaniline	710 U	690 U	730 U	820 U	740 U	780 U	720 U
4-Chlorophenyl phenyl ether	350 U	340 U	360 U	410 U	370 U	390 U	360 U
4-Nitroaniline	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
4-Nitrophenol	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
4-Nitroquinoline-1-oxide	3500 R	3400 R	3600 R	4100 R	3700 R	3900 R	3600 R
712-Dimethylbenz(a)anthracene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Acetophenone	350 U	340 U	360 U	410 U	370 U	390 U	360 U
alphaalpha-Dimethyl phenethylamine	72000 U	70000 U	74000 U	83000 U	75000 U	79000 U	73000 U
Aniline	710 U	690 U	730 U	820 U	740 U	780 U	720 U
Aramite Total	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Benzyl alcohol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Bis(2-chloroethoxy)methane	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Bis(2-chloroethyl)ether	350 U	340 U	360 U	410 U	370 U	390 U	360 U

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDU WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SB01-03	28SB01-05	28SB02-02	28SB02-03	28SB03-01	28SB03-03	28SB04-01
Lab Sample Number	680-22001-33	680-22001-34	680-22001-36	680-22001-37	680-22001-39	680-22001-40	680-22001-42
Sampling Date	11/13/06						
Matrix	Solid						
Method - 8270C (ug/kg)							
Bis(2-ethylhexyl) phthalate	350 U	340 U	360 U	410 U	370 U	100 J	360 U
bis(chloroisopropyl) ether	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Butyl benzyl phthalate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Diallate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Dibenzofuran	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Diethyl phthalate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Dimethoate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Dimethyl phthalate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Di-n-butyl phthalate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Di-n-octyl phthalate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Dinoseb	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Disulfoton	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Ethyl methanesulfonate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Famphur	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Hexachlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Hexachlorobutadiene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Hexachlorocyclopentadiene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Hexachloroethane	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Hexachlorophene	180000 R	180000 R	190000 UJ	210000 R	190000 R	200000 R	190000 R
Hexachloropropene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Isophorone	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Isosafrole	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Methapyrilene	72000 U	70000 U	74000 U	83000 U	75000 U	79000 U	73000 U
Methyl methanesulfonate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Methyl parathion	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Nitrobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitro-o-toluidine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosodiethylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosodimethylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosodi-n-butylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosodi-n-propylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosodiphenylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosomethylethylamine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosomorpholine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosopiperidine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
N-Nitrosopyrrolidine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
oo'o''-Triethylphosphorothioate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Parathion	350 U	340 U	360 U	410 U	370 U	390 U	360 U
p-Dimethylamino azobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Pentachlorobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Pentachloronitrobenzene	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Pentachlorophenol	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
Phenacetin	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Phenol	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Phorate	350 U	340 U	360 U	410 U	370 U	390 U	360 U
p-Phenylene diamine	1800 U	1800 U	1900 U	2100 U	1900 U	2000 U	1900 U
Pronamide	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Pyridine	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Safrole Total	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Sulfotepp	350 U	340 U	360 U	410 U	370 U	390 U	360 U
Thionazin	350 U	340 U	360 U	410 U	370 U	390 U	360 U

SUBSURFACE SOIL ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28SB01-03	28SB01-05	28SB02-02	28SB02-03	28SB03-01	28SB03-03	28SB04-01
Lab Sample Number	680-22001-33	680-22001-34	680-22001-36	680-22001-37	680-22001-39	680-22001-40	680-22001-42
Sampling Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
Matrix	Solid						
Method - 8270_LL (ug/kg)							
1-Methylnaphthalene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 R	7.3 U
2-Methylnaphthalene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 R	7.3 U
Acenaphthene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Acenaphthylene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Anthracene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Benzo[a]anthracene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Benzo[a]pyrene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Benzo[b]fluoranthene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Benzo[ghi]perylene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Benzo[k]fluoranthene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Chrysene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Dibenz(ah)anthracene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Fluoranthene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Fluorene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Indeno[123-cd]pyrene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Naphthalene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 R	7.3 U
Phenanthrene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Pyrene	7.2 U	7.0 U	7.4 U	8.3 U	7.5 U	7.9 U	7.3 U
Method - 8015B (mg/kg)							
Diesel Range Organics	3.5 U	3.4 U	3.6 U	4.1 U	3.7 U	3.9 U	3.6 U
Gasoline Range Organics	0.23 U	0.27 U	0.23 U	0.20 U	0.27 U	0.19 U	0.079 J
Method - 8081A_8082 (ug/kg)							
Aroclor 1016	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Aroclor 1221	71 U	70 U	74 U	83 U	74 U	78 U	73 U
Aroclor 1232	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Aroclor 1242	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Aroclor 1248	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Aroclor 1254	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Aroclor 1260	35 U	34 U	36 U	41 U	37 U	39 U	36 U
Method - 6020 (mg/kg)							
Antimony	4.1 UJ	3.7 UJ	4.1 UJ	4.8 UJ	4.1 UJ	4.3 UJ	4.2 UJ
Arsenic	0.86 J	0.55 J	1.4 J	1.2 J	1.0 J	2.3	1.4 J
Barium	250 J	210 J	230 J	64 J	250 J	380 J	230 J
Beryllium	0.78 J	0.46 J	0.51 J	0.35 J	0.57 J	0.64 J	0.61 J
Cadmium	1.0 U	0.92 U	1.0 U	1.2 U	1.0 U	1.1 U	1.1 U
Chromium	1.4 J	1.1 J	6.2 J	5.7 J	11	21	8.1
Cobalt	4.9	7.1	6.7	6.4	7.9 J	12 J	7.3 J
Copper	4.1 UJ	5.4 R	11 R	4.8 U	14 R	27 B	10 R
Lead	0.27 J	0.47 J	0.83 J	1.6 J	1.1	4.4 J	1.1
Nickel	0.98 J	1.2 J	3.4 J	2.6 J	8.2 U	8.6 UJ	8.4 J
Selenium	2.1 U	1.8 U	2.0 U	0.24 J	2.0 U	0.39 J	2.1 U
Silver	2.1 U	1.8 U	2.0 U	2.4 U	2.0 U	2.1 U	2.1 U
Thallium	2.1 U	1.8 U	2.0 U	2.4 U	2.0 U	2.1 U	2.1 U
Tin	10 UJ	9.2 UJ	10 UJ	12 UJ	10 UJ	11 UJ	11 UJ
Vanadium	26 J	33 J	31 J	23 J	31 J	53 J	28 J
Zinc	27 J	47 J	19 J	7.9 J	17	21	19
Mercury - 7471A	0.021 J	0.020 UJ	0.014 J	0.019 J	0.021 J	0.016 J	0.030 J
Cyanide Total - 9012A	0.53 U	0.50 U	0.48 U	0.61 U	0.55 U	0.57 U	0.54 U
Sulfide - 9034	27 U	210	28 U	46	28 U	29 U	35

GROUNDWATER ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28TW01	28TW02	28TW02D	28TW03
Lab Sample Number	680-22139-45	680-22012-50	680-22012-51	680-22060-39
Sampling Date	11/17/06	11/14/06	11/14/06	11/15/06
Matrix	Water	Water	Water	Water
Method - 8260B (ug/L)				
1112-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
111-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1122-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
112-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
11-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
11-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
123-Trichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
12-Dibromo-3-Chloropropane	1.0 U	1.0 U	1.0 U	1.0 U
12-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
12-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloro-1,3-butadiene	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	10 U	10 U	10 U	10 U
3-Chloro-1-propene	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	9.6 J	25 U	25 U	25 U
Acetonitrile	40 U	40 U	40 U	40 U
Acrolein	20 R	20 R	20 R	20 R
Acrylonitrile	20 U	20 U	20 U	20 U
Benzene	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 UJ	1.0 U	1.0 U	1.0 U
Carbon disulfide	2.0 U	2.0 U	2.0 U	2.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U
Chlorodibromomethane	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
Dibromomethane	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorobromomethane	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	1.0 U	1.0 U	1.0 U	1.0 U
Ethyl methacrylate	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U
Ethylene Dibromide	1.0 U	1.0 U	1.0 U	1.0 U
Iodomethane	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isobutanol	40 R	40 R	40 R	40 R
Methacrylonitrile	20 U	20 U	20 U	20 U
Methyl Ethyl Ketone	10 U	10 U	10 U	10 U
methyl isobutyl ketone	10 U	10 U	10 U	10 U
Methyl methacrylate	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5.0 U	5.0 U	5.0 U	5.0 U
Pentachloroethane	5.0 U	5.0 U	5.0 U	5.0 U
Propionitrile	20 U	20 U	20 U	20 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,4-Dichloro-2-butene	2.0 U	2.0 U	2.0 U	2.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl acetate	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes Total	2.0 U	2.0 U	2.0 U	2.0 U

GROUNDWATER ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28TW01	28TW02	28TW02D	28TW03
Lab Sample Number	680-22139-45	680-22012-50	680-22012-51	680-22060-39
Sampling Date	11/17/06	11/14/06	11/14/06	11/15/06
Matrix	Water	Water	Water	Water
Method - 8270C (ug/L)				
11'-Biphenyl	10 U	10 U	10 U	10 U
1245-Tetrachlorobenzene	10 U	10 U	10 U	10 U
124-Trichlorobenzene	10 U	10 U	10 U	10 U
12-Dichlorobenzene	10 U	10 U	10 U	10 U
135-Trinitrobenzene	10 UJ	10 UJ	10 UJ	10 UJ
13-Dichlorobenzene	10 U	10 U	10 U	10 U
13-Dinitrobenzene	10 U	10 U	10 U	10 U
14-Dichlorobenzene	10 U	10 U	10 U	10 U
14-Dioxane	10 U	10 U	10 U	10 U
14-Naphthoquinone	10 UJ	10 U	10 U	10 U
1-Naphthylamine	10 U	10 U	10 U	10 U
2346-Tetrachlorophenol	10 U	10 U	10 U	10 U
245-Trichlorophenol	10 U	10 U	10 U	10 U
246-Trichlorophenol	10 U	10 U	10 U	10 U
24-Dichlorophenol	10 U	10 U	10 U	10 U
24-Dimethylphenol	10 U	10 U	10 U	10 U
24-Dinitrophenol	50 U	50 U	50 U	50 U
24-Dinitrotoluene	10 U	10 U	10 U	10 U
26-Dichlorophenol	10 U	10 U	10 U	10 U
26-Dinitrotoluene	10 U	10 U	10 U	10 U
2-Acetylaminofluorene	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U	10 U
2-Naphthylamine	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	50 U	50 U
2-Nitrophenol	10 U	10 U	10 U	10 U
2-Picoline	10 U	10 UJ	10 UJ	10 U
2-Toluidine	10 U	10 U	10 U	10 U
3 & 4 Methylphenol	10 U	10 U	10 U	10 U
33'-Dichlorobenzidine	20 U	20 UJ	20 U	20 U
33'-Dimethylbenzidine	20 U	20 U	20 U	20 U
3-Methylcholanthrene	10 U	10 U	10 U	10 U
3-Nitroaniline	50 U	50 U	50 U	50 U
46-Dinitro-2-methylphenol	50 U	50 U	50 U	50 U
4-Aminobiphenyl	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U
4-Chloroaniline	20 U	20 U	20 U	20 U
4-Chlorophenyl phenyl ether	10 U	10 U	10 U	10 U
4-Nitroaniline	50 U	50 U	50 U	50 U
4-Nitrophenol	50 U	50 U	50 U	50 U
4-Nitroquinoline-1-oxide	20 R	20 U	20 U	20 R
712-Dimethylbenz(a)anthracene	10 U	10 U	10 U	10 U
Acetophenone	10 U	10 U	10 U	10 U
alphaalpha-Dimethyl phenethylamine	2000 U	2000 UJ	2000 UJ	2000 U
Aniline	20 U	20 U	20 U	20 U
Aramite Total	10 UJ	10 U	10 U	10 U
Benzyl alcohol	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl) phthalate	10 U	10 U	10 U	10 U

GROUNDWATER ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28TW01	28TW02	28TW02D	28TW03
Lab Sample Number	680-22139-45	680-22012-50	680-22012-51	680-22060-39
Sampling Date	11/17/06	11/14/06	11/14/06	11/15/06
Matrix	Water	Water	Water	Water
Method - 8270C (ug/L)				
bis(chloroisopropyl) ether	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	10 U	10 U	10 U	10 U
Diallate	10 UJ	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	10 U	10 U
Diethyl phthalate	10 U	10 U	10 U	10 U
Dimethoate	10 U	10 U	10 U	10 UJ
Dimethyl phthalate	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	10 U	10 U	10 U	10 U
Dinoseb	10 U	10 U	10 U	10 U
Disulfoton	10 U	10 U	10 U	10 U
Ethyl methanesulfonate	10 U	10 U	10 U	10 U
Famphur	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U
Hexachlorophene	5000 U	5000 U	5000 U	5000 UJ
Hexachloropropene	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U
Isosafrole	10 U	10 U	10 U	10 U
Methapyrilene	2000 UJ	2000 U	2000 U	2000 U
Methyl methanesulfonate	10 U	10 U	10 U	10 U
Methyl parathion	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U
N-Nitro-o-toluidine	10 U	10 U	10 U	10 U
N-Nitrosodiethylamine	10 U	10 U	10 U	10 U
N-Nitrosodimethylamine	10 U	10 U	10 U	10 U
N-Nitrosodi-n-butylamine	10 U	10 U	10 U	10 U
N-Nitrosodi-n-propylamine	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	10 U	10 U	10 U	10 U
N-Nitrosomethylethylamine	10 U	10 U	10 U	10 U
N-Nitrosomorpholine	10 U	10 U	10 U	10 U
N-Nitrosopiperidine	10 U	10 U	10 U	10 U
N-Nitrosopyrrolidine	10 U	10 U	10 U	10 U
oo'o"-Triethylphosphorothioate	10 U	10 U	10 U	10 U
Parathion	10 U	10 U	10 U	10 U
p-Dimethylamino azobenzene	10 U	10 U	10 U	10 U
Pentachlorobenzene	10 U	10 U	10 U	10 U
Pentachloronitrobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	50 U	50 U	50 U	50 U
Phenacetin	10 U	10 U	10 U	10 U
Phenol	10 U	10 U	10 U	10 U
Phorate	10 U	10 U	10 U	10 UJ
p-Phenylene diamine	2000 U	2000 U	2000 U	2000 U
Pronamide	10 U	10 U	10 U	10 U
Pyridine	50 U	50 U	50 U	50 U
Safrole Total	10 U	10 U	10 U	10 U
Sulfotepp	10 U	10 U	10 U	10 U
Thionazin	10 U	10 U	10 U	10 U

GROUNDWATER ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28TW01	28TW02	28TW02D	28TW03
Lab Sample Number	680-22139-45	680-22012-50	680-22012-51	680-22060-39
Sampling Date	11/17/06	11/14/06	11/14/06	11/15/06
Matrix	Water	Water	Water	Water
Method - 8270_LL (ug/L)				
1-Methylnaphthalene	0.19 UJ	0.20 U	0.20 U	0.20 U
2-Methylnaphthalene	0.19 U	0.20 U	0.20 U	0.20 U
Acenaphthene	0.19 UJ	0.20 U	0.20 U	0.20 U
Acenaphthylene	0.19 U	0.20 U	0.20 U	0.20 U
Anthracene	0.19 U	0.20 U	0.20 U	0.20 U
Benzo[a]anthracene	0.19 UJ	0.20 U	0.20 U	0.20 U
Benzo[a]pyrene	0.19 U	0.20 U	0.20 U	0.20 U
Benzo[b]fluoranthene	0.19 UJ	0.20 U	0.20 U	0.20 U
Benzo[ghi]perylene	0.19 UJ	0.20 U	0.20 U	0.20 U
Benzo[k]fluoranthene	0.19 UJ	0.20 U	0.20 U	0.20 U
Chrysene	0.19 U	0.20 U	0.20 U	0.20 U
Dibenz(ah)anthracene	0.19 U	0.20 U	0.20 U	0.20 U
Fluoranthene	0.19 U	0.20 U	0.20 U	0.20 U
Fluorene	0.19 UJ	0.20 U	0.20 U	0.20 U
Indeno[123-cd]pyrene	0.19 U	0.20 U	0.20 U	0.20 U
Naphthalene	0.19 U	0.20 U	0.20 U	0.20 U
Phenanthrene	0.19 U	0.20 U	0.20 U	0.20 U
Pyrene	0.19 U	0.20 U	0.20 U	0.20 U
Method - 8081A_8082 (ug/L)				
Aroclor 1016	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Aroclor 1221	2.0 UJ	2.0 UJ	2.0 UJ	2.0 R
Aroclor 1232	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Aroclor 1242	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Aroclor 1248	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Aroclor 1254	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Aroclor 1260	1.0 UJ	1.0 UJ	1.0 UJ	1.0 R
Method - 8015B (mg/L)				
Diesel Range Organics	0.14	0.10 U	0.096 U	0.82
Gasoline Range Organics	0.016 J	0.050 U	0.050 U	0.050 U
Method - 6020 (ug/L)				
Antimony	20 U	20 U	20 U	20 U
Arsenic	29	10 U	10 U	7.0 J
Barium	12000	350	340	1400
Beryllium	78	4.0 U	4.0 U	2.0 J
Cadmium	4.1 J	5.0 U	5.0 U	0.30 J
Chromium	1700	10 U	10 U	61
Cobalt	550 J	0.58 J	0.62 J	26
Copper	380 J	20 U	20 U	29 R
Lead	45	5.0 U	5.0 U	4.5 J
Nickel	280	40 U	40 U	40 U
Selenium	2.3 J	10 U	10 U	3.5 J
Silver	5.1 J	10 U	10 U	10 U
Thallium	10 U	10 U	10 U	10 U
Tin	26 UJ	10 UJ	10 UJ	3.1 J
Vanadium	820	10 U	10 U	130
Zinc	1400 J	5.8 J	12 J	61 J
Mercury - 7470A	4.6	0.20 U	0.20 U	0.40 U
Cyanide Total - 9012A (mg/L)	0.010 U	0.010 U	0.010 U	0.010 U
Sulfide - 9034 (mg/L)	1.1	1.0 U	1.0 U	1.0 U

APPENDIX B

**GROUNDWATER ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR**

Sample ID	28TW01	28TW02	28TW02D	28TW03
Lab Sample Number	680-22139-45	680-22012-50	680-22012-51	680-22060-39
Sampling Date	11/17/06	11/14/06	11/14/06	11/15/06
Matrix	Water	Water	Water	Water
Method - 6020 Dissolved (ug/L)				
Antimony Dissolved	1.2 J	20 U	20 U	20 U
Arsenic Dissolved	1.5 J	1.6 J	0.85 J	3.6 J
Barium Dissolved	40	340 J	330 J	710 J
Beryllium Dissolved	4.0 U	4.0 U	4.0 U	0.16 J
Cadmium Dissolved	5.0 U	5.0 U	5.0 U	5.0 U
Chromium Dissolved	1.6 J	10 U	10 U	5.5 J
Cobalt Dissolved	13	2.9 J	0.73 J	13
Copper Dissolved	20 UJ	20 U	20 U	20 U
Lead Dissolved	5.0 U	5.0 U	5.0 U	5.0 U
Nickel Dissolved	40 U	1.2 J	0.51 J	4.0 J
Selenium Dissolved	1.5 J	10 U	10 U	1.8 J
Silver Dissolved	10 U	10 U	10 U	10 U
Thallium Dissolved	10 U	10 U	10 U	10 U
Tin Dissolved	10 U	10 UJ	10 UJ	10 UJ
Vanadium Dissolved	25	10 U	10 U	19
Zinc Dissolved	7.8 J	7.2 J	10 J	15 J
Mercury Dissolved - 7470A	0.20 U	0.20 U	0.20 U	0.20 U

TRIP BLANKS ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	28TB01	28TB02
Lab Sample Number	680-22001-48	680-22012-52
Sampling Date	11/14/06	11/15/2006 15:00
Matrix	Water	Water
Method - 8260B (ug/kg)		
1112-Tetrachloroethane	1.0 U	1.0 U
111-Trichloroethane	1.0 U	1.0 U
1122-Tetrachloroethane	1.0 U	1.0 U
112-Trichloroethane	1.0 U	1.0 U
11-Dichloroethane	1.0 U	1.0 U
11-Dichloroethene	1.0 U	1.0 U
123-Trichloropropane	1.0 U	1.0 U
12-Dibromo-3-Chloropropane	1.0 U	1.0 U
12-Dichloroethane	1.0 U	1.0 U
12-Dichloropropane	1.0 U	1.0 U
2-Chloro-1,3-butadiene	1.0 U	1.0 U
2-Hexanone	10 U	10 U
3-Chloro-1-propene	1.0 U	1.0 U
Acetone	25 U	25 U
Acetonitrile	40 U	40 U
Acrolein	20 R	20 U
Acrylonitrile	20 U	20 U
Benzene	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U
Carbon disulfide	2.0 U	2.0 U
Carbon tetrachloride	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U
Chlorodibromomethane	1.0 U	1.0 U
Chloroethane	1.0 UJ	1.0 U
Chloroform	1.0 U	1.0 U
Chloromethane	1.0 UJ	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U
Dibromomethane	1.0 U	1.0 U
Dichlorobromomethane	1.0 U	1.0 U
Dichlorodifluoromethane	1.0 U	1.0 U
Ethyl methacrylate	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U
Ethylene Dibromide	1.0 U	1.0 U
Iodomethane	5.0 UJ	5.0 U
Isobutanol	40 R	40 U
Methacrylonitrile	20 U	20 U
Methyl Ethyl Ketone	10 U	10 U
methyl isobutyl ketone	10 U	10 U
Methyl methacrylate	1.0 U	1.0 U
Methylene Chloride	5.0 U	5.0 U
Pentachloroethane	5.0 U	5.0 U
Propionitrile	20 U	20 U
Styrene	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U
Toluene	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U
trans-1,4-Dichloro-2-butene	2.0 U	2.0 U
Trichloroethene	1.0 U	1.0 U
Trichlorofluoromethane	1.0 U	1.0 U
Vinyl acetate	2.0 UJ	2.0 U
Vinyl chloride	1.0 U	1.0 U
Xylenes Total	2.0 U	2.0 U
Method - 8015B (mg/kg)		
Gasoline Range Organics (GRO)-C6-C10	0.050 U	0.050 U

APPENDIX B

QA/QC ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL AVTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2006ER01	2006ER02	2006ER03	2006ER04	2006ER05	2006FB01	2006FB02
Lab Sample Number	680-22060-38	680-22139-1	680-22139-2	680-22139-6	680-22139-3	680-22139-4	680-22139-5
Sampling Date	11/13/2006	11/15/2006	11/15/2006	11/16/2006	11/17/2006	11/18/2006	11/18/2006
Matrix	Water	Water	Water	Water	Water	Water	Water
Method - 8260B (ug/L)							
1112-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
111-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1122-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
112-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
11-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
11-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
123-Trichloropropane	1.0 U	1.0 UJ	1.0 U				
12-Dibromo-3-Chloropropane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
12-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
12-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chloro-13-butadiene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Chloro-1-propene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Acetonitrile	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Acrolein	20 R	20 R	20 R	20 R	20 R	20 R	20 R
Acrylonitrile	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorodibromomethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.8
Chloroethane	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	160
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-13-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromomethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorobromomethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	18
Dichlorodifluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethyl methacrylate	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylene Dibromide	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Iodomethane	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isobutanol	40 R	40 R	40 R	40 R	40 R	40 R	40 R
Methacrylonitrile	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Methyl Ethyl Ketone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
methyl isobutyl ketone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl methacrylate	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Pentachloroethane	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Propionitrile	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	2.3	6.9	2.2	3.0	1.0 U	1.0 U
trans-12-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-13-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-14-Dichloro-2-butene	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl acetate	2.0 UJ	2.0 U	2.0 UJ				
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes Total	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

QA/QC ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL AVTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2006ER01	2006ER02	2006ER03	2006ER04	2006ER05	2006FB01	2006FB02
Lab Sample Number	680-22060-38	680-22139-1	680-22139-2	680-22139-6	680-22139-3	680-22139-4	680-22139-5
Sampling Date	11/13/2006	11/15/2006	11/15/2006	11/16/2006	11/17/2006	11/18/2006	11/18/2006
Matrix	Water	Water	Water	Water	Water	Water	Water
Method - 8270C (ug/L)							
11'-Biphenyl	9.4 UJ	10 UJ	10 U				
1245-Tetrachlorobenzene	9.4 UJ	10 UJ	10 U				
124-Trichlorobenzene	9.4 UJ	10 UJ	10 U	10 UJ	10 U	10 U	10 U
12-Dichlorobenzene	9.4 UJ	10 UJ	10 U				
135-Trinitrobenzene	9.4 UJ	10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 U
13-Dichlorobenzene	9.4 UJ	10 UJ	10 U				
13-Dinitrobenzene	9.4 UJ	10 UJ	10 U				
14-Dichlorobenzene	9.4 UJ	0.56 J	10 U	10 U	0.52 J	0.53 J	10 U
14-Dioxane	9.4 UJ	10 UJ	10 U				
14-Naphthoquinone	9.4 UJ	10 UJ	10 U	10 U	10 UJ	10 UJ	10 U
1-Naphthylamine	9.4 UJ	10 UJ	10 U				
2346-Tetrachlorophenol	9.4 UJ	10 UJ	10 U				
245-Trichlorophenol	9.4 UJ	10 UJ	10 U				
246-Trichlorophenol	9.4 UJ	10 UJ	10 U				
24-Dichlorophenol	9.4 UJ	10 UJ	10 U				
24-Dimethylphenol	9.4 UJ	10 UJ	10 U				
24-Dinitrophenol	47 UJ	50 UJ	50 U				
24-Dinitrotoluene	9.4 UJ	10 UJ	10 U				
26-Dichlorophenol	9.4 UJ	10 UJ	10 U				
26-Dinitrotoluene	9.4 UJ	10 UJ	10 U				
2-Acetylaminofluorene	9.4 UJ	10 UJ	10 U				
2-Chloronaphthalene	9.4 UJ	10 UJ	10 U				
2-Chlorophenol	9.4 UJ	10 UJ	10 U				
2-Methylphenol	9.4 UJ	10 UJ	10 U				
2-Naphthylamine	9.4 UJ	10 UJ	10 U				
2-Nitroaniline	47 UJ	50 UJ	50 U				
2-Nitrophenol	9.4 UJ	10 UJ	10 U				
2-Picoline	9.4 UJ	10 UJ	10 U	10 U	10 U	10 U	10 UJ
2-Toluidine	9.4 UJ	10 UJ	10 U				
3 & 4 Methylphenol	9.4 UJ	10 UJ	10 U				
33'-Dichlorobenzidine	19 UJ	20 UJ	20 U				
33'-Dimethylbenzidine	19 UJ	20 UJ	20 U				
3-Methylcholanthrene	9.4 UJ	10 UJ	10 U				
3-Nitroaniline	47 UJ	50 UJ	50 U				
46-Dinitro-2-methylphenol	47 UJ	50 UJ	50 U				
4-Aminobiphenyl	9.4 UJ	10 UJ	10 U				
4-Bromophenyl phenyl ether	9.4 UJ	10 UJ	10 U				
4-Chloro-3-methylphenol	9.4 UJ	10 UJ	10 U				
4-Chloroaniline	19 UJ	20 UJ	20 U				
4-Chlorophenyl phenyl ether	9.4 UJ	10 UJ	10 U				
4-Nitroaniline	47 UJ	50 UJ	50 U				
4-Nitrophenol	47 UJ	50 UJ	50 U				
4-Nitroquinoline-1-oxide	19 R	20 R	20 R	20 R	20 R	20 R	20 U
712-Dimethylbenz(a)anthracene	9.4 UJ	10 UJ	10 U				
Acetophenone	9.4 UJ	10 UJ	10 U				
alphaalpha-Dimethyl phenethylamine	1900 UJ	2000 UJ	2000 U				
Aniline	19 UJ	20 UJ	20 U				
Aramite Total	9.4 UJ	10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ
Benzyl alcohol	9.4 UJ	10 UJ	10 U				
Bis(2-chloroethoxy)methane	9.4 UJ	10 UJ	10 U				
Bis(2-chloroethyl)ether	9.4 UJ	10 UJ	10 U				
Bis(2-ethylhexyl) phthalate	9.4 UJ	10 UJ	10 U				
bis(chloroisopropyl) ether	9.4 UJ	10 UJ	10 U				

QA/QC ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL AVTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2006ER01	2006ER02	2006ER03	2006ER04	2006ER05	2006FB01	2006FB02
Lab Sample Number	680-22060-38	680-22139-1	680-22139-2	680-22139-6	680-22139-3	680-22139-4	680-22139-5
Sampling Date	11/13/2006	11/15/2006	11/15/2006	11/16/2006	11/17/2006	11/18/2006	11/18/2006
Matrix	Water						
Method - 8270C (ug/L)							
Butyl benzyl phthalate	9.4 UJ	10 UJ	10 U				
Diallate	9.4 UJ	10 UJ	10 U	10 U	10 UJ	10 UJ	10 U
Dibenzofuran	9.4 UJ	10 UJ	10 U				
Diethyl phthalate	0.82 J	10 UJ	10 U	10 U	10 U	0.69 J	10 U
Dimethoate	9.4 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
Dimethyl phthalate	9.4 UJ	10 UJ	10 U				
Di-n-butyl phthalate	9.4 UJ	10 UJ	10 U				
Di-n-octyl phthalate	9.4 UJ	10 UJ	10 U				
Dinoseb	9.4 UJ	10 UJ	10 U				
Disulfoton	9.4 UJ	10 UJ	10 U				
Ethyl methanesulfonate	9.4 UJ	10 UJ	10 U				
Famphur	9.4 UJ	10 UJ	10 U				
Hexachlorobenzene	9.4 UJ	10 UJ	10 U				
Hexachlorobutadiene	9.4 UJ	10 UJ	10 U				
Hexachlorocyclopentadiene	9.4 UJ	10 UJ	10 U				
Hexachloroethane	9.4 UJ	10 UJ	10 U				
Hexachlorophene	4700 UJ	5000 UJ	5000 UJ	5000 UJ	5000 U	5000 U	5000 U
Hexachloropropene	9.4 UJ	10 UJ	10 U				
Isophorone	9.4 UJ	10 UJ	10 U				
Isosafrole	9.4 UJ	10 UJ	10 U				
Methapyrilene	1900 UJ	2000 UJ	2000 U	2000 U	2000 UJ	2000 UJ	2000 U
Methyl methanesulfonate	9.4 UJ	10 UJ	10 U				
Methyl parathion	9.4 UJ	10 UJ	10 U				
Nitrobenzene	9.4 UJ	10 UJ	10 U				
N-Nitro-o-toluidine	9.4 UJ	10 UJ	10 U				
N-Nitrosodiethylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosodimethylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosodi-n-butylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosodi-n-propylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosodiphenylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosomethylethylamine	9.4 UJ	10 UJ	10 U				
N-Nitrosomorpholine	9.4 UJ	10 UJ	10 U				
N-Nitrosopiperidine	9.4 UJ	10 UJ	10 U				
N-Nitrosopyrrolidine	9.4 UJ	10 UJ	10 U				
oo'o"-Triethylphosphorothioate	9.4 UJ	10 UJ	10 U				
Parathion	9.4 UJ	10 UJ	10 U				
p-Dimethylamino azobenzene	9.4 UJ	10 UJ	10 U				
Pentachlorobenzene	9.4 UJ	10 UJ	10 U				
Pentachloronitrobenzene	9.4 UJ	10 UJ	10 U				
Pentachlorophenol	47 UJ	50 UJ	50 U				
Phenacetin	9.4 UJ	10 UJ	10 U				
Phenol	9.4 UJ	10 UJ	10 U				
Phorate	9.4 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
p-Phenylene diamine	1900 UJ	2000 UJ	2000 U				
Pronamide	9.4 UJ	10 UJ	10 U				
Pyridine	47 UJ	50 UJ	50 U				
Safrole Total	9.4 UJ	10 UJ	10 U				
Sulfotepp	9.4 UJ	10 UJ	10 U				
Thionazin	9.4 UJ	10 UJ	10 U				

QA/QC ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL AVTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2006ER01	2006ER02	2006ER03	2006ER04	2006ER05	2006FB01	2006FB02
Lab Sample Number	680-22060-38	680-22139-1	680-22139-2	680-22139-6	680-22139-3	680-22139-4	680-22139-5
Sampling Date	11/13/2006	11/15/2006	11/15/2006	11/16/2006	11/17/2006	11/18/2006	11/18/2006
Matrix	Water						
Method - 8270_LL (ug/L)							
1-Methylnaphthalene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
2-Methylnaphthalene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.19 U
Acenaphthene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Acenaphthylene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.19 U
Anthracene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Benzo[a]anthracene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Benzo[a]pyrene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Benzo[b]fluoranthene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Benzo[ghi]perylene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Benzo[k]fluoranthene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Chrysene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Dibenz(ah)anthracene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.19 U
Fluoranthene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.080 J
Fluorene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Indeno[123-cd]pyrene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.19 U
Naphthalene	0.19 UJ	0.19 UJ	0.025 J	0.20 U	0.20 U	0.20 U	0.19 U
Phenanthrene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Pyrene	0.19 UJ	0.19 UJ	0.20 U	0.20 U	0.20 U	0.20 U	0.19 U
Method - 8081A_8082 (ug/L)							
Aroclor 1016	0.96 UJ	1.0 UJ	1.0 U	1.1 U	0.99 U	1.0 U	0.98 U
Aroclor 1221	1.9 UJ	2.0 UJ	2.0 U	2.2 U	2.0 U	2.0 U	2.0 U
Aroclor 1232	0.96 UJ	1.0 UJ	1.0 U	1.1 U	0.99 U	1.0 U	0.98 U
Aroclor 1242	0.96 UJ	1.0 UJ	1.0 U	1.1 U	0.99 U	1.0 U	0.98 U
Aroclor 1248	0.96 UJ	1.0 UJ	1.0 U	1.1 U	0.99 U	1.0 U	0.98 U
Aroclor 1254	0.96 UJ	1.0 UJ	1.0 U	1.1 U	0.99 U	1.0 U	0.98 U
Aroclor 1260	0.96 UJ	1.0 UJ	1.0 UJ	1.1 UJ	0.99 UJ	1.0 UJ	0.98 UJ
Method - 8015B (mg/L)							
Diesel Range Organics	0.096 UJ	0.10 UJ	0.10 U	0.10 U	0.099 U	0.052 J	0.10 U
Gasoline Range Organics	0.050 U	0.050 U	0.015 J	0.050 U	0.050 U	0.050 U	0.050 U
Method - 8330 (ug/L)							
4-Amino-26-dinitrotoluene	0.1 U						
2-Amino-46-dinitrotoluene	0.2 U						
13-Dinitrobenzene	0.1 U						
24-Dinitrotoluene	0.1 U						
26-Dinitrotoluene	0.1 U						
HMX	0.1 U						
Nitrobenzene	0.1 U	0.097 J	0.1 U				
2-Nitrotoluene	0.5 U						
3-Nitrotoluene	0.5 U	0.22 J	0.14 J	0.31 J	0.26 J	0.5 U	0.5 U
4-Nitrotoluene	0.5 U						
RDX	0.1 U	0.14	0.1 U				
Tetryl	0.1 U	0.077 J	0.1 U				
135-Trinitrobenzene	0.1 U	0.13 J	0.13 J	0.13 J	0.15 J	0.1 U	0.1 U
Picric Acid	1.0 U						
246-Trinitrotoluene	0.1 U						

APPENDIX B

QA/QC ANALYTICAL RESULTS
SWMU 28 - BUNDY WWTP SLUDGE DRYING BEDS
PHASE I RFI
NAVAL AVTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2006ER01	2006ER02	2006ER03	2006ER04	2006ER05	2006FB01	2006FB02
Lab Sample Number	680-22060-38	680-22139-1	680-22139-2	680-22139-6	680-22139-3	680-22139-4	680-22139-5
Sampling Date	11/13/2006	11/15/2006	11/15/2006	11/16/2006	11/17/2006	11/18/2006	11/18/2006
Matrix	Water						
Method - 6020 (ug/L)							
Antimony	20 U						
Arsenic	10 U						
Barium	10 U						
Beryllium	4.0 U						
Cadmium	5.0 U						
Chromium	10 U						
Cobalt	10 U						
Copper	20 U	79					
Lead	5.0 U	0.69 J					
Nickel	40 U	0.26 J	0.16 J	0.19 J	40 U	40 U	40 U
Selenium	10 U						
Silver	10 U						
Thallium	10 U						
Tin	10 UJ						
Vanadium	10 U						
Zinc	3.7 J	20 U					
Mercury - 7470A	0.20 U	0.20 UJ					
Cyanide Total - 9012A	0.010 U	NA	NA	NA	NA	NA	NA
Sulfide - 9034	1.0 U	NA	NA	NA	NA	NA	NA

APPENDIX C
2006 RFI DATA VALIDATION SUMMARIES

APPENDIX C.1
PUERTO RICAN CHEMIST CERTIFICATIONS

PUERTO RICO CERTIFICATION

I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-22012-4**, and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz



PUERTO RICO CERTIFICATION

I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-22001-3**, and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz



APPENDIX C.2
STL SAVANNAH SDG 22001-3

VOLATILE ORGANIC COMPOUNDS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO 121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 2, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28TB01	680-22001-48	Water
18	28SS04	680-22001-53	Soil
19	28SS04D	680-22001-54	Soil

The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were analyzed within 14 days for preserved water and soil samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited the following %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
15	Acetone	7210%/618%/162	Qualified due to CCAL
	All others	Out high	Sample ND- No action

Laboratory Control Sample - The LCS samples exhibited acceptable %R values except the following:

LCS ID	Compound	%R	Qualifier	Affected Samples
LCS 680-6055313	Chloroethane	141%	None	Sample ND
LCS 680-6064717	1,2-Dichloropropane	119%	None	
	Styrene	120%	None	
LCS680-6086614	Chloroethane	145%	None	
LCS 680-6090113	1,1,1,2-Tetrachloroethane	113%	None	

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
28TB01 (NAPR 22012-4)	None	ND	-	-	-
2006ER01 (NAPR 22060-3)	None	ND	-	-	-
2006ER02 (NAPR 22060-3)	Toluene	2.3	23	None	All ND
2006FB01 (NAPR 22060-3)	None	ND	-	-	-
2006FB02 (NAPR 22060-3)	Dichlorobromomethane	18	90	None	All ND
	Chloroform	160	800	None	
	Chlorodibromomethane	2.8	14	None	

GC/MS Instrument Performance Check - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values with the exception of the following:

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
11/19/06	Acrolein	0.0222	J/R	17
	Isobutanol	0.0305	J/R	

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values with the exception of the following:

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/20/06 0952/1013	Acrolein	74%D	J/UJ	1-3, 5-8
	3-Chloro-1-propene	22%D	J/UJ	
	Pentachloroethane	34% D	J/UJ	
	cis-1,3-dichloropropene	21% D	J/UJ	
	trans-1,3-Dichloropropene	20.5% D	J/UJ	
11/21/06 0857/0918	Acrolein	53% D	J/UJ	4, 9, 11-13, 15-16
	2-Chloro-1,3-Butadiene	76% D	J/UJ	
	Isobutanol	RRF 0.038/34% D	J/R	
	Pentachloroethane	28% D	J/UJ	
	Chloroethane	42% D	J/UJ	
	Acetone	31% D	J/UJ	
	1,1,1-Trichloroethane	24% D	J/UJ	
	4-Methyl-2-Pentanone (MIK)	20.4% D	J/UJ	
2-Hexanone	25% D	J/UJ		
11/22/06 0751/1025	Acrolein	35% D	J/UJ	10, 14
	Iodomethane	24% D	J/UJ	
	3-Chloro-1-propene	31% D	J/UJ	
	2-Chloro-1,3-Butadiene	48% D	J/UJ	
	Isobutanol	RRF 0.047	J/R	
	Methyl methacrylate	21% D	J/UJ	
	Pentachloroethane	45% D	J/UJ	
	Dichlorodifluoromethane	24% D	J/UJ	
Acetone	21% D	J/UJ		
11/25/06 1229	Acrolein	23% D	J/UJ	18, 19

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/25/06 1229	Iodomethane	24% D	J/UJ	18, 19
	3-Chloro-1-propene	28% D	J/UJ	
	Isobutanol	RRF 0.0496	J/R	
	Pentachloroethane	35% D	J/UJ	
	Bromomethane	26% D	J/UJ	
	Chloroethane	29% D	J/UJ	
	Carbon disulfide	27% D	J/UJ	
	Trans-1,2-dichloroethane	23% D	J/UJ	
	4-Methyl-2-pentanone (MIK)	25% D	J/UJ	
	2-Hexanone	33% D	J/UJ	
11/27/06 1013/1041	1,2-Dibromo-3-chloropropane	26% D	J/UJ	17
	Chloromethane	23% D	J/UJ	
	Chloroethane	41% D	J/UJ	Qualified due to ICAL
	Acrolein	RRF 0.045/101% D	None	17
	Iodomethane	29% D	J/UJ	Qualified due to ICAL

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following.

Sample ID	Internal Standard	Area Count	Qualifier
10	IS3 Chlorobenzene-d5	Low	J/UJ Associated analytes
14	IS2 1,4-Difluorobenzene	Low	J/UJ Associated analytes

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 ug/kg	28SS05D ug/kg	RPD	Qualifier
Acetone	170	150	13%	None

Compound	28SS04 ug/kg	28SS04D ug/kg	RPD	Qualifier
Acetone	380	340	8%	None
Benzene	2.3	2.1	9%	
Methyl Ethyl Ketone	23	26	12%	
Iodomethane	1.5 J	8.0 U	NC	
Isobutanol	290 U	250 J	NC	

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 2, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28SS04	680-22001-53	Soil
18	28SS04D	680-22001-54	Soil

The USEPA Region II SOP No. HW-22, Revision 2, June 2001; Validating Semivolatile Organic Compounds by SW-846 Method 8270C was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate recoveries except the following:

Sample ID	Surrogate	%R	Qualifier
13	Nitrobenzene-d5	31%	None - no action due to surrogates
14	Nitrobenzene-d5	29%	
15	Nitrobenzene-d5	32%	

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS sample(s) exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
2006ER01 (NAPR22060-3)	Diethylphthalate	0.82	290	None	All ND
2006ER02 (NAPR22060-3)	1,4-Dichlorobenzene	0.56	93	None	
2006FB01 (NAPR22060-3)	1,4-Dichlorobenzene	0.53	88	None	
	Diethylphthalate	0.69	230	None	
2006FB02 (NAPR22060-3)	None	ND	-	-	-

GC/MS Instrument Performance Check - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values with the exception of the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
11/24/06	a,a-Dimethylphenethylamine	30%	None	Samples ND
	1,3,5-Trinitrobenzene	23%	None	
	4-Nitroquinoline-1-oxide	RRF 0.032	J/R	17, 18
	Methapyrilene	35%	None	Samples ND
11/21/06	4-Nitroquinoline-1-oxide	RRF 0.024/ 21% RSD	J/R	1-16
	Aramite, total	21% RSD	None	All ND

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values with the exception of the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/29/06	1,4-Dioxane	31% D	J/UJ	17
	2,4-Dinitrophenol	22% D	J/UJ	
	0,0,0-Triethylphosphorothioate	25% D	J/UJ	
	Phorate	34% D	J/UJ	
	Dimethoate	23% D	J/UJ	
	a,a-Dimethylphenethylamine	26% D	J/UJ	
	4-Nitroquinoline-1-oxide	RRF 0.034	None	Qualified due to ICAL
11/30/06	1,4-Dioxane	32% D	J/UJ	18
	2,4-Dinitrophenol	39% D	J/UJ	
	4,6-Dinitro-2-methylphenol	36% D	J/UJ	
	a,a-Dimethylphenethylamine	22% D	J/UJ	
	4-Nitroquinoline-1-oxide	RRF 0.0378	None	Qualified due to ICAL
	Methapyrilene	67% D	J/UJ	18
	Hexachlorophene	29% D	J/UJ	
Methyl parathion	21% D	J/UJ		
11/24/06	1,3,5-Trinitrobenzene	30% D	J/UJ	1-4, 6-9, 11
	4-Nitroquinoline-1-oxide	RRF 0.023	None	Qualified due to ICAL
	Hexachlorophene	RRF 0.046/32% D	J/R	1-4, 6-9, 11
11/27/06	1,4-Dioxane	27% D	J/UJ	5, 10, 15
	4-Nitroquinoline-1-oxide	RRF 0.023	None	Qualified due to ICAL
	Hexachlorophene	26% D	J/UJ	5, 10, 15
11/28/06	2,4-Dinitrophenol	21% D	J/UJ	12, 13
	1,3,5-Trinitrobenzene	42% D	J/UJ	
	4-Nitroquinoline-1-oxide	RRF 0.020	None	Qualified due to ICAL
	Methapyrilene	25% D	J/UJ	12, 13
11/29/06 0643/0714	1,4-Dioxane	21% D	J/UJ	14, 16
	a,a-Dimethylphenethylamine	21% D	J/UJ	
11/29/06 0724	1,3,5-Trinitrobenzene	35% D	J/UJ	

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/29/06 0724	4-Nitroquinoline-1-oxide	RRF 0.027	None	Qualified due to ICAL
	Aramite, total	28% D	J/UJ	14,16

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 ug/kg	28SS05D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Compound	28SS04 ug/kg	28SS04D ug/kg	RPD	Qualifier
None	ND	ND	-	-

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 2, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28SS04	680-22001-53	Soil
18	28SS04D	680-22001-54	Soil

The USEPA Region II SOP No. HW-22, Revision 2, June 2001: Validating Semivolatile Organic Compounds by SW-846 Method 8270C was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/kg	Action Level ug/kg	Qualifier	Affected Samples
680-606491/20-AA	Naphthalene	5.0	50	U	12-14, 16-18

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/kg	Qualifier	Affected Samples
2006ER01 (NAPR 22060-3)	None	ND	-	-	-
2006ER02 (NAPR 22060-3)	None	ND	-	-	-
2006FB01 (NAPR 22060-3)	None	ND	-	-	-
2006FB02 (NAPR 22060-3)	Fluoranthene	0.08	14	U	1, 4, 7, 10, 16-17

GC/MS Instrument Performance Check - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - EDS sample ID #s 4 and 7 were analyzed at 5X dilutions.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria except the following:

Sample ID	Compound	High/Low	Qualifier	Affected Samples
9	IS1 Naphthalene-d8	Low <25%	J/R	Associated Compounds

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 ug/kg	28SS05D ug/kg	RPD	Qualifier
Pyrene	9.6 U	2.1 J	NC	None

Compound	28SS04 ug/kg	28SS04D ug/kg	RPD	Qualifier
Fluoranthene	1.8J	10 U	NC	None

GASOLINE RANGE ORGANICS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 3, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28TB01	680-22001-48	Water
18	28SS04	680-22001-53	Soil
19	28SS04D	680-22001-54	Soil

The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B in conjunction with SW846 Method 8015B were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were analyzed within 14 days for water and soil samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
28TB01	None	ND	-	-	-
2006ER01 (NAPR 22060-3)	None	ND	-	-	-
2006ER02 (NAPR 22060-3)	None	ND	-	-	-
2006FB01 (NAPR 22060-3)	None	ND	-	-	-
2006FB02 (NAPR 22060-3)	None	ND	-	-	-
28TB01 (NAPR 22012-4)	None	ND	-	-	-

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required.

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 mg/kg	28SS05D mg/kg	RPD	Qualifier
GRO C6-C10	0.39	0.28	33%	None

Compound	28SS04 mg/kg	28SS04D mg/kg	RPD	Qualifier
GRO C6-C10	0.27	0.34	23%	None

DIESEL RANGE ORGANICS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 3, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
5 MS	28SB02-02 MS	680-22001-36 MS	Soil
5 MSD	28SB02-02 MSD	680-22001-36 MSD	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28SS04	680-22001-53	Soil
18	28SS04D	680-22001-54	Soil

The USEPA Region II SOP HW-23, Revision 0, April 1995: Validating Pesticide/PCB Compounds by SW846 Method 8080A in conjunction with SW846 Method 8051B were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/kg	Qualifier	Affected Samples
2006ER01 (SDG 22060-3)	None	ND	-	-	-
2006ER02 (SDG 22060-3)	None	ND	-	-	-
2006FB01 (SDG 22060-3)	DRO C10-C28	0.052	8.75	U	4, 7, 10, 12, 15-18
2006FB02 (SDG 22060-3)	None	ND	-	-	-

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 mg/kg	28SS05D mg/kg	RPD	Qualifier
DRO C10-C28	ND	ND	24%	None

Compound	28SS04 mg/kg	28SS04D mg/kg	RPD	Qualifier
DRO C10-C28	ND	ND	6%	None

PCBs
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 3, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28SS04	680-22001-53	Soil
18	28SS04D	680-22001-54	Soil

The USEPA Region II SOP No. HW-23, Revision 0, April 1995: Validating Pesticide/PCB Compounds by SW-846 Method 8080A and SOP No. HW-23B, Revision 1.0, May 2002, were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 14 days for soil samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS sample(s) exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006ER01 (SDG 22060-3)	None	ND	-	-	-
2006ER02 (SDG 22060-3)	None	ND	-	-	-
2006FB01 (SDG 22060-3)	None	ND	-	-	-
2006FB02 (SDG 22060-3)	None	ND	-	-	-

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Analytical Sequence Check - No discrepancies were identified.

Compound Identification - Retention times were acceptable and no further action was taken.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All pesticide chromatographic data were included and no discrepancies were identified.

Compound Quantitation - No discrepancies were identified.

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 ug/kg	28SS05D ug/kg	RPD	Qualifier
None	ND	ND	-	-

Compound	28SS04 ug/kg	28SS04D ug/kg	RPD	Qualifier
None	ND	ND	-	-

METALS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22001-3

Client: CH2M Hill, Inc./Baker Environmental, Inc. Date: January 8, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28SB01-00	680-22001-32	Soil
2	28SB01-03	680-22001-33	Soil
3	28SB01-05	680-22001-34	Soil
4	28SB02-00	680-22001-35	Soil
5	28SB02-02	680-22001-36	Soil
6	28SB02-03	680-22001-37	Soil
7	28SB03-00	680-22001-38	Soil
8	28SB03-01	680-22001-39	Soil
9	28SB03-03	680-22001-40	Soil
10	28SB04-00	680-22001-41	Soil
11	28SB04-01	680-22001-42	Soil
12	28SS01	680-22001-43	Soil
13	28SS02	680-22001-44	Soil
14	28SS03	680-22001-45	Soil
15	28SS05	680-22001-46	Soil
15 MS	28SS05 MS	680-22001-46 MS	Soil
15 MSD	28SS05 MSD	680-22001-46 MSD	Soil
16	28SS05D	680-22001-47	Soil
17	28SS04	680-22001-53	Soil
18	28SS04D	680-22001-54	Soil

The USEPA Region II SOP No. HW-2, Revision 13, September 2005 for Evaluation of Metals Data for the Contract Laboratory Program was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values except those noted below. The associated samples were qualified as indicated.

Compound	%R - High/Low	Qualifier	Affected Samples
Tin 11/25	60% - Low	J/UJ	17, 18
Tin 12/04	59% - Low	J/UJ	1-6
Tin 12/05	60% - Low	J/UJ	8-16
Mercury 11/28	145% - High	J	5-6, 9, 11-13

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc.	Action Level mg/kg	Qualifier	Affected Samples
Barium PBS-3	0.1307 mg/kg	0.1307	None	> CRDL
Copper PBS-3	0.0549 mg/kg	0.0549	None	
Copper PBS-1	0.0433 mg/kg	0.0433	None	
Copper PBS-2	0.0594 mg/kg	0.0594	U	2, 6
Lead PBS 3	0.106 mg/kg	0.106	None	> CRDL
Mercury 11/30	0.1252 ug/L	0.1252	None	Sample > CRDL
Nickel 11/25	0.033 ug/L	0.033	U	17, 18
Nickel 12/05	0.034 ug/L	0.034	U	8, 9, 10-12, 14-15
CCB Thallium 11/25	0.059 ug/L	0.059	None	Samples ND
BLK3 Thallium 12/05	0.060 ug/L	0.060	None	

ICP Interference Check Sample - All %R values were acceptable except the following:

Compound	%R	Qualifier	Affected Samples
11/25 Zinc	125%/124%	J	17, 18
12/04 Cadmium	71%	J	1, 4
12/04 Silver	76%	J	
12/04 Zinc	129%	J	1-6
12/05 Cadmium	77%	J	7, 10, 12-16
12/05 Silver	77%	J	7, 10, 15-16

Matrix Spike/Matrix Spike Duplicate - The matrix spike samples exhibited acceptable %R values except the following:

MS Sample ID	Compound	%R	Qualifier	Affected Samples
15	Antimony	71%/OK/OK	J/UJ	7-16
	Tin	128%/131%/OK	None	Qualified due to CRDL

MS Sample ID	Compound	%R	Qualifier	Affected Samples
15	Mercury	73%/OK/OK	J/UJ	1-4, 8, 10, 14-18
Reference 1	Antimony	OK/74%/OK	J/UJ	17, 18
Reference 2	Antimony	47%/64%/OK	J/UJ	1-6
	Chromium	194%/85%/91	J/UJ	
	Lead	138%/40%/59	J/UJ	
	Nickel	OK/55%/OK	J/UJ	
	Tin	OK/126%/OK	None	Qualified due to CRDL
	Barium	OK/OK/69	J	1-6
	Copper	OK/OK/42	None	Qualified due to FB
	Vanadium	OK/OK/45	J	1-6

Field Duplicates - Field duplicate results are summarized below.

Compound	28SS05 mg/kg	28SS05D mg/kg	RPD	Qualifier
Arsenic	1.8 J	2.4 J	0.60	None
Barium	210	230	5%	
Beryllium	0.36 J	0.39 J	0.03	
Cadmium	0.23 J	0.25 J	0.02	
Chromium	20	22	10%	
Cobalt	14	16	13%	
Copper	56	63	12%	
Lead	5.8	6.5	11%	
Mercury	0.12	0.080	0.04	
Nickel	11 U	11 J	NC	
Selenium	0.37 J	0.39 J	0.02	
Silver	0.29 J	0.30 J	0.01	
Thallium	2.6 U	0.17 J	NC	
Vanadium	86	110	24%	
Zinc	77	86	11%	

Compound	28SS04 mg/kg	28SS04D mg/kg	RPD	Qualifier
Arsenic	1.7 J	1.5 J	0.2	None
Barium	240	230	4%	
Beryllium	0.34 J	0.35 J	0.01	
Cadmium	0.22 J	0.24 J	0.02	
Chromium	18	17	6%	
Cobalt	12	12	0%	
Copper	47	44	7%	
Lead	5.0	4.7	6%	
Mercury	0.13	0.12	8%	
Selenium	0.43 J	0.31 J	0.12	
Silver	0.32 J	0.33 J	0.01	
Vanadium	69	68	1%	
Zinc	68	68	0%	

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values except the following.

ICP Sample ID	Compound	%D	Qualifier	Affected Samples
15	Barium	10.2%	J	7-16
	Cobalt	10.02%	J	
	Nickel	11%	J	7, 13, 16
	Vanadium	11%	J	7-16

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level	Qualifier	Affected Samples
2006ER01 (SDG 22060-3)	None	ND	ND	-	-
2006ER02 (SDG 22060-3)	Nickel	0.26 J	None	None	< CRDL
2006FB01 (SDG 22060-3)	None	ND	ND	-	-
2006FB02 (SDG 22060-3)	Copper	79	158 mg/kg	J/R	1, 3-5, 7-18
	Lead	0.69 J	None	None	< CRDL

Compound Quantitation - All ICP MS analytes were analyzed at a 2X dilution.

VOLATILE ORGANIC COMPOUNDS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO 121, Ceiba, PR SDG #: NAPR 22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TB02	680-22012-52	Water
4	28TW03	680-22012-55	Water
5	28TW01	680-22139-45	Water

The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were analyzed within 14 days for preserved water samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	Chloromethane	OK/OK/54	No action based on RPD alone
	Dichlorodifluoromethane	OK/OK/58	
	1,1-Dichloroethene	OK/OK/35	
	1,1,1,2-Tetrachloroethane	OK/114%/OK	None - sample ND
	Vinyl Chloride	OK/OK/56	No action based on RPD alone

Laboratory Control Sample - The LCS sample(s) exhibited acceptable %R values except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
680-60821/3	1,1,1,2-Tetrachloroethane	110%	None	All ND

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
28TB02	None	ND	-	-	-
2006FB01	None	ND	-	-	-
2006FB02	Dichlorobromomethane	18	90	None	All ND
	Chloroform	160	800	None	
	Chlorodibromomethane	2.8	14	None	
AOCA TB-02	trans-1,3-Dichloropropene	1.6	8.0	None	All ND
29TB02	None	ND	-	-	-
27TB01	None	ND	-	-	-
29TB01	None	ND	-	-	-
42TB03	None	ND	-	-	-

GC/MS Instrument Performance Check - All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values with the exception of the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
11/19/06	Acrolein	0.049 RRF	J/R	1-5
	Isobutanol	0.030 RRF	J/R	

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values with the exception of the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/22/06	Bromomethane	26% D	J/UJ	5
	Acrolein	RRF 0.030/38% D	None	Qualified due to ICAL
	Iodomethane	38% D	J/UJ	5
	Isobutanol	RRF 0.031	None	Qualified due to ICAL
11/24/06	Acrolein	RRF 0.048	None	
	Iodomethane	35% D	J/UJ	1-4
	Isobutanol	RRF 0.029	None	Qualified due to ICAL
	Chloroethane	46% D	J/UJ	1-4
Vinyl Acetate	22% D	J/UJ		

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 ug/L	28TW02D ug/L	RPD	Qualifier
None	ND	ND	-	-

SEMIVOLATILE ORGANIC COMPOUNDS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TW03	680-22060-39	Water
4	28TW01	680-22060-45	Water

The USEPA Region II SOP No. HW-22, Revision 2, June 2001, Validating Semivolatile Organic Compounds by SW-846 Method 8270C was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS/MSD %R/RPD	Qualifier
1	3,3'-Dichlorobenzidine	OK/23%/OK	J/UJ

Laboratory Control Sample - The LCS sample(s) exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006ER04	None	ND	-	-	-
2006FB01	1,4-Dichlorobenzene	0.52	2.6	None	All ND
	Diethylphthalate	0.69	6.9	None	All ND
2006FB02	None	ND	-	-	-

GC/MS Instrument Performance Check - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values with the exception of the following.

ICAL Date	Compound	%RSD/RRF	Qualifier	Affected Samples
11/21/06	2-Picoline	20% RSD	None	All ND
	a,a-Dimethyl phenethylamine	30% RSD	None	
	Methapyrilene	17% RSD	None	
	Aramite total	21% RSD	None	
11/21/06	4-Nitroquinoline-1-oxide	RRF 0.024/21% RSD	J/R	4
	Aramite Total	21% RSD	None	All ND
11/24/06	a,a-Dimethyl phenethylamine	30% RSD	None	
	1,3,5-Trinitrobenzene	23% RSD	None	
	4-Nitroquinoline-1-oxide	RRF 0.032	J/R	
	Methapyrilene	35% RSD	None	All ND

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values with the exception of the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
11/24/06	2-Picoline	24% D	J/UJ	1-2
	a,a-Dimethyl phenethylamine	22% D	J/UJ	
	1,3,5-Trinitrobenzene	53% D	J/UJ	
11/28/06 0714	1,3,5-Trinitrobenzene	51% D	J/UJ	3
	4-Nitroquinoline-1-oxide	RRF 0.025/21% D	None	Qualified due to ICAL
	Hexachlorophene	41% D	J/UJ	3
11/28/06 0737	Phorate	33% D	J/UJ	
	Dimethoate	20.3% D	J/UJ	
11/30/06	1,4-Naphthoquinone	23% D	J/UJ	4
	1,3,5-Trinitrobenzene	36% D	J/UJ	Qualified due to ICAL
	4-Nitroquinoline-1-oxide	RRF 0.022	None	
	Methapyrilene	30% D	J/UJ	
	Aramite, total	32% D	J/UJ	
	Diallate	32% D	J/UJ	

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 ug/L	28TW02D ug/L	RPD	Qualifier
None	ND	ND	-	-

POLYNUCLEAR AROMATIC HYDROCARBONS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TW03	680-22060-39	Water
4	28TW01	680-22060-45	Water

The USEPA Region II SOP No. HW-22, Revision 2, June 2001: Validating Semivolatile Organic Compounds by SW-846 Method 8270C was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks exhibited the following contamination.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
MB 680-60424/7-AA	Benzo(a)anthracene	0.036	0.18	None	All ND
	Fluoranthene	0.020	0.10	None	

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006ER04	None	ND	-	-	-
2006FB01	None	ND	-	-	-
2006FB02	Fluoranthene	0.080	0.40	None	All ND

GC/MS Instrument Performance Check - All of the DFTPP tunes in the initial and continuing calibrations met the percent relative abundance criteria.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Tentatively Identified Compounds (TIC) - TICs were not reported for the samples in this data package.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

GC/MS Initial Calibration - The initial calibrations exhibited acceptable %RSD and mean RRF values.

GC/MS Continuing Calibration - The continuing calibrations exhibited acceptable %D and RRF values with the exception of the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/04/06	Acenaphthene	25% D	J/UJ	4
	Fluorene	26% D	J/UJ	
	Benzo (a) anthracene	20% D	J/UJ	
	Benzo (b) fluoranthene	24% D	J/UJ	
	Benzo (k) fluoranthene	26% D	J/UJ	
	Benzo (g,h,i) perylene	24% D	J/UJ	
	1-Methylnaphthalene	26% D	J/UJ	

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 ug/L	28TW02D ug/L	RPD	Qualifier
None	ND	ND	-	-

PCBs

USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: December 29, 2006

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TW03	680-22060-39	Water
4	28TW01	680-22060-45	Water

The USEPA Region II SOP No. HW-23, Revision 0, April 1995: Validating Pesticide/PCB Compounds by SW-846 Method 8080A and SOP No. HW-23B, Revision 1.0, May 2002, were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 14 days for water samples and analyzed within 40 days for all samples.

Surrogates - All samples exhibited acceptable surrogate %R values except the following.

Sampl ID	Surrogate	%R	Qualifier
1	DCB	21%	J/UJ
2	DCB	22%	J/UJ
3	DCB	7%	J/R
4	DCB	22%	J/UJ

MS/MSD - The MS/MSD samples exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS sample(s) exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006FB01	None	ND	-	-	-
2006FB02	None	ND	-	-	-
2006ER04	None	ND	-	-	-

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Analytical Sequence Check - No discrepancies were identified.

Compound Identification - Retention times were acceptable and no further action was taken.

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All pesticide chromatographic data were included and no discrepancies were identified.

Compound Quantitation - No discrepancies were identified.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 ug/L	28TW02D ug/L	RPD	Qualifier
None	ND	ND	-	-

GASOLINE RANGE ORGANICS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TB02	680-22012-52	Water
4	28TW03	680-22012-55	Water
5	28TW01	680-22139-45	Water

The USEPA Region II SOP HW-24, Revision 1, June 1999: Validating Volatile Organic Compounds by SW-846 Method 8260B in conjunction with SW846 Method 8015B were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were analyzed within 14 days for water samples.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006FB01	None	ND	-	-	-
2006FB02	None	ND	-	-	-
2006ER04	None	ND	-	-	-
28TB02	None	ND	-	-	-
27TB01	None	ND	-	-	-
29TB01	None	ND	-	-	-
AOCATB02	None	ND	-	-	-
29TB02	None	ND	-	-	-

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Internal Standard (IS) Area Performance - All internal standards met response and retention time (RT) criteria. No qualifications were required.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 mg/L	28TW02D mg/L	RPD	Qualifier
None	ND	ND	-	-

DIESEL RANGE ORGANICS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22012-4

Client: CH2M HILL, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
2	28TW02D	680-22012-51	Water
3	28TW03	680-22060-39	Water
4	28TW01	680-22060-45	Water

The USEPA Region II SOP HW-23, Revision 0, April 1995: Validating Pesticide/PCB Compounds by SW846 Method 8080A in conjunction with SW846 Method 8051B were used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were extracted within 7 days for water samples and analyzed within 40 days.

Surrogates - All samples exhibited acceptable surrogate recoveries.

MS/MSD - The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Sample - The LCS samples exhibited acceptable %R values.

Method Blank - The method blanks were free of contamination.

Trip, Field, Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. mg/L	Action Level mg/L	Qualifier	Affected Samples
2006ER04	None	ND	-	-	-
2006FB01	DRO C10-C28	0.052	0.26	None	All ND or > 5X blank
2006FB02	None	ND	-	-	-

Target Compound List (TCL) Analytes - The Form Is were present with the required header information. All mass spectral data were included and no discrepancies were identified.

Compound Quantitation and Reported Detection Limits - No discrepancies were identified.

Initial Calibration - The initial calibrations exhibited acceptable %RSD values.

Continuing Calibration - The continuing calibrations exhibited acceptable %D values.

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 mg/L	28TW02D mg/L	RPD	Qualifier
None	ND	ND	-	-

TOTAL AND DISSOLVED METALS
USEPA Region II - Level IV Review

Site: RCRA Facility Investigation, CTO-121, Ceiba, PR SDG #: NAPR 22012-4

Client: CH2M Hill, Inc./Baker Environmental, Inc. Date: January 12, 2007

Laboratory: Severn Trent Laboratories, Savannah, GA Reviewer: Christine Garvey

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	28TW02	680-22012-50	Water
1 MS	28TW02 MS	680-22012-50 MS	Water
1 MSD	28TW02 MSD	680-22012-50 MSD	Water
1F	28TW02 F	680-22012-50F	Water
1 F MS	28TW02 F MS	680-22012-50F MS	Water
1 F MSD	28TW02 F MSD	680-22012-50F MSD	Water
2	28TW02D	680-22012-51	Water
2F	28TW02D F	680-22012-51F	Water
3	28TW03	690-22060-39	Water
3F	28TW03 F	690-22060-39F	Water
4	28TW01	690-22060-45	Water
4F	28TW01 F	690-22060-45F	Water

The USEPA Region II SOP No. HW-2, Revision 13, September 2005 for Evaluation of Metals Data for the Contract Laboratory Program was used in evaluating the data in this summary report.

Sample Conditions/Problems - The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data.

Holding Times - All samples were prepared and analyzed within 28 days for mercury and 180 days for all other metals.

Calibration - The ICV and CCV %R values were acceptable.

CRDL Standard - The CRDL standards exhibited acceptable %R values except those noted below. The associated samples were qualified as indicated.

Compound	%R - High/Low	Qualifier	Affected Samples
Tin 11/25/06	60%- Low	J/UJ	1-3
Copper 12/01-12/02/06	52%- Low	J/UJ	4F
Tin 12/03/06	59%- Low	J/UJ	4
Tin 12/05-12/06/06	60%- Low	J/UJ	1F-3F

Method and Calibration Blanks - The method blanks and continuing calibration blanks exhibited contamination for several compounds, however, all sample results are non-detect or greater than 5X the blank concentration with the exception of the following:

Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
Arsenic 12/04	0.130 J	0.13	None	>CRDL
Barium PBW-2	0.87	0.87	None	>CRDL
Barium PBW-1	1.26 J	1.26	None	> CRDL
Barium PBW-3	1.24 J	1.24	None	>CRDL
Barium PBW-4	1.19 J	1.19	None	> CRDL
Copper PBW-2	1.89 J	1.89	U	4F
Copper PBW-3	0.42 J	0.42	None	>CRDL
Nickel PBW-1	0.22 J	0.22	U	1-3
Nickel PBW-2	0.35 J	0.35	U	4F
Thallium 11/25/06	0.059 J	0.059	None	All ND
Thallium 12/14	0.081 J	0.081	None	All ND
Thallium 12/04	0.069 J	0.069	U	4
Thallium 12/05-12/06	0.064	0.064	U	2F
Zinc PBW-3	5.39 J	5.39	None	>CRDL

ICP Interference Check Sample - All %R values were acceptable except the following.

Compound	%R	Qualifier	Affected Samples
Zinc	125%	J	1-3
Cadmium	75%/72%	None	Samples ND
Chromium	121%/122%	J	4F
Silver	OK/79%	None	Samples ND
Zinc	123%/OK	J	4F
Cadmium	74%/71%	J	4
Silver	OK/79%	J	
Zinc	122%/OK	J	
Cadmium	77%/78%	None	Samples ND
Silver	77%/75%	None	
Zinc	Ok/129%	J	1F-3F

Internal Standards - Several internal standards were outside the CLP 60-125% limit but within the Method 6020 criteria of 30-120%. Based on professional judgement, no action was taken on this basis.

Matrix Spike/Matrix Spike Duplicate - The matrix spike/matrix spike duplicate samples exhibited acceptable %R values and RPD values except the following.

MS Sample ID	Compound	%R	Qualifier	Affected Samples
1F	Barium	137%/OK/OK	J	1F-3F
Reference 1F	Selenium	OK/59%/31	J	4F
Reference 1	Selenium	OK/OK/24	J/UJ	4

Field Duplicates - Field duplicate results are summarized below.

Compound	28TW02 ug/L	28TW02D ug/L	RPD	Qualifier
Barium	350	340	3%	None
Cobalt	0.58 J	0.62 J	0.04	
Zinc	5.8 J	12 J	6.2	

Compound	28TW02F ug/L	28TW02DF ug/L	RPD or Difference	Qualifier
Arsenic	1.6 J	0.85 J	0.75	None
Barium	340	330	3%	
Cobalt	2.9 J	0.73 J	2.17	
Nickel	1.2 J	0.51 J	0.69	
Zinc	7.2 J	10 J	2.8	

LCS - The LCS samples exhibited acceptable %R values.

ICP Serial Dilution - The ICP serial dilution sample exhibited acceptable %D values except the following.

ICP Sample ID	Compound	%D	Qualifier	Affected Samples
Reference 1 total	Cobalt	13%	J	4

Total versus dissolved metal - All criteria were met.

Field and Equipment Blank - Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
2006ER4	Nickel	0.19 J	0.19 J	None	<CRDL
2006FB01	None	ND	-	-	-
2006FB02	Copper	79	790	J/U/R	2F, 3, 3F, 4
	Lead	0.69 J	0.69 J	None	<CRDL

Compound Quantitation - EDS sample ID #4 was analyzed at a 4X dilution for barium and cadmium due to high concentrations in the sample.