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Corrective Measures Study Addendum
SWMU 54 Benzene Plume

Naval Activity Puerto Rico
Ceiba, Puerto Rico

Revision No. 00

Contract No. N62470-08-D-1006
Task Order No. JM04

Submitted to:

U.S. Naval Facilities
Engineering Command
Southeast

Prepared by:

1000 Abernathy Road
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March 2011

Certification Page
Corrective Measures Study Addendum
SWMU 54 Benzene Plume

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.

Signature: _____

Name: Mark E. Davidson

Title: BRAC Environmental Coordinator

Date: March 14, 2011

Executive Summary

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has been retained by the Department of the Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) to prepare a Corrective Measures Study (CMS) Addendum to address the cleanup of benzene in groundwater beneath Solid Waste Management Unit (SWMU) 54. SWMU 54 is located at Naval Activity Puerto Rico (NAPR), formerly known as Naval Station Roosevelt Roads, in Ceiba, Puerto Rico. The CMS Addendum was prepared under Contract No. N62470-08-D-1006, Task Order JM04. This document revises the *Final Corrective Measures Study Final Report* (hereinafter referred to as the CMS) (Baker Environmental, Inc. [Baker], 2005) because implementation of the in situ bioremediation remedy proposed in the CMS is not viable, based on evaluation of pilot-scale test data (Appendix A).

Between August 2009 and October 2010, AGVIQ-CH2M HILL conducted a groundwater investigation and performed pilot-scale testing to evaluate the use of air sparging (AS) to reduce benzene concentrations in groundwater. The work involved the installation of 32 monitoring wells and 1 AS well, collection of water quality samples for chemical analysis, well gauging, aquifer slug testing, and completion of a pilot-scale test to evaluate ability to inject air into the aquifer to reduce benzene concentrations in groundwater to the Corrective Action Objective of 550 microgram per liter.

The results of the pilot-scale test indicated that a full-scale biosparge system would be more effective as a long-term remedy to reduce benzene concentrations in groundwater than the injection of oxygen-releasing material proposed in the CMS (Baker, 2005).

Contents

Acronyms and Abbreviations ..... **v**
Executive Summary **ES-1**
1.0 Introduction **1-1**
1.1 Background 1-1
1.2 Summary of Recent Work 1-4
2.0 Corrective Measures Alternatives **2-1**
3.0 Corrective Measure Evaluation **3-1**
3.1 Technical Evaluation 3-1
3.1.1 Performance 3-1
3.1.2 Reliability 3-1
3.1.3 Implementability 3-1
3.1.4 Safety 3-1
3.2 Environmental 3-2
3.3 Human Health 3-2
3.4 Institutional 3-2
3.5 Cost Estimate 3-2
4.0 Recommended Corrective Measure **4-1**
5.0 References **5-1**

Appendices

A Pilot-Scale Test Report
B SWMU 54 Benzene Concentrations, October 2004
C Detailed Cost Estimate

Figures

1-1 SWMU 54 Site Location
1-2 Site Layout
1-3 Benzene Concentrations Exceeding Corrective Action Objectives, August 2009 through October 2010
2-1 Proposed Shallow Biosparge Layout
2-2 Proposed Deep Biosparge Layout
4-1 Biosparge Installation Schedule

Acronyms and Abbreviations

AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III
AS	air sparge
Baker	Baker Environmental, Inc.
bgs	below ground surface
CAO	corrective action objective
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DO	dissolved oxygen
ISB	in situ bioremediation
µg/L	microgram per liter
NAPR	Naval Activity Puerto Rico
NAVFAC SE	Naval Facilities Engineering Command Southeast
O&M	operations and maintenance
ORP	oxidation-reduction potential
scfm	standard cubic foot per minute
SWMU	solid waste management unit
TCE	trichloroethene
VOC	volatile organic compound

1.0 Introduction

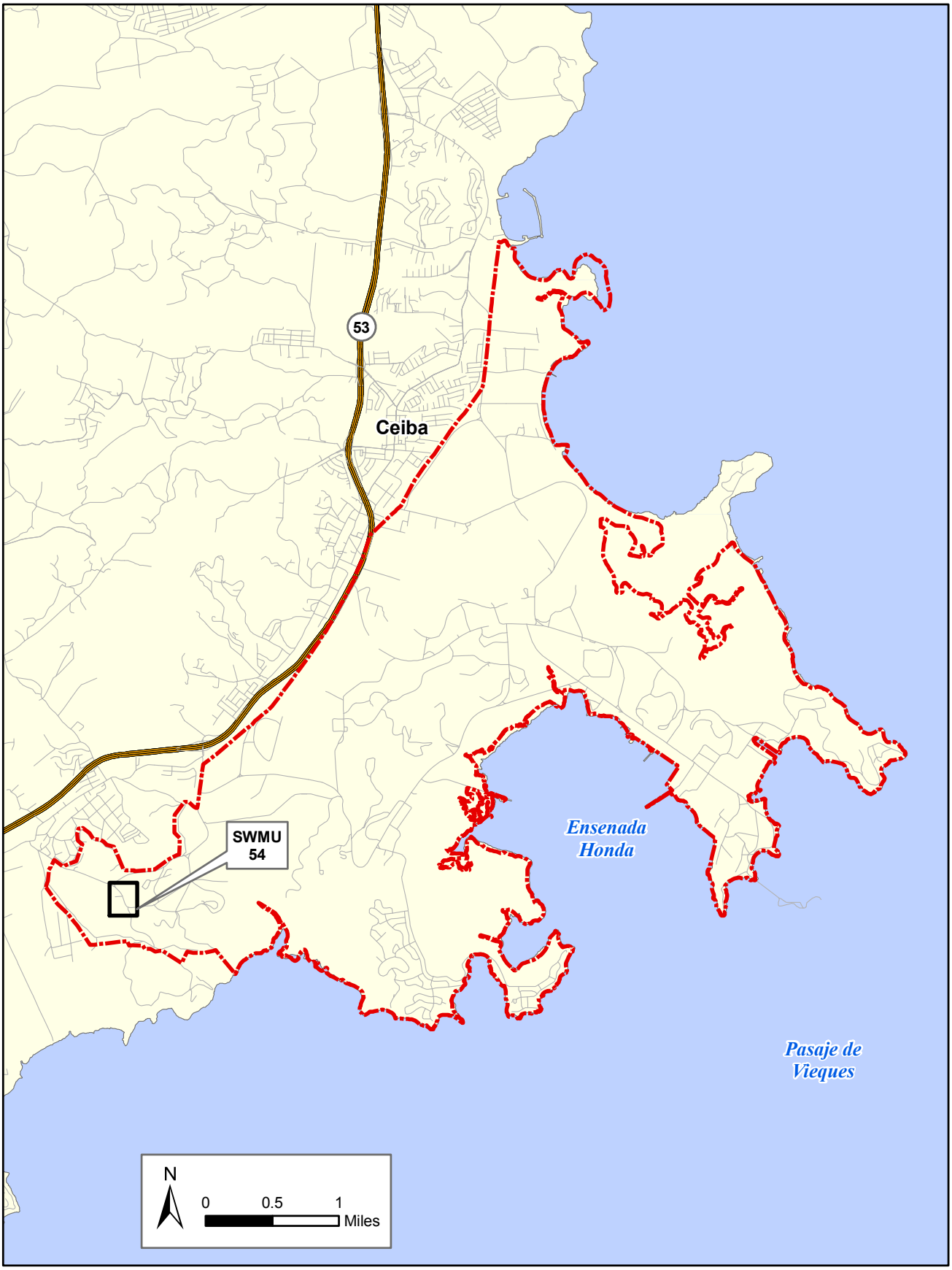
AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has been retained by the Department of the Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) to prepare a Corrective Measures Study (CMS) Addendum to address the cleanup of benzene in groundwater beneath Solid Waste Management Unit (SWMU) 54. SWMU 54 is located at Naval Activity Puerto Rico (NAPR), formerly known as Naval Station Roosevelt Roads, in Ceiba, Puerto Rico (refer to Figure 1-1). This CMS Addendum was prepared under Contract No. N62470-08-D-1006, Task Order JM04. This document revises the *Final Corrective Measures Study Final Report* prepared by Baker Environmental, Inc. (Baker) (hereinafter referred to as the CMS) (Baker, 2005) because implementation of the in situ bioremediation (ISB) remedy proposed to reduce benzene concentrations in groundwater to the corrective action objective (CAO) of 550 micrograms per liter (µg/L) is not viable, based on evaluation of newly acquired pilot-scale test data (Appendix A).

Although two areas of contamination have been identified beneath SWMU 54, a trichloroethene (TCE) plume and a benzene plume (Figure 1-2), this report describes only the additional work that was performed to determine the extent of benzene contamination in groundwater and evaluate biosparging as a technology to reduce benzene concentrations to the CAO. Remediation work to address the cleanup of the TCE plume is described in the *SWMU 54 TCE Plume Corrective Measures Implementation* [CMI] *Plan* (AGVIQ-CH2M HILL, 2011).

1.1 Background

In 2005, Baker prepared a CMS for remedial actions at NAPR, including SWMU 54. The CMS included human health and ecological risk assessments to develop CAOs for the cleanup of contaminants in groundwater. A CAO of 550 µg/L was calculated for benzene at SWMU 54, and the injection of oxygen-releasing compounds was proposed to achieve the CAO.

Since then, NAVFAC SE has contracted AGVIQ-CH2M HILL to review the CMS and optimize the remedial approach for the site. As part of the investigation work, 32 additional monitoring wells were installed to determine the horizontal and vertical extent of benzene in groundwater prior to implementing remedial actions (Figure 1-2). Findings obtained from the additional work indicated the horizontal and vertical extent of benzene was greater than described in the CMS, and benzene concentrations were significantly higher than presented in the CMS (Appendix B). Because the benzene plume was larger in extent and concentrations were significantly higher, AGVIQ-CH2M HILL performed pilot-scale testing to evaluate the use of air sparging (AS) to remediate the plume. Test results obtained from the additional investigation work and pilot-scale testing are presented in Appendix A and are summarized below in Section 1.2.



Road

Expressway

Naval Station Roosevelt Roads Boundary

Originated By: Amanda Struse *Amanda Struse*
Checked By: Shruti Shah *Shruti Shah*
Checked By: Alicia Nobles *Alicia Nobles*

FIGURE 1-1
SWMU 54 Site Location
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

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Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Injection Well Screened 17-27 ft bgs

Air Sparge Injection Well

Former Structure

Originated By: Amanda Struse *Amanda Struse*
Checked By: Shruti Shah *Shruti Shah*
Checked By: Alicia Nobles *Alicia Nobles*

N

0 20 40 Feet

1 inch = 40 feet

FIGURE 1-2
Site Layout
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

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1.2 Summary of Recent Work

Between August 2009 and October 2010, AGVIQ-CH2M HILL conducted a groundwater investigation and performed pilot-scale testing to evaluate the use of AS to reduce benzene concentrations in groundwater. The major findings are summarized below and serve as the basis for amendment of the CMS.

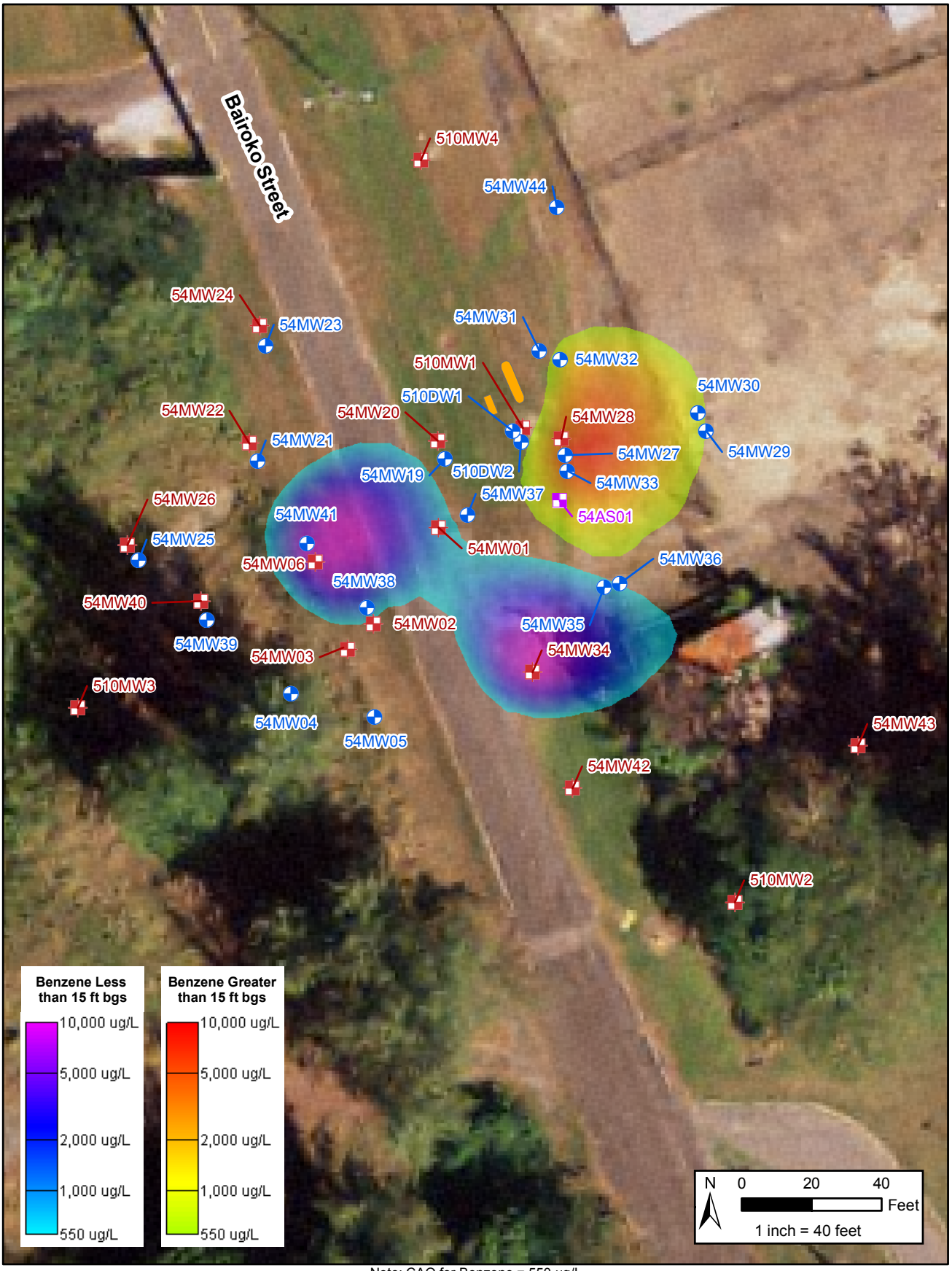
The work involved the installation of 32 monitoring wells (54MW01 through 54MW06 and 54MW19 through 54MW44) to complete the delineation of the benzene plume. Data collected from the monitoring wells showed that benzene concentrations exceeding the CAO were detected in several monitoring wells, and benzene was present in two different zones (shallow and deep) within the water table aquifer. In the shallow zone (less than 15 feet below ground surface [bgs]), the highest benzene concentrations were detected in 54MW34 located east of Bairoko Street and 54MW06 located west of Bairoko Street (refer to Figure 1-3). In the deep zone (approximately 15 to 25 feet bgs), a benzene source area was identified east of Bairoko Street in the area formerly occupied by an underground storage tank (UST) (refer to Figure 1-3) and the highest benzene concentration was measured at 54MW27. Comparison of the recent investigation data with the September 2002 data presented in the CMS (provided in Appendix B) shows that the extent of benzene contamination above the CAO of 550 µg/L is greater than originally estimated in the CMS and that the highest benzene concentrations are three or more times greater than those measured by Baker (Baker, 2005).

As part of the additional investigation, well gauging and aquifer slug tests were performed. The gauging data indicated the direction of groundwater flow is toward the west/southwest. Light non-aqueous phase liquid was not detected in groundwater. Aquifer slug test results indicate that the hydraulic conductivity of the water table aquifer ranges from approximately 0.9 to 5.6 feet/day and averages 3.0 feet/day.

Because both the extent and magnitude of the benzene plume were significantly greater than that presented in the CMS, AGVIQ-CH2M HILL determined aerobic ISB using injection of oxygen-releasing compounds would not adequately treat the benzene plume because distribution of oxygen-releasing compounds in the subsurface over the entire plume would be difficult and concentrations were too high for the oxygen-releasing compounds to be cost-effective. Therefore, AGVIQ–CH2M HILL conducted a pilot-scale test to evaluate the feasibility of using AS to stimulate biodegradation of benzene.

AGVIQ-CH2M HILL conducted the pilot-scale test in May 2010. During the test, air was injected into a single well (54AS01) at varying pressures and flows and changes in water level, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were monitored to evaluate air distribution. Conclusions from the pilot-scale test results include the following:

- Air distribution in the subsurface at SWMU 54 is highly variable and is a function of the air injection rate and the heterogeneity of the formation.
- AS was effective in distributing air to the formation at SWMU 54 to promote volatization of benzene and increased DO to support aerobic biodegradation. Increases in DO and ORP concentrations were primarily observed in the deep monitoring wells (screened deeper than 15 feet bgs) because of the placement of the injection well screen at approximately 24 to 26 feet bgs. Similar DO and ORP response is expected in shallow



Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily 15-25 ft bgs

Air Sparge Injection Well

Note: CAO for Benzene = 550 µg/L

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE 1-3
Benzene Concentrations Exceeding Corrective Action Objectives
August 2009 Through October 2010
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

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zone monitoring wells with the proper placement of the injection well screen at the base of the zone.

- DO response was observed as far away from the injection well as 40 feet; however, results were not consistent in all directions around the monitoring well. Based on a review of pilot-scale results, a conservative radius of influence for a single injection well is estimated to be approximately 15 feet at an injection flow rate of 4 standard cubic feet per minute (scfm). AS injection well spacing of 20 feet between wells is recommended for full-scale application to provide overlap of sparging influence and adequately distribute the air into the formation at a low injection flow rate.
- VOC concentrations observed at storm sewer monitoring location SS#3 (located approximately 65 feet south of the AS injection well) indicate that VOCs liberated from groundwater during the AS pilot-scale test may be traveling through the gravel backfill that surrounds the sewer pipe. Due to the highly variable nature of the distribution of air both horizontally and vertically, and the potential for VOC-laden air to migrate along the backfill of the utility corridors, the AS system should be designed with a maximum flow rate of 4 scfm per injection point to minimize effects of volatilization.
- Shallow injection wells installed to a depth of approximately 16 to 18 feet bgs should be utilized to address VOC concentrations in the shallow zone, while deeper injection wells installed to a depth of approximately 26 to 28 feet bgs should be installed to address intermediate zone impacts.
- AS wells should be individually plumbed from a common equipment manifold and operate on a pulsed frequency to minimize the size of the AS compressor required and to limit the potential for vapor migration along utility corridors or other preferential pathways.

The pilot-scale test showed that it is possible to deliver air to the formation to promote the aerobic degradation of benzene over a large area. AS was demonstrated to be most feasible and effective at lower injection rates. Therefore, NAVFAC SE proposes to amend the remedial approach using biosparging. The following tasks will be performed as part of the installation of the biosparge system:

- Installation of 18 shallow sparge wells to a depth of approximately 18 feet bgs.
- Installation of 8 deep sparge wells to a depth of approximately 28 feet bgs. One deep well will be used to address both benzene and residual TCE concentrations in the vicinity of 54MW05 (refer to Section 2).
- Utilization of existing deep sparge well (54AS01) to address the deep zone.
- Installation and operation a pre-fabricated air injection system to deliver air to the injection wells to promote aerobic degradation of the benzene plume.

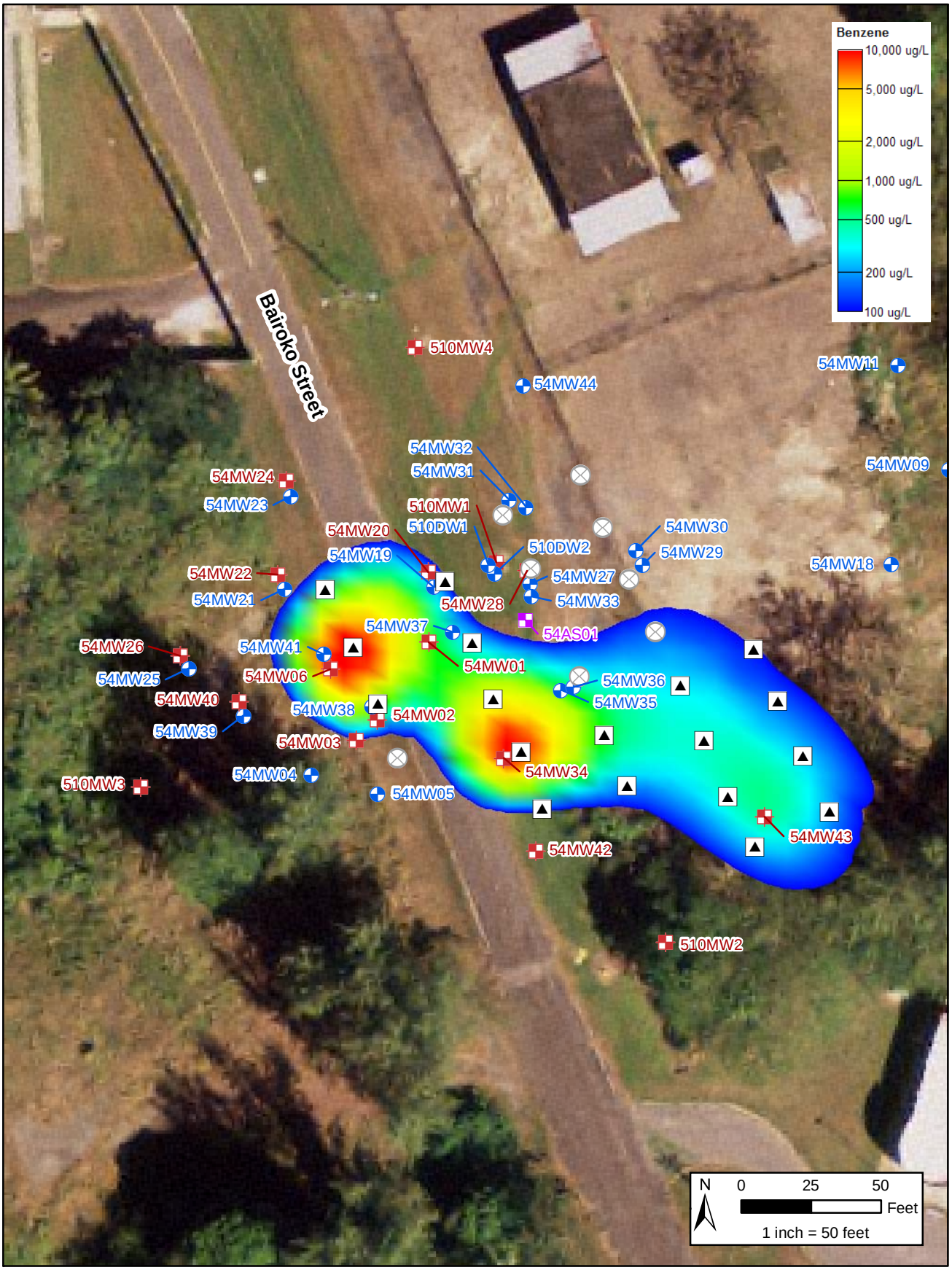
The amended remedial approach, along with a revised implementation schedule, is described in the following sections.

2.0 Corrective Measures Alternatives

As part of the preliminary screening process in the CMS, AS was eliminated from the alternatives for consideration for implementation because the technology would be hindered by the fine-grained soils and low permeability at SWMU 54 (Baker, 2005). However, results from the additional investigation work conducted between August 2009 and October 2010 indicated the technical approach recommended in the CMS, aerobic ISB via injection of oxygen-releasing compounds, was not viable at the site due to the extent and magnitude of benzene encountered in groundwater. The large mass of fuel residual discovered at the site would require excessive amounts of oxygen-releasing compounds and multiple injections. It was also determined that the delivery of oxygen-releasing compounds (slurry) in the subsurface would be too difficult to attain sufficient oxygen distribution to adequately stimulate aerobic ISB for the deep and shallow plume zones. As a result, AS technology was re-evaluated as a corrective measure to address benzene in groundwater at SWMU 54.

Based on the results from the pilot-scale test, biosparging was evaluated as a corrective measure alternative. Biosparging is a form of AS technology in which air is delivered to the subsurface at lower flow rates to promote aerobic degradation rather than primarily to volatize contaminants. The biosparge system to be implemented at SWMU 54 will consist of approximately 27 vertical air injection wells to address benzene concentrations exceeding the CAO. In addition, AGVIQ-CH2M HILL proposes to install wells along the southeast portion of the plume because benzene was detected at a concentration of 477 µg/L in well 54MW43. Although the benzene concentration in 54MW43 was below the CAO (550 µg/L), there is no trend data for this well; therefore, it is possible that concentrations may increase to levels that are at or above the CAO. Thus, the additional wells are proposed to account for possible variations in future concentrations. Sparge well locations for the shallow and deep zones are shown on Figures 2-1 and 2-2, respectively. The injection well screens will correspond to the targeted contamination zone. A total of five rows of injection wells, with wells spaced approximately 20 feet apart oriented perpendicular to groundwater flow, are proposed. The spacing was selected to ensure adequate coverage of the benzene plume based on pilot-scale test results; however, the actual spacing may require adjustment to avoid utilities. Air will be injected into the wells at a flow rate of less than 4 scfm per well with the goal of sufficiently aerating the aquifer to increase oxygen levels in groundwater and stimulate aerobic biodegradation of benzene.

System monitoring will be performed to evaluate the effectiveness of biosparging to achieve the remedial objectives and determine when the system will be turned off. Groundwater monitoring will be performed quarterly during the first year to determine if system adjustments are necessary and to monitor system performance. Additionally, system flow and pressure measurements will be recorded bi-weekly during operations and maintenance (O&M) site visits.



Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Shallow Biosparge Well

Deep Biosparge Well

Note: Corrective Action Objective (CAO) for Benzene = 550 µg/L

Originated By: Kylie McCord *Kylie McCord*

Checked By: Tom Kessler *Tom Kessler*

FIGURE 2-1
Proposed Shallow Biosparge Layout
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

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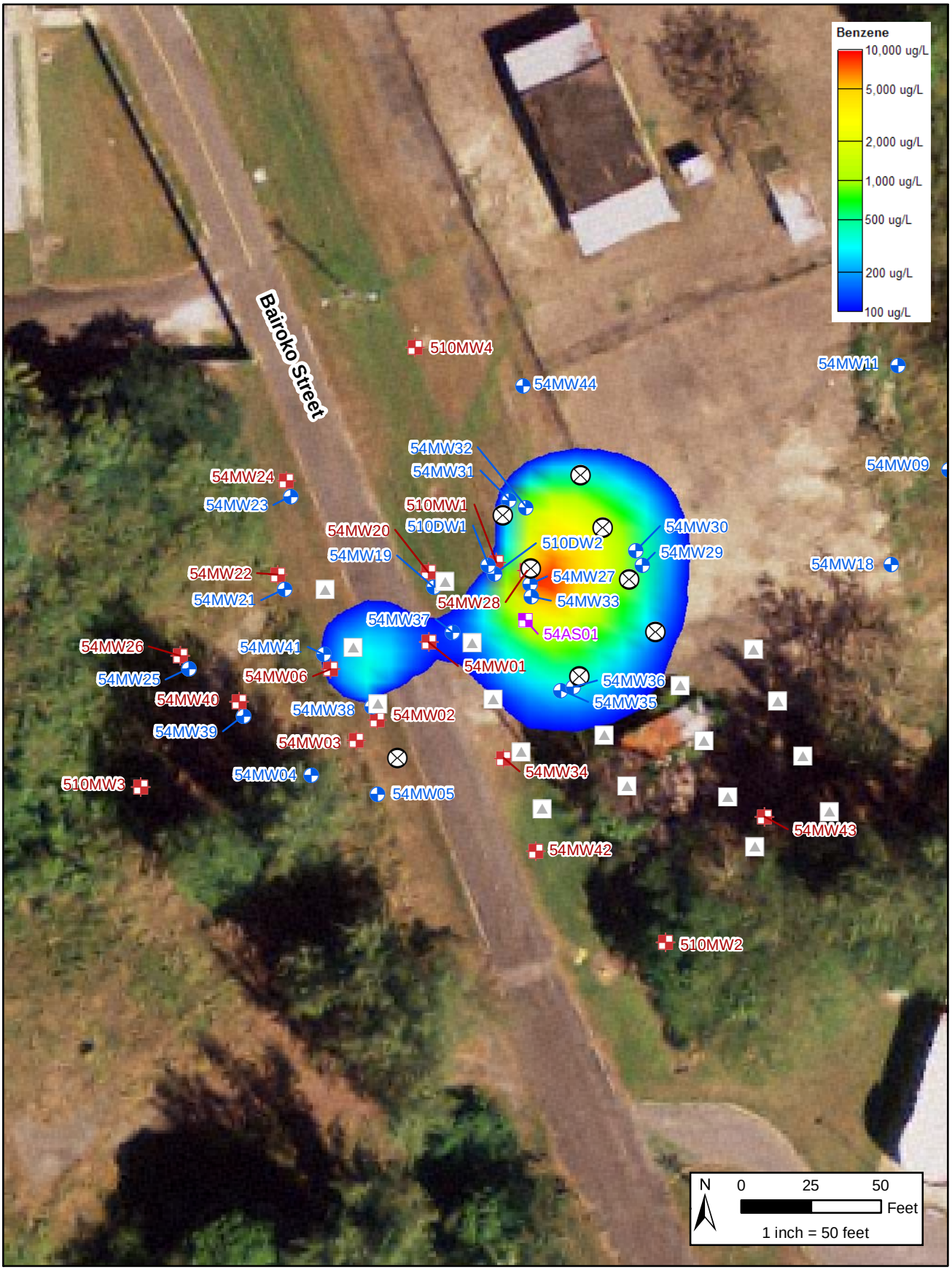

Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Deep Biosparge Well

Shallow Biosparge Well

Note: Corrective Action Objective (CAO) for Benzene = 550 µg/L

Originated By: Kylie McCord *Kylie McCord*

Checked By: Tom Kessler *Tom Kessler*

FIGURE 2-2
Proposed Deep Biosparge Layout
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

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3.0 Corrective Measure Evaluation

Biosparging was evaluated as a corrective measure alternative using the same criteria as the CMS (Baker, 2005). However, the evaluation presented in the following sections incorporates data obtained from the recent pilot-scale test.

3.1 Technical Evaluation

3.1.1 Performance

Biosparging is an established remedial technology that has been widely used to address benzene in groundwater. Based on the pilot-scale test results, it is possible to inject air into the aquifer to reduce benzene concentrations to the CAO of 550 µg/L or less. The results will depend on the ability to effectively address all zones of contamination. However, the use of vertical injection wells allows system expansion to be completed easily, if necessary, to optimize subsurface air distribution.

3.1.2 Reliability

Biosparge systems rely on mechanical equipment, including a compressor and process controls, to deliver air to the subsurface. All the necessary equipment is common and readily available and is therefore expected to perform reliably. However, additional requirements may exist to protect the equipment in a tropical climate, such as that at SWMU 54. An O&M plan will be developed to ensure proper operation and longevity of the equipment.

Contaminant concentrations in groundwater commonly rebound slightly after the equipment is turned off. As a result, AGVIQ-CH2M HILL proposes 1 year of quarterly closure monitoring following deactivation of the biosparge system to confirm groundwater concentrations remain below CAO levels.

3.1.3 Implementability

Because biosparging is a commonly used technology, the installation and operation of the system is well defined and requires commonly available equipment. At this site, the implementation can be completed quickly (less than 6 months). Characterization of the shallow and deep benzene plumes has been completed and system construction can begin upon approval of this CMS Addendum and the associated CMI Plan (AGVIQ-CH2M HILL, 2011).

3.1.4 Safety

The primary safety issue associated with installation and operation of a biosparge system is related to contaminant vapors. Based on previous drilling experience, benzene vapors from groundwater do not present a risk to onsite workers during installation of the biosparge system. Vapors produced during AS will be mitigated by pulsing air to the injection wells at flow rates less than 4 scfm. Based on results from the pilot-scale test, soil vapor extraction

does not appear warranted at this time with proper monitoring and control of the system. Vapor monitoring will be completed at all underground utility vaults (that is, storm sewer inlets, etc.) daily during startup and biweekly thereafter.

3.2 Environmental

This alternative would benefit the environment through rapid removal of benzene from groundwater. In addition, all waste, with the exception of drill cuttings, will be treated in place without having to remove, transport, and dispose. The energy required to operate the biosparge system is more than can be cost effectively and reliably supplied using alternative energy sources (for example, solar or wind power). In addition, electrical service is already available at the site to operate the system.

3.3 Human Health

This alternative is protective of human health by eliminating potential for exposure to benzene, a known carcinogen.

3.4 Institutional

This alternative satisfies federal, state, and local requirements. An underground injection control permit may be required.

3.5 Cost Estimate

The cost estimate prepared for this alternative includes the following assumptions:

- Injection well installation is estimated to require approximately 20 days to complete.
- Biosparge system installation and commissioning is expected to require approximately 40 days to complete.
- A total of approximately 120 tons of non-hazardous petroleum impacted waste is expected to be generated from the injection well installation and trenching activities. Material determined to be free of contamination and suitable for backfill will be used to backfill the piping trenches.
- Electrical service currently available at the site will be sufficient to operate the biosparge system.
- Bi-weekly system O&M visits will be completed during system operations
- The biosparge system is expected to operate for between 2 and 3 years.
- Quarterly groundwater sampling will be completed for the first year during system operations.
- Semiannual groundwater sampling will be completed following the first year while the biosparge system is in operation.

- Quarterly groundwater sampling will be completed during 1 year of confirmation monitoring after system shutdown.

The cost to complete the installation of the biosparge system and 2 years of system operation, maintenance, and monitoring is estimated to be approximately $940,000. Detailed cost information is provided in Appendix C.

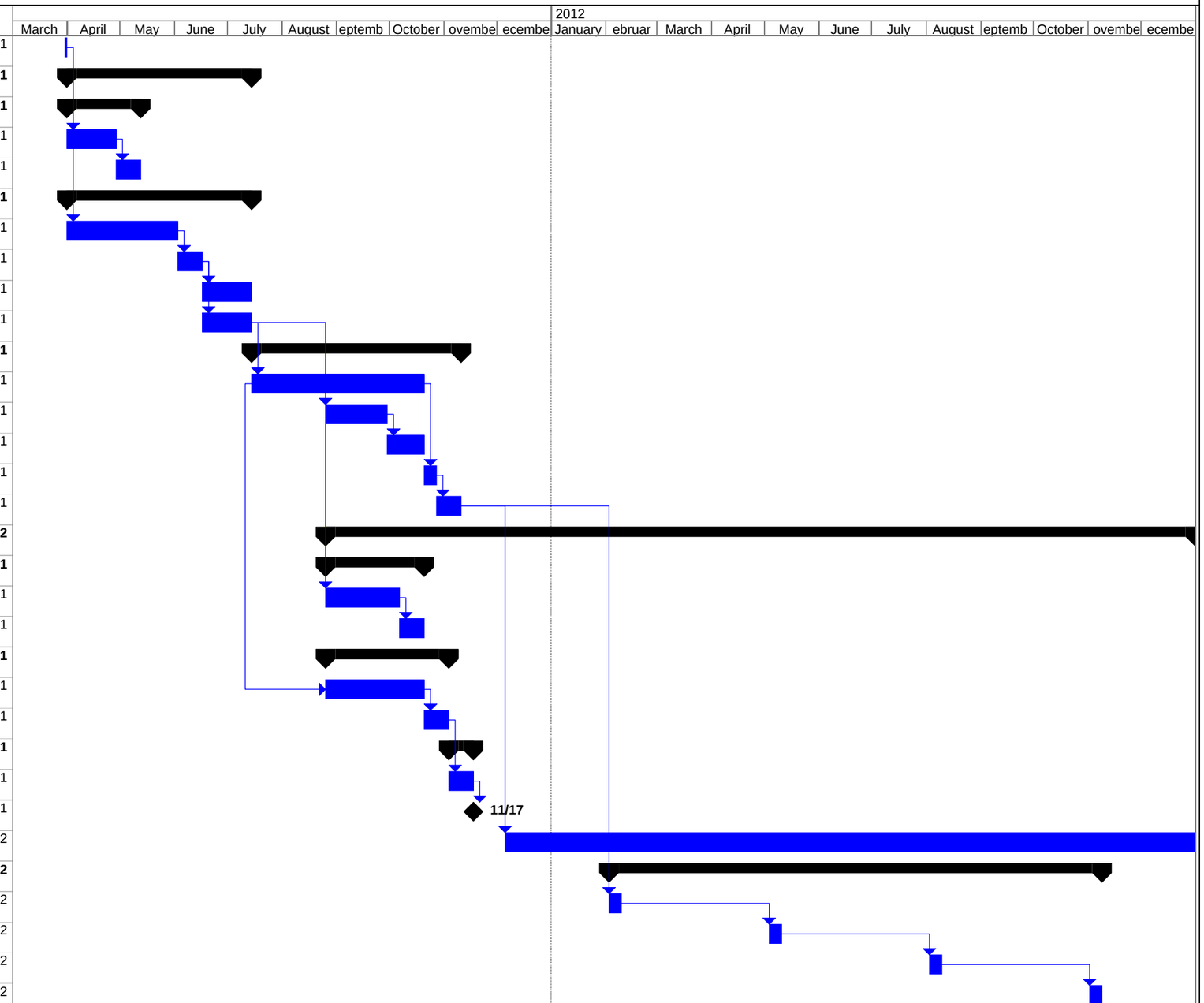
4.0 Recommended Corrective Measure

AGVIQ-CH2M HILL agrees with the CMS in the selection of monitored natural attenuation and institutional controls as the recommended remedy for the SWMU 54 benzene plume. However, the CMS also recommended the injection of oxygen-releasing compounds to achieve site closure more rapidly. Based on the additional investigation work conducted between August 2009 and October 2010 and the information presented in this CMS Addendum, biosparge is the selected corrective measure recommendation.

An implementation schedule is presented on Figure 4-1.

FIGURE 4-1
Biosparge Installation Schedule
SWMU 54
Naval Activity Puerto Rico

ID	Task Name	Duration	Start	Finish
1	Notice to Proceed	1 day	Thu 3/31/11	Thu 3/31/11
2	**Biosparge Design and Workplanning**	**75 days**	**Fri 4/1/11**	**Thu 7/14/11**
3	**Design Preparation**	**30 days**	**Fri 4/1/11**	**Thu 5/12/11**
4	60% Design	20 days	Fri 4/1/11	Thu 4/28/11
5	Final Design	10 days	Fri 4/29/11	Thu 5/12/11
6	**Work Plan for Field Implementation**	**75 days**	**Fri 4/1/11**	**Thu 7/14/11**
7	Work Plan Generation	45 days	Fri 4/1/11	Thu 6/2/11
8	Navy Review	10 days	Fri 6/3/11	Thu 6/16/11
9	EPA Review	20 days	Fri 6/17/11	Thu 7/14/11
10	UIC	20 days	Fri 6/17/11	Thu 7/14/11
11	**Field Implementation**	**85 days**	**Fri 7/15/11**	**Thu 11/10/11**
12	Equipment Fabrication	70 days	Fri 7/15/11	Thu 10/20/11
13	Biosparge Well Installation	25 days	Fri 8/26/11	Thu 9/29/11
14	Trenching	15 days	Fri 9/30/11	Thu 10/20/11
15	Electrical Installation	5 days	Fri 10/21/11	Thu 10/27/11
16	Startup/Shakedown Testing	10 days	Fri 10/28/11	Thu 11/10/11
17	**Biosparge Operations**	**352 days**	**Fri 8/26/11**	**Mon 12/31/12**
18	**O&M Plan**	**40 days**	**Fri 8/26/11**	**Thu 10/20/11**
19	Work Plan Generation	30 days	Fri 8/26/11	Thu 10/6/11
20	Navy Review	10 days	Fri 10/7/11	Thu 10/20/11
21	**O&M Manual**	**50 days**	**Fri 8/26/11**	**Thu 11/3/11**
22	Draft O&M Manual Prepartion	40 days	Fri 8/26/11	Thu 10/20/11
23	Navy Review	10 days	Fri 10/21/11	Thu 11/3/11
24	**Final O&M Manual**	**10 days**	**Fri 11/4/11**	**Thu 11/17/11**
25	Final O&M Manual Prepartion	10 days	Fri 11/4/11	Thu 11/17/11
26	Submittal to Navy	0 days	Thu 11/17/11	Thu 11/17/11
27	Operation and Maintenance	14 mons	Tue 12/6/11	Mon 12/31/12
28	**Monitoring**	**200 days**	**Fri 2/3/12**	**Thu 11/8/12**
29	YR 1 Q1	5 days	Fri 2/3/12	Thu 2/9/12
30	YR1 Q2	5 days	Fri 5/4/12	Thu 5/10/12
31	YR1 Q3	5 days	Fri 8/3/12	Thu 8/9/12
32	YR1 Q4	5 days	Fri 11/2/12	Thu 11/8/12



Project: Worksheet 16
Date: Thu 2/10/11

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

5.0 References

AGVIQ-CH2M HILL. 2011. *Corrective Measures Implementation Plan, SWMU 54, Naval Activity Puerto Rico*. Prepared for Naval Facilities Engineering Command Southeast. February.

Baker, 2005. *Corrective Measures Study Final Report for SWMUs 54 and 55, Naval Station Roosevelt Roads, Ceiba, Puerto Rico*. August.

APPENDIX A

Pilot-Scale Test Report

Pilot-Scale Test Report
SWMU 54 Benzene Plume

Naval Activity Puerto Rico
Ceiba, Puerto Rico

Revision No. 00

Contract No. N62470-08-D-1006
Task Order No. JM04

Submitted to:

U.S. Naval Facilities
Engineering Command
Southeast

Prepared by:

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March 2011

Executive Summary

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has been contracted by the Department of the Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE), under Contract No. N62470-08-D-1006, Task Order JM04, to implement corrective measures at Solid Waste Management Unit (SWMU) 54 at the Naval Activity Puerto Rico, Ceiba, Puerto Rico. AQVIQ-CH2M HILL was retained to conduct a pilot-scale test at SWMU 54 to evaluate the use of in situ bioremediation (ISB) to remediate benzene-contaminated groundwater exceeding the corrective action objectives (CAOs) (AGVIQ-CH2M HILL, 2009) (Baker Environmental, Inc. [Baker], 2005).

However, based on data collected during the first phases of the pilot-scale test, benzene concentrations were detected in groundwater at significantly greater concentrations than those presented in the 2005 Final Corrective Measures Study (CMS) (Baker, 2005). These results also indicated that the vertical and horizontal extent of benzene was not defined and that the remedy proposed in the CMS, ISB of benzene through the injection of oxygen-releasing compounds, was not a viable option as a corrective measures technology. Accordingly, the ISB pilot-scale test was suspended, and 32 monitoring wells were installed during four stages of work, to determine the horizontal and vertical extent of benzene in groundwater.

Using the new monitoring well network, the vertical and horizontal extent of benzene exceeding the CAO of 550 micrograms per liter was defined, including the identification of three separate source areas.

In addition, an air sparge (AS) pilot-scale test, including installation of one AS well, was performed to evaluate the ability to inject air into the subsurface in the vicinity of the benzene plume with the goal to volatilize and aerobically degrade benzene. The pilot-scale AS test demonstrated that air could be successfully distributed in the subsurface at SWMU 54 and that biosparge is the optimal remedy for benzene in groundwater.

The maximum radius of influence for a single injection well is estimated to be approximately 15 feet at an injection flow rate of 4 standard cubic feet per minute, based on AS pilot-scale test results. AS injection well spacing of 20 feet between wells is recommended for full-scale application to provide overlap of sparging influence and adequately distribute the air into the formation at a low injection flow rate. Shallow injection wells installed to a depth of approximately 16 to 18 feet below ground surface (bgs) should be utilized to address benzene concentrations in the shallow zone, while deeper injection wells installed to a depth of approximately 26 to 28 feet bgs should be installed to address intermediate zone impacts.

Contents

Executive Summary **ES-1**
1.0 Introduction **1-1**
1.1 Facility Description and History 1-1
1.2 Site Location and History 1-1
1.3 Objectives 1-3
2.0 Site Investigation **2-1**
2.1 Scope of Work 2-1
2.2 Monitoring and Sparge Well Installation 2-2
2.2.1 Drilling Procedures 2-4
2.2.2 Well Installation Procedures 2-4
2.2.3 Well Development 2-6
2.2.4 Surveying 2-6
2.3 Groundwater Monitoring 2-7
2.3.1 Groundwater Sample Collection 2-7
2.3.2 Analytical Methods 2-7
2.3.3 Quality Assurance/Quality Control Samples 2-7
2.4 Soil Monitoring 2-8
2.4.1 Soil Sample Collection 2-8
2.4.2 Analytical Method 2-8
2.4.3 Quality Assurance/Quality Control Samples 2-8
2.5 Aquifer Slug Testing 2-8
2.6 AS Pilot-Scale Test Procedures 2-9
2.7 Waste Management 2-11
2.7.1 Temporary Storage 2-12
2.7.2 Waste Characterization 2-12
2.7.3 Transportation and Disposal 2-12
3.0 Investigation Results **3-1**
3.1 Geology and Hydrogeology 3-1
3.1.1 Geology 3-1
3.1.2 Hydrogeology 3-1
3.2 Baseline Monitoring Results 3-7
3.2.1 Benzene in Groundwater 3-7
3.2.2 Extent of Benzene in Groundwater at SWMU 54 3-10
3.2.3 VOCs in Groundwater 3-10
3.3 Soil Monitoring Results 3-10
3.4 AS Pilot Test Results 3-10
3.4.1 Shallow Zone Wells (less than 15 ft bgs) 3-12
3.4.2 Deep Zone Wells 3-12
3.4.3 Utility Monitoring 3-13
4.0 Conclusions **4-1**
5.0 References **5-1**

Appendices

A Soil Boring Logs and Well Construction Diagrams
B Monitoring Well Purge Data
C Laboratory Data Sheets and CoCs
D Aquifer Slug Test Data
E AS Pilot-Scale Test Headspace Monitoring Results
F Waste Characterization and IDW Disposal Information
G Additional Analytical Data Summary
H AS Pilot-Scale Test DO and ORP Results
I AS Pilot-Scale Test DO Figures

Tables

2-1 Monitoring and Air Sparge Well Construction Details
2-2 AS Pilot-Scale Test Monitoring Network
3-1 Water Levels – January 25, 2010
3-2 Summary of Aquifer Slug Test Results
3-3 Analytical Data Summary

Figures

1-1 SWMU 54 Site Location
1-2 Site Layout
2-1 Benzene Plume Well Layout
2-2 AS Pilot-Scale Test Location Map
3-1 Cross Section A-A' W-E
3-2 Cross Section B-B' NW-SE
3-3 Potentiometric Surface Map (January 25, 2010)
3-4 Benzene Concentrations Exceeding Corrective Action Objectives, August 2009 through October 2010

Acronyms and Abbreviations

AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III
AS	air sparge
Baker	Baker Environmental, Inc.
bgs	below ground surface
CAO	corrective action objective
CMS	Corrective Measures Study
CoC	chain-of-custody
COD	chemical oxygen demand
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
FID	flame-ionization detector
GCAL	Gulf Coast Analytical Laboratories, Inc.
HSA	hollow-stem auger
ID	inner diameter
IDW	investigation-derived waste
ISB	in situ bioremediation
ISO	International Organization for Standardization
LNAPL	light non-aqueous phase liquid
MCL	Maximum Contaminant Level
µg/L	microgram per liter
mg/kg	milligram per kilogram
mg/L	milligram per liter
MLU	Multi-Layer Unsteady State
MVS	Mining Visualization Software
NAPR	Naval Activity Puerto Rico
NAVFAC SE	Naval Facilities Engineering Command Southeast
NSRR	Naval Stations Roosevelt Road

ORP	oxidation-reduction potential
PPE	personal protective equipment
QA	quality assurance
QC	quality control
PID	photo-ionization detector
ppm	part per million
psi	pound per square inch
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
scfm	standard cubic foot per minute
SESD	Science and Ecosystem Support Division
SOP	Standard Operating Procedure
SWMU	Solid Waste Management Unit
TCE	trichloroethene
TOC	total organic carbon
USCS	Unified Soil Classification System
UST	underground storage tank
VOC	volatile organic compound

1.0 Introduction

AGVIQ-CH2M HILL Constructors, Inc. Joint Venture III (AGVIQ-CH2M HILL) has been contracted by the Department of the Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under Contract No. N62470-08-D-1006, Task Order JM04, to implement corrective measures at Solid Waste Management Unit (SWMU) 54 located at Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico. This report summarizes the additional investigation work that was performed at SWMU 54 to evaluate the extent of benzene-contaminated groundwater. In addition to the investigation work, an air sparge (AS) pilot-scale test was conducted to evaluate the use of AS to remediate benzene-contaminated groundwater exceeding the corrective action objectives (CAOs). Development of the CAOs is described in the *Corrective Measures Study* [CMS] *Final Report* (hereinafter referred to as the CMS) (Baker Environmental, Inc. [Baker], 2005). The pilot-scale test and investigative work was completed between August 2009 and October 2010.

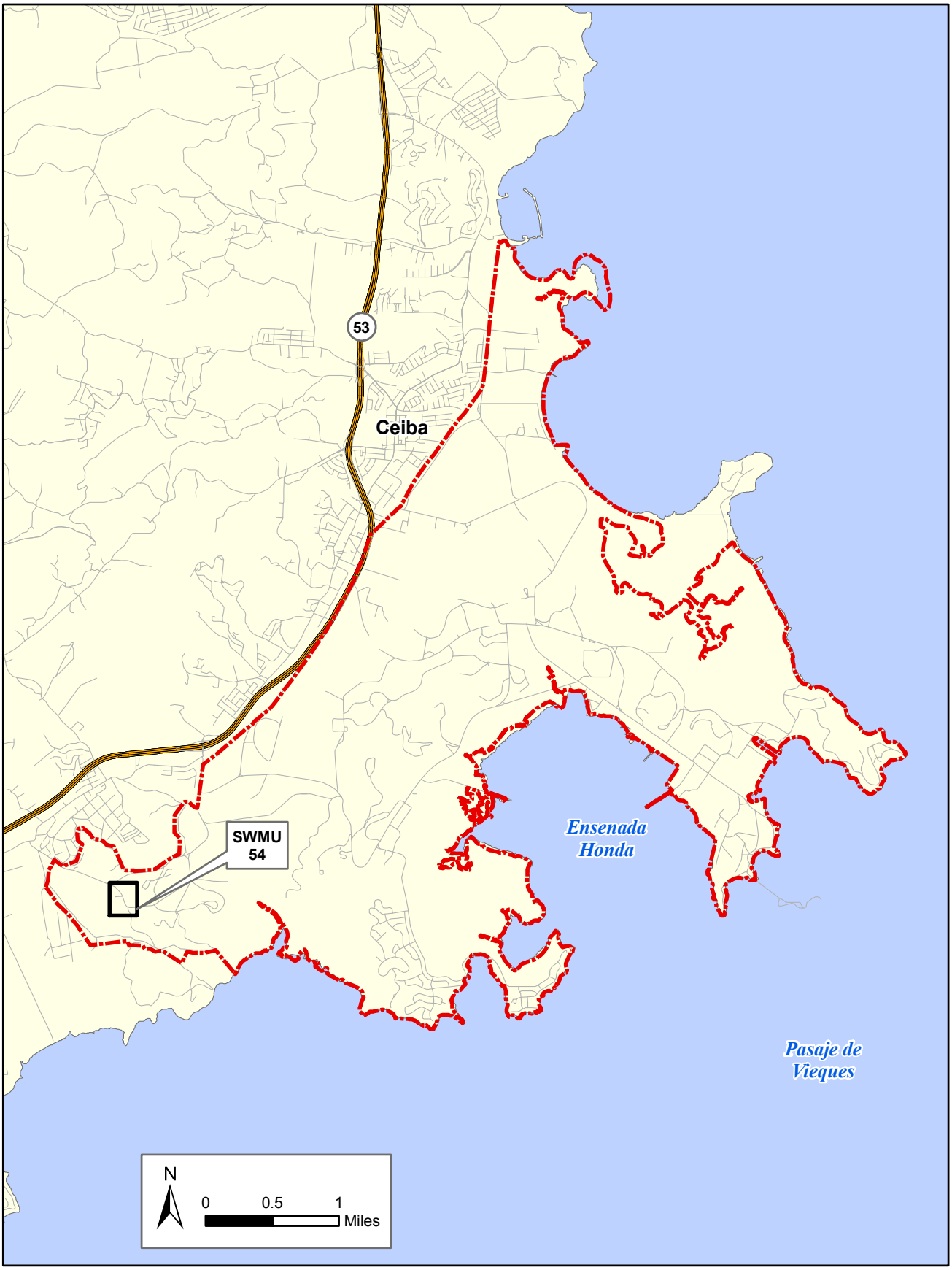
1.1 Facility Description and History

In 1943, the Naval Station Roosevelt Roads (NSRR) was commissioned as a Naval Operations Base and then re-designated as a Naval Station in 1957. The naval station was utilized for flight practice, as well as other missions to control the area's air space until 2004 when it became inoperative. The NAPR was established at this time. The mission of the NAPR is to protect the remaining physical assets, comply with environmental regulations, and sustain the value of the property until its final disposal. The NAPR occupies more than 8,600 acres at the northeastern-most portion of Puerto Rico along the Vieques Passage. The northern entrance to NAPR is approximately 35 miles east of San Juan, along PR Highway 53. The closest large city is Fajardo, located approximately 10 miles north of NAPR on Route PR Highway 53. The town of Ceiba adjoins the west boundary of NAPR (Figure 1-1).

1.2 Site Location and History

Prior to 1993, environmental activities at the former NSRR, exclusive of underground storage tank (UST) operation, were conducted in compliance with Comprehensive Environmental Response, Compensation, and Liability Act regulations under the Navy's Installation Restoration Program. On October 20, 1994, U.S. Environmental Protection Agency (EPA) Region 2 issued a Final Resource Conservation and Recovery Act (RCRA) Part B Permit to the NSRR, now NAPR. The permit contained requirements for RCRA facility investigation activities at 24 SWMUs and 3 areas of concern, including SWMU 54. The RCRA Part B Permit, issued for the Defense Reutilization and Marketing Office at NAPR, included provisions for corrective action under the Hazardous and Solid Waste Amendments provisions of RCRA.

SWMU 54 is the Former Naval Exchange Repair/Maintenance Shop (Building 1914), which was constructed in 1979. It is currently unoccupied and lies on approximately 1 acre of land in the Bundy Area of NAPR. A UST was present at the site and used to store fuel until its



Road

Expressway

Naval Station Roosevelt Roads Boundary

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Checked By: Shruti Shah *Shruti Shah*
Checked By: Alicia Nobles *Alicia Nobles*

FIGURE 1-1
SWMU 54 Site Location
SWMU 54
Naval Activity Puerto Rico

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removal in December 1992 (Blasland, et al., 1995). The date of installation and type of fuel stored is unknown, but is assumed to be gasoline. The building structure itself consists of a small concrete block building with a center office area and open bays on either side. The building was used to perform maintenance on vehicles, including oil changes and lubrications. No wastes are known to have been disposed of at the unit and there are no known releases related to the unit (Baker, 2005).

According to the CMS, two areas of groundwater contamination were identified at SWMU 54: a trichloroethene (TCE) plume east of Bairoko Street and a benzene plume near Bairoko Street (Baker, 2005) (Figure 1-2). The remedial technology recommended for both plumes was in situ bioremediation (ISB), utilizing aerobic ISB for the benzene plume and anaerobic ISB via enhanced reductive dechlorination for the TCE plume. However, groundwater data collected from the benzene plume demonstrated significantly higher benzene concentrations existed in groundwater than were described in the CMS, indicating an alternative technology to aerobic ISB may be more appropriate in this area. Based on this information, the aerobic ISB pilot-scale test to be conducted at the benzene plume was suspended. However, additional site investigation and an AS pilot-scale test were conducted. This report summarizes the work completed at the benzene plume only. Work completed at the TCE plume is described in the SWMU 54 TCE Corrective Measures Implementation Plan (AGVIQ-CH2M HILL, 2011a).

1.3 Objectives

Additional investigation work was performed to determine the extent of benzene-contaminated groundwater and the hydraulic properties of the aquifer. In addition, AS pilot-scale testing was performed to evaluate the use of AS to reduce benzene concentrations in groundwater. The objectives of the AS pilot-scale test were as follows:

- Evaluate the radius of influence from a single injection well based on dissolved oxygen (DO) distribution.
- Evaluate the effects of groundwater mounding and hydrocarbon vapor generation and migration during air injection.
- Evaluate distribution of air in the subsurface at varying injection rates.
- Evaluate persistence of DO in the subsurface following completion of the AS pilot-scale test.

Data collected during the pilot-scale test and subsequent performance monitoring events were used to do the following:

- Determine the pressure required to achieve adequate distribution of air in the subsurface.
- Determine the optimal air injection rate.
- Obtain data to design a full-scale AS system.

Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Injection Well Screened 17-27 ft bgs

Air Sparge Injection Well

Former Structure

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N

0 20 40 Feet

1 inch = 40 feet

FIGURE 1-2
Site Layout
SWMU 54
Naval Activity Puerto Rico

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2.0 Site Investigation

This section summarizes the investigation and pilot-scale test activities conducted between August 2009 and October 2010. The chronological summary of the field events is provided in Section 2.1, and the field procedures for each phase of work are summarized in Sections 2.2 through 2.6. The results of these efforts are summarized in Section 3.

2.1 Scope of Work

Investigation and pilot-scale test field work included a soil investigation, four phases of groundwater investigation that comprise the baseline benzene data, four stages of monitoring well installation for the groundwater investigation, and an AS pilot-scale test, including AS well installation, aquifer slug testing, and performance monitoring.

The following activities were completed at the SWMU 54 benzene plume between August 2009 and October 2010:

- **August 2009:** Installed six monitoring wells (54MW01 through 54MW06) [Stage 1] and collected soil samples from borings 54MW02 and 54MW03
- **September 2009:** Collected baseline groundwater samples from Stage 1 wells 54MW01 through 54MW06
- **October 2009:** Performed aquifer slug testing at wells 54MW01 through 54MW14 and 510MW5R
- **November to December 2009:** Installed 10 monitoring wells (54MW19 through 54MW28) [Stage 2]
- **January 2010:** Collected baseline groundwater samples from Stage 2 wells (54MW19 through 54MW28) and six existing wells (510DW1, 510DW2, and 510MW1 through 510MW4)
- **February to March 2010:** Installed 13 monitoring wells (54MW29 through 54MW41) [Stage 3]
- **April 2010:** Collected baseline groundwater samples from Stage 3 wells (54MW29 through 54MW41) and installed one AS well (54AS01)
- **May 2010:** Conducted AS pilot-scale test
- **October 2010:** Installed and collected groundwater samples from three monitoring wells (54MW42 through 54MW44) [Stage 4]

Well locations are shown on Figure 2-1. During completion of field work, protection of air, water, and land resources; fish and wildlife; and spill prevention measures were implemented in accordance with the Environmental Protection Plan (part of the SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]). In addition, quality control (QC) measures were

maintained for all work, including mobilization and site preparation, well installation, sample collection, waste management, decontamination, and demobilization. The QC measures were performed in accordance with the Quality Control Plan (part of the SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]).

2.2 Monitoring and Sparge Well Installation

A total of 32 monitoring wells (54MW01 through 54MW06 and 54MW19 through 54MW44) and 1 AS well (54AS01) were installed at SWMU 54 (Figure 2-1). The wells were installed in the following four stages:

Stage 1: Six monitoring wells (54MW01 through 54MW06) were installed along the plume axis based on the direction of groundwater flow determined in the CMS (Baker, 2005).

Stage 2: The benzene analytical results from Stage 1 wells indicated the horizontal extent of the benzene plume was still undefined. Also, benzene concentrations exceeding the CAO of 550 micrograms per liter (µg/L) (Baker 2005) were detected at wells 54MW01 (707 µg/L) and 54MW06 (9,260 µg/L). These wells were screened from 5 to 15 feet below ground surface (bgs), indicating the vertical extent of benzene was undefined. Therefore, five monitoring well pairs (54MW19 through 54MW28) were installed to further define the benzene plume horizontally and vertically. Each well pair includes a shallow well (screened approximately 5 to 15 feet bgs) and deep well (screened approximately 15 to 25 feet bgs). The Stage 1 wells (54MW01 through 54MW06) were sampled again to confirm the previous results.

Stage 3: The benzene analytical results from Stage 2 wells suggested that the benzene plume was split into two separate sources: a deep source associated with the former UST located on the east side of Bairoko Street, and a shallow source related to a surface spill of fuel that reportedly occurred on the west side of Bairoko Street. Therefore, 12 monitoring wells were installed to further define the benzene plume:

- Two monitoring wells (54MW33 and 54MW37) were installed to define the deep source plume vertically.
- Three monitoring well pairs (54MW29 through 54MW32 and 54MW35 and 54MW36) were installed to horizontally and vertically define the northern, southern, and eastern extent of the deep source plume.
- Two monitoring wells (54MW38 and 54MW41) were installed to define the shallow source plume vertically.
- One monitoring well pair (54MW39 and 54MW40) was installed to define the horizontal and vertical extent of the plume along the southwestern edge of the site.

In addition to the 12 wells installed to determine the extent of benzene in groundwater, one AS well (54AS01) was installed for use as an air injection well during the May 2010 pilot-scale test.

Stage 4: The benzene analytical results from Stage 3 wells confirmed the presence of two benzene plumes: one in the deep zone on the east side of Bairoko Street and one in the

Note: CAO for Benzene = 550 µg/L

Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Air Sparge Injection Well

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FIGURE 2-1
Benzene Plume Well Layout
SWMU 54
Naval Activity Puerto Rico

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shallow zone primarily on the west side of Bairoko Street. The analytical results also identified a previously unknown area of shallow benzene contamination present in the vicinity of well 54MW34 located on the southeast side of Bairoko Street near a drainage ditch. Therefore, two monitoring wells (54MW42 and 54MW43) were installed to completely define the horizontal extent of the shallow benzene contamination in well 54MW34, and one monitoring well (54MW44) was installed to define the northern extent of deep zone plume.

2.2.1 Drilling Procedures

A total of 33 borings (32 monitoring wells and 1 AS well) were advanced between August 10, 2009, and October 14, 2010. Jaca and Sierra Geotechnical Services of Bayamon, Puerto Rico, performed the drilling and well installation work. Borings were advanced using a Mobil B61 hollow-stem auger (HSA) drill rig. Well drilling and installation procedures followed the requirements of the EPA Region 4 Science and Ecosystem Support Division (SESD) *Environmental Investigations Standard Operating Procedures* [SOPs] *and Quality Assurance Manual* (EPA, 2001).

Prior to commencement of intrusive work, AGVIQ-CH2M HILL staked the locations of the proposed wells and coordinated with One Vision Utility Services of Kennesaw, Georgia, to mark underground utilities. AGVIQ-CH2M HILL also consulted with local base personnel to identify inactive subsurface utility lines that were still in place and, before drilling operations, hand augured the proposed boring locations to 5 feet bgs, or where refusal was met, to vertically clear the borehole. An AGVIQ-CH2M HILL geologist oversaw drilling and well construction activities.

Borings were advanced using an 8-inch outside diameter HSA. Soil samples were collected using an 18- or 24-inch split-spoon sampler in accordance with American Society for Testing and Materials Method D-1586. The split-spoon sampler was driven 18 inches, 24 inches, or until the number of blows exceeded 50 for 6 inches or less of penetration. Split-spoon samples were collected at 5-foot intervals or at significant changes in lithology. Boring depths ranged from 16 to 41 feet bgs.

Following the split-spoon sample collection, the soil samples were screened for headspace using either a flame-ionization detector (FID) or photo-ionization detector (PID) to evaluate the relative concentration of volatile organic compounds (VOCs) in the soil. In addition, the lithology was recorded in accordance with the Unified Soil Classification System (USCS). Soil boring logs are provided in Appendix A.

Soil cuttings from Stages 1 and 4 were containerized in 55-gallon drums, and soil cuttings from Stages 2 and 3 were containerized in a 20-yard roll-off container pending characterization and proper disposal, in accordance with the Waste Management Plan (part of the SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]).

2.2.2 Well Installation Procedures

AS and monitoring well construction activities commenced upon completion of the soil borings. Well construction details are summarized in Table 2-1, and well construction diagrams are presented in Appendix A. Well installation procedures are described in the following subsections.

TABLE 2-1
Monitoring and Air Sparge Well Construction Details
SWMU 54
Naval Activity Puerto Rico

Well ID	Ground Elevation[a] (feet NGVD29)	Top of Casing (TOC) Elevation (feet NGVD29)	Flush/Stick-up	Height from TOC to Ground Surface (feet)	Depth, Top of Screen (feet BTOC)	Depth, Bottom of Screen (feet BTOC)	Total Depth (feet BTOC)	Riser Material	Riser Diameter (inches)	Screen Length (feet)	Date Installed
54MW01	16.88	16.42	Flush	-0.5	3.4	13.4	13.92	Sch 40 PVC	2	10	8/14/2009
54MW02	16.83	16.54	Flush	-0.3	4.5	14.5	15.01	Sch 40 PVC	2	10	8/13/2009
54MW03	16.91	19.26	Stick-up	2.4	6.9	16.9	17.39	Sch 40 PVC	2	10	8/12/2009
54MW04	17.04	19.52	Stick-up	2.5	8.8	23.8	24.31	Sch 40 PVC	2	15	8/10/2009
54MW05	17.21	19.82	Stick-up	2.6	8.9	23.9	24.37	Sch 40 PVC	2	15	8/12/2009
54MW06	16.60	19.38	Stick-up	2.8	7.8	17.8	18.30	Sch 40 PVC	2	10	8/11/2009
54MW19	17.21	19.61	Stick-up	2.4	17.7	27.7	28.24	Sch 40 PVC	2	10	12/9/2009
54MW20	17.06	19.72	Stick-up	2.7	7.6	17.6	18.07	Sch 40 PVC	2	10	12/10/2009
54MW21	15.92	18.20	Stick-up	2.3	17.8	27.8	28.29	Sch 40 PVC	2	10	11/20/2009
54MW22	15.73	18.31	Stick-up	2.6	7.7	17.7	18.23	Sch 40 PVC	2	10	11/20/2009
54MW23	15.94	15.68	Flush	-0.3	14.9	24.9	25.44	Sch 40 PVC	2	10	12/9/2009
54MW24	15.99	15.69	Flush	-0.3	4.9	14.9	15.35	Sch 40 PVC	2	10	12/1/2009
54MW25	15.88	18.30	Stick-up	2.4	17.9	27.9	28.39	Sch 40 PVC	2	10	11/18/2009
54MW26	15.67	18.26	Stick-up	2.6	7.5	17.5	18.00	Sch 40 PVC	2	10	11/19/2009
54MW27	17.46	20.00	Stick-up	2.5	17.7	27.7	28.23	Sch 40 PVC	2	10	12/11/2009
54MW28	17.44	20.13	Stick-up	2.7	7.5	17.5	18.02	Sch 40 PVC	2	10	12/16/2009
54MW29	17.62	20.30	Stick-up	2.7	28.0	43.0	43.47	Sch 40 PVC	2	15	2/26/2010
54MW30	17.62	20.27	Stick-up	2.6	17.1	27.1	27.59	Sch 40 PVC	2	10	3/3/2010
54MW31	17.32	20.00	Stick-up	2.7	27.8	42.8	43.30	Sch 40 PVC	2	15	3/17/2010
54MW32	17.41	20.36	Stick-up	2.9	17.1	27.1	27.55	Sch 40 PVC	2	10	3/4/2010
54MW33	17.27	19.82	Stick-up	2.6	27.9	42.9	43.40	Sch 40 PVC	2	15	3/19/2010
54MW34	17.51	20.29	Stick-up	2.8	7.9	17.9	18.37	Sch 40 PVC	2	10	3/5/2010
54MW35	17.39	17.26	Flush	-0.1	25.1	40.1	40.64	Sch 40 PVC	2	15	3/22/2010
54MW36	17.39	17.19	Flush	-0.2	14.9	24.9	25.38	Sch 40 PVC	2	10	3/23/2010
54MW37	16.89	19.67	Stick-up	2.8	28.0	43.0	43.45	Sch 40 PVC	2	15	3/24/2010
54MW38	16.67	16.61	Flush	-0.1	14.8	24.8	25.34	Sch 40 PVC	2	10	3/29/2010
54MW39	15.77	18.71	Stick-up	2.9	17.8	27.8	28.25	Sch 40 PVC	2	10	3/25/2010
54MW40	15.77	18.70	Stick-up	2.9	7.8	17.8	18.25	Sch 40 PVC	2	10	3/29/2010
54MW41	16.10	18.85	Stick-up	2.7	17.7	27.7	28.23	Sch 40 PVC	2	10	3/30/2010
54MW42	17.43	20.25	Stick-up	2.8	7.3	17.3	17.82	Sch 40 PVC	2	10	10/7/2010
54MW43	19.32	22.41	Stick-up	3.1	7.5	17.5	18.00	Sch 40 PVC	2	10	10/14/2010
54MW44	17.00	19.90	Stick-up	2.9	17.4	27.4	27.88	Sch 40 PVC	2	10	10/7/2010
54AS01	17.20	19.98	Stick-up	2.8	26.8	28.8	29.28	Sch 40 PVC	2	2	4/1/2010
510DW1	17.37	17.36	Flush	0.0	19.6	24.6	25.10	Sch 40 PVC	2	5	3/23/1995
510DW2	17.52	17.32	Flush	-0.2	39.0	44.0	44.50	Sch 40 PVC	2	5	4/17/1995
510MW1	17.39	17.14	Flush	-0.3	2.9	12.9	13.40	Sch 40 PVC	2	10	2/21/1995
510MW2	19.85	22.48	Stick-up	2.6	5.8	20.8	21.32	Sch 40 PVC	2	15	2/21/1995
510MW3	15.54	17.50	Stick-up	2.0	6.9	16.9	17.40	Sch 40 PVC	2	10	2/21/1995
510MW4	16.69	16.15	Flush	-0.5	4.2	14.2	14.74	Sch 40 PVC	2	10	2/22/1995

Notes:
[a] Ground surface elevation is measured from the concrete well pad at the base of the well.
BTOC = below top of casing
NGVD29 = \National Geodetic Vertical Datum of 1929
= wells screened primarily less than 15 ft bgs
= wells screened primarily greater than 15 ft bgs

AS Well

The AS well (54AS01) was installed using an HSA drill rig. The well was constructed with 2 feet of 2-inch inner diameter (ID) Schedule 40 polyvinyl chloride (PVC) 0.02-slot screen and 2-inch ID riser. Filter pack (5/12 silica) sand was placed to a height 2 feet above the top of the screen, followed by 2 feet of hydrated bentonite. The annulus was then filled with Portland cement grout to ground surface. The well was finished as an aboveground completion with a locking protective steel cover set into a 3-foot square concrete well pad surrounded by four protective steel bollards.

Monitoring Wells

Monitoring wells were installed using an HSA drill rig. Wells 54MW01 through 54MW06 were constructed with 10 feet of 2-inch ID Schedule 40 PVC 0.01-slot screens and a variable amount of 2-inch ID riser. Wells 54MW19 through 54MW44 were constructed with 10 feet of 2-inch ID Schedule 40 PVC 0.02-slot screens and a variable amount of 2-inch ID riser. Filter pack was comprised of clean 20/30, 5/12, or 6/14 silica sand brought to a to a height at least 0.4 foot above the top of the screen, followed by at least 1.5 feet of hydrated bentonite. The annulus was then filled with Portland cement grout to ground surface.

After installation, the wells were finished as aboveground completions, except monitoring wells installed along Bairoko Drive (54MW01, 54MW02, 54MW23, 54MW24, 54MW35, and 54MW36), which were finished as flush-mount completions. The aboveground completions were finished in the same manner as previously described for the AS well. The flush-mount wells were completed using flush-mount 8-inch-diameter steel well vaults set in 3-foot square concrete well pads.

2.2.3 Well Development

The AS and monitoring wells were developed after the annular space grout cured for a minimum of 24 hours. The development procedures were conducted in accordance with the Sampling and Analysis Plan (SAP) (AGVIQ-CH2M HILL, 2011b), including monitoring of water quality parameters. Well development was accomplished through a combination of pumping and surging along the entire screen length using a submersible pump. Development was considered complete when the water produced was clear and water quality parameters were stabilized.

Development water from Stage 1 and Stages 2 through 4 wells was containerized in 55-gallon drums and 600-gallon tanks, respectively, pending characterization and proper disposal, in accordance with the Waste Management Plan (part of SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]).

2.2.4 Surveying

Horizontal well locations, top of casing elevations, and ground surface elevations were surveyed by PJDC Professional Land Surveyors of San Juan, Puerto Rico, a Puerto Rico-registered land surveyor. The wells were surveyed relative to a previously established benchmark. The horizontal location was surveyed to an accuracy of 0.1 foot, and the ground surface and top of casing elevations were surveyed to an accuracy of 0.01 foot. The well construction diagrams are provided in Appendix A, and elevation data are provided in Table 2-1.

2.3 Groundwater Monitoring

This section describes the field procedures for collection and analysis of groundwater samples.

2.3.1 Groundwater Sample Collection

Groundwater samples were collected after purging the wells according to the low-flow/low-volume (micro-purge) purge method outlined in the EPA Region 4 SESD *Operating Procedure: Groundwater Sampling* (EPA, 2007). This SOP is provided in Appendix B of the SAP (AGVIQ-CH2MHILL, 2011b). The purging was completed using a peristaltic pump and dedicated tubing. Field parameters, including specific conductance, pH, temperature, oxidation-reduction potential (ORP), and DO, were measured with a YSI multi-meter and flow cell. Purge data is provided in Appendix B.

Groundwater samples for benzene analysis were collected during four baseline sampling events (September 2009 and January, April, and October 2010). Groundwater samples collected in September 2009 (Stage 1) were analyzed for benzene, sulfide, alkalinity, nitrate, sulfate, dissolved iron, total organic carbon (TOC), and chemical oxygen demand (COD). Groundwater samples collected in January 2010 (Stage 2) and October 2010 (Stage 4) were analyzed for a full suite of VOCs. Groundwater samples collected in April 2010 (Stage 3) were analyzed only for benzene, with the exception of wells 54MW34 through 54MW36, which were also analyzed for TCE.

Groundwater monitoring results are discussed in Section 3.2.

2.3.2 Analytical Methods

Analyses of groundwater samples collected at SWMU 54 were completed using the following methods:

- VOCs (benzene): EPA Method SW-846 8260B
- Dissolved iron: EPA Method SW-846 6010B
- Sulfate and nitrate: EPA Method 300.0
- Sulfide: SM 4500 S D
- COD: Hach 8000
- Alkalinity: SM 2320 B
- TOC: SM 5310 B

Groundwater samples were placed on ice in a cooler and shipped via overnight mail to Gulf Coast Analytical Laboratories, Inc. (GCAL) of Baton Rouge, Louisiana, under standard chain-of-custody (CoC) procedures. The laboratory data sheets and CoCs are provided in Appendix C.

2.3.3 Quality Assurance/Quality Control Samples

The following quality assurance (QA)/QC samples were collected to conduct the data validation required to ensure all data were useable as reported: 1 field duplicate sample per every 10 samples; 1 trip blank per sample cooler; 1 equipment blank per equipment used per each day of sampling; and 1 matrix spike/matrix spike duplicate per every 20 samples.

2.4 Soil Monitoring

This section describes the field procedures for collection and analysis of soil samples.

2.4.1 Soil Sample Collection

Soil samples were collected during the advancement of borings for wells 54MW02 and 54MW03. As the boring was advanced, soil samples were collected every 6 inches and screened using a FID, in accordance with the SAP (AGVIQ-CH2M HILL, 2011b). The screening sample was immediately placed in a plastic bag, sealed, and allowed to equilibrate for 10 minutes. The bag was then pierced with the FID probe and the headspace reading was recorded. For both 54MW02 and 54MW03, the soil sample exhibiting the highest headspace reading was submitted for chemical analysis.

2.4.2 Analytical Method

Soil samples collected at SWMU 54 were analyzed for benzene using EPA Method SW-846 8260B. Soil samples were placed on ice in a cooler and shipped via overnight mail to GCAL of Baton Rouge, Louisiana, under standard CoC procedures. The laboratory data sheets and CoCs are provided in Appendix C.

2.4.3 Quality Assurance/Quality Control Samples

The following QA/QC samples were collected to conduct the data validation required to ensure all data were useable as reported: 1 field duplicate sample per every 10 samples; 1 trip blank per sample cooler; 1 equipment blank per equipment used per each day of sampling; and 1 matrix spike/matrix spike duplicate per every 20 samples.

2.5 Aquifer Slug Testing

Preliminary injection tests were originally planned to determine the ability to inject fluids in the subsurface prior to procuring and shipping chemical for the pilot-scale test injections. However, during installation of site wells, groundwater recovery rates indicated a geologic lithology with lower-than-expected hydraulic conductivity. Therefore, slug tests were conducted, instead of the preliminary injection tests, to evaluate the aquifer conductivity.

Slug tests were conducted on October 7, 2009, at wells 54MW01 through 54MW06. The tests were completed using a rising head or "slug out" method, as described in the EPA *Slug Tests SOP* (EPA, 1994). A 4-foot bailer was inserted into the well while minimizing the change in water level. After the bailer was completely submerged and the water level stabilized to baseline conditions, the bailer, acting as a slug, was quickly removed from the well. After removal of the slug, water levels within the well were recorded using a Level TROLL 700® pressure transducer.

The slug test data were evaluated using the Multi-Layer Unsteady State (MLU) program to determine the hydraulic conductivity. MLU is a Windows™ application that can be used for drawdown calculations and aquifer test analysis of transient well flow in layered aquifer systems and stratified aquifers. MLU can estimate selected aquifer parameters based on a best-fit semi-analytical solution to measure time-distance-drawdown data. The slug test results are discussed in Section 3.4. Aquifer slug test data are provided in Appendix D.

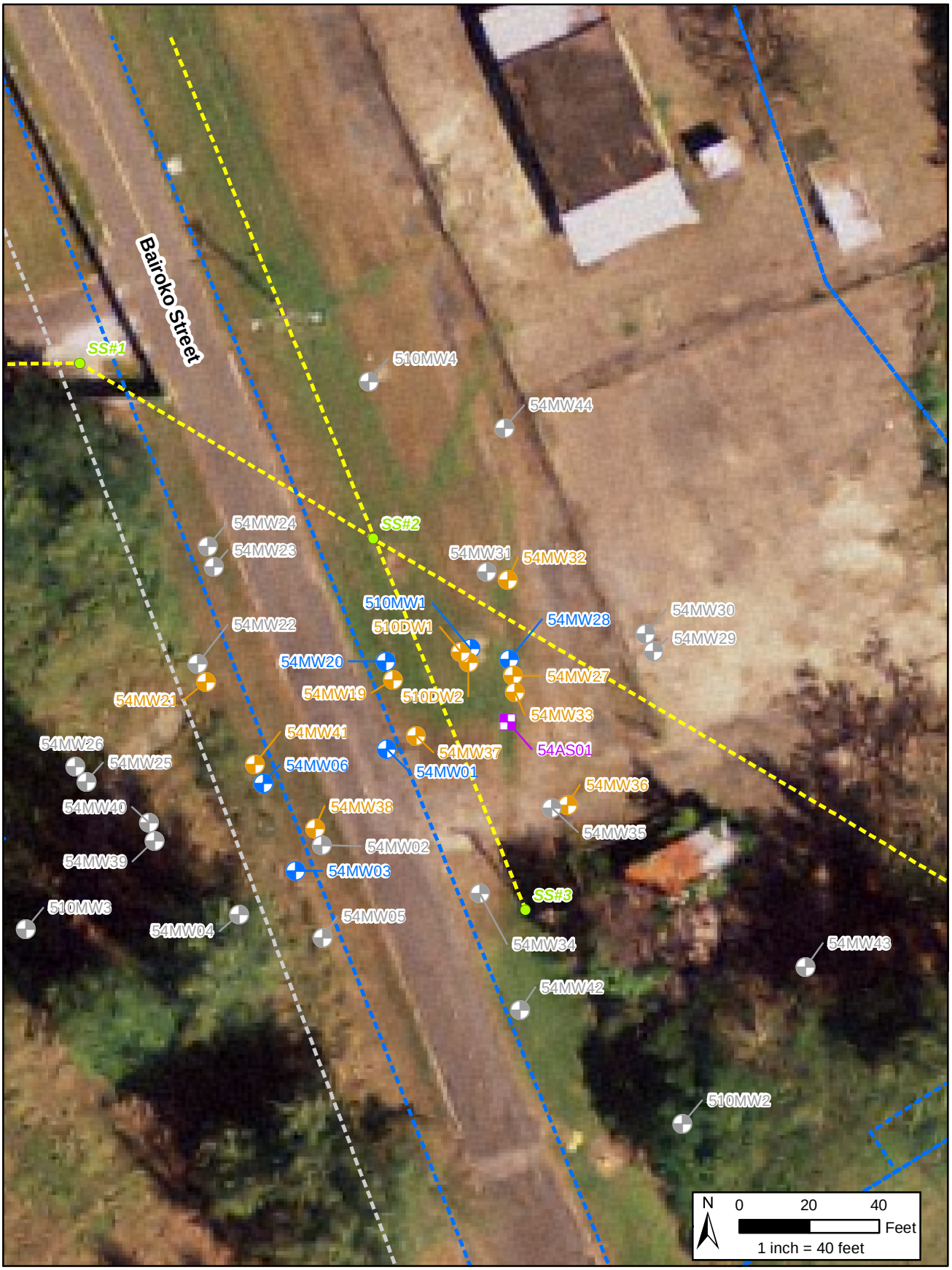
2.6 AS Pilot-Scale Test Procedures

Between May 10 and 13, 2010, an AS pilot-scale test was performed to evaluate the effectiveness of AS to reduce benzene concentrations in groundwater to the CAO of 550 µg/L.

Prior to initiating the pilot-scale test, a monitoring well network was established using existing wells based on the proximity of the monitoring wells to the AS injection well (54AS01) and the screened interval of each well. The objective was to select an adequate number of wells to determine the horizontal and vertical influence that resulted from the injection of air into the aquifer between 24 and 26 feet bgs. Air injection into the deep zone was selected for pilot-scale testing because of existing monitoring network configuration in the test area and because design results from the deep zone would translate to the shallow zone. A total of 17 wells were selected for monitoring (see Table 2-2 and Figure 2-2). Of the 17 wells, 6 shallow wells (screened within the upper 15 feet of the water table aquifer), and 11 deep wells (screened below 25 feet bgs) were selected for monitoring. Prior to starting the AS pilot-scale test, all 17 wells were gauged using an oil/water interface probe to establish baseline water levels. Following completion of the baseline gauging event, YSI 600XLM data logging probes were installed approximately 2 to 4 feet below the static water level in 10 of the monitoring wells (4 shallow and 6 deep) to monitor changes in DO, ORP, temperature, and conductivity during the course of the AS pilot-scale test. Of the 10 data logging probes, 6 were also equipped with a pressure transducer that allowed changes in water levels to be recorded. Data logging was conducted at monitoring wells 510MW1, 54MW01, 54MW19, 54MW20, 54MW27, 54MW 28, 54MW32, 54MW33, 54MW36, and 54MW37, while the following six wells contained the water level transducer: shallow zone wells 510MW1, 54MW01, and 54MW28; and deep zone wells 54MW19, 54MW33, and 54MW37.

Data logging was initiated approximately 12 hours before AS using the in-well data loggers. The AS pilot-scale test equipment included a portable air compressor, equipped with a flow meter, pressure regulator, and moisture and particulate filter, used to deliver air to well 54AS01. AS was activated at a flow rate of approximately 4 standard cubic feet per minute (scfm) and a delivery pressure of approximately 14 pounds per square inch (psi). Once breakthrough of air to the formation was achieved, the operating pressure on the well was reduced to approximately 7 psi. During the first 8 hours of the test, VOC concentrations were measured in the headspace of each of the monitoring network wells and at known underground utility locations using a PID.

After the first 8 hours, the portable air compressor was replaced with a larger unit, and the air delivery to well 54AS01 was increased to 8 scfm at approximately 19 psi. The air compressor continued to operate overnight at 8 scfm. Approximately 16 hours later (a total of 24 hours into the test), the airflow was increased to approximately 15 scfm at 25 psi. Wellhead VOC and pressure readings were periodically collected at monitoring wells throughout the remainder of the test after the flow was increased to 8 scfm (Appendix E). AS was ceased after approximately 31 total hours of sparging. Data loggers continued to log data for approximately 18 more hours to monitor changes in DO, ORP, and water levels following discontinuation of air injection. At the conclusion of the pilot-scale test, all 17 wells in the monitoring well network were gauged using an oil/water interface probe.



Shallow Monitoring Well
Deep Monitoring Well
Other Monitoring Well Not Included In Pilot Test
Air Sparge Injection Well
Storm Sewer Monitoring Location
Water Line
Storm Sewer Line
Communication Fiber Optic Line

Originated By: Kylie McCord *Kylie McCord*
Checked By: Shruti Shah *Shruti Shah*
Checked By: Alicia Nobles *Alicia Nobles*

FIGURE 2-2
AS Pilot-Scale Test Location Map
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_ASPILOTTESTLOCATIONMAP_20110124.MXD SSMITH21 1/28/2011 15:39:12

The use of soil vapor extraction was not evaluated because the shallow depth to groundwater and lack of impermeable surface cover would prevent effective operation of a soil vapor extraction system.

TABLE 2-2
AS Pilot-Scale Test Monitoring Network
Naval Activity Puerto Rico, Ceiba, Puerto Rico

Well Identification	Screened Interval (feet bgs)	Approximate Distance (feet) and Direction from 54AS01	Baseline Water Level	Final Water Level	YSI Data Logger (DO, ORP, and Conductivity)	YSI Data Logger (Water Level)
Shallow Zone Wells						
510MW1	3.2 – 13.2	24 NNW	X	X	X	X
54MW01	3.9 – 13.9	35 W	X	X	X	X
54MW03	4.5 – 14.5	73 SW	X	X	-	-
54MW06	5.0 – 15.0	72 WSW	X	X	-	-
54MW20	4.9 – 14.9	39 NW	X	X	X	-
54MW28	4.8 – 14.8	17NW	X	X	X	X
Deep Zone Wells						
510DW1	19.6 – 24.6	24 NNW	X	X	-	-
54MW19	15.3 – 25.3	34 NW	X	X	X	X
54MW21	15.5 – 25.5	86 WNW	X	X	-	-
54MW27	15.2 – 25.2	13 NNE	X	X	X	-
54MW32	14.1 – 24.1	40 N	X	X	X	-
54MW36	15.1 – 25.1	29 SE	X	X	X	-
54MW38	14.9 – 24.9	62 SW	X	X	-	-
54MW41	15.0 – 25.0	73 WSW	X	X	-	-
54MW33	25.9 – 40.9	8 NNE	X	X	X	X
54MW37	25.2 – 40.2	25 WNW	X	X	X	X
510DW2	39.2 – 44.2	24 NNW	X	X	-	-

2.7 Waste Management

Investigation-derived waste (IDW) was generated during the well installation, well development, groundwater sampling, aquifer testing, and decontamination operations. Soil, groundwater, and decontamination waste was stored, transported, and disposed of in accordance with the Waste Management Plan (part of SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]) and waste management procedures described in the following subsections.

2.7.1 Temporary Storage

During Stage 1 of well installation, soil and water were contained in 55-gallon steel drums, as approved and designated by the Navy. For transportation purposes, water was transferred from the 55-gallon drums to an International Organization for Standardization (ISO) container by the transporter, Clean Harbors Caribe, Inc.

During Stages 2 and 3 of well installation, soil was contained in lined 20-yard roll-off containers, and water was stored in 600-gallon poly tanks. During Stage 4 of well installation, soil was contained in 55-gallon steel drums, and water was stored in 500-gallon poly tanks.

The ISO container was stored on an existing secondary containment pad with a polyethylene liner. All drums and 600-gallon tanks were properly stored within secondary containment and on palettes at base-approved temporary storage locations. Each container was properly labeled in accordance with 49 Code of Federal Regulations 172, 173, and 178. Labels included the type of waste, location from which the waste was generated, and accumulation start date.

Spill kits, including clean bagged soil, nitrile gloves, shovels, and absorbent pads, were available at each temporary containment area in the event a spill occurred. No spills occurred during containment and transportation to and from the containment area.

Weekly inspections were recorded in field logs and daily QC reports. Each drum and corresponding label was inspected weekly, in accordance with the Waste Management Plan (part of SWMU 54 Work Plan [AGVIQ-CH2M HILL, 2009]), to ensure readability and drum integrity. Any deficiencies were recorded and rectified upon observation.

2.7.2 Waste Characterization

Generated soil and water were sampled, characterized, and profiled to determine proper disposal requirements. Waste samples were analyzed by GCAL, and data were validated by AGVIQ-CH2M HILL chemists. All data were within validation requirements and met SAP procedures (AGVIQ-CH2M HILL, 2011b). Waste characterization analytical results are provided in Appendix F.

Water

Water generated during well development, sampling, and decontamination was characterized as non-hazardous aqueous waste. Waste characterization was based on total detected compounds.

Soil

Soil generated during drilling operations was characterized as non-hazardous solid waste. Waste characterization was based on Toxicity Characteristic Leaching Procedure screening limits and other detected compounds.

2.7.3 Transportation and Disposal

All waste was disposed at the Peñuelas Valley Landfill, Puerto Rico. Disposal manifests were signed by the Navy, and a weight ticket was submitted by the disposal facility for each shipment. The disposal manifests and weight tickets are provided in Appendix F.

Water

A total of 3,065 gallons of non-hazardous water stored in fifty-nine 55-gallon drums and one 600-gallon poly tank was manifested by Clean Harbors Caribe, Inc., and transported by Top Quality Vacuum on February 12, 2010, to Peñuelas Valley Landfill. A total of 1,002 gallons of non-hazardous water stored in two 600-gallon tanks was manifested and transported by Clean Harbors Caribe, Inc., on May 28, 2010, to Peñuelas Valley Landfill. The weight tickets and manifests are provided in Appendix F.

Soil

A total of 11.88 tons (23,760 pounds) of non-hazardous soil, drilling mud, and personal protective equipment (PPE) stored in forty-one 55-gallon drums was manifested and transported by Clean Harbors Caribe, Inc., on January 29, 2010, to Peñuelas Valley Landfill. A total of 9.68 tons (19,360 pounds) of non-hazardous soil, drilling mud, grout, and PPE stored in one 20-yard roll-off container was manifested and transported by Clean Harbors Caribe, Inc., on April 1, 2010, to Peñuelas Valley Landfill. A total of 12.11 tons (24,220 pounds) of non-hazardous soil, drilling mud, and PPE stored in one 20-yard roll-off container was manifested and transported by Clean Harbors Caribe, Inc., on April 9, 2010, to Peñuelas Valley Landfill. The weight tickets and manifests are provided in Appendix F.

3.0 Investigation Results

3.1 Geology and Hydrogeology

3.1.1 Geology

Two hydrogeologic cross sections were created to illustrate the lithology beneath SWMU 54. Cross section A-A′ (Figure 3-1) is oriented west to east, and cross section B-B′ (Figure 3-2) is oriented northwest to southeast. The lithology beneath SWMU 54 is composed of the following three units:

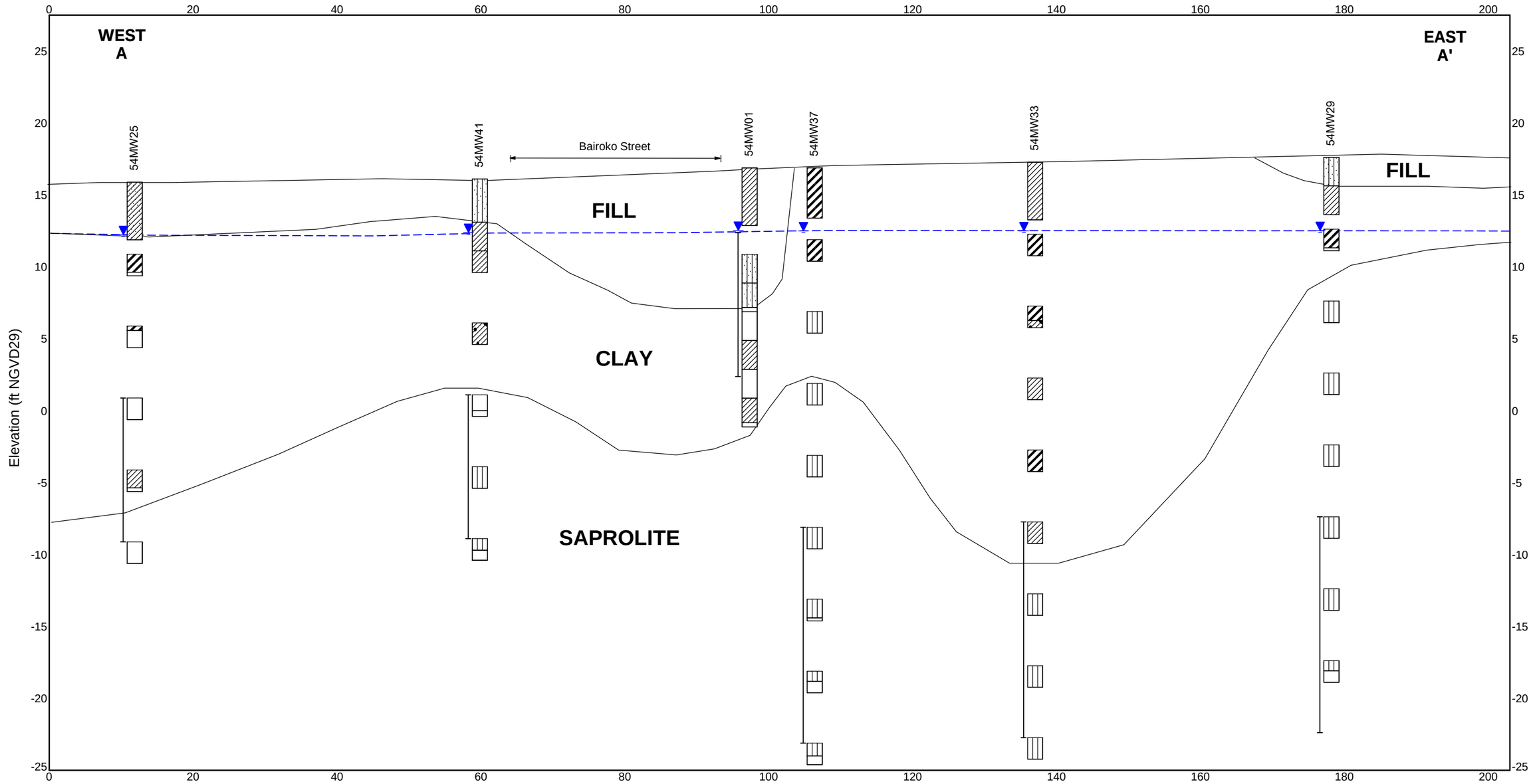
- Fill material consists of a mixture of a mixture of clays with unweathered rock (gabbro) fragments. The fill unit is dry, well indurated, and was generally found 5 feet bgs or less. The fill material does not uniformly cover the clay.
- Clay consists mostly of silt and lean and fat clays and appears to be uniform across the site. The clay was encountered from the surface to 27 feet bgs.
- Saprolite consists mostly of oxidized clay, silt, and sand, with some gravel (gabbro). The saprolitic soil was formed through the in-place chemical weathering of the gabbro bedrock. Within the saprolite, the moisture content increases with depth. The saprolite was encountered at 10 to 27 feet bgs and extends to the terminus of each boring

The thickness of these three units is fairly uniform across the site; however, the clay layer appears to thicken toward the southern portion of the site and is not uniformly covered by fill.

3.1.2 Hydrogeology

Water levels were measured in all site groundwater monitoring wells on January 25, 2010. Water level measurements are summarized in Table 3-1. Figure 3-3 is a potentiometric map that illustrates the west/southwest direction of groundwater flow beneath SWMU 54, as of January 25, 2010. Figure 3-3 also shows that the water table is extremely flat beneath SWMU 54 with a gradient of 0.0003 feet/foot. The hydraulic gradient was calculated by dividing the difference in water levels between wells 54MW14 and 54MW04 with the distance between these two wells. The calculated hydraulic conductivity ranged from 0.9 to 5.6 feet/day with a geometric mean of 3.0 feet/day (Table 3-2). Using the geometric mean hydraulic conductivity value of 3.0 feet/day, hydraulic gradient of 0.0003 feet/foot, and porosity of 30 percent the average groundwater flow velocity beneath SWMU 54 was calculated to be 0.003 feet per day.

Light-non aqueous phase liquid (LNAPL) was not detected in any of the monitoring wells.



Note:
The geologic interpretations on this map were generalized from and interpolated between drilling points. The actual subsurface conditions between boring locations may differ from those interpreted on this cross-section. Samples were retrieved during hollow stem auger drilling using an 18" split spoon sampler except where indicated. Samples within 5 feet of ground surface were collected using a hand auger.

VERTICAL SCALE: 1" = 7.0'
HORIZONTAL SCALE: 1" = 14.0'
VERTICAL EXAGGERATION = 2.0x

GEOLOGIC UNITS

FILL: Mix of fines and rock fragments.

CLAY: Lean clay with lenses of fat clay, medium stiff to stiff, dry to moist, plastic, yellowish brown into grayish green with depth.

SAPROLITE: Moist to wet, stiff nonplastic silt, dark yellowish brown mottled with pink, white and greenish grey.

LEGEND

Top of Screen
Water Level*
18" splitspoon sample with 50% recovery, lithology depicted
Bottom of Screen

*Water Levels Measured 8/17/2010

LITHOLOGY GRAPHICS

Lean Clay
Silty Sand
No Recovery
Clayey Sand
Fat Clay
Silt
Clayey Gravel

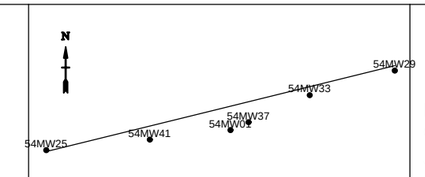
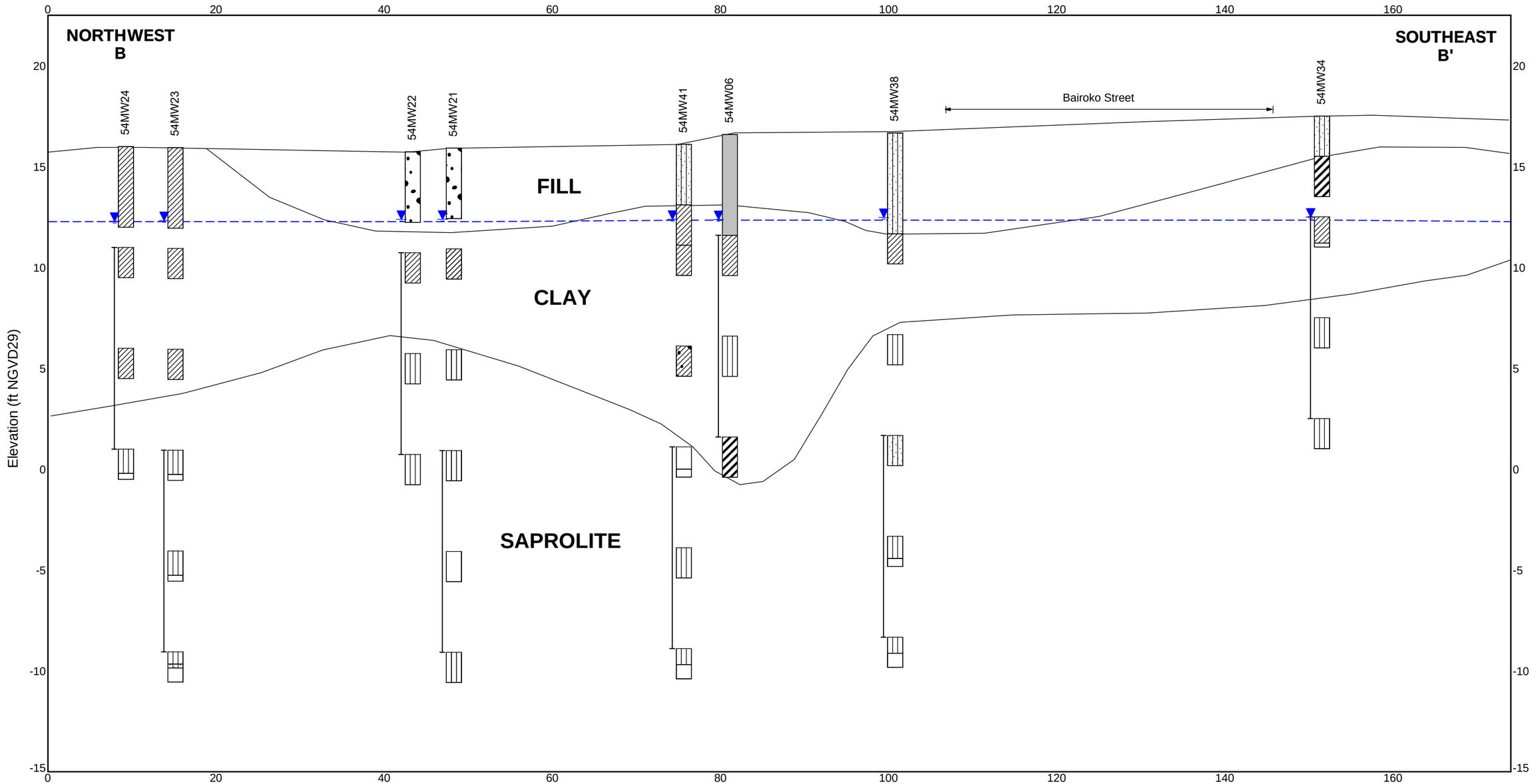


FIGURE 3-1
Cross Section A-A' W-E
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

SWMU55_NORTH-SOUTH NAPR.GPJ CH2M GEOTECH.GDT 9/29/10 ES110910030046KNV



Note:
The geologic interpretations on this map were generalized from and interpolated between drilling points. The actual subsurface conditions between boring locations may differ from those interpreted on this cross-section. Samples were retrieved during hollow stem auger drilling using an 18" split spoon sampler except where indicated. Samples within 5 feet of ground surface were collected using a hand auger.

VERTICAL SCALE: 1" = 5.0'
HORIZONTAL SCALE: 1" = 12.0'
VERTICAL EXAGGERATION = 2.4x

GEOLOGIC UNITS

FILL: Mix of fines and rock fragments.

CLAY: Lean clay with lenses of fat clay, medium stiff to stiff, dry to moist, plastic, yellowish brown into grayish green with depth.

SAPROLITE Moist to wet, stiff nonplastic silt, dark yellowish brown mottled with pink, white and greenish grey.

LEGEND

Top of Screen
Water Level*
18" splitspoon sample with 50% recovery, lithology depicted
Bottom of Screen

*Water Levels Measured 8/17/2010

LITHOLOGY GRAPHICS

No Sample
Lean Clay
Silt
Fat Clay
Well Graded Gravel
No Recovery
Silty Sand
Clayey Gravel

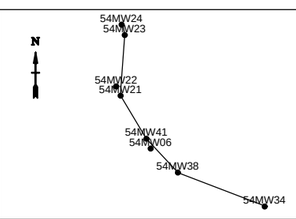


FIGURE 3-2
Cross Section B-B' NW-SE
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

TABLE 3-1
Water Levels - January 25, 2010
SWMU54
Naval Activity Puerto Rico

Well Identification	Ground Elevation[1] (feet NGVD29)	Top of Casing (TOC) Elevation[1] (feet NGVD29)	Groundwater Elevation (feet NGVD29)	Depth to Water (feet BTOC)
54MW01	16.88	16.42	9.95	6.47
54MW02	16.83	16.54	9.49	7.05
54MW03	16.91	19.26	9.75	9.51
54MW04	17.04	19.52	9.74	9.78
54MW05	17.21	19.82	9.72	10.10
54MW06	16.60	19.38	9.81	9.57
54MW07	19.94	22.32	9.86	12.46
54MW08	20.74	23.07	9.88	13.19
54MW09	19.92	22.33	9.87	12.46
54MW10	20.40	23.03	9.81	13.22
54MW11	19.71	22.32	9.80	12.52
54MW12	20.32	22.77	9.77	13.00
54MW13	20.92	23.56	9.82	13.74
54MW14	20.72	23.25	9.82	13.43
54MW15	20.48	22.88	9.85	13.03
54MW16	20.84	23.50	9.86	13.64
54MW17	19.54	21.94	9.88	12.06
54MW18	19.35	21.87	9.88	11.99
54MW19	17.21	19.61	9.81	9.80
54MW20	17.06	19.72	9.90	9.82
54MW21	15.92	18.20	9.79	8.41
54MW22	15.73	18.31	9.83	8.48
54MW23	15.94	15.68	9.83	5.85
54MW24	15.99	15.69	9.90	5.79
54MW25	15.88	18.30	9.75	8.55
54MW26	15.67	18.26	9.81	8.45
54MW27	17.46	20.00	9.84	10.16
54MW28	17.44	20.13	12.67	7.46
510MW1	17.39	17.14	12.70	4.44
510MW2	19.85	22.48	9.88	12.60
510MW3	15.54	17.50	9.77	7.73
510MW4	16.69	16.15	10.17	5.98
510MW5R	20.35	22.84	9.82	13.02
510DW1	17.37	17.36	9.82	7.54
510DW2	17.52	17.32	9.81	7.51
54IW01	20.30	22.71	8.77	13.94
54IW02	19.72	22.67	9.87	12.80
54IW03	22.21	22.77	NA	NA
54IW04	20.31	22.65	9.86	12.79
54IW05	19.95	22.41	9.89	12.52
61GW01	10.26	12.78	8.29	4.49
61GW02	12.61	15.09	9.38	5.71
61GW03	7.78	10.44	9.15	1.29
61GW04	11.88	14.15	9.46	4.69
61GW05	10.37	12.84	9.30	3.54
61GW06	12.54	15.11	9.26	5.85
61GW07	9.30	9.14	7.68	1.46

Notes:

(1) Data for 510MW# wells from RFI Report SWMUs 53 and 54, September 30, 2002; 54MW#, 54IW#, and 61GW# wells surveyed by Pedro J. Davila Colon on September 9, 2009 and February 5, 2010.

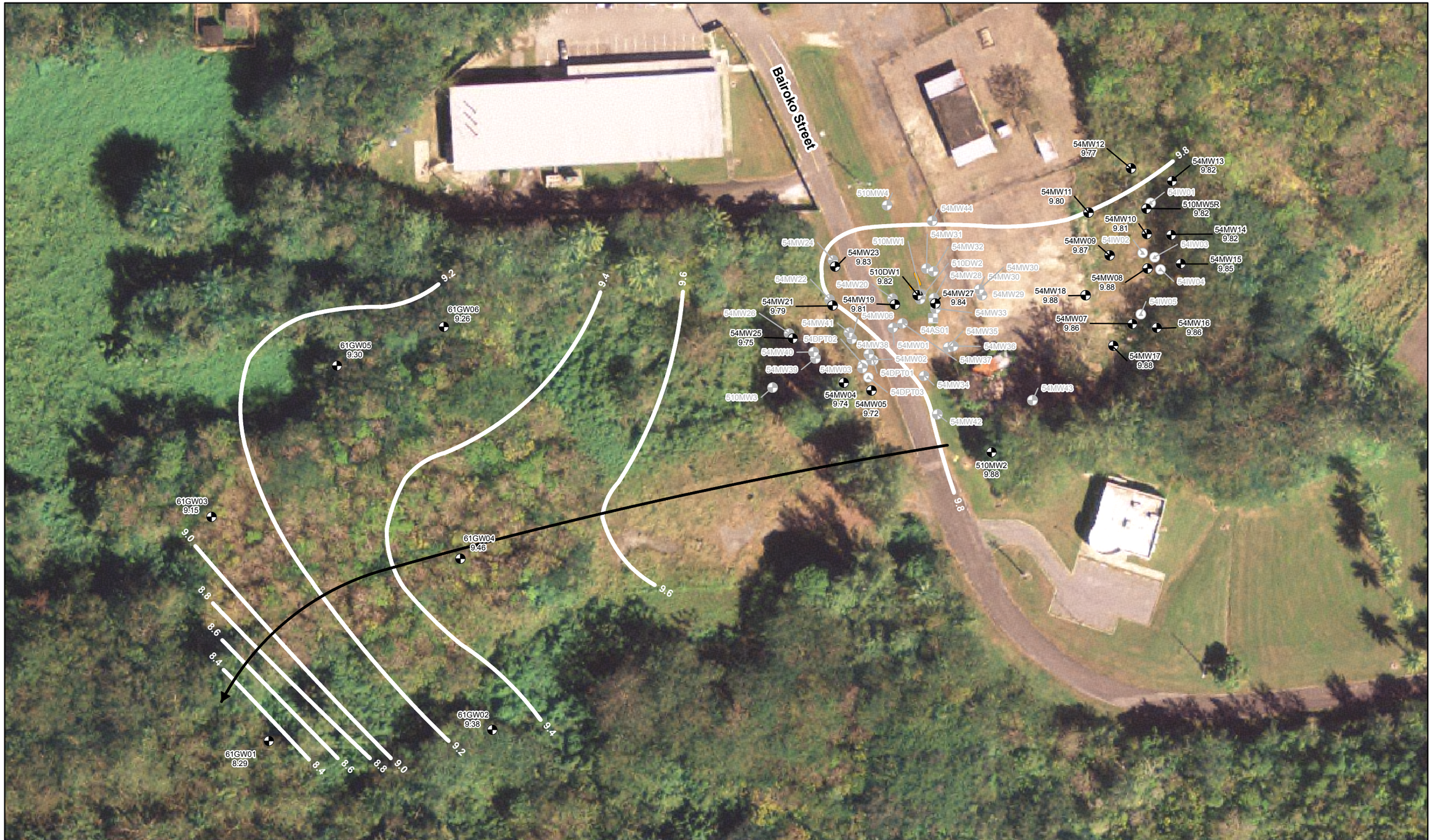
(2) Corrected Groundwater Elevation = Top-of-Casing Elevation - Corrected Depth to Groundwater

(3) Corrected Depth to Groundwater = Depth to Groundwater - (Product Thickness * Specific Gravity of Combined Fuel (assumed 0.9))

NGVD: National Geodetic Vertical Datum of 1929

BTOC : below top-of-casing

NA: not available



Air Sparge Injection Well Location
Injection Well Location
Monitoring Well Location
Groundwater Flow
Monitoring Well Location
Proposed Injection Well Location
Potentiometric Contour
Inferred Potentiometric Contour
Former Structure

Originated By: Amanda Struse *Amanda Struse*
Checked By: Shruti Shah *Shruti Shah*
Checked By: Alicia Nobles *Alicia Nobles*

Locations in grey were not used in development of Potentiometric Surface Map

N
0 40 80 Feet
1 inch = 80 feet

Groundwater Elevation in Feet NGVD29

FIGURE 3-3
Potentiometric Surface Map (January 25, 2010)
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_PZPOTMAP_GREATER15FTSCREEN_20100316.MXD SSMITH21 3/22/2010 10:48:07

TABLE 3-2
Summary of Aquifer Slug Test Results
SWMU54
Naval Activity Puerto Rico

	Hydraulic Conductivity (feet/day)		
	Minimum	**Maximum**	**Geo. Mean**
SWMU 54 Monitoring Wells (Benzene Site):	**0.6**	**15.2**	**2.1**

Well ID	**Test Type**	**Fully or Partially Penetrating Well (1)**	**Well Screen Diameter (ft)**	**Borehole Diameter (ft)**	**Depth to Top of Screen (ft BTOC)**	**Depth to Bottom of Screen (ft BTOC)**	**Measured Total Depth(2) (ft BTOC)**	**Depth to Static Water Level(3) (ft BTOC)**	**Calculated Saturated Screen Length(4) (ft)**	**Is water level in the well screen?**	**Hydraulic Conductivity (5,6) (cm/sec)**	**Hydraulic Conductivity (ft/day)**
SWMU 54 Monitoring Wells (Benzene Site)												
54MW01	Out	*Partially*	0.17	0.69	3.4	13.4	13.9	7.40	*6.0*	Yes	5.4E-03	15.2
54MW02	Out	*Partially*	0.17	0.69	4.5	14.5	15.0	7.62	*6.9*	Yes	1.7E-03	4.8
54MW03	Out	*Partially*	0.17	0.69	6.9	16.9	17.4	10.39	*6.5*	Yes	8.5E-04	2.4
54MW04	Out	*Partially*	0.17	0.69	8.8	23.8	24.3	10.68	*13.1*	Yes	3.0E-04	0.9
54MW05	Out	*Partially*	0.17	0.69	8.9	23.9	24.4	11.00	*12.9*	Yes	2.2E-04	0.6
54MW06	Out	*Partially*	0.17	0.69	7.8	17.8	18.3	10.48	*7.3*	Yes	2.7E-04	0.8

(1) Fully penetrating means the entire saturated aquifer is screened.
(2) Total well depth = length of casing + length of screen + sump
(3) Depth-to-groundwater measurements were collected on October 6, 2009 (SWMU 55) and October 7, 2009 (SWMU 54).
(4) Software uses the value of Aquifer Thickness = saturated screen length
(5) Pressure heads were measured using a Level Troll 700, manufactured by In-Situ Inc. (SN# 115278)
(6) The computer model, MLU (Multi-Layer Unsteady state) for Windows, developed by Kick Hemker and Vincent Post (Version 2.07, http://www.microfem.com) was used.

3.2 Baseline Monitoring Results

3.2.1 Benzene in Groundwater

Stage 1: 54MW01 through 54MW06

The baseline sampling event for wells 54MW01 through 54MW06 was conducted in September 2009. Groundwater samples were collected to determine if the location of the benzene plume had shifted since last sampled in 2002 and to determine the optimal placement of the ISB injection well locations as proposed in the CMS (Baker, 2005).

As summarized in Table 3-3, benzene was measured at concentrations exceeding the CAO of 550 µg/L at wells 54MW01 (707 µg/L) and 54MW06 (9,260 µg/L). Benzene was detected at significantly higher concentrations during the baseline sampling event than during the 2002 event (3,000 µg/L in 54TW15) (Baker, 2005). These results indicated the benzene source area had not been identified, and the horizontal extent of benzene in groundwater was not defined. Based on these results, it was determined that the injection of oxygen-releasing compounds to stimulate the aerobic biodegradation of benzene would be ineffective; therefore, the ISB injection wells were not installed. In addition, Stage 1 wells were screened from 5 to 15 feet bgs, indicating that the vertical extent of benzene in groundwater was not defined. The locations of the wells sampled are shown on Figure 2-1.

Based on Stage 1 sampling results, the ISB pilot-scale test was delayed until the source area and plume extent could be better characterized. Monitoring well pairs 54MW19 through 54MW28 were proposed to define the vertical and horizontal extent of the benzene plume.

Stage 2: 510DW1, 510DW2, 510MW1 through 510MW4, and 54MW19 through 54MW28

The Stage 2 well installation included monitoring well pairs 54MW19 through 54MW28. The well pairs consisted of two screened intervals, 5 to 15 feet bgs and 15 to 25 feet bgs, to evaluate the vertical and horizontal extent of contamination. These wells were installed between November and December 2009 and were sampled in January 2010. In addition, existing monitoring wells 510DW1, 510DW2, and 510MW1 through 510MW4 were sampled, and monitoring wells 54MW01 through 54MW06 were resampled to confirm previous results.

As summarized in Table 3-3, benzene was measured at concentrations exceeding the CAO of 550 µg/L at wells 54MW01 (653 µg/L), 54MW06 (14,200 µg/L), and 54MW27 (7,410 µg/L). These results identified two separate benzene sources: a deep source (greater than 15 feet bgs) associated with the former UST located on the east side of Bairoko Street, and a shallow source (less than 15 feet) related to a surface spill of fuel that reportedly occurred on the west side of Bairoko Street. Based on Stage 2 sampling results, additional monitoring wells 54MW29 through 54MW41 were proposed to define the vertical and horizontal extent of both benzene plume sources. The locations of the wells sampled are shown on Figure 2-1.

TABLE 3-3
Analytical Data Summary
SWMU 54
Naval Activity Puerto Rico

Location	Sample ID	Analyte	Benzene		$CaCO_3$	COD		Fe*		Nitrate		SO_4	S_2^-		TOC
		Units	µg/L		mg/L	mg/L		mg/L		mg/L		mg/L	mg/L		mg/L
		Baker [SL]	550		NA	NA		NA		NA		NA	NA		NA
		Sample Date													
510DW1	JM04-510DW1-012610	1/26/2010	**21.8**		NA	NA		NA		NA		NA	NA		NA
510DW2	JM04-510DW2-012510	1/25/2010	5	U	NA	NA		NA		NA		NA	NA		NA
510MW1	JM04-510MW1-012610	1/26/2010	5	U	NA	NA		NA		NA		NA	NA		NA
510MW2	JM04-510MW2-012810	1/28/2010	5	U	NA	NA		NA		NA		NA	NA		NA
510MW3	JM04-510MW3-012710	1/27/2010	5	U	NA	NA		NA		NA		NA	NA		NA
510MW4	JM04-510MW04-012610	1/26/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW01	JM04-54MW01-090209	9/2/2009	**707**	**JB**	**617**	**2700**	**JB**	**0.091**	**J**	0.5	U	**446**	0.02	U	**1010**
	JM04-54MW01-012610	1/26/2010	**653**		NA	NA		NA		NA		NA	NA		NA
54MW02	JM04-54MW02-090209	9/2/2009	**394**	**JB**	**651**	**25**	**JB**	0.1	U	**0.25**	**J**	**48.7**	0.02	U	**30.6**
	JM04-54MW02-012610	1/26/2010	**500**		NA	NA		NA		NA		NA	NA		NA
54MW03	JM04-54MW03-090209	9/2/2009	**347**	**JB**	**514**	**23.1**	**JB**	**0.051**	**J**	**1.01**		**37.5**	**0.006**	**J**	**23.3**
	JM04-54MW03-012610	1/26/2010	**357**		NA	NA		NA		NA		NA	NA		NA
54MW04	JM04-54MW04-090209	9/2/2009	**2.83**	**JB**	**365**	**23.1**	**JB**	**0.036**	**J**	**1.24**		**81.3**	0.02		**18.3**
	JM04-54MW04-012810	1/28/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW05	JM04-54MW05-090209	9/2/2009	**2.2**	**JB**	**580**	**8**	**JB**	0.1	U	**0.81**		**32.1**	0.1	UJ	**32.8**
	JM04-54MW05-012610	1/26/2010	**1.52**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW06	JM04-54MW06-090209	9/2/2009	**9260**	**JB**	**500**	**111**	**JB**	0.1	U	0.5	U	**3.45**	0.02	U	**49.5**
	JM04-54MW06-012810	1/28/2010	**14200**		NA	NA		NA		NA		NA	NA		NA
54MW19	JM04-54MW19-012510	1/25/2010	**45.2**		NA	NA		NA		NA		NA	NA		NA
54MW20	JM04-54MW20-012510	1/25/2010	**208**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW21	JM04-54MW21-012710	1/27/2010	**15.2**		NA	NA		NA		NA		NA	NA		NA
54MW22	JM04-54MW22-012710	1/27/2010	**20.7**		NA	NA		NA		NA		NA	NA		NA
54MW23	JM04-54MW23-012610	1/26/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW24	JM04-54MW24-012710	1/27/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW25	JM04-54MW25-012710	1/27/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW26	JM04-54MW26-012710	1/27/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW27	JM04-54MW27-012510	1/25/2010	**7410**		NA	NA		NA		NA		NA	NA		NA
54MW28	JM04-54MW28-012510	1/25/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW29	JM04-54MW29-041410	4/14/2010	**2.45**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW30	JM04-54MW30-041510	4/15/2010	**621**		NA	NA		NA		NA		NA	NA		NA
54MW31	JM04-54MW31-041410	4/14/2010	**696**		NA	NA		NA		NA		NA	NA		NA
54MW32	JM04-54MW32-041410	4/14/2010	**31.4**		NA	NA		NA		NA		NA	NA		NA
54MW33	JM04-54MW33-041410	4/14/2010	**238**		NA	NA		NA		NA		NA	NA		NA
54MW34	JM04-54MW34-041410	4/14/2010	**10800**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW35	JM04-54MW38-041510	4/15/2010	**1790**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW36	JM04-54MW36-041510	4/15/2010	**330**		NA	NA		NA		NA		NA	NA		NA
54MW37	JM04-54MW37-041410	4/14/2010	**13**		NA	NA		NA		NA		NA	NA		NA
54MW38	JM04-54MW38-041510	4/15/2010	**117**		NA	NA		NA		NA		NA	NA		NA
54MW39	JM04-54MW39-041510	4/15/2010	5	U	NA	NA		NA		NA		NA	NA		NA
54MW40	JM04-54MW40-041510	4/15/2010	**0.74**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW41	JM04-54MW41-041510	4/15/2010	**115**		NA	NA		NA		NA		NA	NA		NA
54MW42	JM04-54MW42-101410	10/14/2010	**2.78**	**J**	NA	NA		NA		NA		NA	NA		NA
54MW43	JM04-54MW43-101810	10/18/2010	**477**		NA	NA		NA		NA		NA	NA		NA
54MW44	JM04-54MW44-101410	10/14/2010	**5**	U	NA	NA		NA		NA		NA	NA		NA

Notes

Cis-1,2-DCE = Cis-1,2-dichloroethylene
TCE = Trichloroethene
VC = Vinyl Chloride

CaCO3 = Total Alkalinity
COD = Chemical Oxygen Demand
Ethane = Ethane

Ethene = Ethene
Fe = Iron
Mn = Manganese
CH4 = Methane
SO4 = Sulfate
S2- = Sulfide
TOC = Total Organic Carbon
= wells screened primarily less than 15 ft bgs
= wells screened primarily greater than 15 ft bgs
Shading indicates analyte exceeded screening criteria

* - Dissolved
NA = Not analyzed
B = Indicates the analyte was detected in the associated method blank.
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
JB = The analyte detected in the associated field, equipment, and/or trip blank.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
mg/L = milligram per liter
µg/L = microgram per liter
Bold indicates the analyte was detected.
Shading indicates the analyte exceded screening criteria.
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)

Stage 3: 54MW29 through 54MW41

The Stage 3 well installation, completed between February and March 2010, included the following:

- Deep wells east of Bairoko Street: two monitoring wells (54MW33 and 54MW37) and three monitoring well pairs (54MW29 through 54MW32, 54MW35 and 54MW36)
- Shallow and deep wells west of Bairoko Street: two monitoring wells (54MW38 and 54MW41) and one monitoring well pair (54MW39 and 54MW40)
- Shallow wells east of Bairoko Street: one monitoring well (54MW34)

The April 2010 sampling results confirmed that there are two benzene plumes: one in the shallow zone (approximately 5 to 15 feet bgs) on the west side of Bairoko Street and one in the deep zone (15 to approximately 25 feet bgs) on the east side of Bairoko Street. The data also identified a previously unknown area of shallow benzene contamination present in the vicinity of well 54MW34 located on the east side of Bairoko Street near a drainage ditch.

As summarized in Table 3-3, benzene was not measured above the CAO of 550 µg/L at any of the wells installed in the shallow zone on the west side of Bairoko Street, indicating delineation of this plume is fully defined both vertically and horizontally. However, the benzene concentration in shallow well 54MW34 (10,800 µg/L) located on the east side of Bairoko Street did exceed the CAO. Well 54MW34 is separated from the shallow contamination on the west side of Bairoko Street by shallow wells 54MW02 and 54MW03, which have significantly lower benzene concentrations. It is unlikely the benzene detected in 54MW34 is related to the surface spill of fuel that reportedly occurred on the west side of Bairoko Street. The locations of the wells sampled are shown on Figure 2-1.

As summarized in Table 3-3, benzene was measured at concentrations exceeding the CAO of 550 µg/L in wells installed in the deep zone on the east side of Bairoko Street at 54MW30 (621 µg/L), 54MW31 (696 µg/L), and 54MW35 (1,790 µg/L). These results indicate that the extent of benzene contamination exceeding the CAO of is confined to wells screened approximately 15 to 25 feet bgs and that benzene concentrations decrease to levels significantly below the CAO in wells screened deeper than 25 feet bgs. Therefore, the delineation of the deep source zone plume east of Bairoko Street has been fully defined vertically.

Based on Stage 3 sampling results, additional monitoring wells 54MW42 through 54MW44 were proposed to fully define the horizontal extent of benzene contamination in the deep zone (15 to 25 feet bgs) east of Bairoko Street and the horizontal extent of benzene contamination in the shallow zone (5 to 15 feet bgs) east of Bairoko Street.

Stage 4: 54MW42 through 54MW44

The Stage 4 well installation included three monitoring wells (54MW42 through 54MW44). The wells were installed and sampled in October 2010.

As summarized in Table 3-3, benzene was not measured above the CAO of 550 µg/L at any of the Stage 4 well locations, indicating that the horizontal extent of both the deep source plume and shallow source plume east of Bairoko Street have now been fully defined.

3.2.2 Extent of Benzene in Groundwater at SWMU 54

To optimize the full-scale treatment approach, groundwater analytical results were divided into the shallow (screened 5 to 15 feet bgs) and deep (deeper than 15 feet bgs) zones. Figure 3-4 illustrates the extent of benzene in groundwater in the shallow and deep zones based on the Stage 1 through Stage 4 baseline data and Mining Visualization Software (MVS).

The extent of benzene contamination increased substantially compared to that reported in the CMS (Baker, 2005). As illustrated on Figure 3-4, there appear to be three separate benzene sources: a deep source associated with the former UST located on the east side of Bairoko Street; a shallow source related to a surface spill of fuel that reportedly occurred on the west side of Bairoko Street; and an unknown shallow source on the east side of Bairoko Street near well 54MW34.

3.2.3 VOCs in Groundwater

The VOCs acetone, chloroform, cis-1,2-dichloroethene, cyclohexane, 1,2-dichloroethane, ethylbenzene, 4-methyl-2-pentanone, isopropylbenzene, methylcyclohexane, methyl tert butyl ether, toluene, TCE, and xylenes were detected in benzene plume wells. With the exception of concentrations of 1,2-dichloroethane (8.04 µg/L) at 54MW02; ethylbenzene at 54MW01 (893 µg/L) and 54MW06 (1,300 µg/L); TCE at 54MW04 (24.9 µg/L) and 54MW05 (40.9 µg/L); and toluene (1,150 µg/L) at 54MW06, the VOCs were either measured below their Maximum Contaminant Levels (MCLs) or did not exceed the previously calculated risk-based cleanup criteria (Baker, 2005). The VOC detections are summarized in Table G-1, Appendix G.

It was determined the detections at monitoring wells 54MW01, 54MW02, 54MW05, and 54MW06 that did exceed the MCLs or the CAOs did not warrant further investigation because the values were not substantially greater than the respective standard and would be remediated during remedial action intended to address the benzene contamination in groundwater.

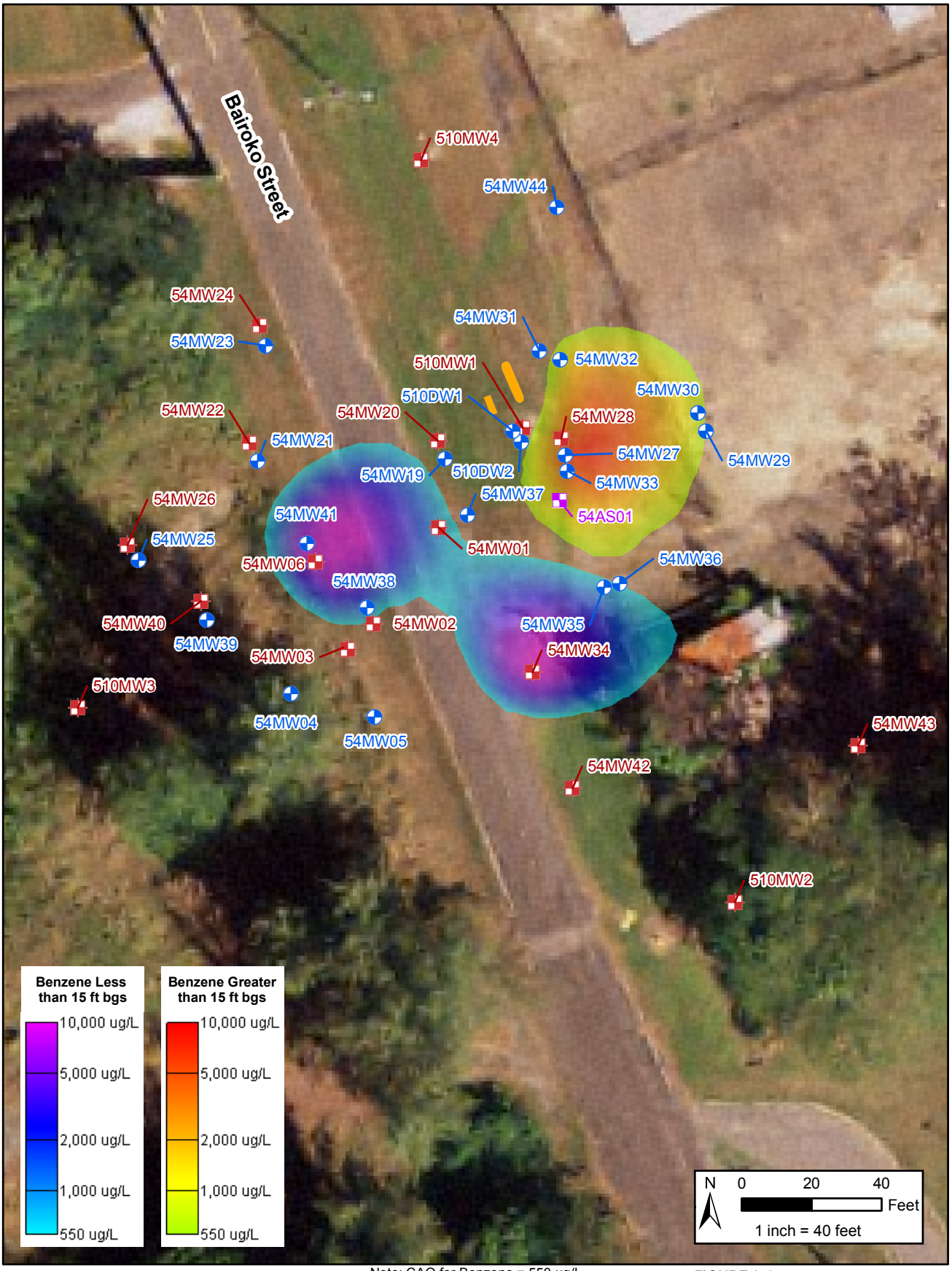
3.3 Soil Monitoring Results

Soil samples were collected during well installation at monitoring wells 54MW02 and 54MW03 in August 2009.

As summarized in Table G-2 in Appendix G, benzene was detected at well 54MW02 (6.23 milligrams per kilogram [mg/kg] between 10.5 and 11 feet bgs and 9.99 mg/kg between 13.5 and 14 feet bgs). Benzene was also detected at well 54MW03 (4.62 mg/kg between 10.5 and 11 feet bgs and 13.2 mg/kg between 13 and 13.5 feet bgs).

3.4 AS Pilot Test Results

Graphs depicting the DO and ORP response in the 10 AS pilot-scale test monitoring wells equipped with data loggers are provided in Appendix H. Figures developed using MVS to depict the DO concentrations observed at different injection flow rates are provided in Appendix I.



Monitoring Well Screened Primarily Less than 15 ft bgs

Monitoring Well Screened Primarily Greater than 15 ft bgs

Air Sparge Injection Well

Note: CAO for Benzene = 550 µg/L

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE 3-4
Benzene Concentrations Exceeding Corrective Action Objectives
August 2009 Through October 2010
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_BENZENE_201010.MXD AOMALLEY 2/23/2011 14:33:07

A review of the data collected prior to AS activation indicates that the average DO concentration in the 10 wells containing the YSI data logging probes was less than 1 milligram per liter (mg/L) and ORP levels ranged from 0 to -250 millivolts. These baseline measurements indicate that the water table aquifer is anoxic and will not support aerobic biodegradation of dissolved benzene without the addition of oxygen. A summary of the AS pilot-scale test results by interval (shallow and deep) at each injection flow rate (4 scfm, 8 scfm, and 15 scfm) is presented in the following subsections.

3.4.1 Shallow Zone Wells (less than 15 ft bgs)

No changes in the DO were observed in any shallow monitoring wells at an flow rate of 4 scfm. However, an increase in DO to between 6 and 10 mg/L was observed in shallow well 54MW28 (located approximately 17 feet north of the injection well) when the flow rate was increased to approximately 8 scfm. DO response was not observed in the other shallow wells at a flow rate of 8 scfm.

When the flow rate was increased to approximately 15 scfm, an increase in DO was observed in shallow wells 54MW28 and 510MW1 (located approximately 24 feet north-northwest of the injection well). The DO concentration increased to between approximately 8 and 10 mg/L in 54MW28 and to between 1 and 3 mg/L in 510MW1. DO response was not observed in the other shallow wells at a flow rate of 15 scfm.

When the air delivery was discontinued at 54AS01, the DO level at 54MW28 decreased from approximately 10 to essentially 0 mg/L within approximately 8 hours, indicating that a constant supply of oxygen was necessary to drive the aerobic degradation process.

ORP levels remained stable in all shallow wells at a flow rate of 4 scfm, but increased in shallow wells 54MW28 and 54MW01 when the flow rate was increased to 8 scfm. Despite the increase, ORP values remained negative, indicating reducing conditions were still present. The ORP increased to positive levels in shallow wells 54MW28 and 54MW01 when the flow rate was increased to 15 scfm.

Headspace VOC concentrations increased from baseline levels in shallow wells 510MW1, 54MW01, 54MW20, and 54MW28, while the concentration remained stable in 54MW06. The maximum observed increase was approximately 75 parts per million (ppm), or an increase of approximately 15 percent from baseline, in 54MW01. Headspace monitoring results for May 11 and May 12, 2010, are provided in Appendix E.

Groundwater levels increased by approximately 1 foot and 2 feet, respectively, in shallow wells 54MW28 and 54MW01 when the flow rate was initiated at 4 scfm, when the flow rate was increased to 8 scfm, and when the flow rate was increased to 15 scfm. Groundwater levels returned to static or near-static conditions throughout the remainder of the test in 54MW28, but remained elevated in 54MW01. Groundwater elevations in 510MW1 did not change throughout the operation of the pilot-scale test.

3.4.2 Deep Zone Wells

Increases in DO were observed in three of the six deep wells monitored during the pilot-scale test (54MW27, 54MW33, and 54MW36) at an injection flow rate of 4 scfm. DO concentrations increased throughout the pilot-scale test as the injection flow rate was increased in five of the six wells (54MW19, 54MW27, 54MW32, 54MW33, and 54MW36).

Maximum DO concentrations in the deep wells ranged between 5 and 12 mg/L during completion of the pilot-scale test, with the exception of 54MW37 (located approximately 25 feet from the injection well) where it did not exceed 0.1 mg/L.

When the air delivery was discontinued at 54AS01, the DO level at wells 54MW19 and 54MW28 decreased from approximately 6 to 10 mg/L to essentially 0 mg/L in less than 8 hours. DO depletion was slower in 54MW36, taking approximately 1.5 days to reduce from nearly 8 to essentially 0 mg/L. As with the shallow zone, results indicate that a continuous supply of oxygen is necessary to drive aerobic degradation.

ORP levels increased in four of the six wells (54MW27, 54MW32, 54MW33, and 54MW36) at a flow rate of 4 scfm. As the flow rate was increased during the pilot-scale test, the ORP levels increased from negative to positive values, indicating a change from reducing to oxidizing conditions in four of the six wells (54MW19, 54MW27, 54MW32, and 54MW36). ORP levels continued to rise in 54MW33 throughout the pilot-scale test, but the levels remained negative. The change in ORP values was consistent with an increase in DO concentration in the aquifer. ORP values observed in 54MW33 and 54MW37 were negative throughout the pilot-scale test, likely because the monitoring wells are screened deeper than the target treatment zone.

Headspace VOC concentrations increased steadily throughout the test from baseline levels in deep wells 54MW27 and 54MW36, while concentrations remained stable or decreasing in 54MW19, 54MW32, and 54MW37. The VOC concentration increased substantially from baseline in 54MW33 when the pilot-scale test was activated, but quickly decreased and fluctuated throughout the remainder of the test. Monitoring wells 54MW27 and 54MW36 exhibited the most pronounced increase in headspace vapor response of all wells monitored. The response was likely a result of the proximity of the two wells to the injection well. Headspace monitoring results for May 11 and May 12, 2010, are provided in Appendix E.

Groundwater levels increased when the injection rate was initiated at 4 scfm, when the flow rate was increased to 8 scfm, and when the flow rate was increased to 15 scfm in deep wells 54MW19, 54MW33, and 54MW37. After the initial increase in groundwater level when the flow rate was increased, the groundwater elevation quickly returned to static or near-static conditions.

3.4.3 Utility Monitoring

VOCs were not detected during the AS pilot-scale test in storm sewer monitoring locations SS#1 or SS#2 (refer to Figure 2-2). VOCs were not detected at storm sewer monitoring location SS#3 at a flow rate of 4 scfm; however, when the flow rate was increased to 8 scfm, VOC concentrations were detected at approximately 140 ppm. When the flow rate was increased to 15 scfm, the VOC concentrations increased to approximately 780 ppm. Results from the vapor monitoring indicate that vapor migration along utility conduits must be mitigated through the control of flow of air injection to each injection well. Vapor recovery does not appear warranted at this time because the site is vacant and the VOC concentrations were not observed in storm sewer locations SS#1 or SS#2 at any time during the pilot-scale test. VOC increases in these storm sewer monitoring locations would indicate movement of air toward the occupied building located west of Bairoko Street; however, this was not observed. VOCs liberated during AS are expected to rapidly degrade in the unsaturated zone due to the presence of oxygen supplied during AS.

4.0 Conclusions

Additional groundwater investigation work completed in lieu of the ISB pilot-scale test indicated greater benzene contamination in groundwater than was estimated in the CMS (Baker, 2005). A pilot-scale test was conducted to evaluate the use of AS to address benzene-contaminated groundwater at SWMU 54. The pilot-scale test included aquifer slug testing and a sparge test.

Findings from this work include the following:

- The lithology beneath SWMU 54 is composed of three units: fill material, clay, and saprolite.
- The direction of groundwater flow of the water table aquifer is west/southwest.
- LNAPL was not detected in groundwater.
- The calculated hydraulic conductivity ranged from 0.9 to 5.6 feet/day with a geometric mean of 3.0 feet/day. Using the geometric mean hydraulic conductivity value of 3.0 feet/day, hydraulic gradient of 0.0003 feet/foot, and porosity of 30 percent, the average groundwater flow velocity beneath SWMU 54 was calculated to be 0.003 feet per day.
- Two sources of contamination were identified: one in the shallow zone west of Bairoko Street and one in the deep zone east of Bairoko Street.

Conclusions from the pilot-scale test results include the following:

- Air distribution in the subsurface at SWMU 54 is highly variable and is a function of the air injection rate and the heterogeneity of the formation.
- AS was effective in distributing air to the formation at SWMU 54 to promote volatization of benzene and increased DO to support aerobic biodegradation. Increases in DO and ORP concentrations were primarily observed in the deep monitoring wells (screened deeper than 15 feet bgs) because of the placement of the injection well screen at approximately 24 to 26 feet bgs. Similar DO and ORP response is expected in shallow zone monitoring wells with the proper placement of the injection well screen at the base of the zone.
- DO response was observed as far away from the injection well as 40 feet; however, results were not consistent in all directions around the monitoring well. Based on a review of pilot-scale results, a conservative radius of influence for a single injection well is estimated to be approximately 15 feet at an injection flow rate of 4 scfm. AS injection well spacing of 20 feet between wells is recommended for full-scale application to provide overlap of sparging influence and adequately distribute the air into the formation at a low injection flow rate.

- VOC concentrations observed at storm sewer monitoring location SS#3 (located approximately 65 feet south of the AS injection well) indicate that VOCs liberated from groundwater during the AS pilot-scale test may be traveling through the gravel backfill that surrounds the sewer pipe. Due to the highly variable nature of the distribution of air both horizontally and vertically, and the potential for VOC-laden air to migrate along the backfill of the utility corridors, the AS system should be designed with a maximum flow rate of 4 scfm per injection point to minimize effects of volatilization.
- Shallow injection wells installed to a depth of approximately 16 to 18 feet bgs should be utilized to address VOC concentrations in the shallow zone, while deeper injection wells installed to a depth of approximately 26 to 28 feet bgs should be installed to address intermediate zone impacts.
- AS wells should be individually plumbed from a common equipment manifold and operate on a pulsed frequency to minimize the size of the AS compressor required and to limit the potential for vapor migration along utility corridors or other preferential pathways.

5.0 References

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APPENDIX A

Soil Boring Logs and Well Construction Diagrams

PROJECT NUMBER:	BORING NUMBER:
378718	54MW01 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.88 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

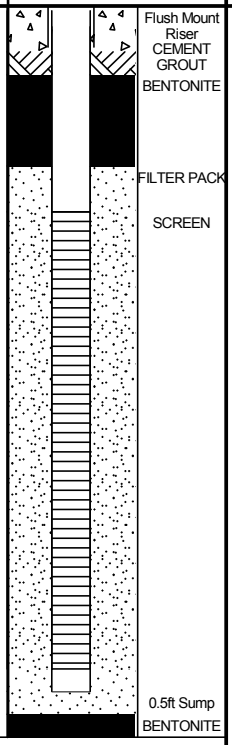
COORDINATES : 139142.8 N 761591.8 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 3.89 ft BTOC (8/12/2010) START: 08/14/2009 END: 08/14/2009 LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0 – 4.0	2.0	NM	145.7	13-3-3-4 (6)		CLAY (CL) wet at bottom, dark brown (10YR 4/4), little silt, trace coarse sands, no odor, low to medium plasticity, good cohesion	
5	4.0 – 6.0							
	6.0 – 8.0	2.0	NM	4776	10-10-17-22 (27)		SILTY SAND (SM) slightly moist, orange-brown (10YR 5/3), trace clays in small band, sand is fine to cobble angular, strong hydrocarbon odor, no visible staining, mottled	
	8.0 – 10.0	1.7	NM	20371	7-11-12-19 (23)		SILTY SAND (SM) slightly moist, orange-brown (10YR 5/3), trace clays in small band, sand is fine to cobble angular, strong hydrocarbon odor, no visible staining, mottled, trace gravels	Heavy rig chatter
10	10.0 – 12.0	0.0	NM	NM	16-15-13-13 (28)		No Recovery	
	12.0 – 14.0	2.0	NM	16616	4-6-8-12 (14)		No Recovery SANDY CLAY (CL) slightly moist, greenish gray (6/10Y), soft, sand is fine to very coarse, medium to high plasticity, strong hydrocarbon odor, low cohesion	
15	14.0 – 16.0	2.0	NM	744	18-18-22-22 (40)		SILTY SAND (SM) - CLAYEY SAND (SC). slightly moist, greenish gray with yellow-brown (5Y 6/2), sand is fine to very coarse, trace gravel and cobble, angular trace clay lenses with medium plasticity, approximately 65% sands, medium density.	
	16.0 – 18.0	1.7	NM	NM	7-12-21-22 (33)		SANDY CLAY (CL) moist below, wet on top, trace gravel, clay layers are fat clay, sand is fine to very coarse angular, low hydrocarbon odor, little staining in wet zone, none below	Boring terminated at 16 ft bgs
20							No Recovery	
25								
30								

WELL DIAGRAM

Casing Top Elev: 16.42 (ft)
Casing Type: Sch 40 PVC



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER: 378718	BORING NUMBER: 54MW02 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.83 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139115.2 N 761573.2 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.38 ft BTOC (8/12/2010) START: 08/13/2009 END: 08/13/2009 LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION)	WELL DIAGRAM (Casing Top Elev: 16.54 (ft) Casing Type: Sch 40 PVC)	ELEVATION NGVD 29
	4.0								Flush Mount Riser; CEMENT GROUT; BENTONITE	15
5	5.5	1.1	NM	0	3-3-4 (7)		SILTY CLAY (CL) slightly moist to moist, dark yellowish brown (10YR 4/4) mottled, trace sand and cobbles, tight, no odor, low plasticity, good cohesion, stiff.		FILTER PACK; SCREEN	
	7.0	1.2	NM	2.5	6-7-10 (17)		SANDY SILT (ML) low to moist, dark yellowish brown (10YR 4/4), trace clay, no odor, approximately 25% sands, fine to very coarse, angular, low plasticity, low to moderate cohesion, large cobble @ 6.5 ft bgs			10
	8.5	1.3	NM	5.1	6-7-11 (18)					
10	10.0	1.3	NM	51	9-14-15 (29)		SANDY CLAY AND SANDY SILT (CL-ML) dark yellowish brown (10YR 4/4), clay is in small zones with medium and coarse gravel, heavily mottled, bands of siltier materials with similar sand constant moist, no odor, medium stiffness, low plasticity, low cohesion			
	11.5	1.5	NM	6408	6-6-8 (14)					5
	13.0	1.1	NM	6891	6-6-8 (14)					
	14.5	1.5	NM	50000	3-5-7 (12)		SANDY AND GRAVELLY CLAY with SILT (CL) moist, dark brown (10YR 3/3), approximately 60% clays with abundant gravel, heavily mottled with coarse sand, no odor, low plasticity, low cohesion			
15	16.0	0.7	NM	3113	8-8-9 (17)				0.5ft Sump; BENTONITE	
	17.5	1.5	NM	8	3-5-12 (17)		SILTY CLAY (CL) slightly moist to moist, light brownish gray (2.5Y 6/2), contact @ 10.8 ft bgs, gravel stops, become silty clay, approximately 35% silt, trace fine sands, no gravel, some stains, trace hydrocarbon odor, moderate plasticity, good cohesion.	Boring terminated at 17.5 ft bgs		0
20							SILTY CLAY (CL) slightly moist to moist, GLEY 1 5/10Y, with trace sands fine to medium sands in silty sand veins, stained strong hydrocarbon odor, low to medium plasticity, poor cohesion, soft clay, approximately 60% clays.			-5
25							SANDY SILT AND SILTY SAND with CLAY (ML/SM) moist, grayish green (GLEY 1 6/10Y), clay in small bands, mostly sand, silt, approximately 40% silt, 40% sands, sand is fine to medium, trace coarse, heavy staining, trace gravel, poor cohesion, low to no plasticity			-10
30							Soil Description on next page			

PROJECT NUMBER: 378718	BORING NUMBER: 54MW02 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.83 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139115.2 N 761573.2 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.38 ft BTOC (8/12/2010) START: 08/13/2009 END: 08/13/2009 LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 16.54 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
							SANDY CLAY (CL) moist, grayish green (GLEY 1 6/10Y - 5Y 6/3), low recovery, high plasticity clay with sand, poor cohesion, sand is fine to medium, stained H.C. odor, travel gravel, angular soft to medium stiffness, trace layers of CH			-15
35							SANDY CLAY (CL) wet, (GLEY 1 2.5/10Y), sand is fine to very coarse, light to dark gray, visible mottling, approximately 20% clays, high plasticity, moderate cohesion.			-20
40										-25
45										-30
50										-35
55										-40
60										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW03 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

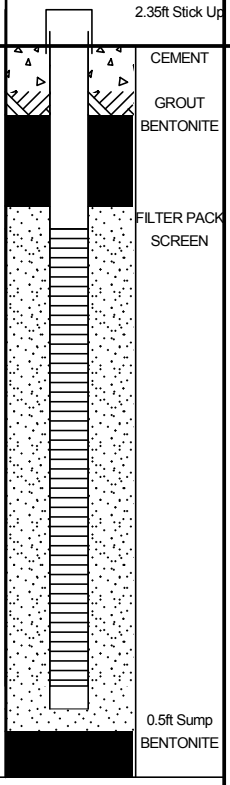
ELEVATION : 16.91 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139108.0 N 761565.8 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.88 ft BTOC (8/12/2010) START: 08/12/2009 END: 08/12/2009 LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0–1.5	1.0	NM	3.6	6-36-50 (86)		GRAVELLY SILT with SAND (ML) slightly moist, little clay some topsoil, no odor gravel and cobble are angular,		
	1.5–4.0	0.0	NM	NM	20-12-10 (22)		No Recovery		
5	4.0–5.5	1.3	NM	3.7	4-6-7 (13)		SILTY CLAY (CL) moist, brown (10YR 4/4), trace medium and coarse sand, low to moderate plasticity, good cohesion, low plasticity, trace medium and coarse sands.		
	5.5–7.0	1.3	NM	4.5	10-15-20 (35)				
	7.0–8.5	1.3	NM	3.3	10-24-23 (47)		SILTY CLAY (CL) slightly moist, brown (10YR 4/4), approximately 50% clay, stiff, good cohesion, low plasticity, trace medium and coarse sands, same to 8.0 feet.		
10	8.5–10.0	1.5	NM	114.9	19-24-23 (47)		CLAYEY SILT with GRAVEL and COBBLES slightly moist, dark brown, sand is fine to gravel, no plasticity.		
	10.0–11.5	1.5	NM	1870	6-6-7 (13)				
	11.5–13.0	1.5	NM	4390	8-10-15 (25)		GRAVELLY SILT (ML) slightly moist, dark brown (10YR 4/4), angular, approximately 50% silt, 20% clays , 30% gravel, no odor, trace mottling,		
15	13.0–14.5	1.5	NM	4390	10-12-12 (24)		At 10.5 ft bgs, SILTY CLAY - CLAY (CL) low to moist, (GLEY 1 6/10Y), green, strong hydrocarbon odor, trace gravel and cobble, moderate plasticity, good cohesion		
	14.5–16.0	1.5	NM	42.7	10-12-14 (26)				
	16.0–17.5	0.5	NM	1.4	4-6-11 (17)		Gravel (GM) becomes sandy, approximately 30% sand, fine sand, 40% clay, 30% more silt.	Boring terminated at 16 ft bgs	
20							SILTY CLAY (CL) moist to very moist, pale brown (10YR 6/3), trace cobble, and gravel angular, moderate hydrocarbon odor, some staining, moderate plasticity, good cohesion, approximately 70% clays		
25							SILTY SAND - SANDY SILT (SM-ML) slightly moist, pale olive (5Y 6/3), little clay in lenses, little staining, 15.0-15.5 ft bgs, clayeyer and more stained, trace cobbles, moderate hydrocarbon odor		
30							CLAY (CH) clay is high plasticity, light brown (2.5Y 6/4), good cohesion, low recovery, cobbles in clay, no odor, trace staining, trace medium grained sands		

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW04 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.04 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

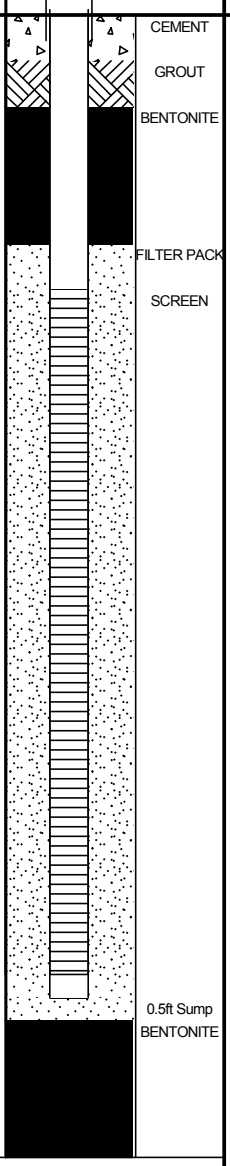
COORDINATES : 139095.5 N 761549.7 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.45 ft BTOC (8/12/2010) START: 08/10/2009 END: 08/10/2009 LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
							Not Sampled		
5	5.0								
	7.0	1.5	NM	0	9-9-19-15 (28)		SANDY SILT (ML) slightly moist, yellowish brown (10YR 5/4), trace cobble and coarse sand, trace mottled, trace debris, low to moderate cohesion, cobbles and sand are angular, stiff.		
10	10.0								
	12.0	2.0	NM	62.9	12-16-22-22 (38)		SANDY SILT (ML) slightly moist, gray (5Y 5/1), little or no clay, sand is fine grained, strong sweet and benzene odor, trace medium sands		
15	15.0								
	17.0	1.5	NM	1.7	19-21-50/6" (71/12")		SILTY SAND (SM) slightly moist, 5Y 7/4, approximately 35% silt, slightly moist H.C. odor, not as strong as before, partial cementation, sand is fine grained, very dense/stiff.		
20	20.0								
	22.0	2.0	NM	1.3	19-22-50/4" (72/10")		SILTY SAND (SM) slightly moist to moist, water reported at 20 ft bgs, orange brown (2.5Y 6/4) with trace clay zones, less odor, approximately 35% soils sand is fine, very dense.		
25	25.0							Boring terminated at 25 ft bgs	
	27.0	2.0	NM	0	17-26-41-43 (67)		SANDY SILT (ML) slightly moist to moist, orange brown (2.5Y 6/4), little clay, very stiff, approximately 60% silt, 20% fine grained sands, no plasticity, low cohesion.		
30									

WELL DIAGRAM

Casing Top Elev: 19.52 (ft)
Casing Type: Sch 40 PVC
2.47ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW05 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.21 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139088.9 N 761573.5 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.5 ft BTOC (8/12/2010)

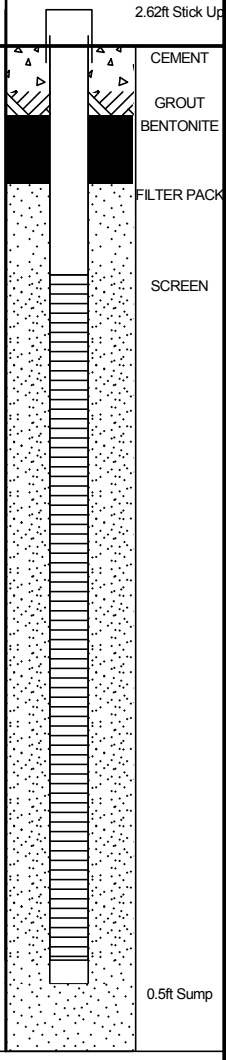
START: 08/12/2009

END: 08/12/2009

LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
							Not Sampled		
5	5.0								
	7.0	2.0	NM	NM	8-12-20-23 (32)		SANDY COBBLY SILT (ML) dry to slightly moist, dark yellowish brown (10YR 4/4), little clay in small lenses, sand is fine to gravel, angular, no odor, low plasticity, moderate cohesion, trace mottling		
10	10.0								
	12.0	2.0	NM	NM	10-8-11-12 (19)		SANDY SILT (ML) slightly moist to moist, gray with trace brown (5Y 6/1), silty sand with clay lenses are not oriented with surface, from vertical to varying degrees, sand is fine, low plasticity (clay lenses have high plasticity) strong hydrocarbon odor, low cohesiveness		
	14.0	2.0	NM	NM	6-12-17-19 (29)				
15	16.0	2.0	NM	NM	9-13-20 (33)		SILTY SAND (SM) slightly moist, gleyed color with some brown (5Y 5/2), trace clay lenses near top, sand is fine grained, trace cobble, evidence of feldspars in saprolite, moderate to high hydrocarbon odor		
	18.0	2.0	NM	NM	17-20-25-50 (45)		SILTY SAND (SM) slightly moist, gleyed color with some brown (5Y 5/2), trace clay lenses near top, sand is fine grained, trace cobble, evidence of feldspars in saprolite, moderate to high hydrocarbon odor		
20	20.0	2.0	NM	NM	NM		SILTY SAND (SM) slightly moist, gleyed color with some brown (5Y 5/2), trace clay lenses near top, sand is fine grained, trace cobble, evidence of feldspars in saprolite, moderate to high hydrocarbon odor	Boring terminated at 22 ft bgs	
25							SILTY SAND (SM) slightly moist, gleyed color with some brown (5Y 5/2), trace clay lenses near top, sand is fine grained, trace cobble, evidence of feldspars in saprolite, moderate to high hydrocarbon odor		
30									

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW06 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.60 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139133.1 N 761556.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7 ft BTOC (8/12/2010)

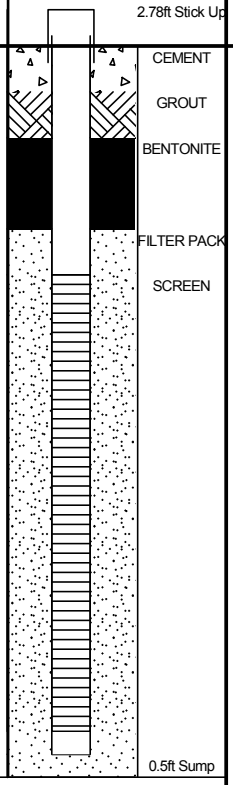
START: 08/11/2009

END: 08/11/2009

LOGGER : Sam Smith/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
							Not Sampled		
5	5.0								
	7.0	2.0	NM	0.4	5-7-7-7 (14)		SILTY CLAY with SAND (CL) moist, dark yellowish brown (10YR 4/4), approximately 50% clays, clays throughout, but also almost pure clay lenses, sand is fine to very coarse, angular, mottled, medium stiffness, low plasticity, medium cohesion		
10	10.0								
	12.0	0.7	NM	346	13-15-9-9 (24)		COBBLY CLAYEY SILT (ML) moist, dark yellowish brown (10YR 4/4), strong hydrocarbon odor, mostly silt with clay lens and cobbles, cobbles are sub-angular to sub-round to angular, trace mottling		
15	15.0								
	17.0	1.5	NM	24	3-4-5-6 (9)		CLAY (CH) wet, gray (6 gley 7/N), very strong hydrocarbon odor, high plasticity, wet gravel above	Boring terminated at 16 ft bgs	
20									
25									
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW19 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.21 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139162.5 N 761593.7 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.26 ft BTOC (8/12/2010)

START: 12/09/2009

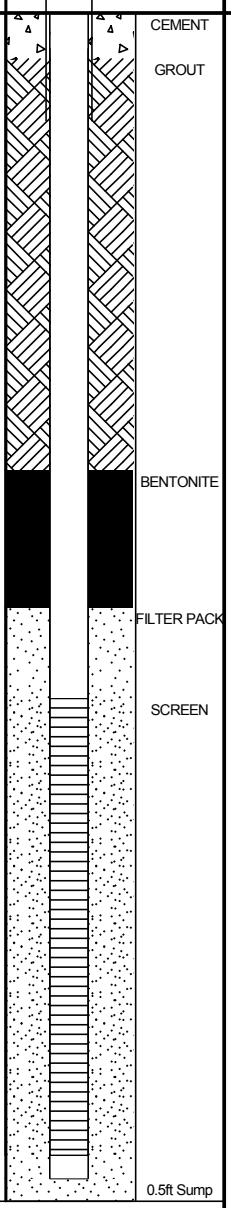
END: 12/09/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	5.0			NM		SANDY CLAY (CL) dry, dark brown (7.5YR 3/4), very stiff, non-plastic, no odor		
5	5.0								
	6.5	1.5	0	11.6	6-7-10 (17)		CLAY (CL) dry, dark brown (7.5YR 3/4), non-plastic, very stiff, no odor, trace sands		
10	10.0								
	11.5	1.5	0.2	632	13-13-14 (27)		SILTY CLAY with GRAVEL (CL) dry, yellowish brown (10YR 5/4), very stiff, slightly plastic, strong gasoline odor, gravel (gabbro) is weathered to completely decomposed, mafic, black and iron oxide staining		
15	15.0								
	16.5	1.5	0.2	74.1	12-12-19 (31)		SANDY SILT (ML) dry, olive (5Y 5/3), mottled with greenish gray (GLEY 6/10GY), hard, non-plastic, slight odor, some iron oxide staining present, 0.5-in clay lens at 15.5 ft bgs		
20	20.0								
	21.5	1.3	0.1	15.5	19-31-50/5" (81/11")		SILTY SAND (SM) dry, olive (5Y 5/3), very dense, very fine grained, no odor, wet at the bottom of split spoon, some clay		
							No Recovery		
25	25.0								
	26.5	1.3	0	19.2	25-33-35 (68)		SILTY SAND (SM) wet, olive (5Y 5/3), very dense, very fine grained, no odor, wet at the bottom of split spoon, some clay, few weathered gravels (gabbro) up to 0.5-in in diameter at bottom of split spoon	Boring terminated at 26 ft bgs	
							No Recovery		
30									

WELL DIAGRAM

Casing Top Elev: 19.61 (ft)
Casing Type: Sch 40 PVC
2.40ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW20 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.06 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139167.7 N 761591.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.22 ft BTOC (8/12/2010)

START: 12/10/2009

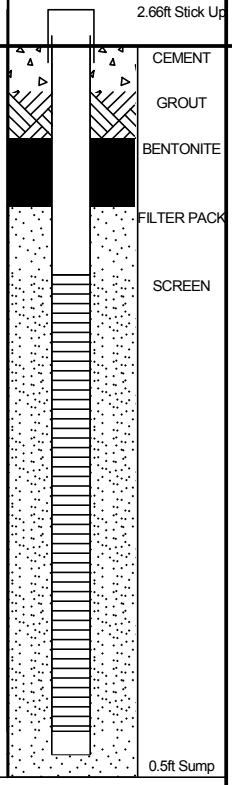
END: 12/10/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION)	ELEVATION NGVD 29
	0.0	NM			NM		SANDY CLAY (CL) dry, dark brown (7.5YR 3/4), very stiff, non-plastic, no odor	Lithology taken from 54MW19	15
5	5.0	NM	NM	NM	NM		CLAY (CL) dry, dark brown (7.5YR 3/4), non-plastic, very stiff, no odor, trace sands		10
10	10.0	NM	NM	NM	NM		SILTY CLAY with GRAVEL (CL) dry, yellowish brown (10YR 5/4), very stiff, slightly plastic, strong gasoline odor, gravel (gabbro) is weathered to completely decomposed, mafic, black and iron oxide staining		5
15	15.0	NM	NM	NM	NM		SANDY SILT (ML) dry, olive (5Y 5/3), mottled with greenish gray (GLEY 6/10GY), hard, non-plastic, slight odor, some iron oxide staining present, 0.5-in clay lens at 15.5 ft bgs	Boring terminated at 16 ft bgs	0
20									-5
25									-10
30									

WELL DIAGRAM

Casing Top Elev: 19.72 (ft)
Casing Type: Sch 40 PVC
2.66ft Stick Up



PROJECT NUMBER:	BORING NUMBER:
378718	54MW21 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.92 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139161.8 N 761540.2 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 5.81 ft BTOC (8/12/2010)

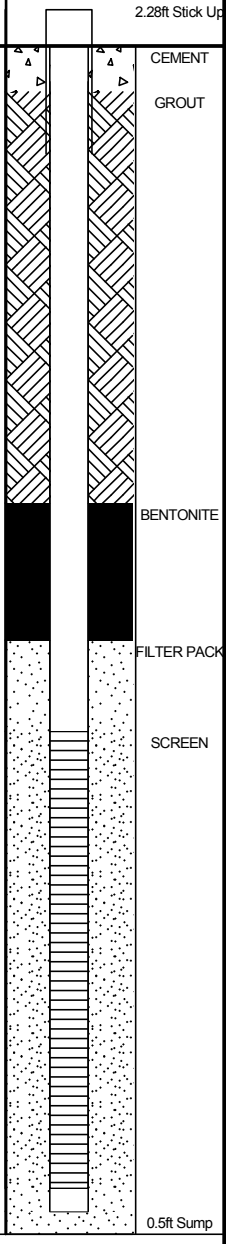
START: 11/19/2009

END: 11/20/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0 – 3.5	3.5			NM		COBBLES-SAND-SILT MIX (GW) dry, brown (10YR 4/3), dense, some quartz and mafic cobbles		15
5	5.0 – 6.5	1.5	0	2.5	5-7-10 (17)		SILTY CLAY (CL) dry, brown (10YR 4/3), non-plastic, very stiff, no sand or gravel, iron oxide staining, no odor		10
10	10.0 – 11.5	1.5	0	2836	16-21-25 (46)		CLAYEY SILT with GRAVEL (ML) dry, brown (10YR 4/3), hard, non-plastic, gravel up to 0.5-in, strong gasoline odor		5
15	15.0 – 16.5	1.5	0	3.7	8-8-13 (21)		CLAYEY SILT (ML) dry, brownish yellow (10YR 6/8), mottled with light gray (2.5Y 7/2), very stiff, non-plastic, no odor, no gravels, trace fine sand		0
20	20.0 – 21.5	0.0	0	0	50/3" (50/3")		No Recovery		-5
25	25.0 – 26.5	0.8	0	0	32-50/3" (50/3")		CLAYEY SILT with SAND (ML) wet, dark yellowish brown (10YR 4/4), hard, non-plastic, no odor, few fine sands, no gravels	Boring terminated at 26 ft bgs	-10
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW22 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.73 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139166.9 N 761537.8 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 5.93 ft BTOC (8/12/2010)

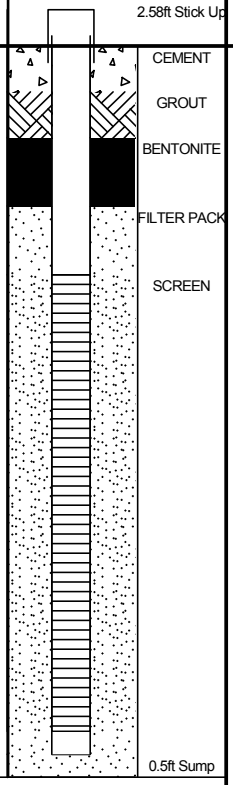
START: 11/20/2009

END: 11/20/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	NM			NM		Cobbles-Sand-Silt mix (GW) dry, brown (10YR 4/3), dense, some quartz and mafic cobbles	Lithology taken from 54MW21	15
5	5.0	NM	NM	NM	NM		SILTY CLAY (CL) dry, brown (10YR 4/3), non-plastic, very stiff, no sand or gravel, iron oxide staining, no odor		10
10	10.0	NM	NM	NM	NM		CLAYEY SILT with GRAVEL(ML) dry, brown (10YR 4/3), hard, non-plastic, gravel up to 0.5-in, strong gasoline odor		5
15	15.0	NM	NM	NM	NM		CLAYEY SILT (ML) dry, brownish yellow (10YR 6/8), mottled with light gray (2.5Y 7/2), very stiff, non-plastic, no odor, no gravels, trace fine sand	Boring terminated at 16 ft bgs	0
20									-5
25									-10
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW23 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.94 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139194.9 N 761542.4 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 3.36 ft BTOC (8/12/2010)

START: 12/08/2009

END: 12/09/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM (Casing Top Elev: 15.68 (ft) Casing Type: Sch 40 PVC)	ELEVATION NGVD 29
	0.0 – 4.0	4.0			NM		SANDY CLAY (CL) dry, olive brown (2.5YR 4/4), medium stiff, slightly plastic, no odor		Flush Mount Riser; CEMENT GROUT	15
5	5.0 – 6.5	1.5	0	7	9-8-8 (16)		SANDY CLAY (CL) slightly moist, olive brown (2.5YR 4/4), mottled with black staining and olive yellow (2.5Y 6/8), trace gravels present (weathered gabbro), non-plastic, very stiff, no odor			10
10	10.0 – 11.5	1.5	4.2	1235	7-10-20 (30)		SANDY CLAY (CL) slightly moist, olive brown (2.5YR 4/4), mottled with black staining and olive yellow (2.5Y 6/8), trace gravels present (weathered gabbro), non-plastic, very stiff, strong odor		BENTONITE	5
15	15.0 – 16.5	1.2	0.1	10.3	15-9-18 (27)		CLAYEY SILT (ML) moist, yellowish brown (10YR 5/4), very stiff, non-plastic, no odor, some iron oxide staining present, trace sands		FILTER PACK; SCREEN	0
							No Recovery			
20	20.0 – 21.5	1.2	0.1	19	30-50/5" (50/5")		SANDY SILT (ML) wet, yellowish brown (10YR 5/4), hard, non-plastic, sand is very fine, no odor			-5
							No Recovery			
25	25.0 – 26.5	0.8	0	11	7-50/6" (50/6")		CLAYEY SILT (ML) wet, yellowish brown (10YR 5/4), hard, non-plastic, no odor	Boring terminated at 26 ft bgs	0.5ft Sump	-10
							SILTY SAND with GRAVEL (SM) wet, dark yellowish brown (10YR 4/4), sand is very fine to coarse, loose to medium dense gravel is weathered gabbro up to 0.5-in diameter			
							No Recovery			
30										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW24 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.99 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139200.5 N 761540.7 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 3.4 ft BTOC (8/12/2010)

START: 12/01/2009

END: 12/01/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 15.69 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	0.0	NM			NM		SANDY CLAY (CL) dry, olive brown (2.5YR 4/4), medium stiff, slightly plastic, no odor	Lithology taken from 54MW23	Flush Mount Riser; CEMENT GROUT; BENTONITE; FILTER PACK; SCREEN; 0.5ft Sump	15
5	5.0	NM	NM	NM	NM		SANDY CLAY (CL) slightly moist, olive brown (2.5YR 4/4), mottled with black staining and olive yellow (2.5Y 6/8), trace gravels present (weathered gabbro), non-plastic, very stiff, no odor			10
10	6.5									
	10.0	NM	NM	NM	NM		SANDY CLAY (CL) slightly moist, olive brown (2.5YR 4/4), mottled with black staining and olive yellow (2.5Y 6/8), trace gravels present (weathered gabbro), non-plastic, very stiff, strong odor			5
15	11.5									
	15.0	NM	NM	NM	NM		CLAYEY SILT (ML) moist, yellowish brown (10YR 5/4), very stiff, non-plastic, no odor, some iron oxide staining present, trace sands	Boring terminated at 16 ft bgs		0
	16.5						No Recovery			
20										-5
25										-10
30										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW25 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.88 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139133.5 N 761506.1 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.07 ft BTOC (8/12/2010)

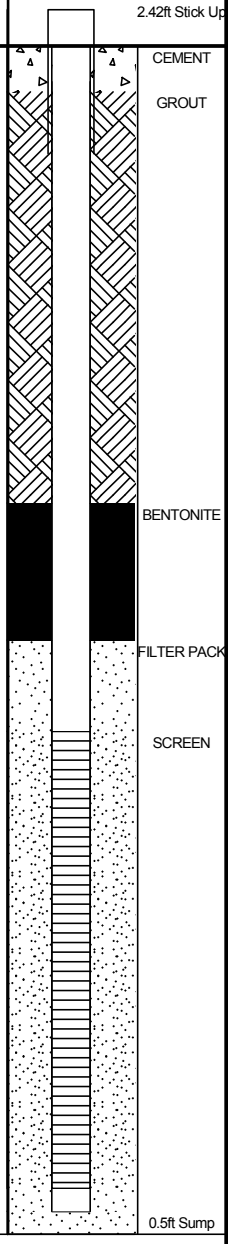
START: 11/18/2009

END: 11/18/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION)	ELEVATION NGVD 29
	0.0 – 4.0	4.0					CLAYEY SAND with COBBLES (SC) dry, olive brown (2.5Y 4/3), dense, cobbles up to 11-in in diameter, clay is non-plastic, sand is very fine to coarse, cobbles are mostly mafic, one quartz cobble found		
5	5.0 – 6.5	1.3	0	0.8	3-2-3 (5)		CLAY (CH) dry, very dark grayish brown (2.5Y 3/2), moderate to highly plastic, medium stiff, no odor		10
							No Recovery		
10	10.0 – 11.5	0.3	0	1	42-35-20 (55)		CLAY (CH) dry, very dark grayish brown (2.5Y 3/2), moderate to highly plastic, medium stiff, quartz mixed with clay, slight odor, no HCl reaction at the bottom of split spoon		5
							No Recovery		
15	15.0 – 16.5	0.0	0	NM	15-24-37 (61)		No Recovery		0
20	20.0 – 21.5	1.3	0	1	6-5-8 (13)		SILTY CLAY with SAND (CL) very moist, light yellowish brown (2.5Y 6/4) mottled with pale yellow (5Y 8/4), low plasticity, stiff, sticky, trace gravels up to 0.5-in in diameter, iron oxide staining, gravels are quartz		-5
							No Recovery		
25	25.0 – 26.5	0.0	0	NM	50/0" (50/0")		No Recovery		-10
30								Boring terminated at 26 ft bgs	

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW26 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.67 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139137.9 N 761502.9 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.15 ft BTOC (8/12/2010)

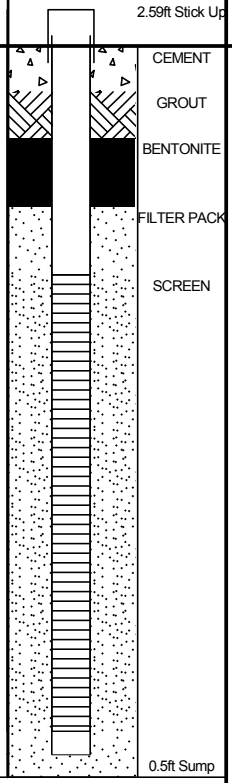
START: 11/19/2009

END: 11/19/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	NM			NM		CLAYEY SAND with COBBLES (SC) dry, olive brown (2.5Y 4/3), dense, cobbles up to 11-in in diameter, clay is non-plastic, sand is very fine to coarse, cobbles are mostly mafic, one quartz cobble found	Lithology taken from 54MW25	15
5	5.0	NM	NM	NM	NM		CLAY (CH) dry, very dark grayish brown (2.5Y 3/2), moderate to highly plastic, medium stiff, no odor		10
	6.5						No Recovery		
10	10.0	NM	NM	NM	NM		CLAY (CH) dry, very dark grayish brown (2.5Y 3/2), moderate to highly plastic, medium stiff, quartz mixed with clay, slight odor, no HCl reaction at the bottom of split spoon		5
	11.5						No Recovery		
15	15.0	NM	NM	NM	NM		No Recovery		0
	16.5							Boring terminated at 16 ft bgs	
20									-5
25									-10
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW27 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.46 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139163.6 N 761628.1 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.8 ft BTOC (8/12/2010)

START: 12/11/2009

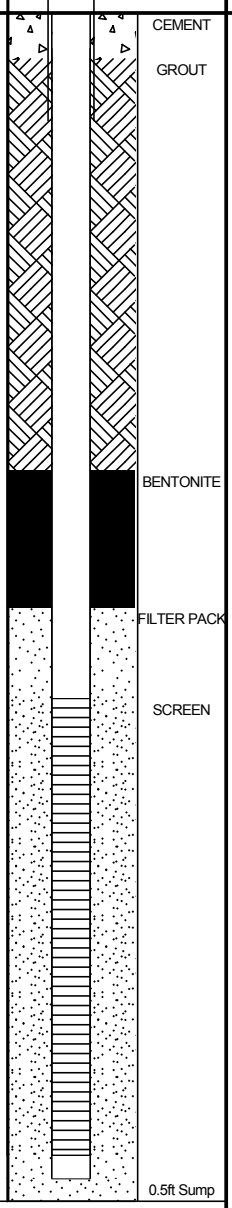
END: 12/11/2009

LOGGER : Roger Gomez/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0 – 4.0	4.0	NM	18	NM		SILTY CLAY (CL) slightly moist, black, highly organic soil, some coarse gravels, stiff	
5	5.0 – 6.5	1.5	0	367	3-7-14 (21)		CLAY (CH) moist, dark yellowish brown (10YR 4/4), very stiff, high plasticity, trace gravel (<0.25-in diameter) and silts	
10	10.0 – 11.5	1.5	0.5	1113	16-22-27 (49)		CLAY (CH) moist, dark yellowish brown (10YR 4/4), hard, high plasticity	
							CLAYEY GRAVEL (GC) moist, brown (10YR 4/3), very dense, well graded, gravel fragments < 2-in diameter, quartz fragments., some black staining on clay	
15	15.0 – 16.5	1.5	5	1190	3-5-8 (13)		SILTY CLAY (CL) moist, dark yellowish brown (10YR 4/4), with grayish green (gley 4/2) mottling throughout run, stiff, mod to high plasticity, trace fine gravel	
20	20.0 – 21.5	1.5	0.5	33	3-6-10 (16)		SILTY CLAY (CH) moist, dark yellowish brown (10YR 4/4), with grayish green mottling (gley 4/2), mod to high plasticity, pale brown specs, high angle fractures along split spoon run (highly weathered gabbro)	
25	25.0 – 26.5	1.5	0.1	92	8-12-20 (32)		SILTY CLAY (CL) wet, gray (10YR 6/1), yellowish brown (10YR 5/6), iron oxide staining along high angle clay fractures, (highly weathered gabbro)	Boring terminated at 26 ft bgs
30								

WELL DIAGRAM

Casing Top Elev: 20.00 (ft)
Casing Type: Sch 40 PVC
2.54ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW28 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.44 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139168.3 N 761627.0 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.35 ft BTOC (8/12/2010)

START: 12/10/2009

END: 12/16/2009

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM	ELEVATION NGVD 29
	0.0	NM			NM		SILTY CLAY (CL) slightly moist, black, highly organic soil, some coarse gravels, stiff	Lithology taken from 54MW27	Casing Top Elev: 20.13 (ft) Casing Type: Sch 40 PVC 2.69ft Stick Up; CEMENT; GROUT; BENTONITE; FILTER PACK; SCREEN; 0.5ft Sump	15
5	5.0	NM	NM	NM	NM		CLAY (CH) moist, dark yellowish brown (10YR 4/4), very stiff, high plasticity, trace gravel (<0.25-in diameter) and silts			
	6.5									10
10	10.0	NM	NM	NM	NM		CLAY (CH) moist, dark yellowish brown (10YR 4/4), hard, high plasticity			
	11.5						CLAYEY GRAVEL (GC) moist, brown (10YR 4/3), very dense, well graded, gravel fragments < 2-in diameter, quartz fragments., some black staining on clay			5
15	15.0	NM	NM	NM	NM		SILTY CLAY (CL) moist, dark yellowish brown (10YR 4/4), with grayish green (gley 4/2) mottling throughout run, stiff, mod to high plasticity, trace fine gravel	Boring terminated at 16 ft bgs		
	16.5									0
20										
										-5
25										
										-10
30										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW29 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.62 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

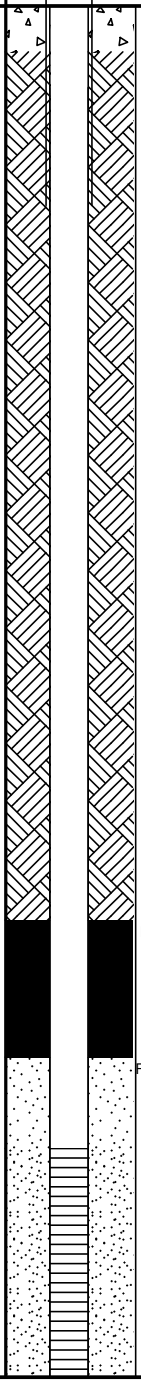
COORDINATES : 139170.5 N 761668.2 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.78 ft BTOC (8/12/2010) START: 02/25/2010 END: 02/26/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0						SILTY SAND with COBBLES and GRAVELS (SM) dry, dark olive gray (5Y 3/2)	
		4.0	0	22.2	NM		SANDY CLAY (CL) dry, dark olive gray (5Y 3/2), medium plasticity, cohesive, medium stiff, petroleum odor, some sand	
5	5.0							
	6.5	1.3	0	140.8	10-10-9 (19)		SANDY CLAY with GRAVEL (CH) slightly moist, dark brown (10YR 3/3), stiff, high plasticity, 30% fine to medium grained sand, 15% gravel up to 0.5-in diameter, petroleum odor	
							No Recovery	
10	10.0							
	11.5	1.5	1.3	782.1	17-11-13 (24)		CLAYEY SILT (ML) dry, dark yellowish brown (10YR 4/6), very stiff, non-plastic, non cohesive, petroleum odor, trace highly weathered gravel	
15	15.0							
	16.5	1.5	0.2	557.1	3-4-6 (10)		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	
20	20.0							
	21.5	1.5	0.3	84.6	4-7-11 (18)		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, pink and dark gray mottling (gley 4/1), stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	
25	25.0							
	26.5	1.5	0	8.9	7-8-19 (27)		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, iron oxide staining, very stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	
30								

WELL DIAGRAM

Casing Top Elev: 20.30 (ft)
Casing Type: Sch 40 PVC
2.68ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW29 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.62 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139170.5 N 761668.2 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.78 ft BTOC (8/12/2010)

START: 02/25/2010

END: 02/26/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 20.30 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	30.0 – 31.5	1.5	0	11.2	8-8-12 (20)		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, iron oxide staining, very stiff, non-plastic, cohesive, petroleum odor, no gravel, "saprolite"			
35	35.0 – 36.5	0.7	0	3.8	12-17-23 (40)		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, iron oxide staining, very stiff, non-plastic, cohesive, petroleum odor, no gravel, "saprolite"			-15
40	40.0 – 41.5	1.5	0	2	6-10-17 (27)		No Recovery	Boring terminated at 41 ft bgs	0.5ft Sump	-20
45										-25
50										-30
55										-35
60										-40

PROJECT NUMBER:	BORING NUMBER:
378718	54MW30 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.62 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139175.6 N 761666.0 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.9 ft BTOC (8/12/2010)

START: 03/03/2010

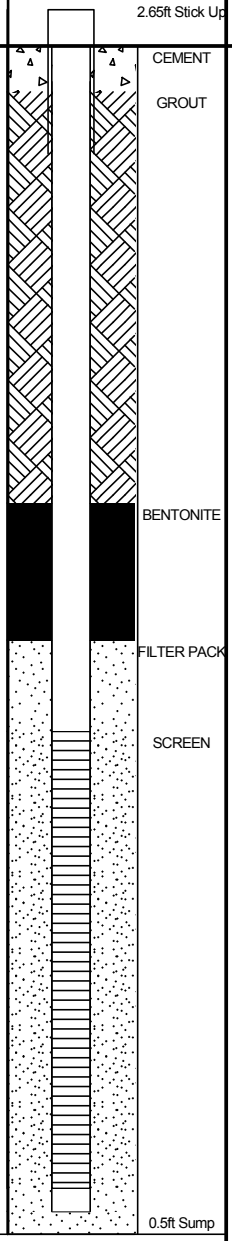
END: 03/03/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0						SILTY SAND with COBBLES and GRAVELS (SM) dry, dark olive gray (5Y 3/2)	Lithology taken from 54MW29
		NM			NM		SANDY CLAY (CL) dry, dark olive gray (5Y 3/2), medium plasticity, cohesive, medium stiff, petroleum odor, some sand	
5	5.0							
	6.5	NM	NM	NM	NM		SANDY CLAY with GRAVEL (CH) slightly moist, dark brown (10YR 3/3), stiff, high plasticity, 30% fine to medium grained sand, 15% gravel up to 0.5-in diameter, petroleum odor	
							No Recovery	
10	10.0							
	11.5	NM	NM	NM	NM		CLAYEY SILT (ML) dry, dark yellowish brown (10YR 4/6), very stiff, non-plastic, non cohesive, petroleum odor, trace highly weathered gravel	
15	15.0							
	16.5	NM	NM	NM	NM		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	
20	20.0							
	21.5	NM	NM	NM	NM		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, pink and dark gray mottling (gley 4/1), stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	
25	25.0							
	26.5	NM	NM	NM	NM		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, iron oxide staining, very stiff, non-plastic, non cohesive, petroleum odor, no gravel, "saprolite"	Boring terminated at 26 ft bgs
30								

WELL DIAGRAM

Casing Top Elev: 20.27 (ft)
Casing Type: Sch 40 PVC
2.65ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW31 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.32 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

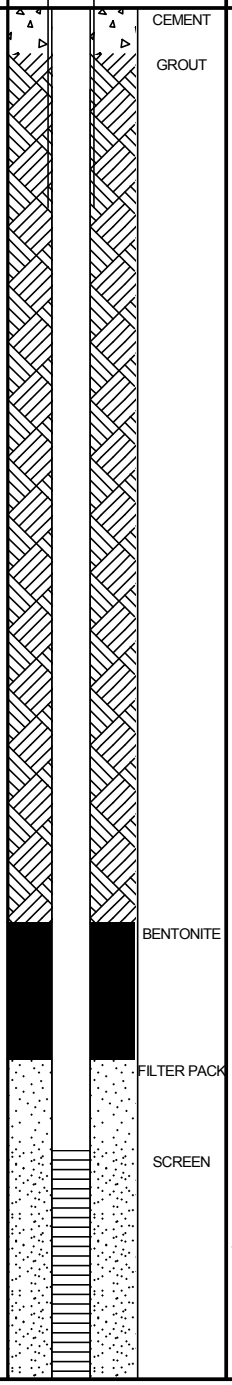
COORDINATES : 139193.4 N 761620.6 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.51 ft BTOC (8/12/2010) START: 03/16/2010 END: 03/17/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0 – 4.0	4.0	0	4.7	NM		CLAYEY SILT (ML) slightly moist, dark yellowish brown (10YR 4/6) with greenish gray mottling (gley 6/1) (decomposed gravel), veins of white precipitate, black staining, iron oxide staining, very stiff, non-plastic, cohesive, petroleum odor, no gravel, "saprolite"		
5	4.0 – 5.0						FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), med to high plasticity, soft, trace sand and gravel		
	5.0 – 6.5	1.3	0	21.7	2-4-4 (8)		FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), medium to high plasticity, medium stiff, trace sand and gravel		
	6.5 – 10.0						No Recovery		
10	10.0 – 11.5	1.5	0.1	158.2	12-16-18 (34)		CLAYEY SILT (ML) dry, light olive brown (2.5Y 5/6), with black staining, non-plastic, strong hydrocarbon odor, trace gravel (weathered gabbro), hard		
15	15.0 – 16.5	1.5	0.1	272.6	5-5-7 (12)		CLAYEY SILT (ML) dry, light olive brown (2.5Y 5/6), mottled with greenish gray (GLEY 1 6/1), stiff, non-plastic to low plasticity, trace gravel (weathered gabbro), hydrocarbon odor		
20	20.0 – 21.5	1.5	0.1	319.9	4-4-5 (9)		CLAYEY SILT (ML) very moist, olive yellow (2.5Y 6/6), mottled with white precipitate and greenish gray (GLEY 2 6/1), noncohesive, nonplastic, slight hydrocarbon odor, no gravel, stiff, "saprolite"		
25	25.0 – 26.5	1.5	0	13.6	5-6-6 (12)		CLAYEY SILT (ML) very moist, olive yellow (2.5Y 6/6), mottled with white precipitate and greenish gray (GLEY 2 6/1), veins of white precipitate present, iron oxide staining, cohesive and medium to low plasticity, no gravels, no odor, stiff, "saprolite"		
30									

WELL DIAGRAM

Casing Top Elev: 20.00 (ft)
Casing Type: Sch 40 PVC
2.68ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW31 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.32 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139193.4 N 761620.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.51 ft BTOC (8/12/2010)

START: 03/16/2010

END: 03/17/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION (SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION)	WELL DIAGRAM (Casing Top Elev: 20.00 (ft) Casing Type: Sch 40 PVC)	ELEVATION NGVD 29
	30.0 – 31.5	1.2	0	8.8	37-50/3" (50/3")		CLAYEY SILT (ML) very moist, olive yellow (2.5Y 6/6), mottled with white precipitate and greenish gray (GLEY 2 6/1), veins of white precipitate present, iron oxide staining, non cohesive and non-plasticity, no gravels, no odor,hard, "saprolite"			
							No Recovery			-15
35	35.0 – 36.5	0.5	0	7.2	50/6" (50/6")		GRAVELLY SILT (ML) wet, olive (5Y 5/4), noncohesive, nonplastic, hard, gravel up to 0.5-in diameter, gravel is mafic, angular, highly weathered, friable			
							No Recovery			-20
40	40.0 – 41.5	0.7	0	NM	50/4" (50/4")		GRAVELLY SILT (ML) wet, olive (5Y 5/4), noncohesive, nonplastic, hard, gravel up to 0.75-in diameter, gravel is mafic, angular, highly weathered, friable	Boring terminated at 41 ft bgs	0.5ft Sump	
							No Recovery			-25
45										-30
50										-35
55										-40
60										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW32 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

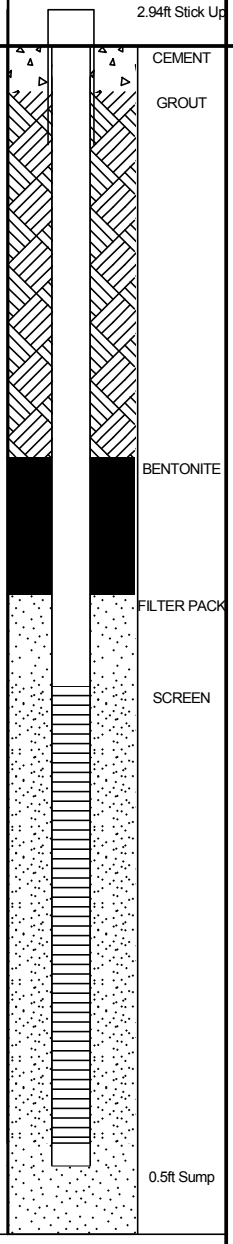
ELEVATION : 17.41 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

COORDINATES : 139191.0 N 761626.6 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.85 ft BTOC (8/12/2010) START: 03/04/2010 END: 03/04/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0						CLAYEY SAND with GRAVEL (SC)	Lithology taken from 54MW31
		NM			NM		FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), med to high plasticity, soft, trace sand and gravel	
5	5.0							
	6.5	NM	NM	NM	NM		FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), med to high plasticity, medium stiff, trace sand and gravel	
							No Recovery	
10	10.0							
	11.5	NM	NM	NM	NM		CLAYEY SILT (ML) dry, light olive brown (2.5Y 5/6), with black staining, non-plastic, strong hydrocarbon odor, trace gravel (weathered gabbro), hard	
15	15.0							
	16.5	NM	NM	NM	NM		CLAYEY SILT (ML) dry, light olive brown (2.5Y 5/6), mottled with greenish gray (5GY 6/1), stiff, non-plastic to low plasticity, trace gravel (weathered gabbro), hydrocarbon odor	
20	20.0							
	21.5	NM	NM	NM	NM		CLAYEY SILT (ML) very moist, olive yellow (2.5Y 6/6), mottled with white precipitate and greenish gray (GLEY 2 6/1), noncohesive, nonplastic, slight hydrocarbon odor, no gravel, stiff, "saprolite"	
25	25.0							
	26.5	NM	NM	NM	NM		CLAYEY SILT (ML) very moist, olive yellow (2.5Y 6/6), mottled with white precipitate and greenish gray (GLEY 2 6/1), veins of white precipitate present, iron oxide staining, cohesive and medium to low plasticity, no gravels, no odor, stiff, "saprolite"	Boring terminated at 26 ft bgs
30								

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW33 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.27 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139159.1 N 761628.7 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.32 ft BTOC (8/12/2010)

START: 03/18/2010

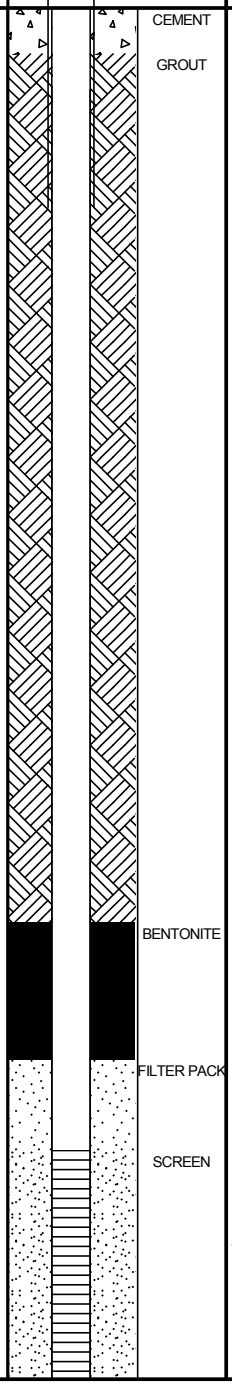
END: 03/19/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0	NM	NM	NM	NM		SILTY CLAY (CL) slightly moist, black, highly organic soil, some coarse gravels, stiff	First 26.5 feet of lithology taken from 54MW27
5	5.0	NM	NM	NM	NM		CLAY (CH) moist, dark yellowish brown (10YR 4/4), very stiff, high plasticity, trace gravel (<0.25-in diameter) and silts	
	6.5							
10	10.0	NM	NM	NM	NM		CLAY (CH) moist, dark yellowish brown (10YR 4/4), hard, high plasticity	
	11.5						CLAYEY GRAVEL (GC) moist, brown (10YR 4/3), very dense, well graded, gravel fragments < 2-in diameter, quartz fragments., some black staining on clay	
15	15.0	NM	NM	NM	NM		SILTY CLAY (CL) moist, dark yellowish brown (10YR 4/4), with grayish green (gley 4/2) mottling throughout run, stiff, mod to high plasticity, trace fine gravel	
	16.5							
20	20.0	NM	NM	NM	NM		SILTY CLAY (CH) moist, dark yellowish brown (10YR 4/4), with grayish green mottling (gley 4/2), mod to high plasticity, pale brown specs, high angle fractures along split spoon run (highly weathered gabbro)	
	21.5							
25	25.0	0.8	34.9	64.8	15-13-19 (32)		SILTY CLAY (CL) wet, gray (10YR 6/1), yellowish brown (10YR 5/6), iron oxide staining along high angle clay fractures, (highly weathered gabbro)	
	26.5							
30								

WELL DIAGRAM

Casing Top Elev: 19.82 (ft)
Casing Type: Sch 40 PVC
2.55ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW33 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.27 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139159.1 N 761628.7 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.32 ft BTOC (8/12/2010) START: 03/18/2010 END: 03/19/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 19.82 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	30.0 – 31.5	1.5	0.8	27.2	5-18-15 (33)		CLAYEY SILT (ML) very moist, greenish gray (GLEY 1 6/1), veins of iron oxide and white precipitate, black staining, noncohesive, nonplastic, no gravels, v. stiff, "saprolite"			
35	35.0 – 36.5	1.5	0.1	14.9	6-10-16 (26)		CLAYEY SILT (ML) very moist, greenish gray (GLEY 1 6/1), veins of iron oxide and white precipitate, black staining, noncohesive, nonplastic, no gravels, v. stiff, "saprolite"			-15
40	40.0 – 41.5	0.9	0	32.6	16-50/5" (50/5")		CLAYEY SILT (ML) very moist, greenish gray (GLEY 1 6/1), veins of iron oxide and white precipitate, black staining, noncohesive, nonplastic, no gravels, hard, "saprolite"	Boring terminated at 41 ft bgs	0.5ft Sump	-20
45										-25
50										-30
55										-35
60										-40

PROJECT NUMBER:	BORING NUMBER:
378718	54MW34 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.51 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Juan Santiago

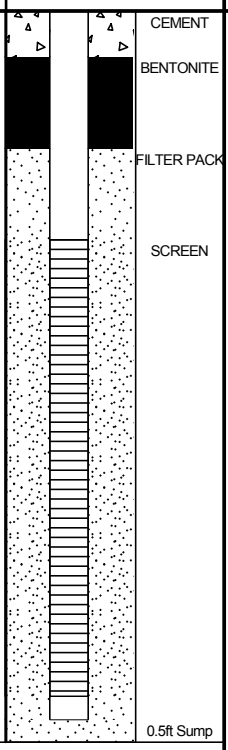
COORDINATES : 139101.5 N 761618.7 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.79 ft BTOC (8/12/2010) START: 03/05/2010 END: 03/05/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	4.0	NM	2.5	NM		SILTY SAND with GRAVEL (SM) dry, brown (10YR 4/3), loose		
	4.0						CLAY (CH) dry, brown (10YR4/3), stiff, med to high plasticity, trace sand		
5	5.0								
	6.5	1.3	0	4.1	4-4-5 (9)		CLAY (CL) dry, brown (10YR 4/3), stiff, low plasticity, cohesive, trace to little sand, no gravels, little silt, no odor		
							No Recovery		
10	10.0								
	11.5	1.5	0	344	9-8-10 (18)		CLAYEY SILT (ML) dry, brown (10YR 4/3) mottled with greenish gray (GLEY 1 6/1), very stiff, low plasticity, cohesive, black hydrocarbon staining, hydrocarbon odor, trace weathered gravel, trace sand		
15	15.0								
	16.5	1.5	0	318	5-7-10 (17)		CLAYEY SILT (ML) dry, dark greenish gray (GLEY 1 4/1), small veins of white precipitate, trace pink spots, "saprolite"	Boring terminated at 16 ft bgs	
20									
25									
30									

WELL DIAGRAM

Casing Top Elev: 20.29 (ft)
Casing Type: Sch 40 PVC
2.78ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW35 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.39 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139125.8 N 761639.1 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.75 ft BTOC (8/12/2010) START: 03/22/2010 END: 03/22/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 17.26 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	0.0 – 4.0	4.0			NM		SILTY GRAVEL with COBBLES (GM) wet at 2.5ft bgs, light olive brown (2.5Y 5/4), loose, gravel up to cobble size, cobbles up to 8-in in diameter		Flush Mount Riser; CEMENT GROUT	15
5	5.0 – 6.5	1.5	0	38.5	6-9-13 (22)		SILTY CLAY (CL) very moist, dark olive brown (2.5Y 3/3), very stiff, medium plasticity, visible hydrocarbon staining, strong hydrocarbon odor			10
10	10.0 – 11.5	1.5	0	1580	5-9-12 (21)		SILTY CLAY (CL) very moist, dark olive brown (2.5Y 3/3), very stiff, medium plasticity, visible hydrocarbon staining, strong hydrocarbon odor, trace gravel			5
15	15.0 – 16.5	1.5	0	317.1	3-5-6 (11)		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic			0
20	20.0 – 21.5	1.5	0	22.4	5-9-12 (21)		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic, iron oxide staining		BENTONITE	-5
25	25.0 – 26.5	1.2	0.2	2	15-31-39 (70)		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic, iron oxide staining, hard bottom 2-inches GRAVEL (GW) up to 1-in in diameter, mafic and angular		FILTER PACK; SCREEN	-10
30							No Recovery			

PROJECT NUMBER:	BORING NUMBER:
378718	54MW35 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.39 ft (NGVD 29) DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139125.8 N 761639.1 E DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.75 ft BTOC (8/12/2010) START: 03/22/2010 END: 03/22/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 17.26 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	30.0–31.5	1.1	0	5.2	39-50/4" (50/4")		CLAYEY SILT (ML) wet, light yellowish brown (2.5Y 5/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic, iron oxide staining			
35	35.0–36.5	1.3	0	22.9	23-50/5" (50/5")		CLAYEY SILT (ML) wet, light yellowish brown (2.5Y 5/4), hard, trace gravel, iron oxide staining, non cohesive, non-plastic, no veins as above, no odor			-15
40	40.0–41.5	0.6	0	9.5	50/4" (50/4")		CLAYEY SILT (ML) wet, light yellowish brown (2.5Y 5/4), hard, trace gravel, iron oxide staining, non cohesive, non-plastic, no veins as above, no odor	Boring terminated at 41 ft bgs	0.5ft Sump	-20
45										-25
50										-30
55										-35
60										-40

PROJECT NUMBER:	BORING NUMBER:
378718	54MW36 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.39 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139126.8 N 761643.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.66 ft BTOC (8/12/2010)

START: 03/23/2010

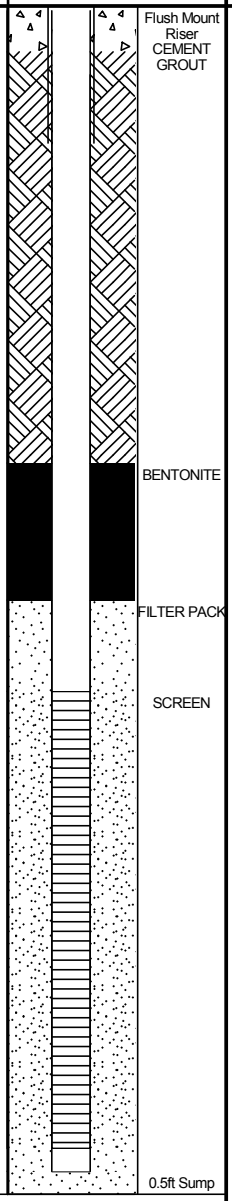
END: 03/23/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	NM			NM		SILTY GRAVEL with COBBLES (GM) wet at 2.5ft bgs, gravel up to cobble size, cobbles up to 8-in in diameter, light olive brown (2.5Y 5/4), loose	Lithology taken from 54MW35	15
5	5.0	NM	NM	NM	NM		SILTY CLAY (CL) very moist, dark olive brown (2.5Y 3/3), very stiff, medium plasticity, visible hydrocarbon staining, strong hydrocarbon odor		10
10	10.0	NM	NM	NM	NM		SILTY CLAY (CL) very moist, dark olive brown (2.5Y 3/3), very stiff, medium plasticity, visible hydrocarbon staining, strong hydrocarbon odor, trace gravel		5
15	15.0	NM	NM	NM	NM		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic		0
20	20.0	NM	NM	NM	NM		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic, iron oxide staining		-5
25	25.0	NM	NM	NM	NM		CLAYEY SILT (ML) dry, light yellowish brown (2.5Y 6/4), stiff, speckled with white precipitate, few veins of white precipitate, slight hydrocarbon odor, non cohesive, non-plastic, iron oxide staining, hard bottom 2-inches GRAVEL (GW) up to 1-in in diameter, mafic and angular	Boring terminated at 26 ft bgs	-10
30	26.5						No Recovery		

WELL DIAGRAM

Casing Top Elev: 17.19 (ft)
Casing Type: Sch 40 PVC



PROJECT NUMBER:	BORING NUMBER:
378718	54MW37 SHEET 1 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.89 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139146.5 N 761600.2 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.18 ft BTOC (8/12/2010)

START: 03/24/2010

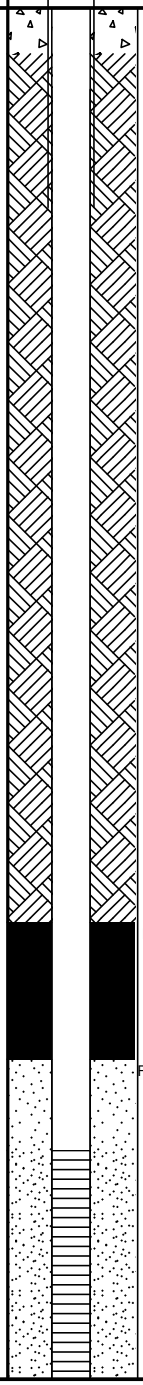
END: 03/24/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0 – 3.5	3.5	0	2.5	NM		FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), med to high plasticity, medium stiff		
5	5.0 – 6.5	1.5	0	44.3	3-5-9 (14)		FAT CLAY (CH) dry, very dark grayish brown (10YR 3/2), med to high plasticity, stiff		
10	10.0 – 11.5	1.5	0	102.9	10-9-10 (19)		CLAYEY SILT (ML) dry, dark yellowish brown (10YR 4/6), mottled with greenish gray (5GY1 6/1), low plasticity, cohesive, v. stiff, strong hydrocarbon odor		
15	15.0 – 16.5	1.5	0	86.3	3-5-7 (12)		CLAYEY SILT (ML) dry, greenish gray (5GY 5/1), mottled with white and brown, trace veins with iron oxide staining, stiff, slight odor, non cohesive and non-plastic, no sands, no gravels, "saprolite"		
20	20.0 – 21.5	1.5	0	7.5	6-8-10 (18)		CLAYEY SILT (ML) wet, olive (5Y 5/3), white veins, some iron oxide staining, non-plastic, non cohesive, v. stiff, no odor		
25	25.0 – 26.5	1.5	0	6.8	3-6-9 (15)		CLAYEY SILT (ML) wet, olive (5Y 5/3), some iron oxide staining, non-plastic, non cohesive, no odor, stiff, speckled with white precipitate and mottled with dark greenish gray (5GY 4/1) "saprolite"		
30									

WELL DIAGRAM

Casing Top Elev: 19.67 (ft)
Casing Type: Sch 40 PVC
2.78ft Stick Up



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW37 SHEET 2 OF 2

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.89 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139146.5 N 761600.2 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.18 ft BTOC (8/12/2010) START: 03/24/2010 END: 03/24/2010 LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	WELL DIAGRAM: Casing Top Elev: 19.67 (ft) Casing Type: Sch 40 PVC	ELEVATION NGVD 29
	30.0 – 31.5	1.3	0	8.6	13-16-34 (50)		CLAYEY SILT (ML) wet, olive (5Y 5/3), white veins, iron oxide staining, non-plastic, non cohesive, hard, no odor, trace gravel			
							No Recovery			-15
35	35.0 – 36.5	0.7	0	5	34-50/3" (50/3")		CLAYEY SILT (ML) wet, olive (5Y 5/3), white veins, iron oxide staining, non-plastic, non cohesive, hard, no odor, trace gravel			
							No Recovery			-20
40	40.0 – 41.5	0.9	0	7.8	38-50/4" (50/4")		CLAYEY SILT (ML) wet, olive (5Y 5/3), white veins, iron oxide staining, non-plastic, non cohesive, hard, no odor, trace gravel	Boring terminated at 41 ft bgs	0.5ft Sump	
							No Recovery			-25
45										-30
50										-35
55										-40
60										

PROJECT NUMBER:	BORING NUMBER:
378718	54MW38 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.67 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139120.0 N 761571.4 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 4.13 ft BTOC (8/12/2010)

START: 03/29/2010

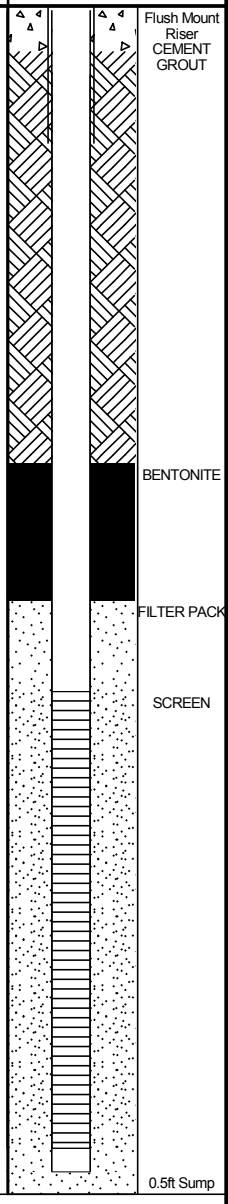
END: 03/29/2010

LOGGER : Mike Karafa/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	5.0			NM		SILTY SAND with GRAVEL (SM) dry, loose, fine to medium grained		
5	5.0								
	6.5	1.5	0	0.2	4-5-6 (11)		SILTY CLAY (CL) slightly moist, dark grayish brown (10YR4/2), fine grained, low plasticity, trace pea sized gravel up to 0.5-in diameter		
10	10.0								
	11.5	1.5	0.4	2650	15-15-12 (27)		SANDY SILT with CLAY (ML) slightly moist, dark grayish brown (10YR 4/2), stiff, fine grained, gravel 30%, up to 0.5-in diameter, fuel odor		
15	15.0								
	16.5	1.5	0	216	4-4-6 (10)		SILTY SAND with CLAY (SM) light olive gray (5Y 6/2), soft, fine grained, saprolite		
20	20.0								
	21.5	1.1	0	9.6	7-8-9 (17)		CLAYEY SILT with GRAVEL (ML) wet, light olive gray (5Y 6/2), soft, fine grained, gravel 50% pea sized up to 0.25-in diameter gabbro, saprolite		
							No Recovery		
25	25.0								
	26.5	0.8	0	31.2	6-25-16 (41)		CLAYEY SILT with GRAVEL (ML) wet, light olive gray (5Y 6/2), soft, fine grained, gravel 50% pea sized up to 0.25-in diameter gabbro, saprolite	Boring terminated at 26 ft bgs	
							No Recovery		
30									

WELL DIAGRAM

Casing Top Elev: 16.61 (ft)
Casing Type: Sch 40 PVC



PROJECT NUMBER:	BORING NUMBER:
378718	54MW39 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.77 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139116.5 N 761525.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.5 ft BTOC (8/12/2010)

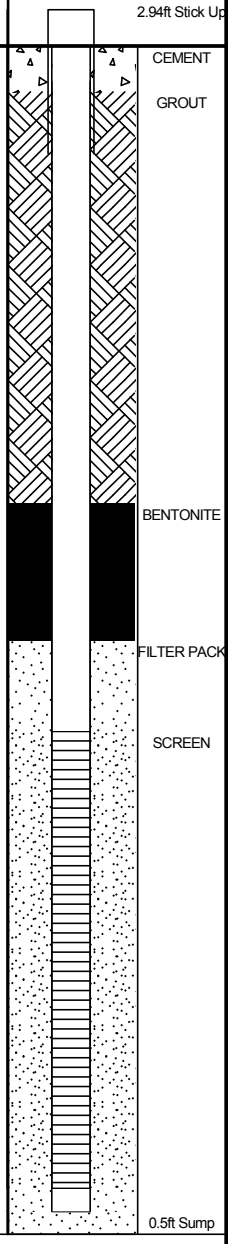
START: 03/25/2010

END: 03/25/2010

LOGGER : Amber Guilfoyle/SAN

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0 – 3.0	3.0			NM		SILTY SAND with COBBLES (SM) cobbles up to 9-in in diameter, dry, loose, brown (10YR 4/3), well graded	
5	5.0 – 6.5	1.5	0	0.4	3-5-5 (10)		SILTY CLAY (CL) dry, dark brown (10YR 3/3), stiff, medium plasticity, trace gravels, no odor	
10	10.0 – 11.5	1.5	0	1.3	2-2-3 (5)		SILTY FAT CLAY (CL) moist, dark olive brown (2.5Y 3/3), high plasticity, medium stiff, mottled with greenish gray (5BG 5/1), no odor, trace gravel	
15	15.0 – 16.5	1.5	0	2.1	5-12-15 (27)		CLAYEY SILT (ML) moist, brownish yellow (10YR 6/6), v. stiff, non cohesive, non-plastic, iron oxide staining present, no gravels	
20	20.0 – 21.5	1.3	0	3.4	4-5-15 (20)		CLAYEY SILT (ML) wet, brownish yellow (10YR 6/6), mottled with dark greenish gray (10GY 4/1), and yellowish red (5YR 5/6), v. stiff, no odor, cohesive, low plasticity, trace gravels, "saprolite"	
							No Recovery	
25	25.0 – 26.5	0.8	0	3.7	40-50/3" (50/3")		CLAYEY SILT (ML) wet, light olive brown (2.5Y 5/6), veins with iron oxide stains, no plasticity, non cohesive, no odor, trace gravels.	Boring terminated at 26 ft bgs
							No Recovery	
30								

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW40 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 15.77 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139121.8 N 761523.9 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.58 ft BTOC (8/12/2010)

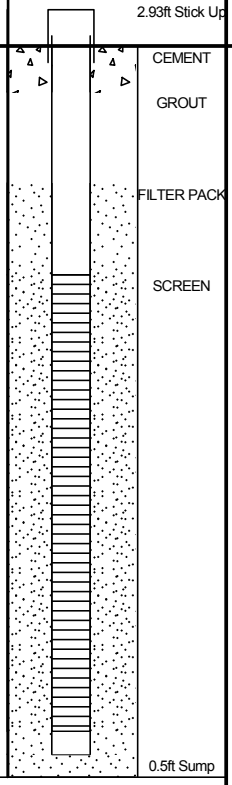
START: 03/29/2010

END: 03/29/2010

LOGGER : Mike Karafa/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
							SILTY SAND with COBBLES (SM) cobbles up to 9-in in diameter, dry, loose, brown (10YR 4/3), well graded		15
5	5.0								
	6.5	NM	NM	NM	NM		SILTY CLAY (CL) dry, dark brown (10YR 3/3), stiff, medium plasticity, trace gravels, no odor		10
10	10.0								
	11.5	NM	NM	NM	NM		SILTY FAT CLAY (CL) moist, dark olive brown (2.5Y 3/3), high plasticity, medium stiff, no odor, mottled with greenish gray (5BG 5/1), no odor, trace gravel		5
15	15.0								
	16.5	NM	NM	NM	NM		CLAYEY SILT (ML) moist, brownish yellow (10YR 6/6), v. stiff, non cohesive, non-plastic, iron oxide staining present, no gravels	Boring terminated at 16 ft bgs	0
20									-5
25									-10
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW41 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 16.10 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139138.4 N 761554.3 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 6.46 ft BTOC (8/12/2010)

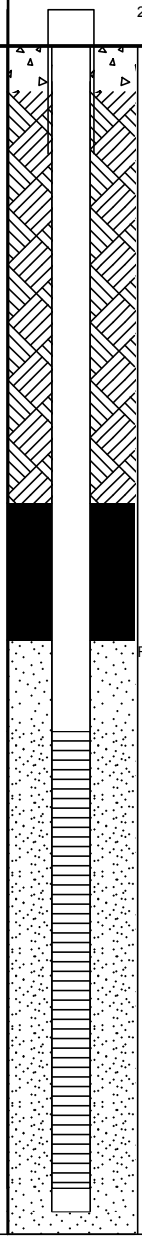
START: 03/30/2010

END: 03/30/2010

LOGGER : Mike Karafa/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	5.0			NM		SILTY SAND (SM) dry, brown (10YR 4/3), loose, fine grained, gravel up to 2-in diameter		
5	5.0						SILTY CLAY (CL) slightly moist, dark grayish brown (10YR 4/2), medium plasticity, fine grained, trace gravel		
	6.5	1.5	0	1.4	3-6-7 (13)		SILTY CLAY (CL) slightly moist, dark grayish brown (10YR 4/2) mottled with GLEY 6/10, stiff, gravel 25% up to 0.25-in diameter gabbro		
10	10.0								
	11.5	1.5	0	1040	13-16-10 (26)		CLAYEY GRAVEL with SAND (GC) dry, dark grayish brown (10YR4/3), loose, fine grained, gravel 70% up to 0.75-in diameter gabbro, fuel odor		
15	15.0								
	16.5	1.1	0	109	5-6-7 (13)		CLAYEY SILT with GRAVEL (ML) dry, dark grayish brown (10YR 4/2), soft, fine grained, weathered gabbro structure, gravel 20% up to 0.5-in diameter, saprolite		
							No Recovery		
20	20.0								
	21.5	1.5	0	6.3	4-6-11 (17)		CLAYEY SILT (ML) slightly moist, light olive gray (5Y 6/2), loose, fine grained, weathered gabbro structure, trace pea sized gravel, saprolite		
25	25.0								
	26.5	0.8	0	6	12-12-26 (38)		CLAYEY SILT (ML) slightly moist, light olive gray (5Y 6/2), loose, fine grained, weathered gabbro structure, saprolite, 30% pea sized gravel up to 0.5-in diameter	Boring terminated at 26 ft bgs	
							No Recovery		
30									

WELL DIAGRAM



PROJECT NUMBER:	BORING NUMBER:
378718	54MW42 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.43 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139068.4 N 761630.1 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 7.74 ft BTOC (10/14/2010)

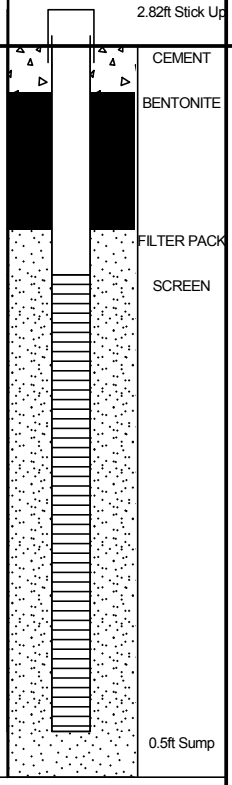
START: 10/07/2010

END: 10/07/2010

LOGGER : Andrew O'Conor/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0 – 5.0	5.0	NM	7.2			CLAY (CL) moist, yellowish brown (10YR 4/5), soft, med grain gravel and some silts	
5	5.0 – 7.0	1.8	NM	2.3	4-6-8-10 (14)		CLAY with SAND (CL) moist, brown (10YR 4/3), stiff, 5% dark gravel	
	7.0 – 10.0						No Recovery	
10	10.0 – 12.0	1.8	NM	NM	4-5-7-7 (12)		SANDY CLAY with SILT (CL) brown, medium stiff clay with trace gravels and fine sand	
	12.0 – 15.0						SANDY CLAY with SILT (CL) greenish grey, trace gravel, fine grained gravel to 1-in diameter, some iron oxide staining, GLEY 2 5/5B mixed with 5YR 5/8. No Recovery	
15	15.0 – 17.0	1.8	NM	3.8	4-6-5-5 (11)		SILTY CLAY to CLAYEY SILT (CL/ML) moist, wet at 16 ft bgs, dark grey, soft, gravels 1" to fine, some iron oxide staining, greenish brown (5Y 6/8)	Boring terminated at 16 ft bgs
20								
25								
30								

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW43 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04 | LOCATION : Ceiba, Puerto Rico

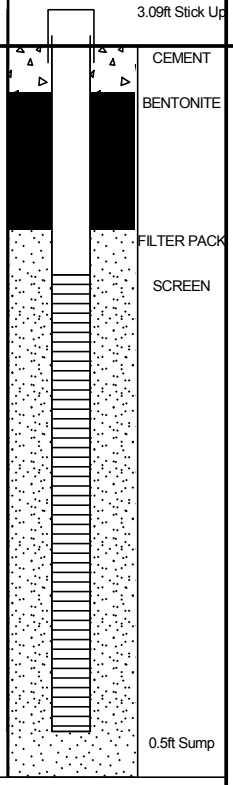
ELEVATION : 19.32 ft (NGVD 29) | DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139080.4 N 761711.7 E | DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 9.73 ft BTOC (10/18/2010) START: 10/08/2010 END: 10/14/2010 LOGGER : Andrew O'Conor/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION	ELEVATION NGVD 29
	0.0	5.0	NM	0			Not Sampled		
5	5.0	1.7	NM	0	2-3-5-6 (8)		CLAY (CL) dry to slightly moist, yellowish brown (10YR 5/6), trace silts and trace coarse gravel, stiff		
	7.0						No Recovery		
10	10.0	0.6	NM	0	9-12-13-8 (25)		CLAY (CL) moist, dark yellowish brown (10YR 4/6), some fine grained sand, trace silt and trace subangular gravel		
	12.0						No Recovery		
15	15.0	2.0	NM	2859	3-3-4-5 (7)		SILTY CLAY (CL) moist to very moist, grayish green (GLEY 1 5/5G), "saprolite"	Boring terminated at 16 ft bgs	
	17.0								
20									
25									
30									

WELL DIAGRAM



ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

PROJECT NUMBER:	BORING NUMBER:
378718	54MW44 SHEET 1 OF 1

Soil Boring Log

PROJECT : Naval Activity Puerto Rico JM04

LOCATION : Ceiba, Puerto Rico

ELEVATION : 17.00 ft (NGVD 29)

DRILLING CONTRACTOR : Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago

COORDINATES : 139234.5 N 761625.6 E

DRILLING METHOD AND EQUIPMENT : Mobil B61, Hollow-stem auger, 8-in OD augers

STATIC WATER LEVEL: 8.86 ft BTOC (10/14/2010)

START: 10/07/2010

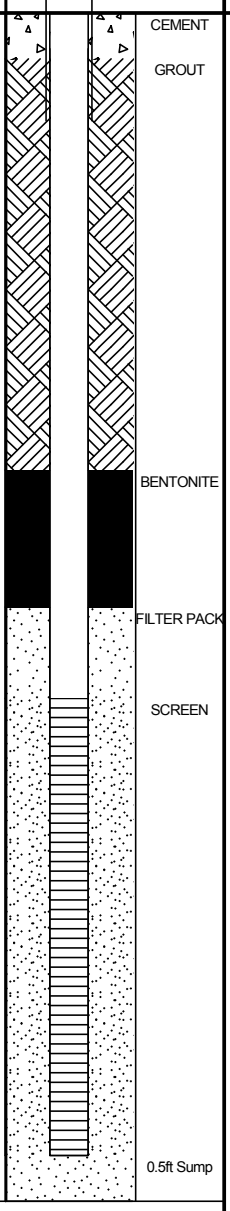
END: 10/07/2010

LOGGER : Andrew O'Conor/ATL

DEPTH BELOW GROUND SURFACE (ft)	INTERVAL (ft)	RECOVERY (ft)	PID (ppm) breathing zone	PID (ppm) headspace	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	GRAPHIC LOG	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR,MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, & INSTRUMENTATION
	0.0 – 5.0	5.0	NM	NM			CLAY (CL) dry, greenish brown, medium soft, trace silts, gravelly clay at 5-ft bgs, easily penetrated with thumb.	
5	5.0 – 7.0	0.0	NM	NM	4-7-7-8 (14)		No Recovery from cuttings: CLAYEY SAND with GRAVEL, brown	
10	10.0 – 12.0	1.1	NM	NM	24-10-64 (74)		CLAY with GRAVEL (CL) moist, brownish orange (10YR 5/4), stiff to soft clay, gravels 1/8-in to 1-in, subangular to rounded, moist to wet soft clay lenses (GLEY 7/5G)	
	12.0 – 15.0						No Recovery	
15	15.0 – 17.0	1.8	NM	0	3-4-3-3 (7)		CLAY (CL) moist, yellowish brown (10YR 5/6), soft to medium stiff, trace silts, silty clay at 17 ft bgs, trace gravels 1/8-in	
	17.0 – 20.0						No Recovery	
20	20.0 – 22.0	2.0	NM	0	2-3-5-5 (8)		SILTY CLAY (CL) moist to wet, yellowish red (5YR 5/8), soft, trace gravels up to 1/8-in diameter	
25	25.0 – 27.0	2.0	NM	0	4-4-5-5 (9)		SILTY CLAY (CL) moist to wet, orange brown (10YR 5/6), soft, with gravel layer at 26-ft bgs	Boring terminated at 26 ft bgs
30								

WELL DIAGRAM

Casing Top Elev: 19.90 (ft)
Casing Type: Sch 40 PVC
2.89ft Stick Up



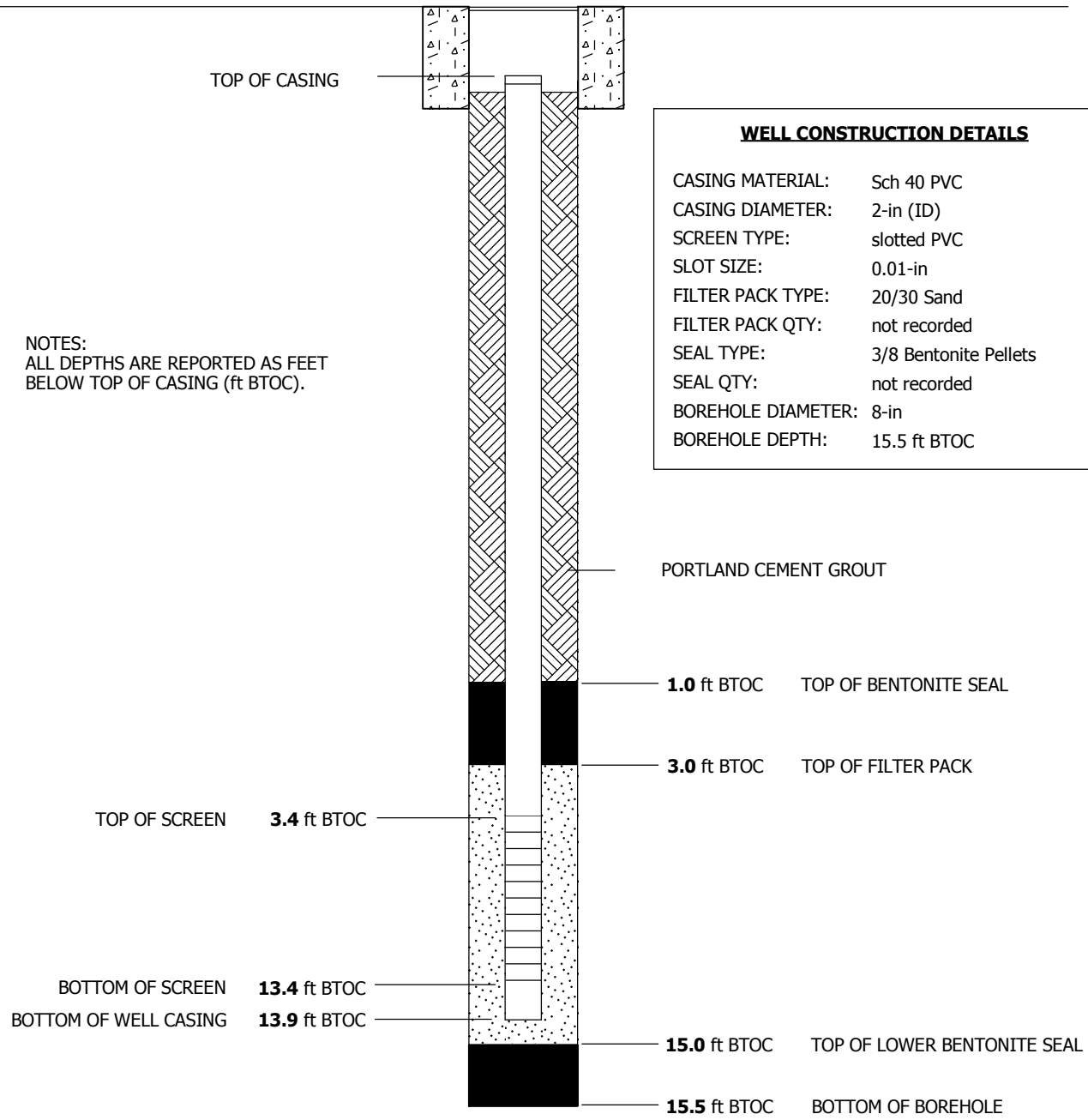
ELEVATION NGVD 29: 15, 10, 5, 0, -5, -10

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW01

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 16.42 ft	**NORTHING (NAD83 Z 20):** 139142.84	**EASTING (NAD83 Z 20):** 761591.78	**STATIC WATER LEVEL:** 3.89 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.88 ft	**START:** 08/14/2009	**FINISH:** 08/14/2009	**LOGGED BY:** Sam Smith/ATL

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	not recorded
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	not recorded
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	15.5 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

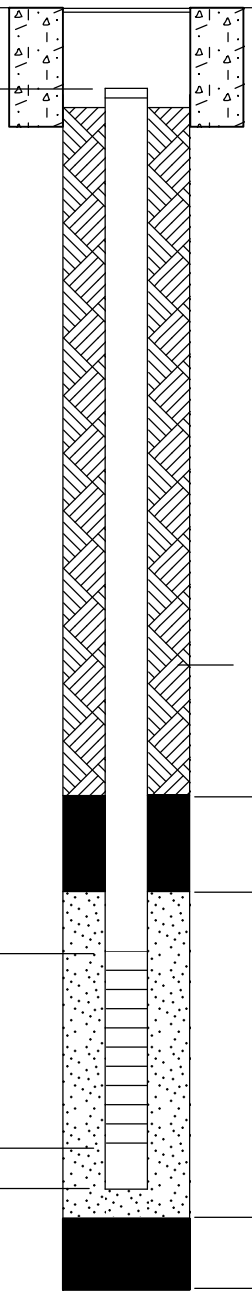
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW02

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 16.54 ft	**NORTHING (NAD83 Z 20):** 139115.22	**EASTING (NAD83 Z 20):** 761573.24	**STATIC WATER LEVEL:** 4.38 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.83 ft	**START:** 08/13/2009	**FINISH:** 08/13/2009	**LOGGED BY:** Sam Smith/ATL

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	5.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	17.2 ft BTOC

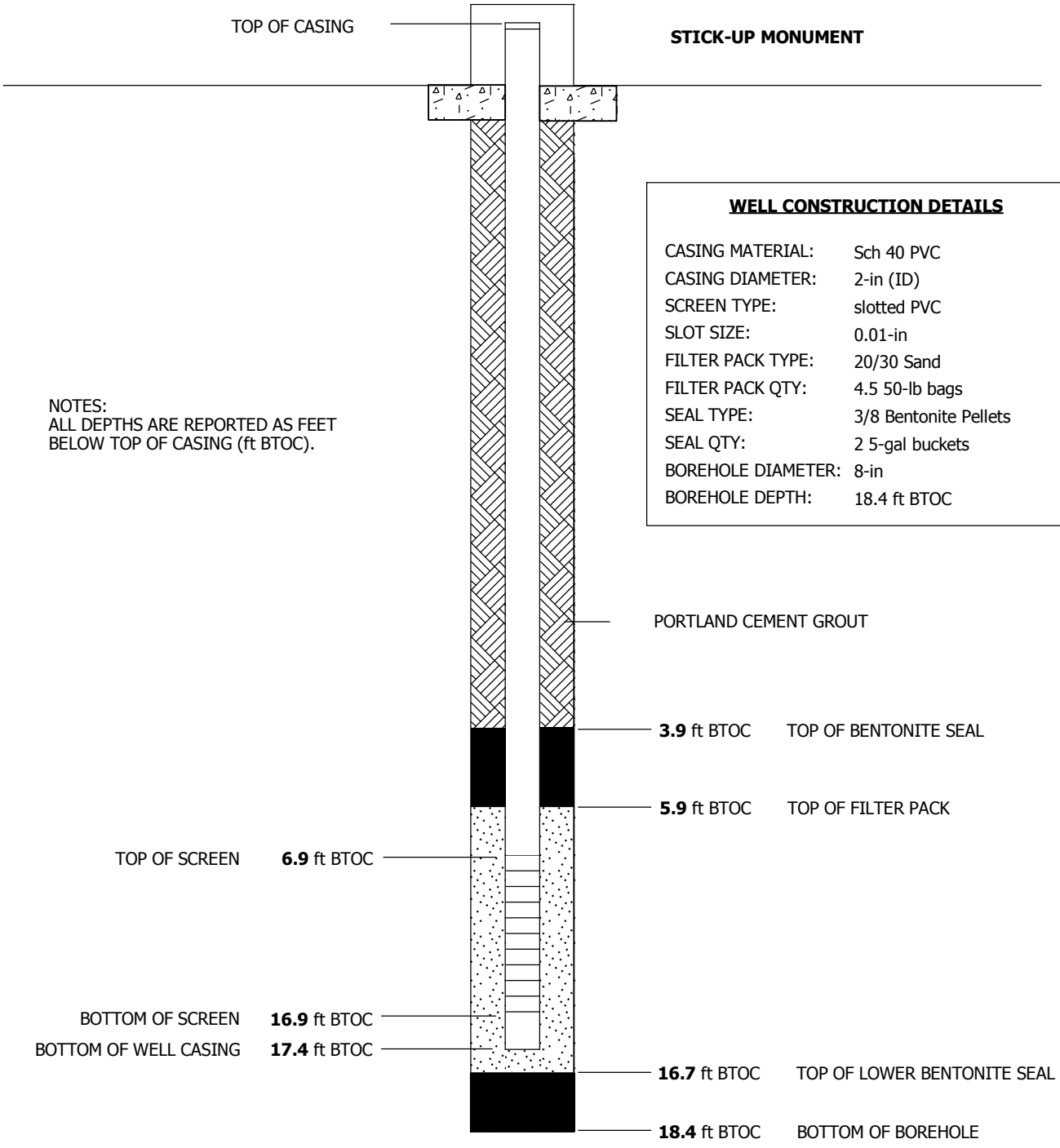
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW03

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.26 ft	**NORTHING (NAD83 Z 20):** 139107.98	**EASTING (NAD83 Z 20):** 761565.82	**STATIC WATER LEVEL:** 6.88 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.91 ft	**START:** 08/12/2009	**FINISH:** 08/12/2009	**LOGGED BY:** Sam Smith/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	4.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	2 5-gal buckets
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.4 ft BTOC

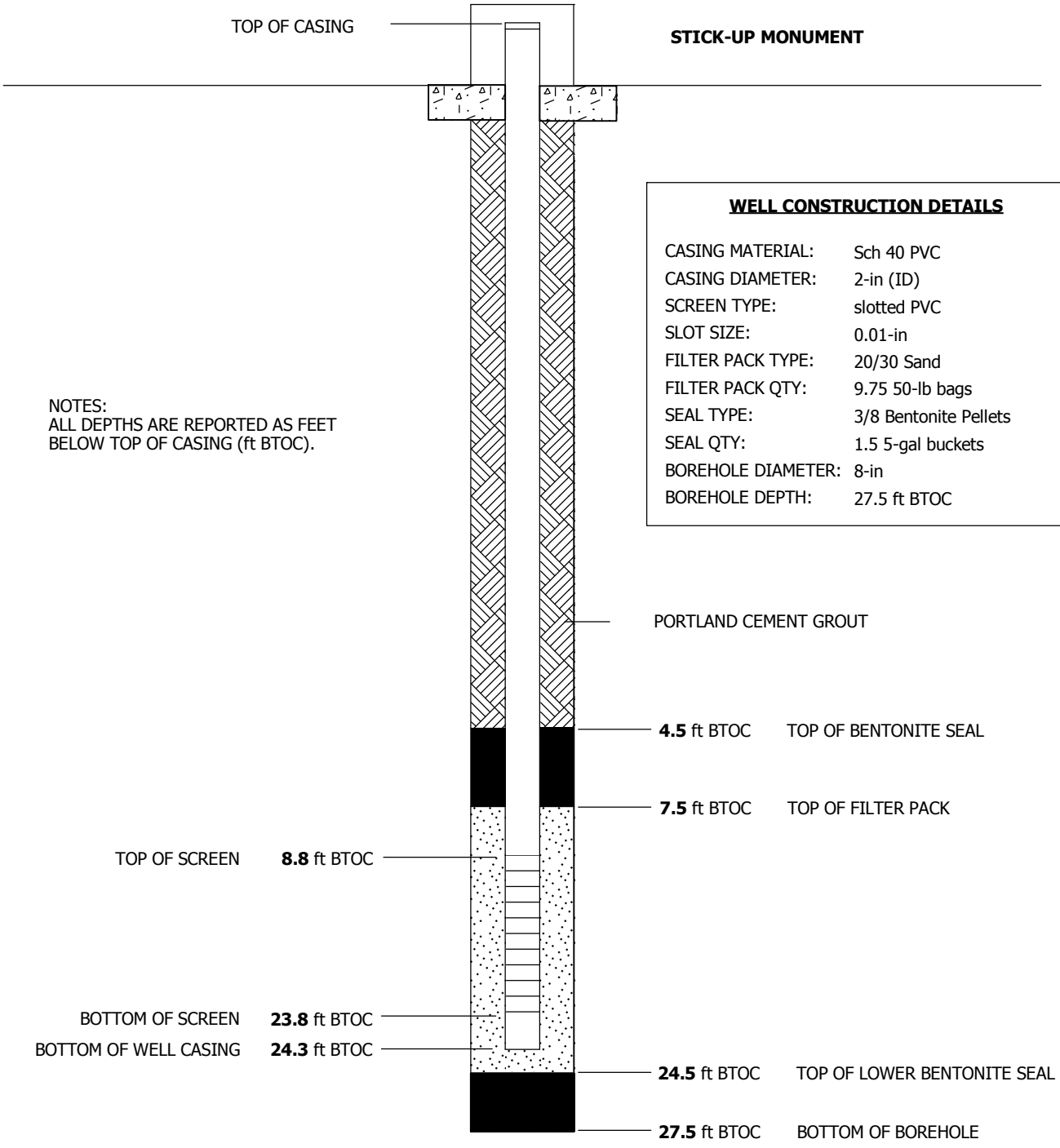
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW04

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.52 ft	**NORTHING (NAD83 Z 20):** 139095.45	**EASTING (NAD83 Z 20):** 761549.69	**STATIC WATER LEVEL:** 7.45 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.04 ft	**START:** 08/10/2009	**FINISH:** 08/10/2009	**LOGGED BY:** Sam Smith/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	9.75 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1.5 5-gal buckets
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	27.5 ft BTOC

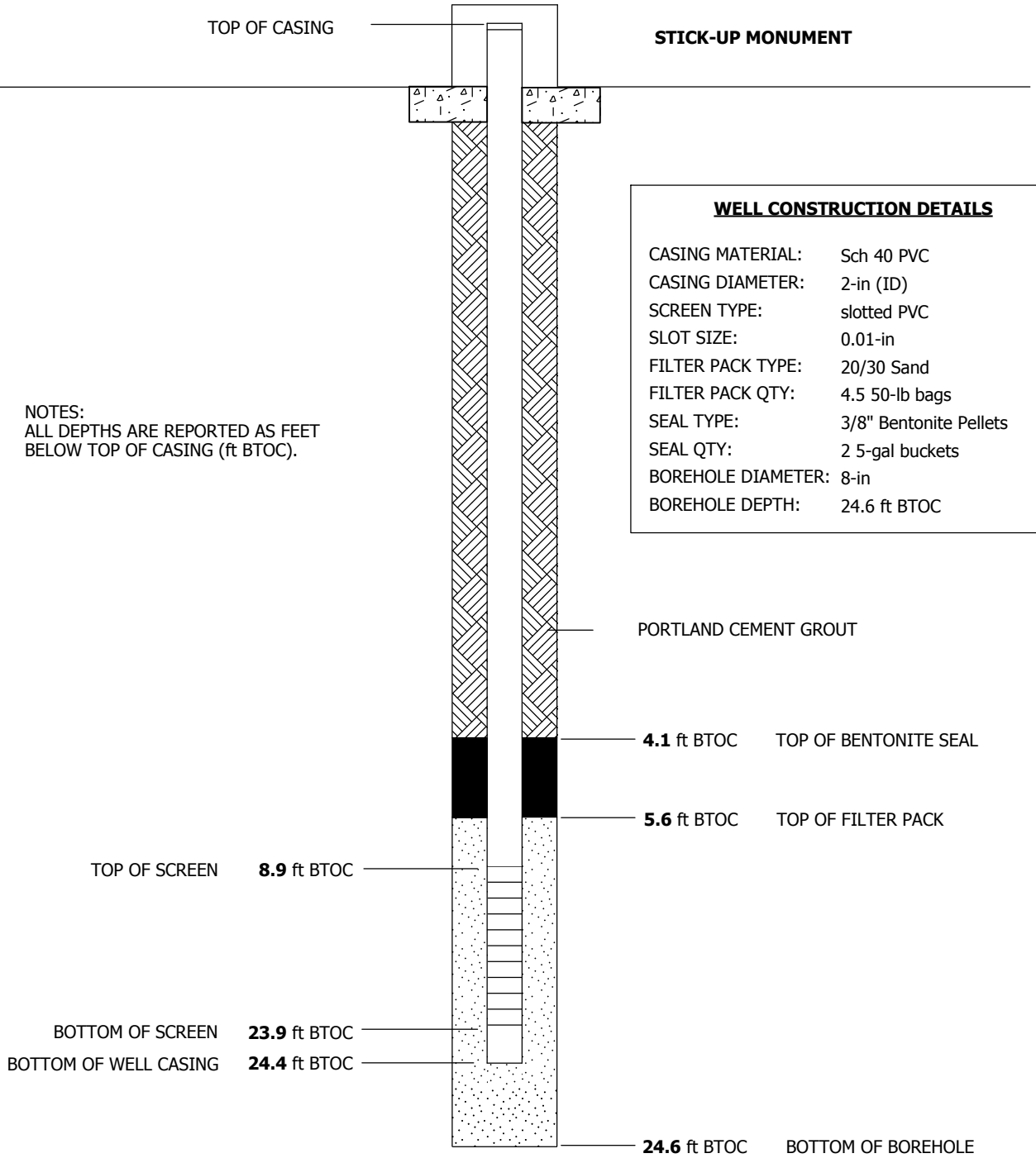
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW05

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.82 ft	**NORTHING (NAD83 Z 20):** 139088.85	**EASTING (NAD83 Z 20):** 761573.48	**STATIC WATER LEVEL:** 7.5 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.21 ft	**START:** 08/12/2009	**FINISH:** 08/12/2009	**LOGGED BY:** Sam Smith/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	4.5 50-lb bags
SEAL TYPE:	3/8" Bentonite Pellets
SEAL QTY:	2 5-gal buckets
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	24.6 ft BTOC

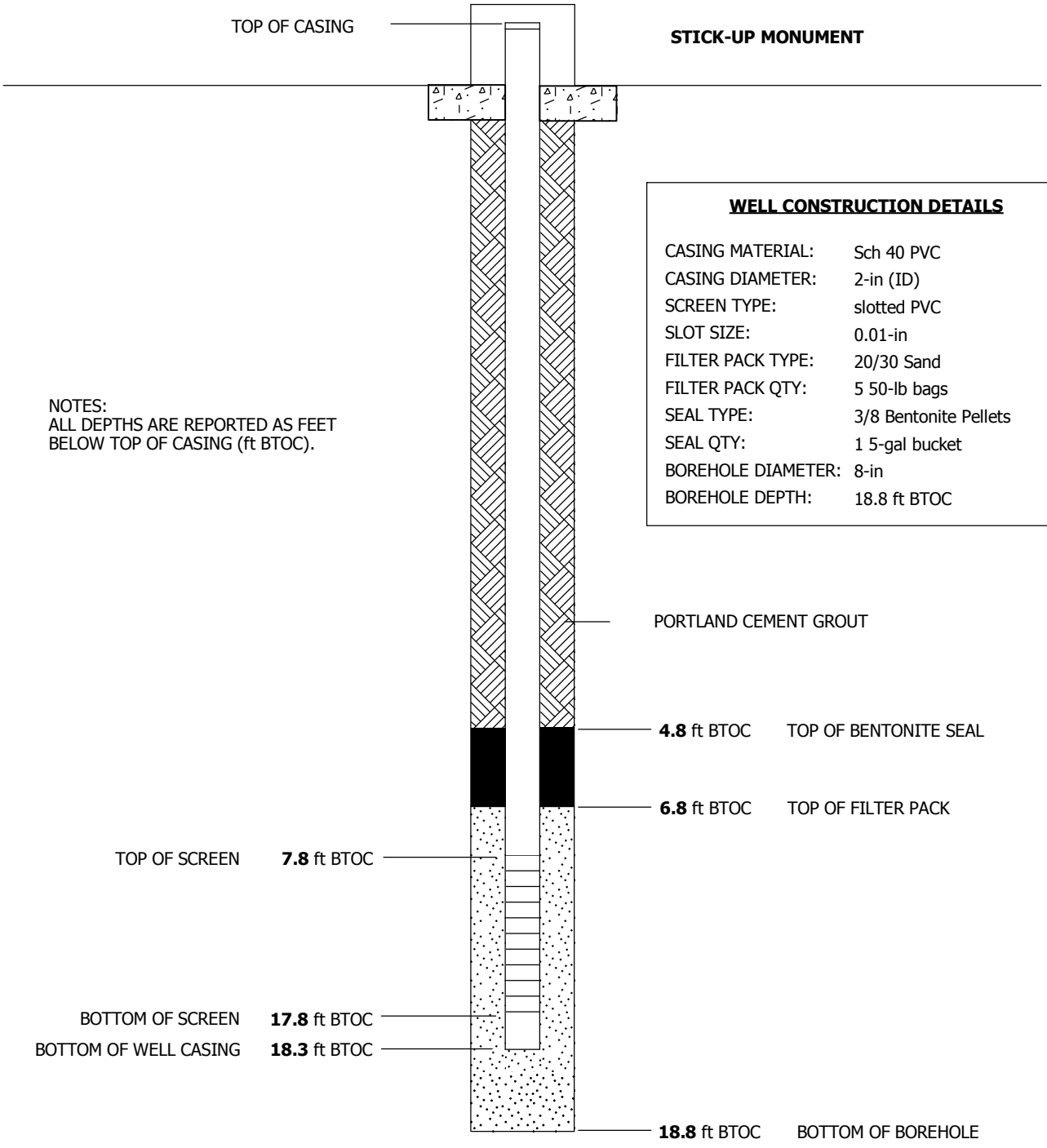
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW06

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.38 ft	**NORTHING (NAD83 Z 20):** 139133.06	**EASTING (NAD83 Z 20):** 761556.57	**STATIC WATER LEVEL:** 7 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.60 ft	**START:** 08/11/2009	**FINISH:** 08/11/2009	**LOGGED BY:** Sam Smith/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.01-in
FILTER PACK TYPE:	20/30 Sand
FILTER PACK QTY:	5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.8 ft BTOC

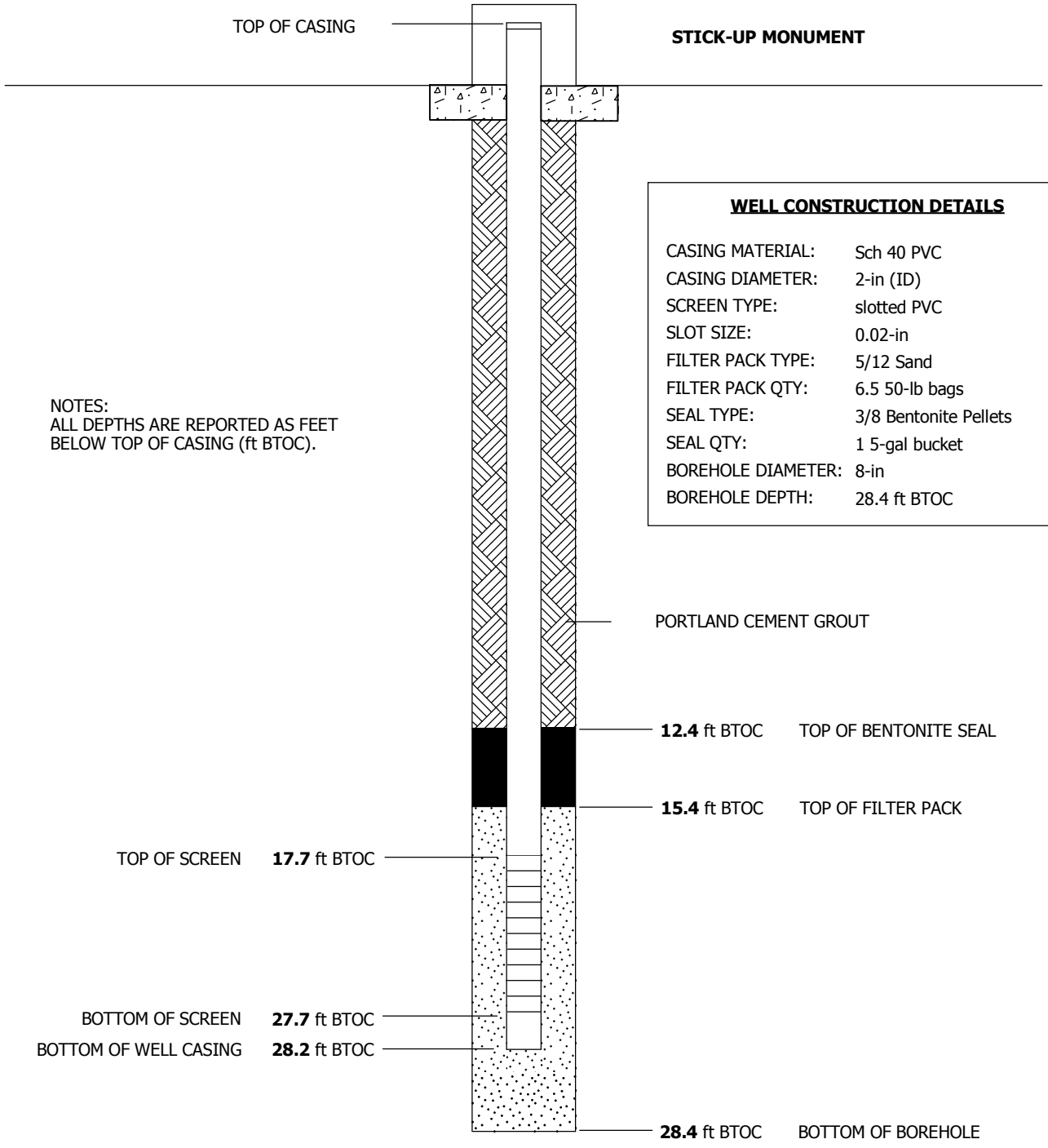
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW19

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.61 ft	**NORTHING (NAD83 Z 20):** 139162.50	**EASTING (NAD83 Z 20):** 761593.65	**STATIC WATER LEVEL:** 7.26 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.21 ft	**START:** 12/09/2009	**FINISH:** 12/09/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	6.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.4 ft BTOC

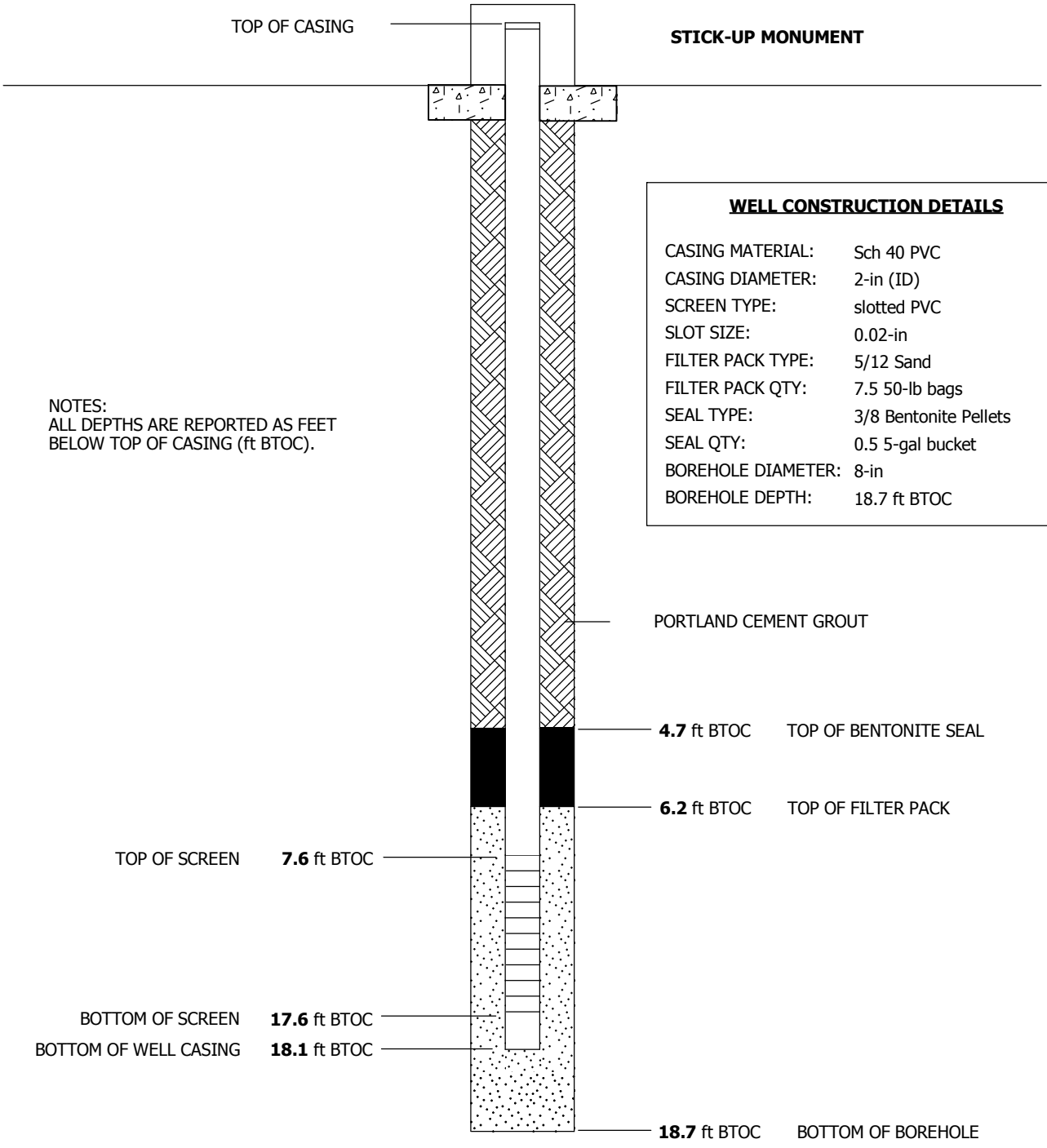
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW20

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.72 ft	**NORTHING (NAD83 Z 20):** 139167.71	**EASTING (NAD83 Z 20):** 761591.58	**STATIC WATER LEVEL:** 7.22 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.06 ft	**START:** 12/10/2009	**FINISH:** 12/10/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.7 ft BTOC

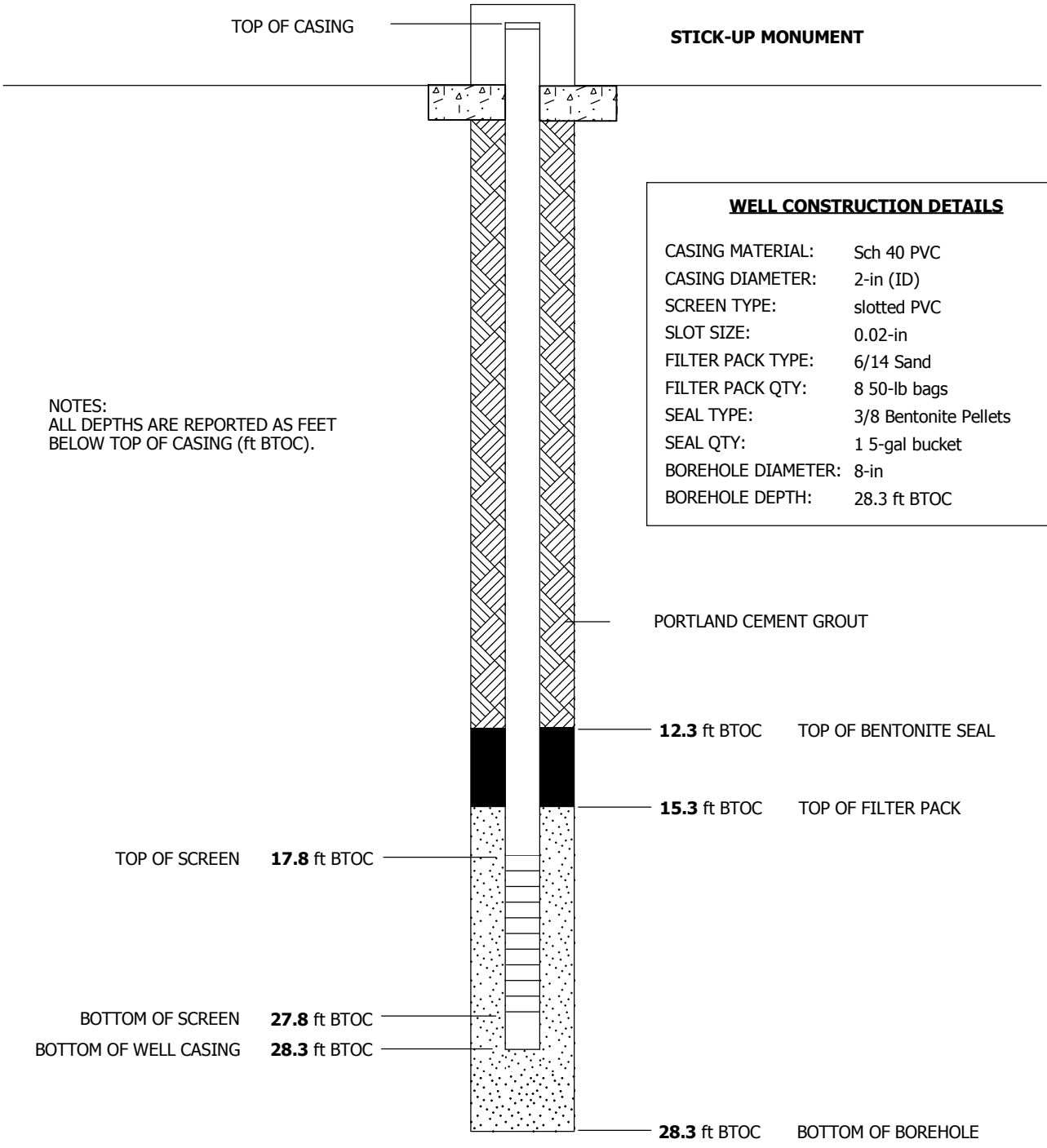
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW21

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.20 ft	**NORTHING (NAD83 Z 20):** 139161.84	**EASTING (NAD83 Z 20):** 761540.19	**STATIC WATER LEVEL:** 5.81 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.92 ft	**START:** 11/19/2009	**FINISH:** 11/20/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	6/14 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.3 ft BTOC

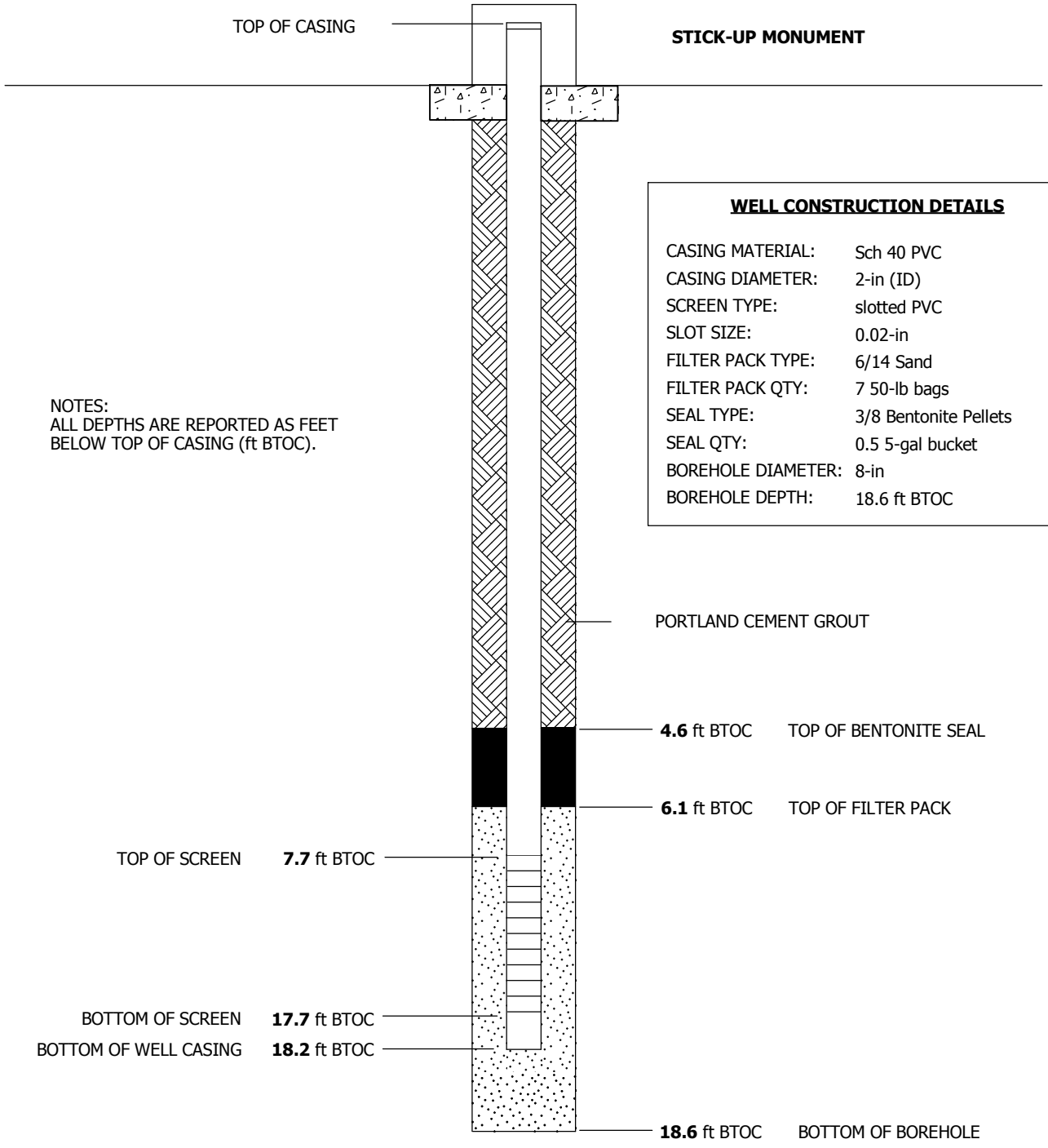
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW22

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.31 ft	**NORTHING (NAD83 Z 20):** 139166.90	**EASTING (NAD83 Z 20):** 761537.77	**STATIC WATER LEVEL:** 5.93 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.73 ft	**START:** 11/20/2009	**FINISH:** 11/20/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	6/14 Sand
FILTER PACK QTY:	7 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.6 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

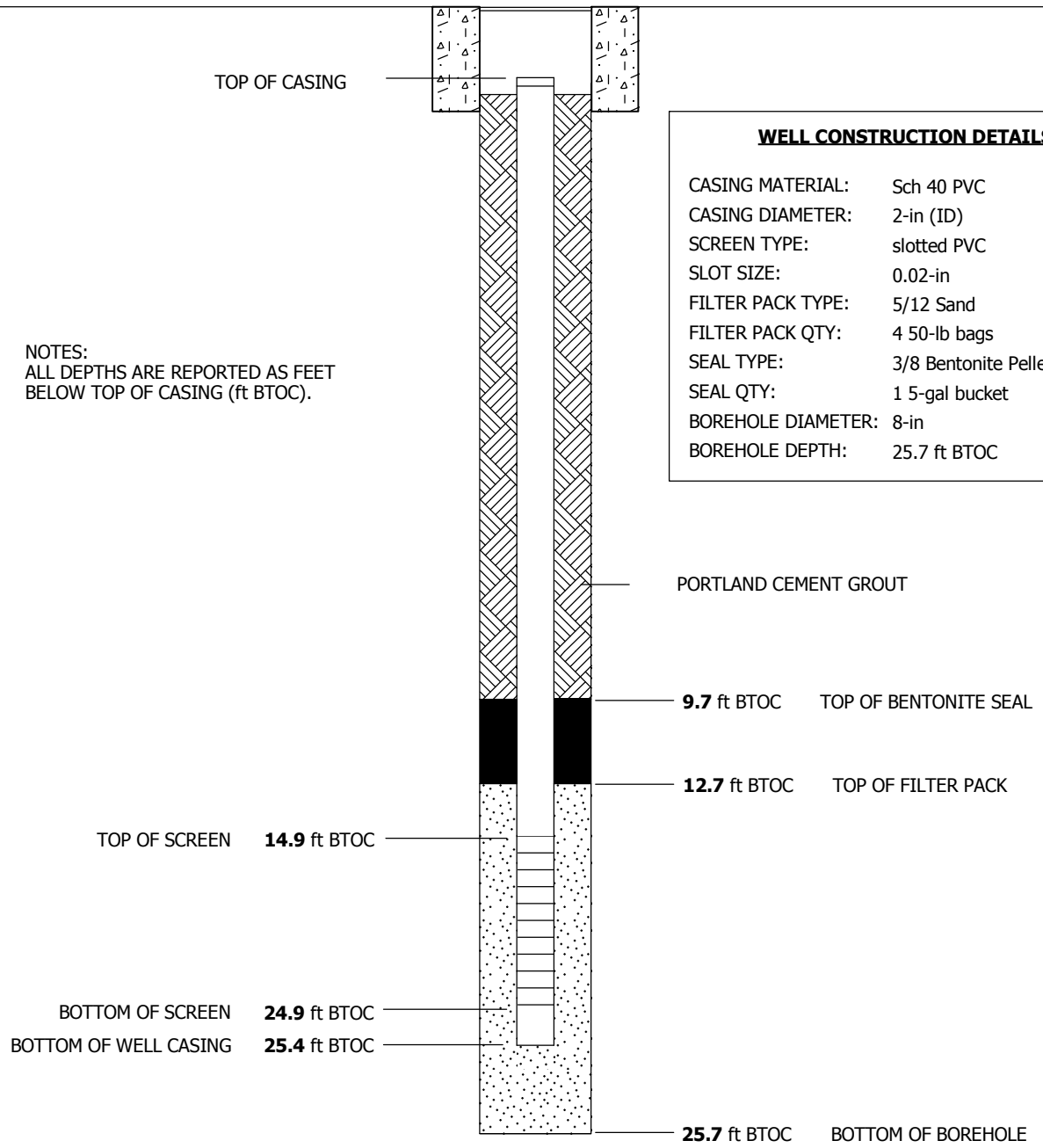
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW23

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 15.68 ft	**NORTHING (NAD83 Z 20):** 139194.86	**EASTING (NAD83 Z 20):** 761542.45	**STATIC WATER LEVEL:** 3.36 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.94 ft	**START:** 12/08/2009	**FINISH:** 12/09/2009	**LOGGED BY:** Amber Guilfoyle/SAN

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	4 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	25.7 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

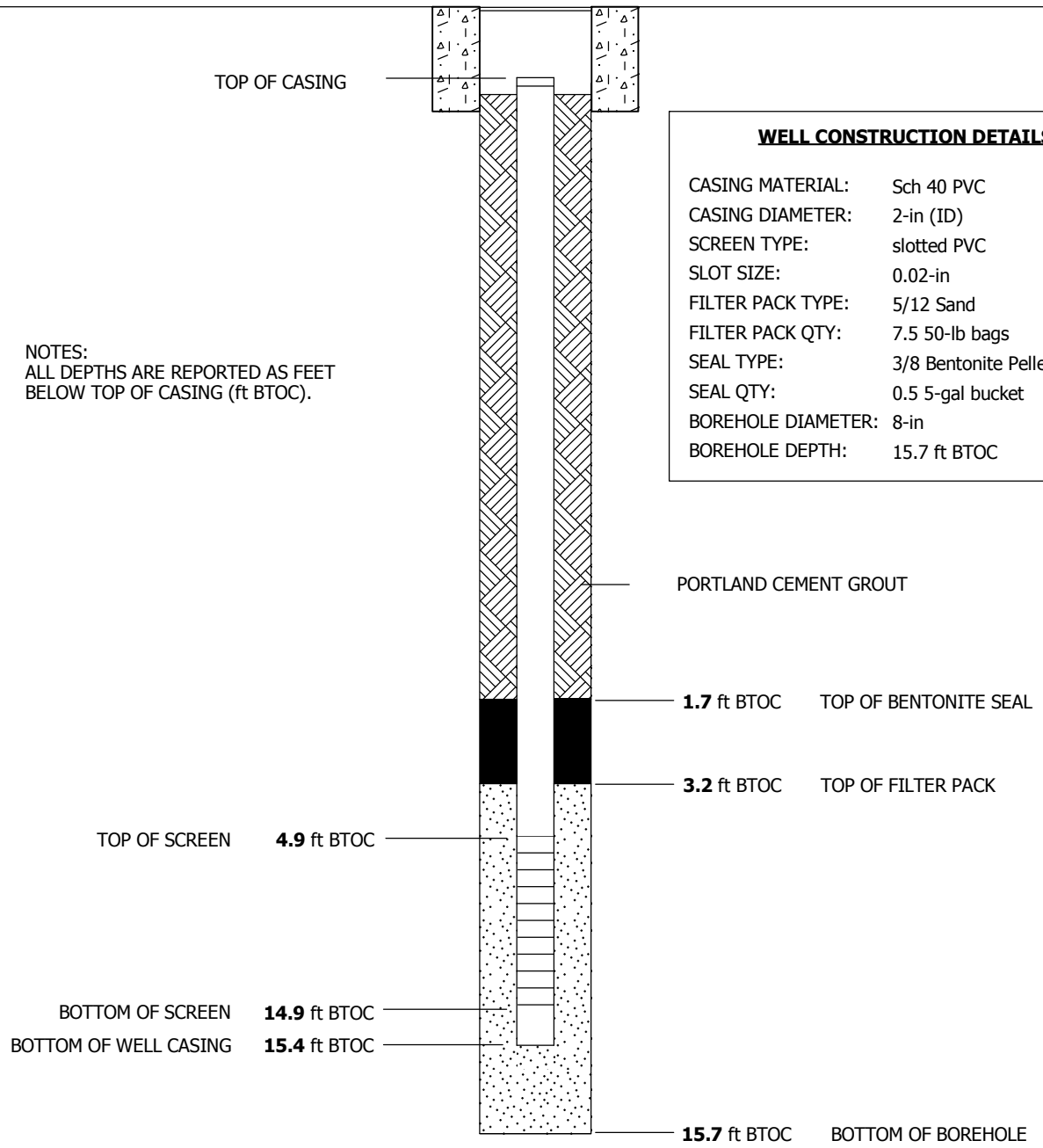
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW24

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 15.69 ft	**NORTHING (NAD83 Z 20):** 139200.53	**EASTING (NAD83 Z 20):** 761540.75	**STATIC WATER LEVEL:** 3.4 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.99 ft	**START:** 12/01/2009	**FINISH:** 12/01/2009	**LOGGED BY:** Amber Guilfoyle/SAN

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	15.7 ft BTOC

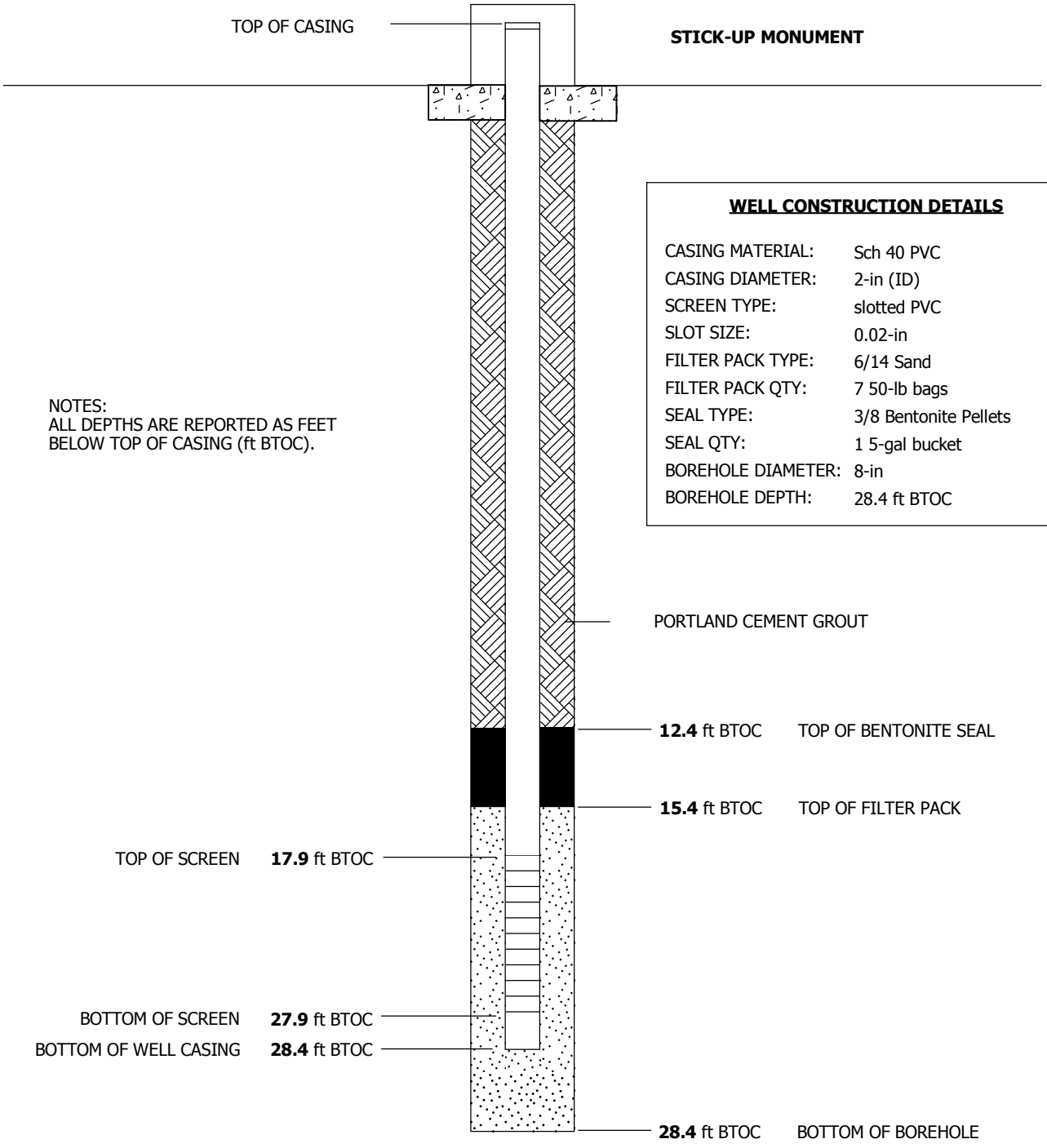
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW25

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.30 ft	**NORTHING (NAD83 Z 20):** 139133.49	**EASTING (NAD83 Z 20):** 761506.07	**STATIC WATER LEVEL:** 6.07 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.88 ft	**START:** 11/18/2009	**FINISH:** 11/18/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	6/14 Sand
FILTER PACK QTY:	7 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.4 ft BTOC

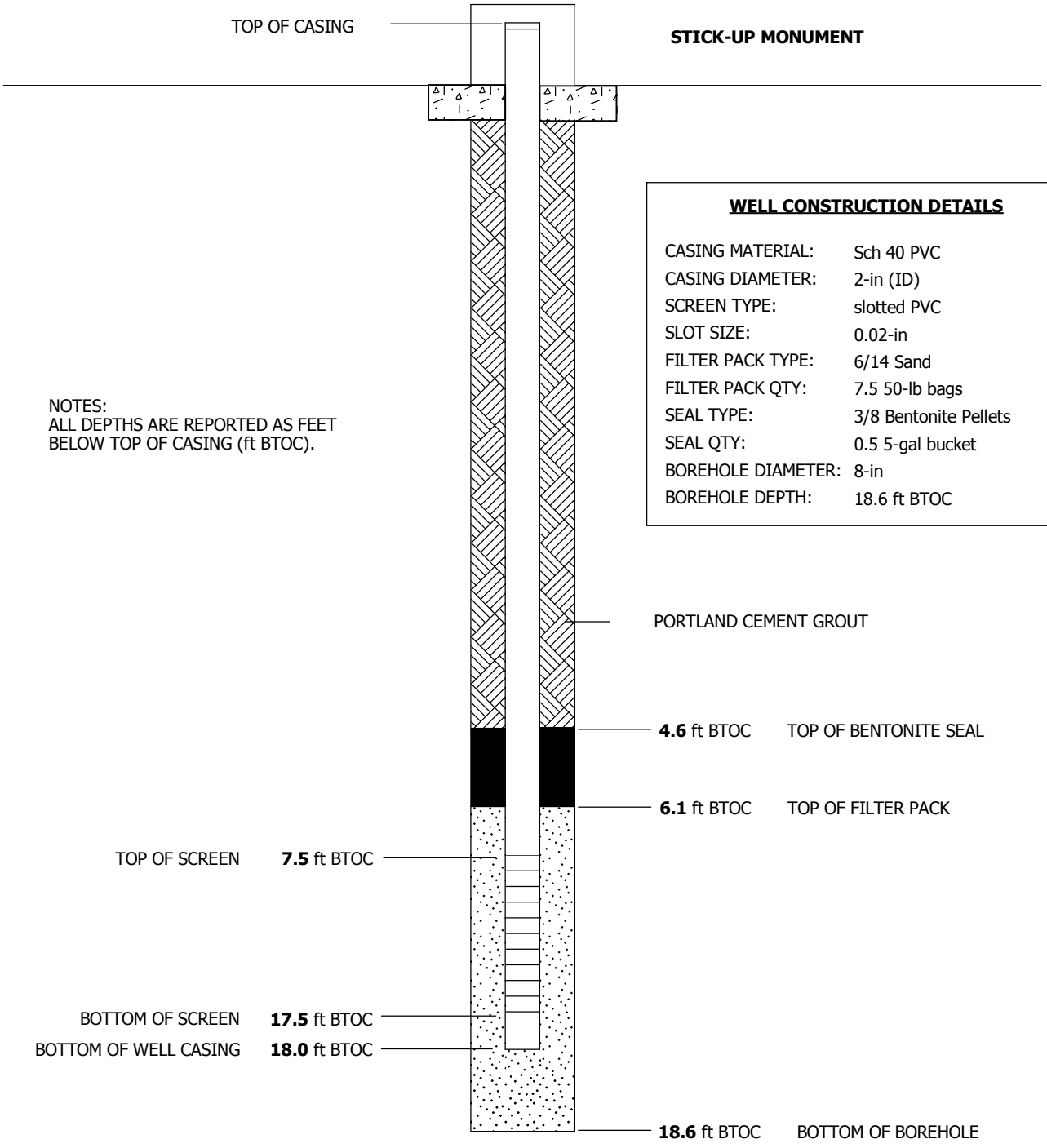
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW26

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.26 ft	**NORTHING (NAD83 Z 20):** 139137.87	**EASTING (NAD83 Z 20):** 761502.90	**STATIC WATER LEVEL:** 6.15 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.67 ft	**START:** 11/19/2009	**FINISH:** 11/19/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	6/14 Sand
FILTER PACK QTY:	7.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.6 ft BTOC

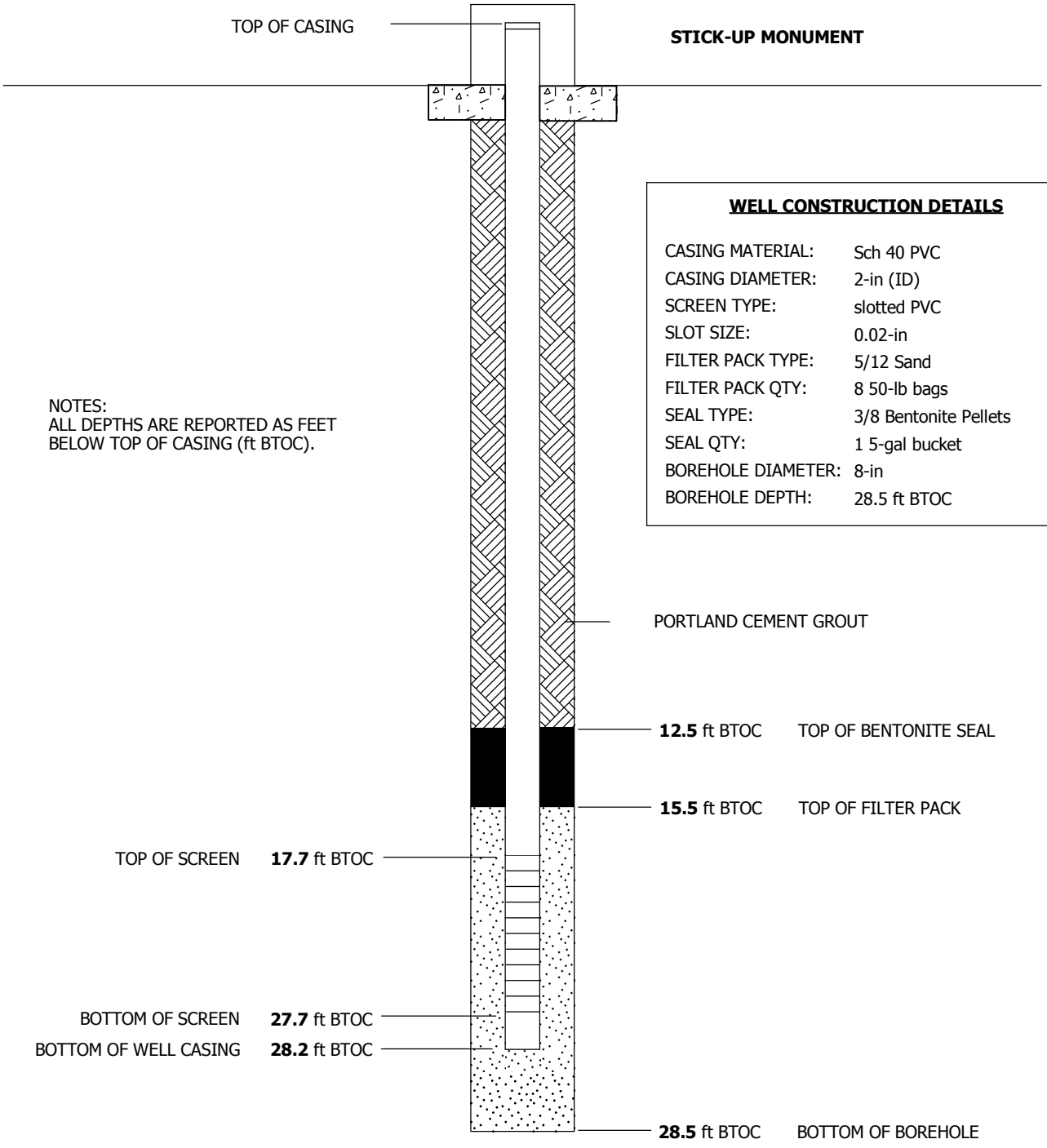
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW27

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.00 ft	**NORTHING (NAD83 Z 20):** 139163.59	**EASTING (NAD83 Z 20):** 761628.09	**STATIC WATER LEVEL:** 7.8 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.46 ft	**START:** 12/11/2009	**FINISH:** 12/11/2009	**LOGGED BY:** Roger Gomez/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.5 ft BTOC

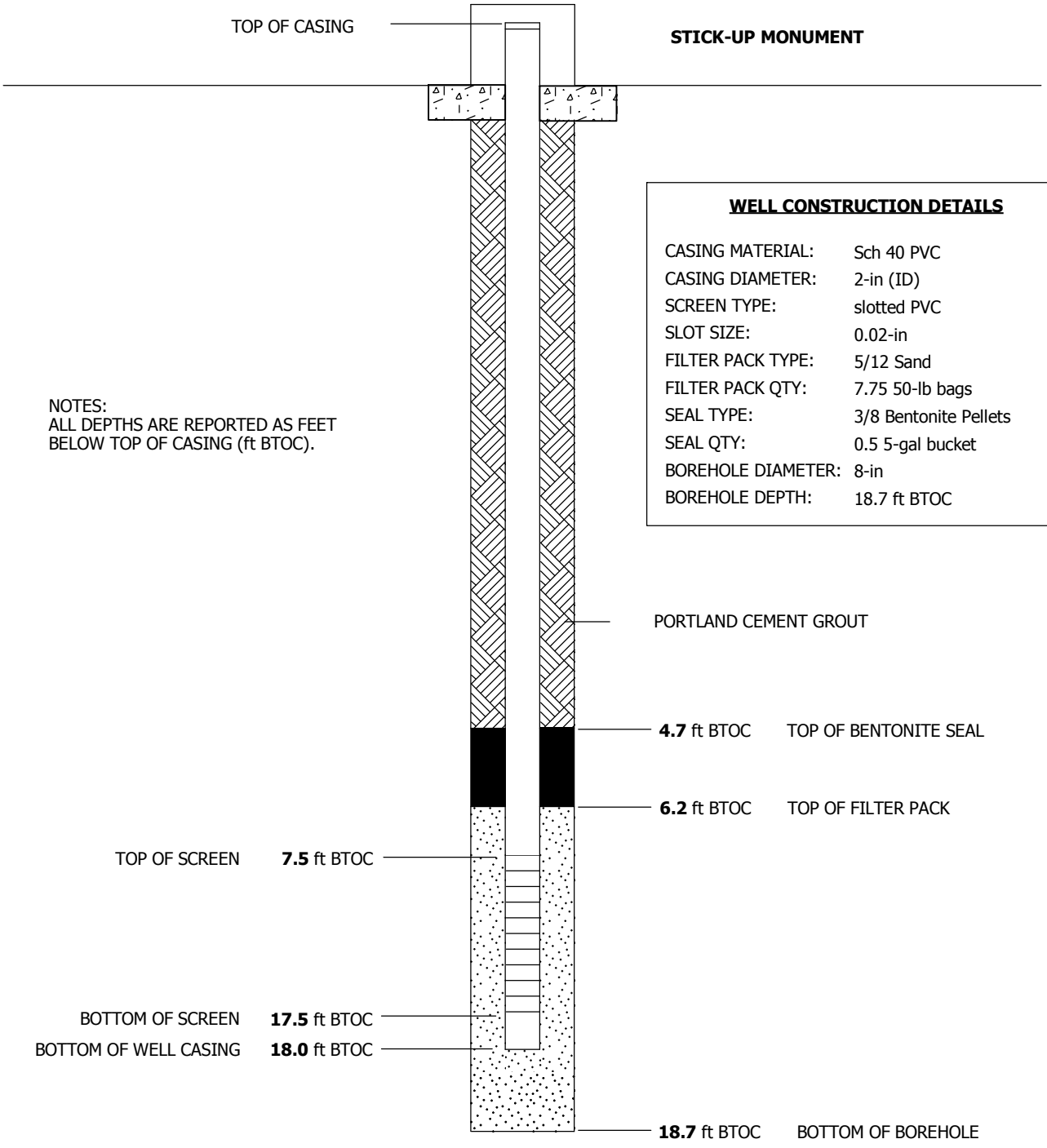
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW28

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.13 ft	**NORTHING (NAD83 Z 20):** 139168.27	**EASTING (NAD83 Z 20):** 761626.95	**STATIC WATER LEVEL:** 6.35 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.44 ft	**START:** 12/10/2009	**FINISH:** 12/16/2009	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.75 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.7 ft BTOC

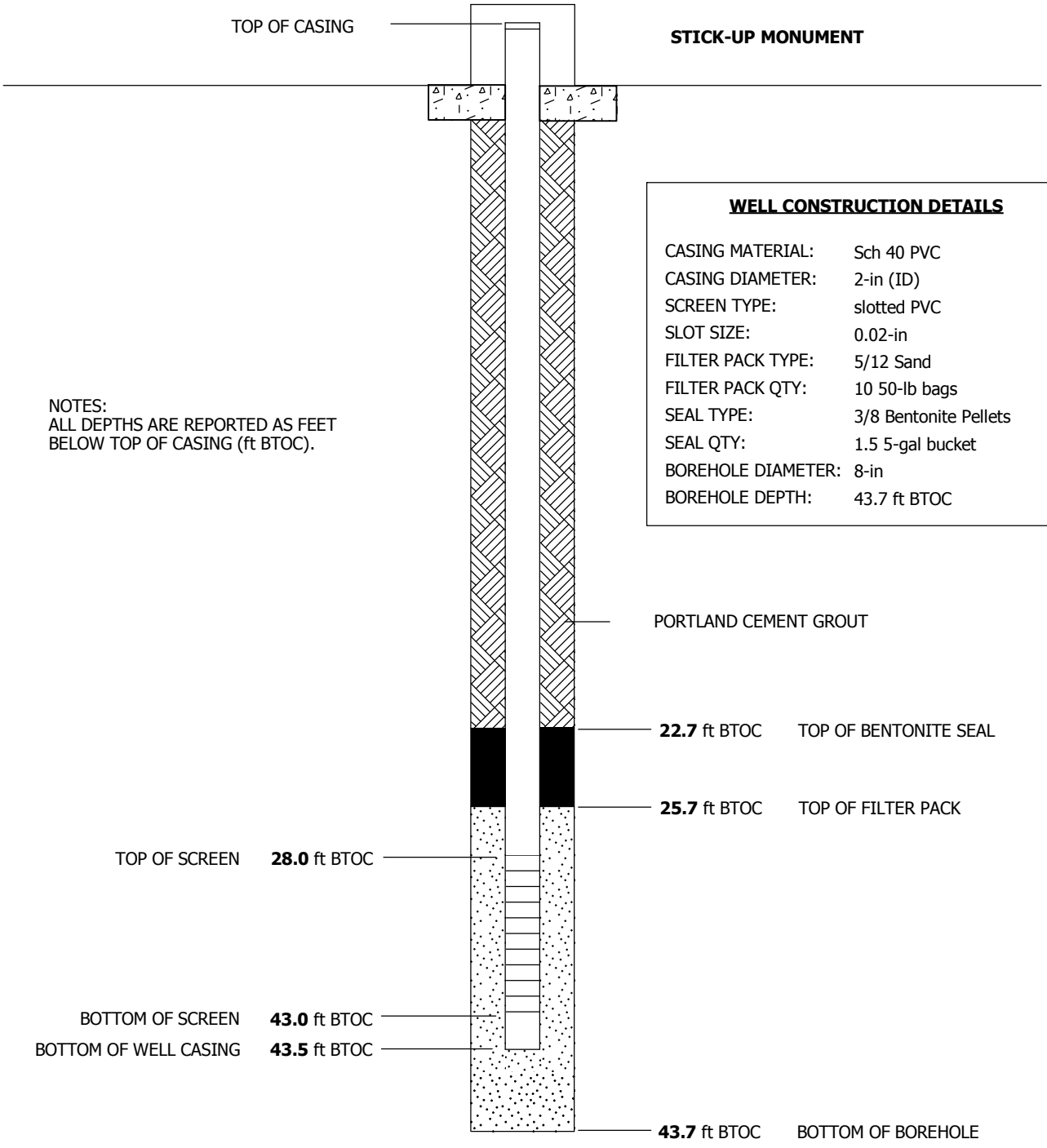
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW29

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.30 ft	**NORTHING (NAD83 Z 20):** 139170.53	**EASTING (NAD83 Z 20):** 761668.24	**STATIC WATER LEVEL:** 7.78 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.62 ft	**START:** 02/25/2010	**FINISH:** 02/26/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	10 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	43.7 ft BTOC

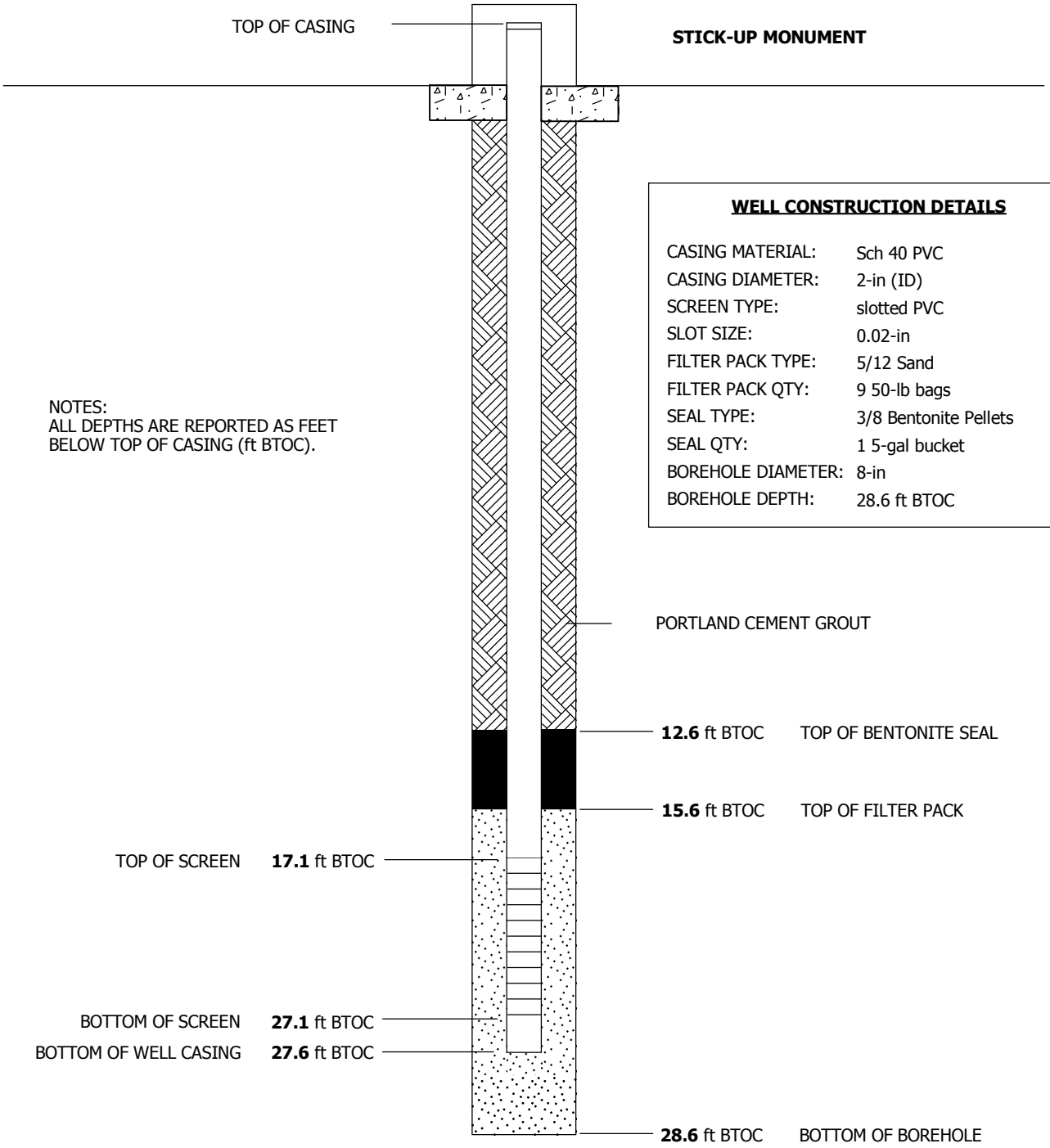
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW30

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.27 ft	**NORTHING (NAD83 Z 20):** 139175.64	**EASTING (NAD83 Z 20):** 761665.99	**STATIC WATER LEVEL:** 7.9 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.62 ft	**START:** 03/03/2010	**FINISH:** 03/03/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	9 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.6 ft BTOC

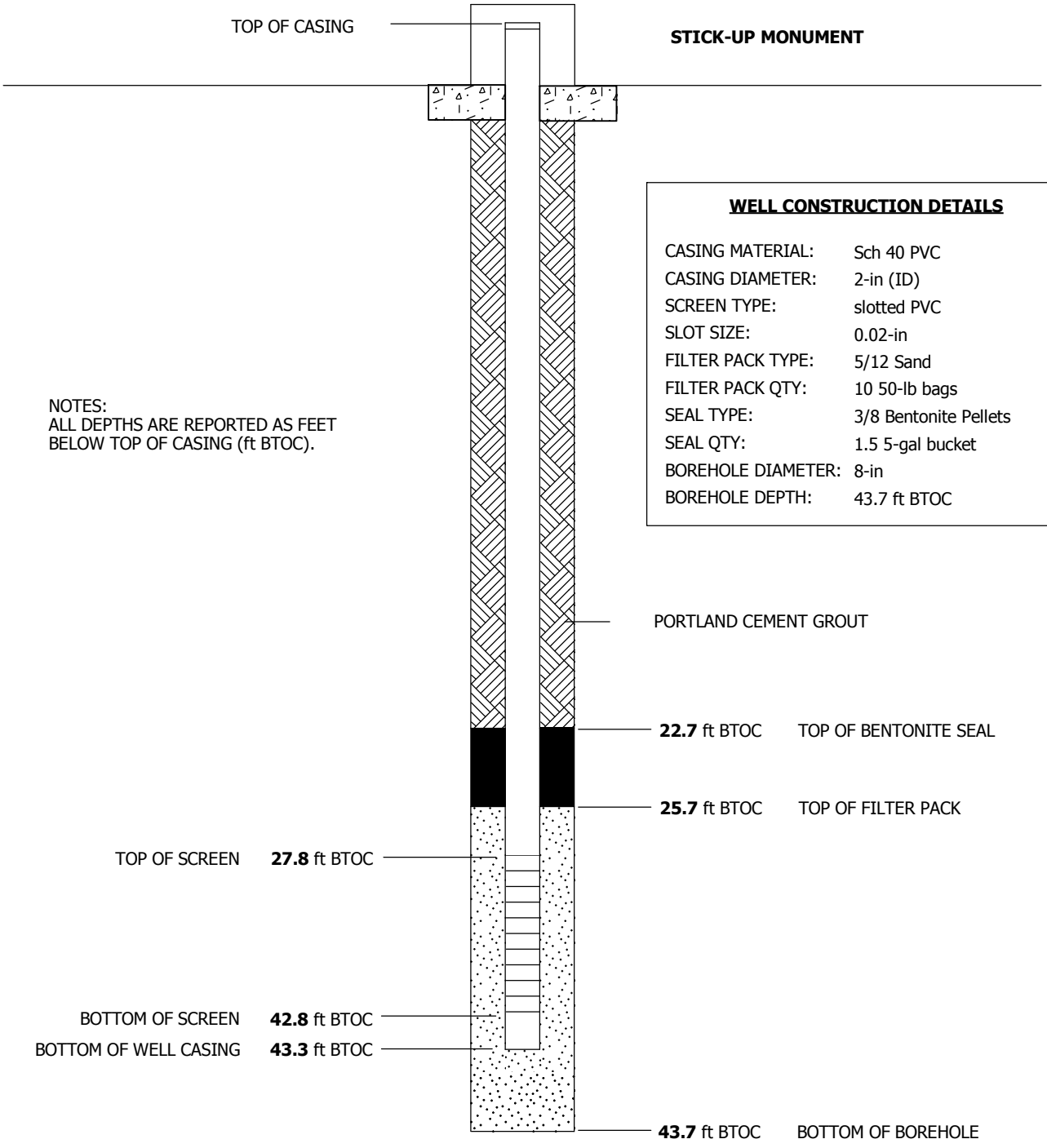
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW31

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.00 ft	**NORTHING (NAD83 Z 20):** 139193.37	**EASTING (NAD83 Z 20):** 761620.65	**STATIC WATER LEVEL:** 7.51 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.32 ft	**START:** 03/16/2010	**FINISH:** 03/17/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	10 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	43.7 ft BTOC

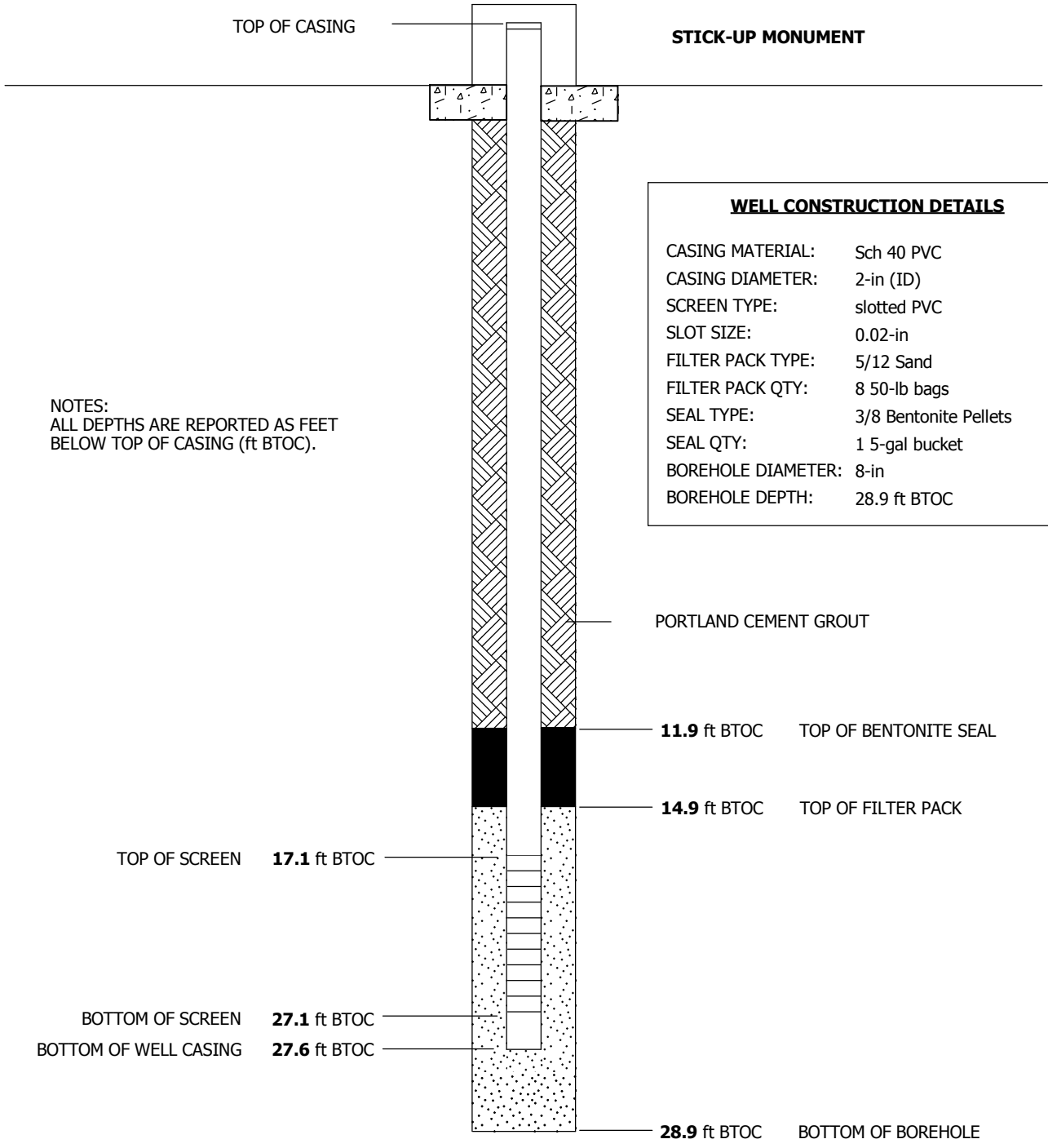
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW32

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.36 ft	**NORTHING (NAD83 Z 20):** 139191.01	**EASTING (NAD83 Z 20):** 761626.56	**STATIC WATER LEVEL:** 7.85 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.41 ft	**START:** 03/04/2010	**FINISH:** 03/04/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.9 ft BTOC

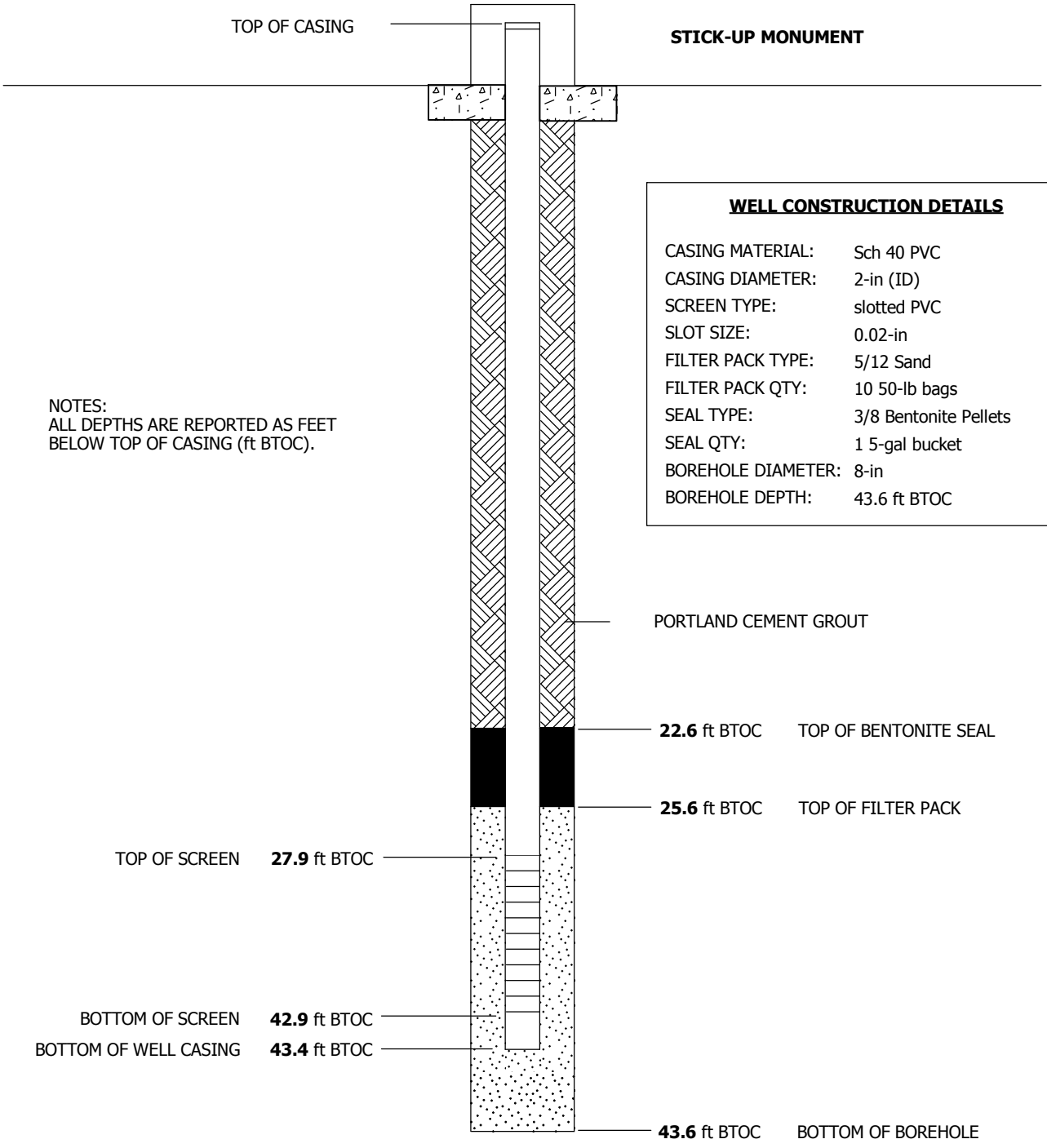
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW33

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.82 ft	**NORTHING (NAD83 Z 20):** 139159.07	**EASTING (NAD83 Z 20):** 761628.66	**STATIC WATER LEVEL:** 7.32 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.27 ft	**START:** 03/18/2010	**FINISH:** 03/19/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	10 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	43.6 ft BTOC

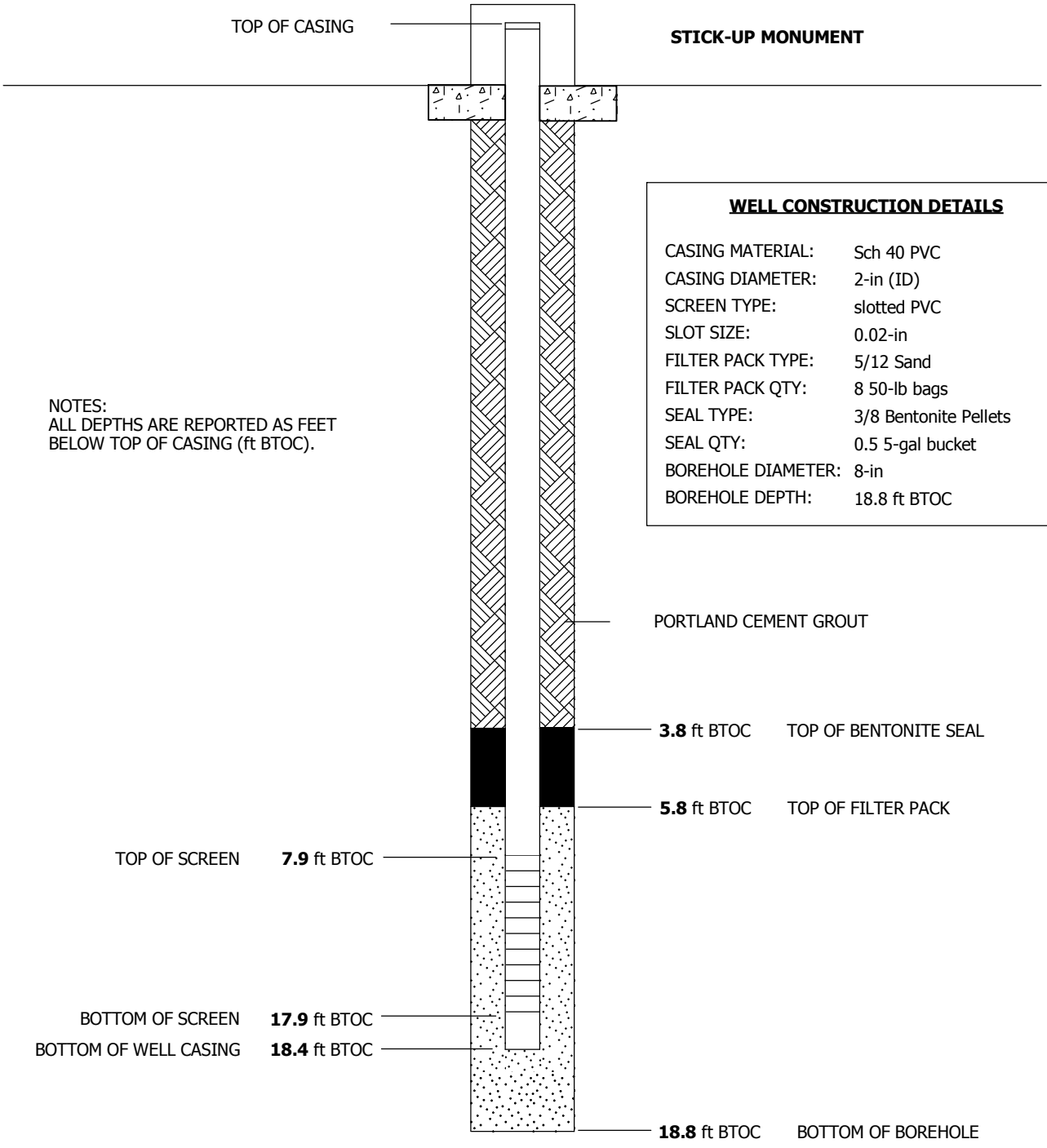
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW34

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Juan Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.29 ft	**NORTHING (NAD83 Z 20):** 139101.51	**EASTING (NAD83 Z 20):** 761618.66	**STATIC WATER LEVEL:** 7.79 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.51 ft	**START:** 03/05/2010	**FINISH:** 03/05/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.8 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

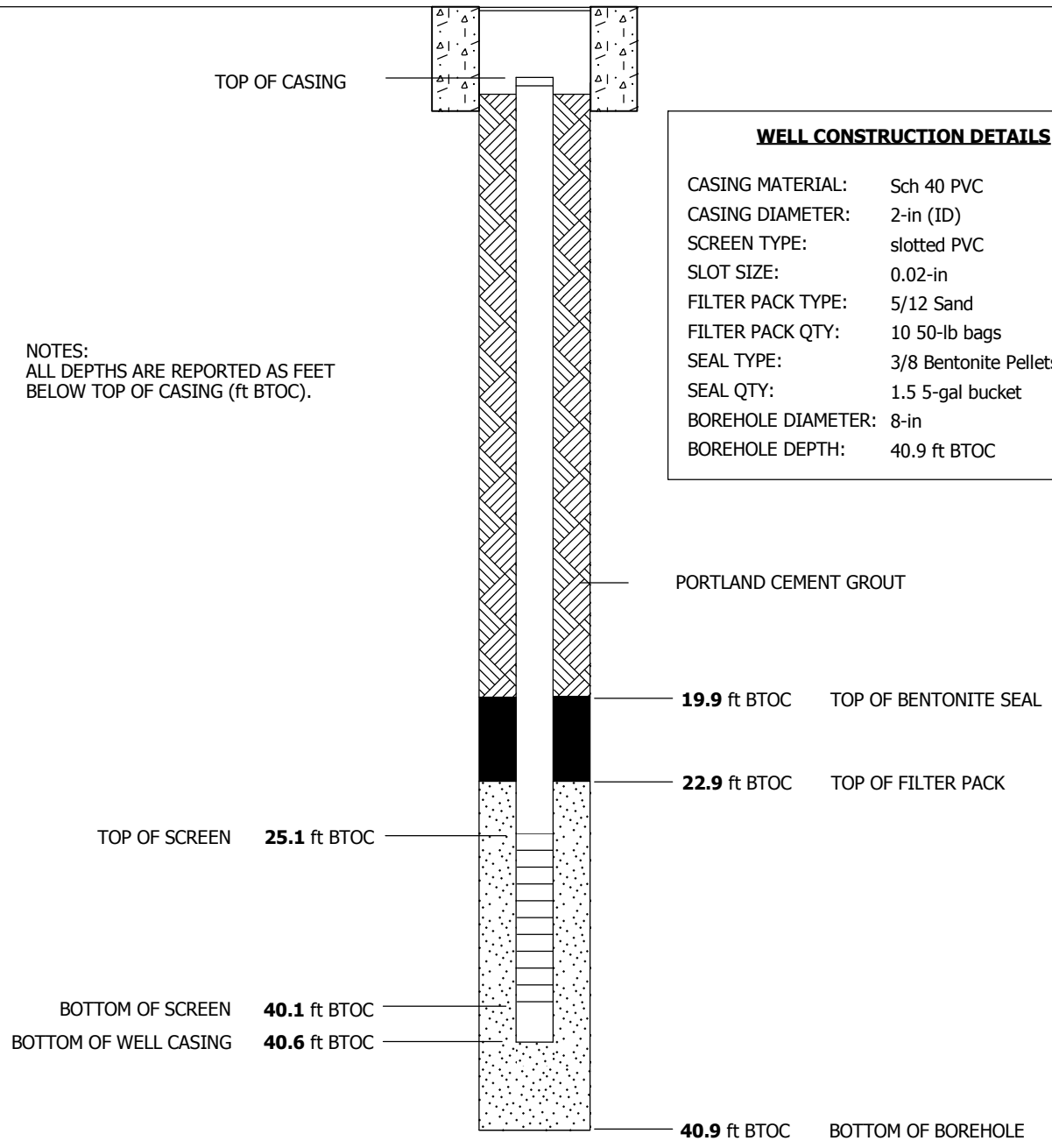
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW35

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 17.26 ft	**NORTHING (NAD83 Z 20):** 139125.85	**EASTING (NAD83 Z 20):** 761639.09	**STATIC WATER LEVEL:** 4.75 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.39 ft	**START:** 03/22/2010	**FINISH:** 03/22/2010	**LOGGED BY:** Amber Guilfoyle/SAN

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	10 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	40.9 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

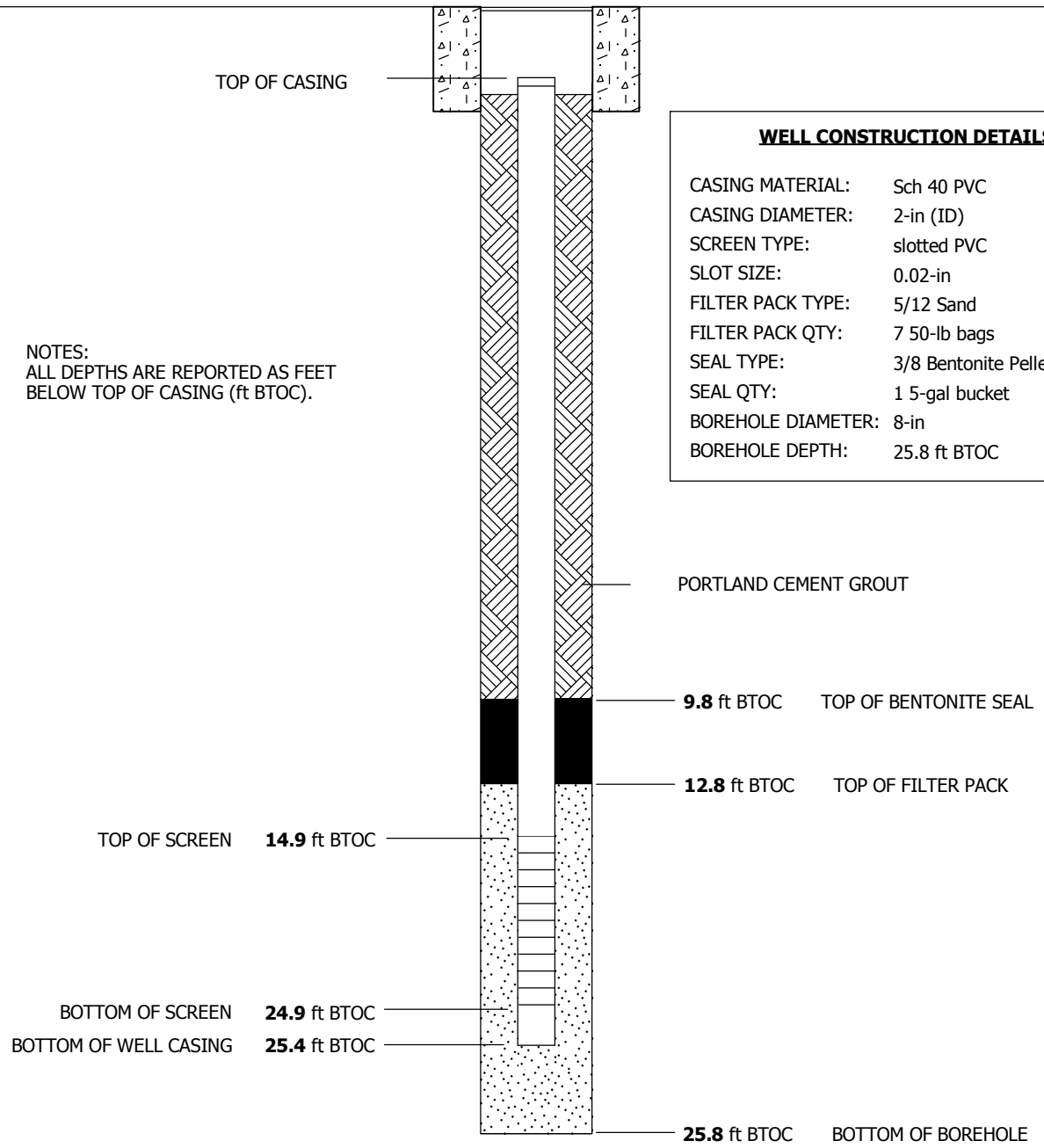
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW36

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 17.19 ft	**NORTHING (NAD83 Z 20):** 139126.82	**EASTING (NAD83 Z 20):** 761643.64	**STATIC WATER LEVEL:** 4.66 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 17.39 ft	**START:** 03/23/2010	**FINISH:** 03/23/2010	**LOGGED BY:** Amber Guilfoyle/SAN

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	25.8 ft BTOC

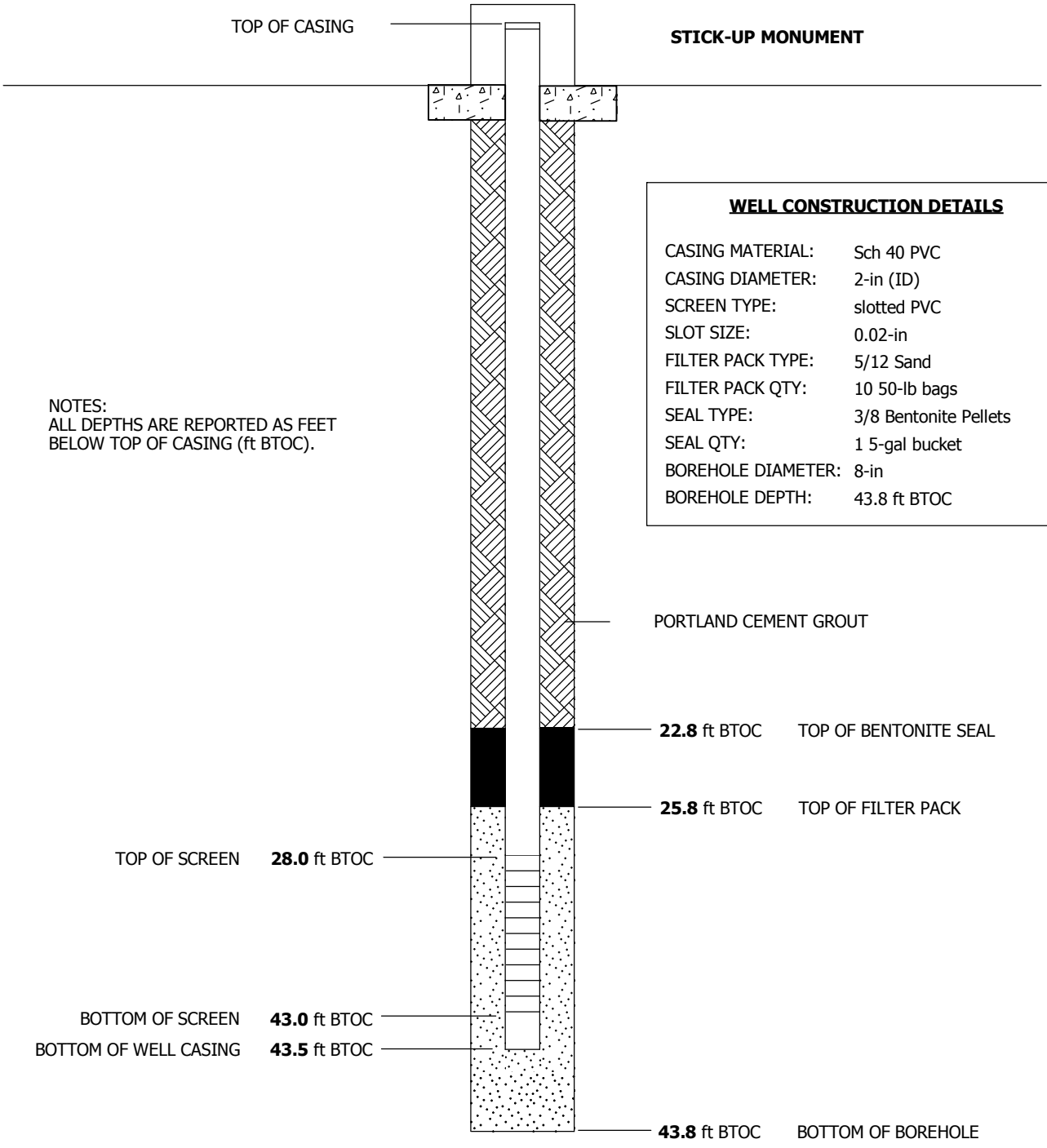
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW37

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.67 ft	**NORTHING (NAD83 Z 20):** 139146.52	**EASTING (NAD83 Z 20):** 761600.20	**STATIC WATER LEVEL:** 7.18 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.89 ft	**START:** 03/24/2010	**FINISH:** 03/24/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	10 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	43.8 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

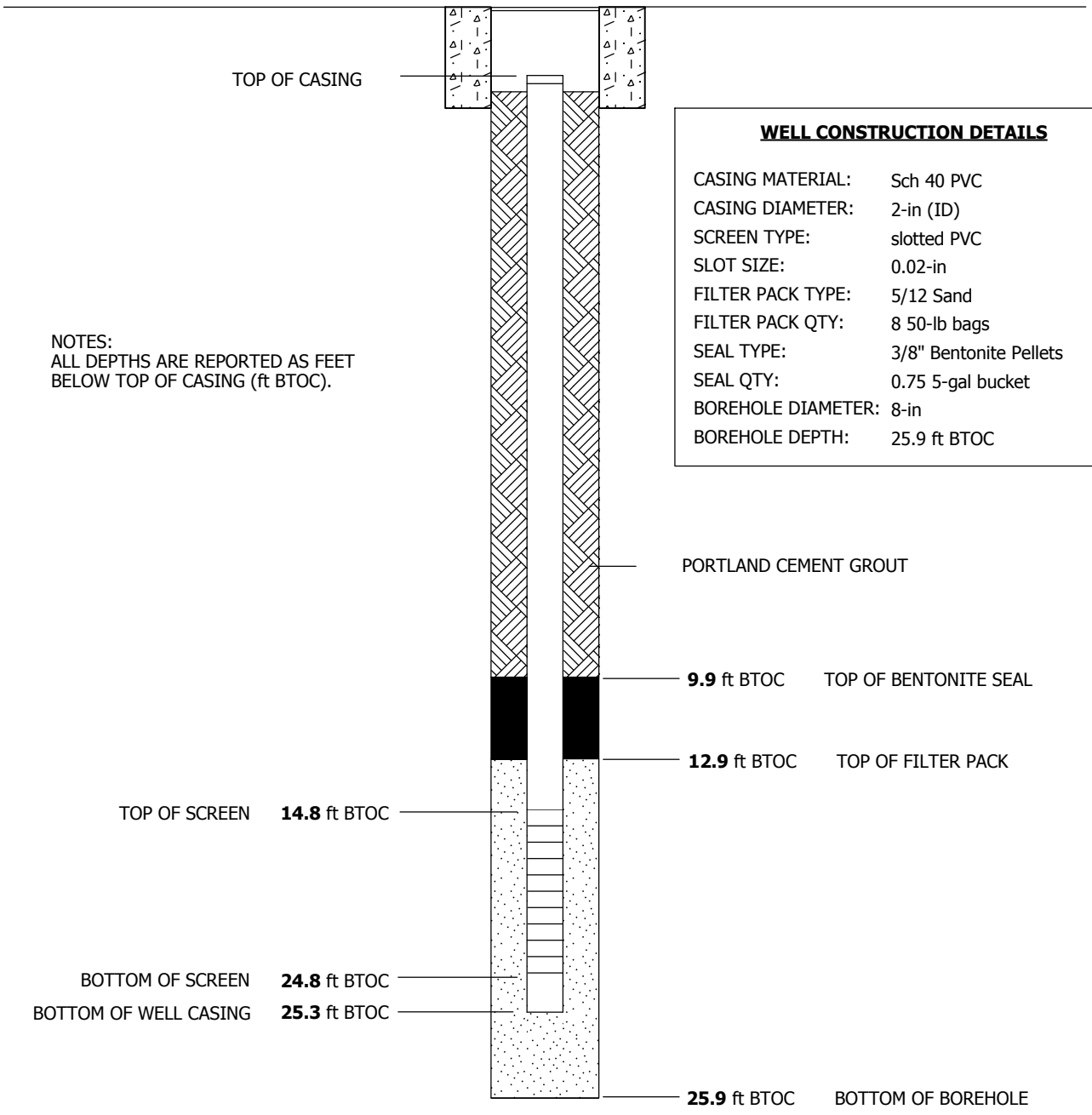
WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW38

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 16.61 ft	**NORTHING (NAD83 Z 20):** 139120.00	**EASTING (NAD83 Z 20):** 761571.38	**STATIC WATER LEVEL:** 4.13 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.67 ft	**START:** 03/29/2010	**FINISH:** 03/29/2010	**LOGGED BY:** Mike Karafa/ATL

FLUSH COMPLETION



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8" Bentonite Pellets
SEAL QTY:	0.75 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	25.9 ft BTOC

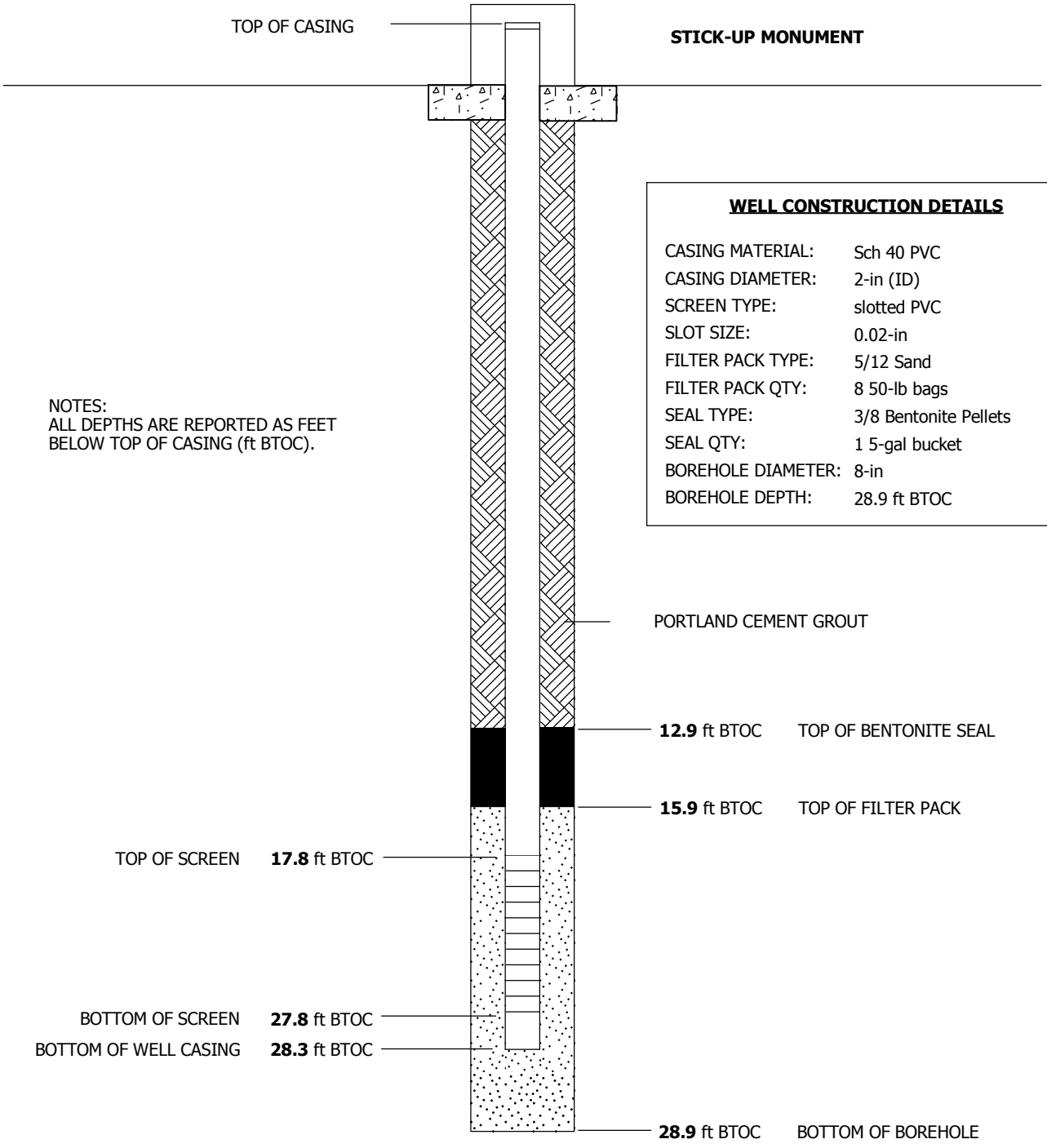
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW39

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.71 ft	**NORTHING (NAD83 Z 20):** 139116.55	**EASTING (NAD83 Z 20):** 761525.60	**STATIC WATER LEVEL:** 6.5 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.77 ft	**START:** 03/25/2010	**FINISH:** 03/25/2010	**LOGGED BY:** Amber Guilfoyle/SAN



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.9 ft BTOC

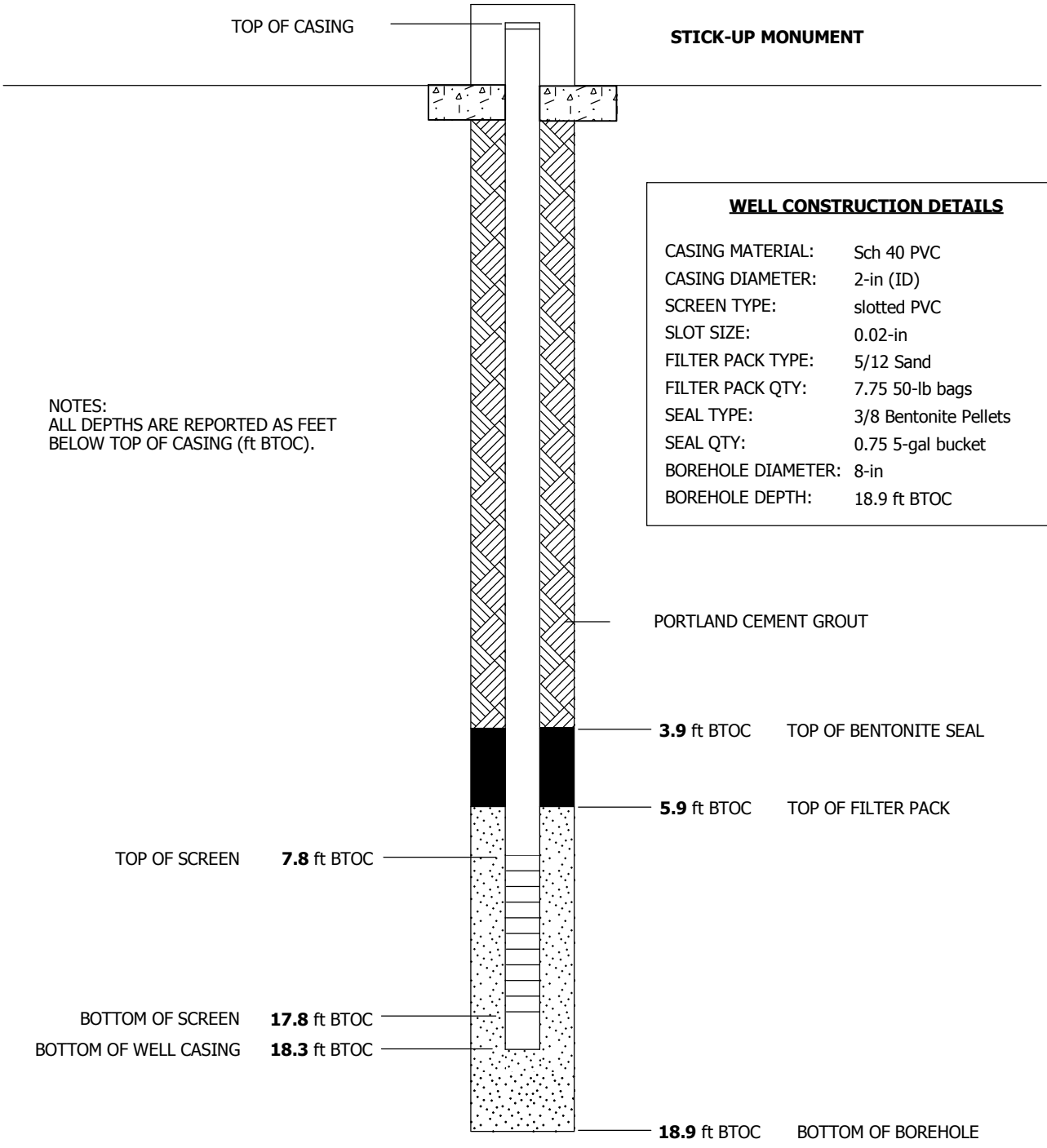
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW40

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.70 ft	**NORTHING (NAD83 Z 20):** 139121.81	**EASTING (NAD83 Z 20):** 761523.92	**STATIC WATER LEVEL:** 6.58 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 15.77 ft	**START:** 03/29/2010	**FINISH:** 03/29/2010	**LOGGED BY:** Mike Karafa/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.75 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.75 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.9 ft BTOC

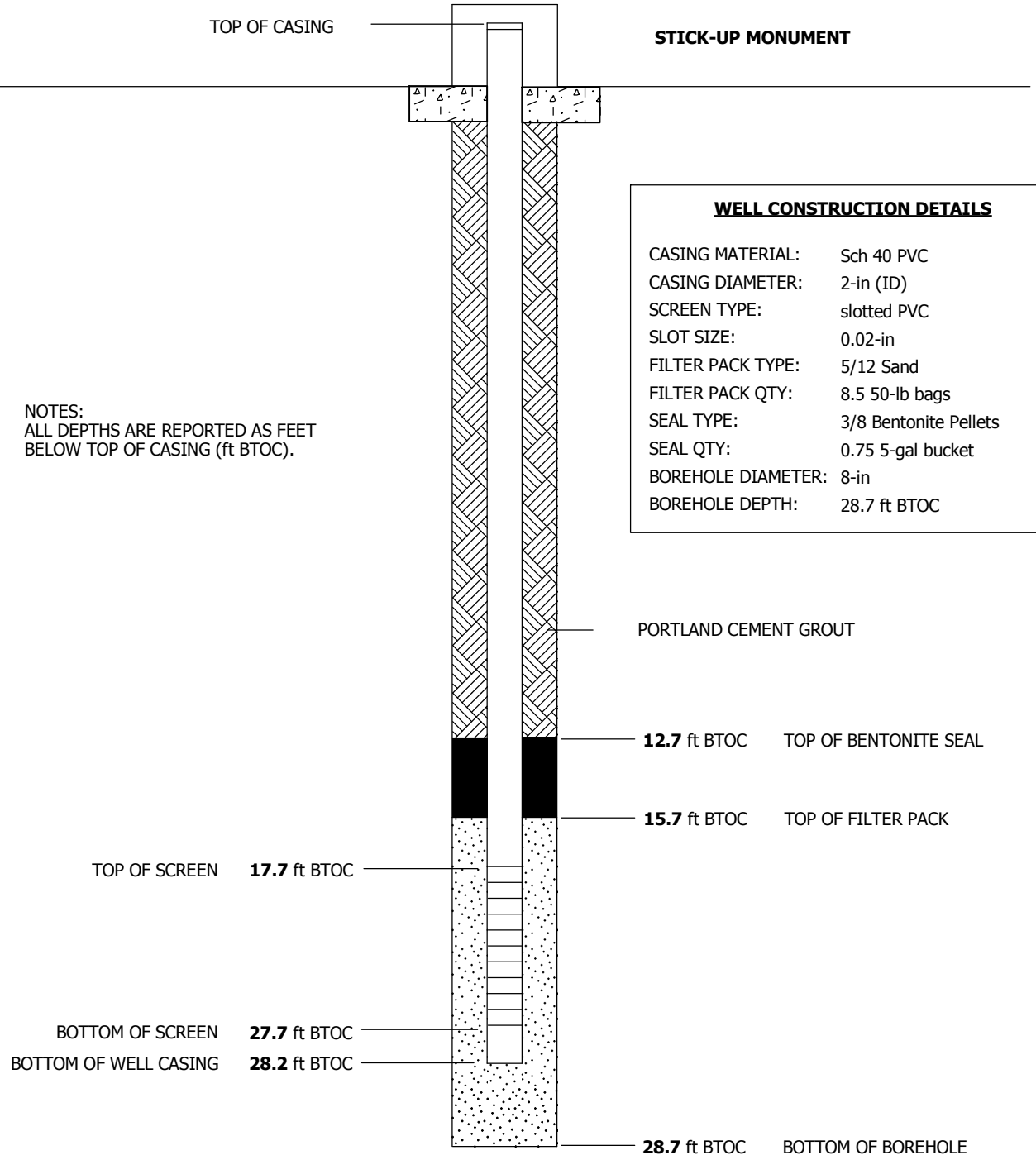
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW41

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 18.85 ft	**NORTHING (NAD83 Z 20):** 139138.41	**EASTING (NAD83 Z 20):** 761554.26	**STATIC WATER LEVEL:** 6.46 ft BTOC (8/12/2010)
GROUND ELEVATION (NGVD29): 16.10 ft	**START:** 03/30/2010	**FINISH:** 03/30/2010	**LOGGED BY:** Mike Karafa/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	8.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.75 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.7 ft BTOC

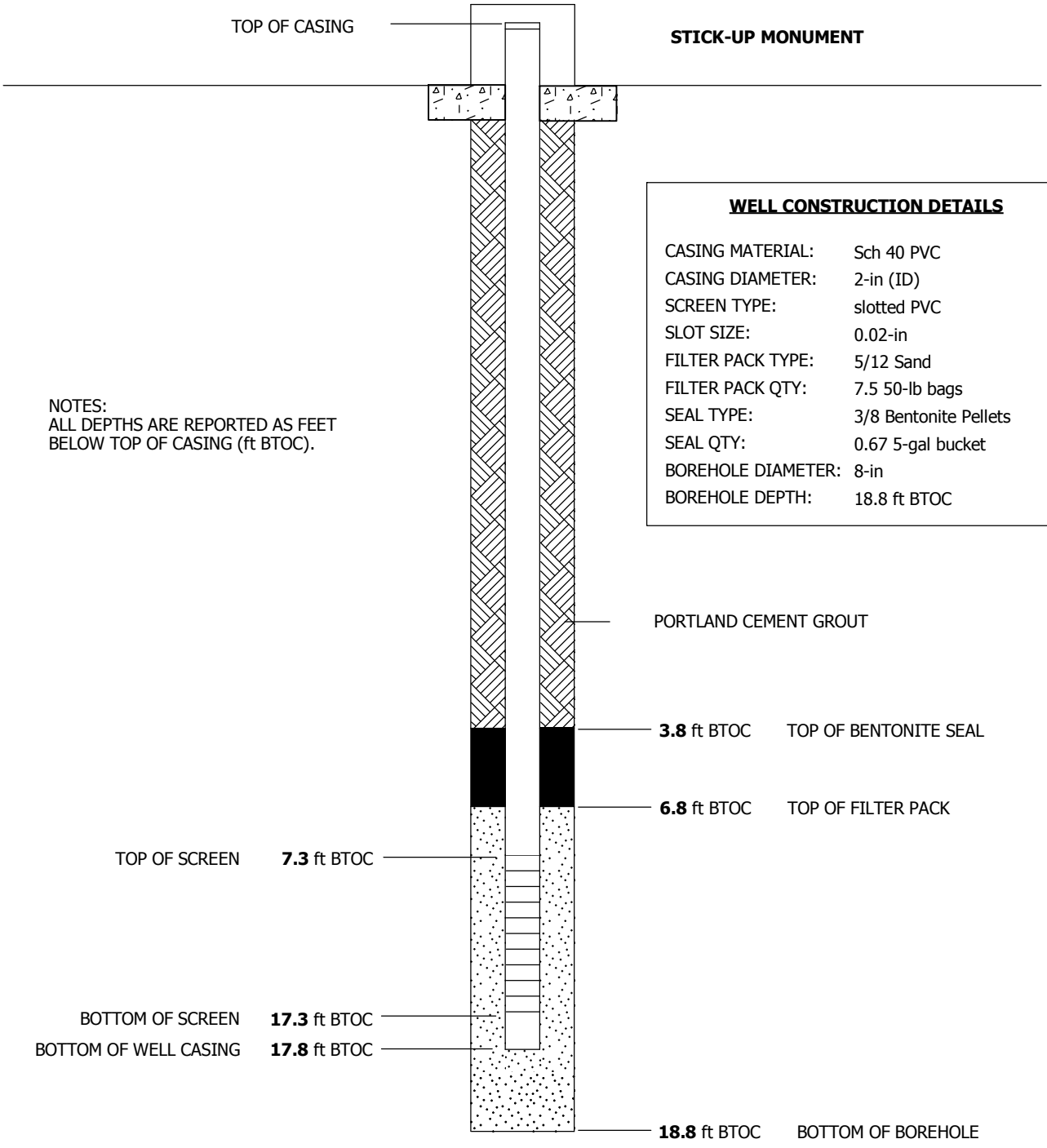
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW42

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 20.25 ft	**NORTHING (NAD83 Z 20):** 139068.35	**EASTING (NAD83 Z 20):** 761630.14	**STATIC WATER LEVEL:** 7.74 ft BTOC (10/14/2010)
GROUND ELEVATION (NGVD29): 17.43 ft	**START:** 10/07/2010	**FINISH:** 10/07/2010	**LOGGED BY:** Andrew O'Conor/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	0.67 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	18.8 ft BTOC

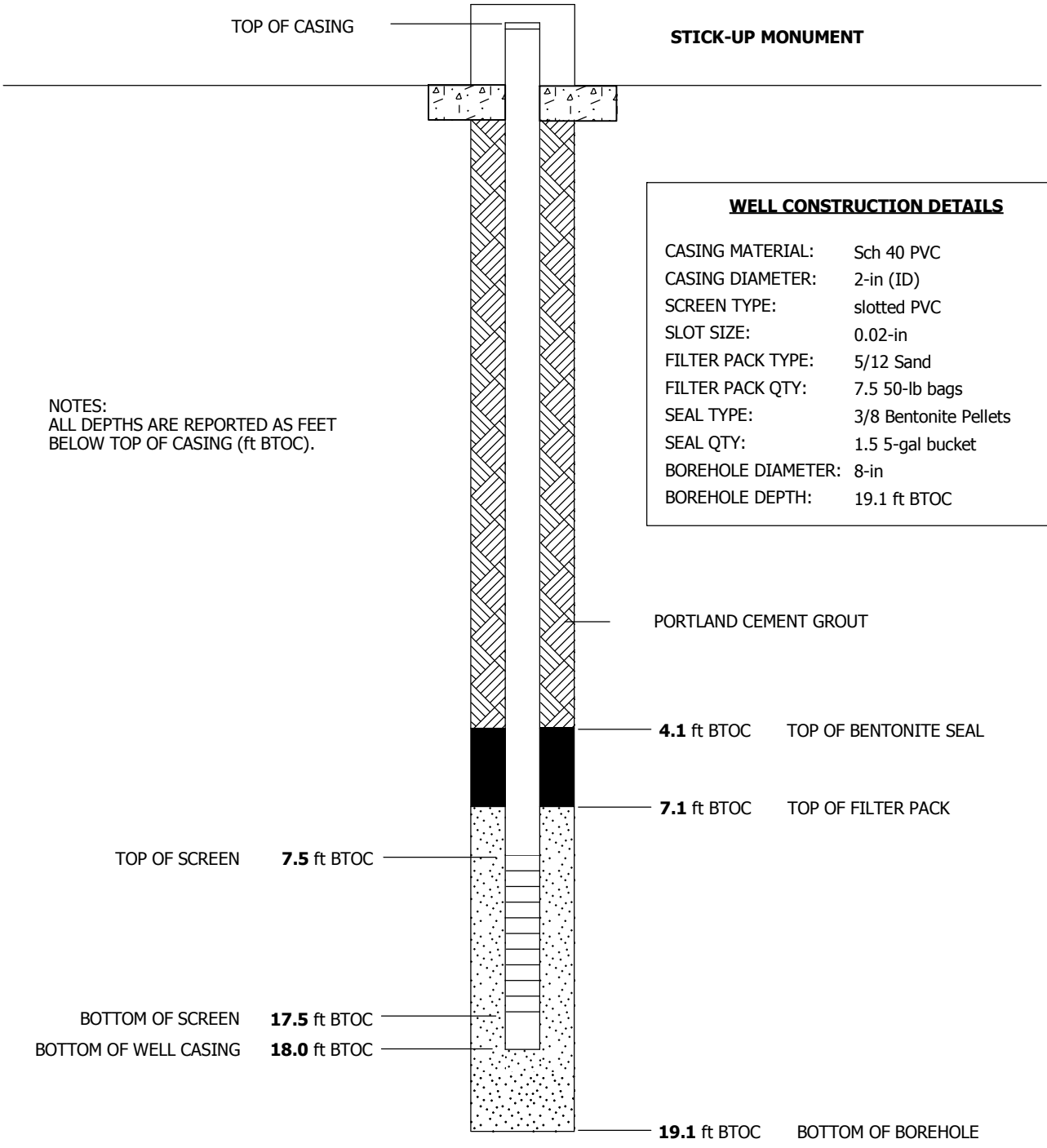
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW43

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 22.41 ft	**NORTHING (NAD83 Z 20):** 139080.44	**EASTING (NAD83 Z 20):** 761711.69	**STATIC WATER LEVEL:** 9.73 ft BTOC (10/18/2010)
GROUND ELEVATION (NGVD29): 19.32 ft	**START:** 10/08/2010	**FINISH:** 10/14/2010	**LOGGED BY:** Andrew O'Conor/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	7.5 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1.5 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	19.1 ft BTOC

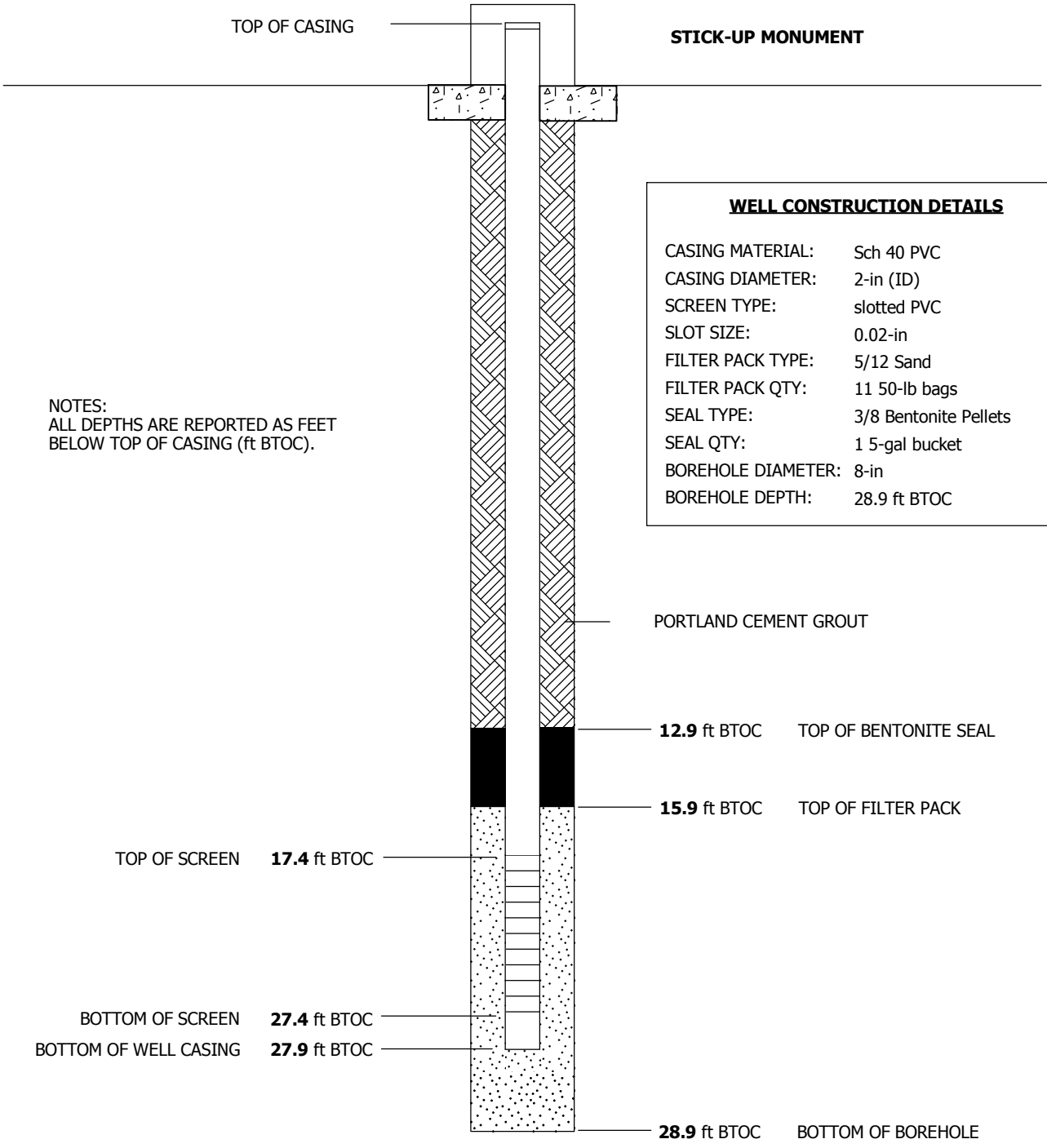
NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

CH2MHILL	**PROJECT NUMBER:** 378718	**BORING NUMBER:** 54MW44

WELL COMPLETION DIAGRAM

PROJECT: Naval Activity Puerto Rico JM04		**LOCATION:** SWMU 54	
DRILLING METHOD: Hollow-stem auger, 8-in OD augers, Mobil B61		**DRILLING CONTRACTOR:** Jaca and Sierra Geotechnical Services, Driller: Edwardo Santiago	
TOP OF CASING ELEVATION (NGVD29): 19.90 ft	**NORTHING (NAD83 Z 20):** 139234.45	**EASTING (NAD83 Z 20):** 761625.64	**STATIC WATER LEVEL:** 8.86 ft BTOC (10/14/2010)
GROUND ELEVATION (NGVD29): 17.00 ft	**START:** 10/07/2010	**FINISH:** 10/07/2010	**LOGGED BY:** Andrew O'Conor/ATL



WELL CONSTRUCTION DETAILS

CASING MATERIAL:	Sch 40 PVC
CASING DIAMETER:	2-in (ID)
SCREEN TYPE:	slotted PVC
SLOT SIZE:	0.02-in
FILTER PACK TYPE:	5/12 Sand
FILTER PACK QTY:	11 50-lb bags
SEAL TYPE:	3/8 Bentonite Pellets
SEAL QTY:	1 5-gal bucket
BOREHOLE DIAMETER:	8-in
BOREHOLE DEPTH:	28.9 ft BTOC

NOTES:
ALL DEPTHS ARE REPORTED AS FEET BELOW TOP OF CASING (ft BTOC).

WELL DIAGRAM IS NOT TO SCALE

APPENDIX B

Monitoring Well Purge Data

Well ID	Date/Time	Sampling Event	Temperature (°C)	Specific Conductivity (mS/cm)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Comments
510DW01	1/26/10 10:10	Baseline	29.09	0.637	6.97	-99.4	0.80	8.3	
510DW02	1/25/10 16:05	Baseline	28.78	1.771	6.77	198.5	0.81	13.6	
510MW01	1/26/10 9:15	Baseline	28.06	0.738	6.97	-69.1	0.83	7.4	
510MW02	1/28/10 10:20	Baseline	27.21	1.058	7.04	251.1	1.02	7.2	
510MW03	1/27/10 13:40	Baseline	32.53	1.832	6.87	224.6	0.82	5.9	
510MW04	1/26/10 11:15	Baseline	29.08	0.888	7.10	527.9	2.95	9.4	
54MW01	9/2/09 15:24	Baseline - Benzene only	31.99	1.990	6.52	-23.9	0.12	3.0	
54MW01	1/26/10 12:10	Baseline - VOCs	30.64	0.839	7.67	-206.6	0.70	5.3	
54MW02	9/2/09 14:15	Baseline - Benzene only	31.07	1.706	6.07	111.5	0.12	8.3	
54MW02	1/26/10 13:15	Baseline - VOCs	30.61	1.792	6.58	-71.8	0.73	4.7	
54MW03	9/2/09 13:10	Baseline - Benzene only	30.55	1.422	6.20	99.2	0.09	16.1	
54MW03	1/26/10 14:30	Baseline - VOCs	29.06	1.995	6.65	-102.6	0.78	9.3	
54MW04	9/2/09 11:39	Baseline - Benzene only	28.82	1.301	6.34	121.4	0.07	14.8	
54MW04	1/28/10 11:15	Baseline - VOCs	28.50	1.719	6.65	-77.6	0.81	21.0	
54MW05	9/2/09 9:45	Baseline - Benzene only	29.15	1.475	6.40	251.5	0.12	1.9	
54MW05	1/26/10 15:20	Baseline - VOCs	29.35	1.809	6.77	-45.5	0.77	12.2	
54MW06	9/2/09 16:47	Baseline - Benzene only	29.83	1.183	5.97	70.1	0.00	-1.0	
54MW06	1/28/10 13:35	Baseline - VOCs	29.26	1.140	6.70	-100.0	0.81	3.6	
54MW19	1/25/10 14:55	Baseline	29.05	1.357	7.20	-14.5	0.68	21.7	
54MW20	1/25/10 13:45	Baseline	29.27	1.166	7.24	-57.6	0.63	23.7	
54MW21	1/27/10 10:10	Baseline	29.89	1.838	6.69	61.1	0.83	9.0	
54MW22	1/27/10 9:10	Baseline	28.59	2.160	6.88	63.3	0.90	16.3	
54MW23	1/26/10 14:10	Baseline	29.41	0.728	7.27	-88.9	0.81	19.6	
54MW24	1/27/10 15:55	Baseline	29.22	1.665	6.92	433.1	1.68	21.3	
54MW25	1/27/10 11:20	Baseline	28.21	1.973	6.83	70.8	0.91	20.5	
54MW26	1/27/10 12:25	Baseline	28.12	1.814	6.82	210.3	0.88	8.7	
54MW27	1/25/10 11:45	Baseline	29.29	1.193	7.20	-57.6	0.65	10.7	
54MW28	1/25/10 10:51	Baseline	28.32	1.265	7.41	-178.1	0.72	10.2	
54MW29	4/14/10 14:05	Baseline	28.24	1.369	6.47	333.0	0.33	180.0	
54MW30	4/15/10 9:12	Baseline	28.16	1.406	6.58	146.0	0.19	64.0	
54MW31	4/14/10 14:15	Baseline	28.87	1.021	6.88	-110.7	3.37	74.2	
54MW32	4/14/10 13:25	Baseline	29.85	0.775	6.84	78.2	3.41	2.6	
54MW33	4/14/10 9:55	Baseline	29.21	1.172	6.65	-20.2	2.22	75.2	
54MW34	4/14/10 11:18	Baseline	28.90	1.993	6.62	70.9	0.72	6.5	
54MW35	4/15/10 11:03	Baseline	27.31	1.538	6.76	-43.4	0.11	75.8	
54MW36	4/14/10 10:13	Baseline	27.14	1.699	6.76	-98.0	0.19	81.0	
54MW37	4/14/10 12:27	Baseline	28.19	1.086	6.65	-8.4	0.17	144.0	
54MW38	4/14/10 13:08	Baseline	28.00	1.230	6.52	-4.8	0.24	45.4	
54MW39	4/15/10 9:49	Baseline	28.33	1.131	6.40	131.5	1.99	23.6	
54MW40	4/15/10 10:27	Baseline	28.13	0.649	6.60	281.9	2.32	49.8	
54MW41	4/15/10 13:08	Baseline	28.00	1.230	6.52	-4.8	0.24	45.4	
54MW42	10/14/10 13:15	Baseline	30.00	1.715	6.64	430.8	0.68	5.8	
54MW43	10/18/10 8:25	Baseline	26.78	2.006	7.17	-90.8	1.13	9.7	
54MW44	10/14/10 10:50	Baseline	30.70	1.759	6.46	567.9	5.57	7.4	

APPENDIX C

Laboratory Data Sheets and CoCs

NA Puerto Rico

PREPARED FOR:	NA Puerto Rico / SWMU 54 Benzene Soil Sampling 2009
FINAL REVIEWER/ INITIAL REVIEWER	Camden Robinson/ Associate Project Chemist/CH2M Hill
COPIES:	Tom Beisel /Project Manager/AGVIQ-CH2M HILL
DATE:	September 9, 2009
SUBJECT:	Quality Assessment for Samples August 12th, 2009 thru August 13th, 2009

This quality assurance memorandum is based upon a review of analytical data generated for the soil samples and the associated field quality control samples collected August 12th, 2009 thru August 13th, 2009 at the Naval Activity Puerto Rico in Ceiba, Puerto Rico. The samples were collected as a part of the SWMU 54 Benzene Soil sampling event conducted at the site. Table 1-1 presents a summary of the AGVIQ-CH2M HILL sample identification numbers, laboratory sample identification numbers, dates of collection, and the analyses performed.

Gulf Coast Analytical Laboratories, Inc. of Baton Rouge, Louisiana served as the laboratory for this SWMU 54 Benzene Soil sampling event. The samples were submitted for Benzene by SW-846 method 8260B.

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with AQVIQ-CH2M HILL Sampling Analysis Plan. All analysis results have been validated or qualified according to general guidance provided in the Department of Defense (DOD) Quality Systems Manual - Version 3 Final (based on NELAC Voted Version 5 – June 2003).

The findings of this quality assurance report are based upon the comprehensive review of the following results summaries reported according to the AGVIQ-CH2M HILL Level C (CLP-like data deliverables format): chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, bromofluorobenzene (BFB) mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, and electronic data deliverables.

The analyses were performed acceptably. Any aspects of the data, which are not discussed in this report, should be considered qualitatively and quantitatively valid as reported, based on the deliverables reviewed. The validated results are presented in the data summary tables. Attachment A contains a copy of the chain of custody and the validated sample results.

Table 1-1
Summary Sample Data
NA Puerto Rico

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW03(13-13.5)-081209		20908131701	08/12/2009	[1]
JM04-54MW03(10.5-11)-081209		20908131702	08/12/2009	[1]
JM04-FD01-081209	JM04-54MW03(10.5-11)-081209	20908131703	08/12/2009	[1]
JM04-EB01-081209		20908131704	08/12/2009	[1]
JM04-TB01-081209		20908131705	08/12/2009	[1]
JM04-54MW02(13.5-14)-081309		20908141501	08/13/2009	[1]
JM04-54MW02(10.5-11)-081309		20908141502	08/13/2009	[1]
JM04-EB02-081309		20908141505	08/13/2009	[1]
JM04-TB02-081309		20908141506	08/13/2009	[1]

ANALYSES PERFORMED CODES:
[1] – Benzene by SW-846 method 8260B

General Data Qualifiers

As required by U.S. EPA protocols, all compounds, which were qualitatively identified at concentrations below their respective, reporting limits (RL) but above the method detection limit (MDL) have been qualified with "J" qualifiers on the data summary reports to indicate that they are quantitative estimates.

Organic Data Qualifiers

The samples presented below were analyzed at dilutions for the analysis indicated. These dilutions were required to prevent saturation of the instrument, and/or to reduce the effects of the matrix on the target compounds. Positive results for compounds reported above the calibration range in the initial analysis have been reported from the diluted analyses.

Sample ID	Analysis	Dilution Factor
JM04-54MW03(13-13.5)-081209	Benzene	100X
JM04-54MW03(10.5-11)-081209	Benzene	50X
JM04-FD01-081209	Benzene	50X
JM04-54MW02(13.5-14)-081309	Benzene	100X
JM04-54MW02(10.5-11)-081309	Benzene	100X

Sample JM04-54MW03(10.5-11)-081209 and its blind field duplicate sample JM04-FD01-081209 were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met AGVIQ-CH2M HILL's blind duplicate precision criteria of 30% for soil samples relative percent difference (RPD) for the benzene analysis.

Summary

The organic analyses were performed acceptably, and required no qualifying statements from the laboratory or from the data evaluation. A support documentation package has been prepared for this quality assurance review and is filed with the NA Puerto Rico / SWMU 54 Benzene Soil Sampling project file.

Attachment A

VALID QUALIFIERS

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

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
K	Second source %D was noncompliant.	Second source %D was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
MB	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) blank or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or high RPD.	MS/MSD recovery was poor or high RPD.
G	Result is over the calibration range. No other acceptable result was provided.	Result is over the calibration range. Not other acceptable result was provided.
E	Not applicable.	Lab duplicate RPD showed poor agreement.
Z	Field duplicate RPD showed poor agreement.	Field duplicate RPD showed poor agreement
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
TN	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive—reported compound was not present.	Not applicable.
-	False negative—compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Confirmation analysis RPD exceeded 40%.	Post Digestion Spike recovery was not within control limits.
T/D	Not applicable.	Total metals results were less than the dissolved metals result.
SD	Not applicable.	Seed correction factor was below the acceptable limit.
M	Results should be considered estimated due to matrix effects caused by saturation of non-target analytes.	Not applicable
OT	Results should be considered estimated due to sample was analyzed from jar.	Not applicable
LC	Laboratory contamination	Not applicable
ST	Sample Temperature non-conformance	Sample Temperature non-conformance

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02(13.5-14)-081309

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081415

Matrix: (soil/water) Soil

Sample wt/vol: 5.26 (g/ml) g Lab Sample ID: 20908141501

Level: (low/med) Lab File ID: 2090814P/e6773d

% Moisture: not dec. 26.3 Date Collected: 08/13/09 Time: 0845

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/14/09

Instrument ID: MSV6 Date Analyzed: 08/15/09 Time: 0432

Soil Extract Volume: (µL) Dilution Factor: 100 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416811

CONCENTRATION UNITS: ug/kg Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	9990		17.7	650

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02(10.5-11)-081309

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081415

Matrix: (soil/water) Soil

Sample wt/vol: 6.97 (g/ml) g Lab Sample ID: 20908141502

Level: (low/med) Lab File ID: 2090814P/e6763d

% Moisture: not dec. 18.6 Date Collected: 08/13/09 Time: 0826

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/14/09

Instrument ID: MSV6 Date Analyzed: 08/15/09 Time: 0048

Soil Extract Volume: (µL) Dilution Factor: 100 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416811

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	6230		12.1	440

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-081309

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081415

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20908141505

Level: (low/med)

Lab File ID: 2090814P/e6760d

% Moisture: not dec.

Date Collected: 08/13/09 Time: 0928

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 08/14/09

Instrument ID: MSV6

Date Analyzed: 08/14/09 Time: 2341

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 416812

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.075	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB02-081309

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081415

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20908141506

Level: (low/med) Lab File ID: 2090814P/e6761d

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/14/09

Instrument ID: MSV6 Date Analyzed: 08/15/09 Time: 0003

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416812

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.075	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03(13-13.5)-081209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081317

Matrix: (soil/water) Soil

Sample wt/vol: 5.81 (g/ml) g

Lab Sample ID: 20908131701

Level: (low/med)

Lab File ID: 2090814P/e6770d

% Moisture: not dec. 28.7

Date Collected: 08/12/09 Time: 0958

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 08/13/09

Instrument ID: MSV6

Date Analyzed: 08/15/09 Time: 0323

Soil Extract Volume: (µL)

Dilution Factor: 100 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 416811

CONCENTRATION UNITS: ug/kg

Analytical Method: SW-846 8260

CAS NO.	***COMPOUND***	***RESULT***	***Q***	***MDL***	***RL***
71-43-2	Benzene	13200		16.5	600

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03(10.5-11)-081209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081317

Matrix: (soil/water) Soil

Sample wt/vol: 6.21 (g/ml) g

Lab Sample ID: 20908131702

Level: (low/med)

Lab File ID: 2090814P/e6771d

% Moisture: not dec. 26.5

Date Collected: 08/12/09 Time: 0936

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 08/13/09

Instrument ID: MSV6

Date Analyzed: 08/15/09 Time: 0345

Soil Extract Volume: (µL)

Dilution Factor: 50 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 416811

CONCENTRATION UNITS: ug/kg

Analytical Method: SW-846 8260

CAS NO.	***COMPOUND***	***RESULT***	***Q***	***MDL***	***RL***
71-43-2	Benzene	4620		7.50	270

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD01-081209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081317

Matrix: (soil/water) Soil

Sample wt/vol: 5.79 (g/ml) g Lab Sample ID: 20908131703

Level: (low/med) Lab File ID: 2090814P/e6772d

% Moisture: not dec. 25.5 Date Collected: 08/12/09 Time: 0936

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/13/09

Instrument ID: MSV6 Date Analyzed: 08/15/09 Time: 0407

Soil Extract Volume: (µL) Dilution Factor: 50 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416811

CONCENTRATION UNITS: ug/kg Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	3800		7.94	290

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB01-081209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081317

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20908131704

Level: (low/med) Lab File ID: 2090813p/e6720

% Moisture: not dec. Date Collected: 08/12/09 Time: 1040

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/13/09

Instrument ID: MSV6 Date Analyzed: 08/14/09 Time: 0440

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416727

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.075	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-081209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081317

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20908131705

Level: (low/med) Lab File ID: 2090813p/e6721

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 08/13/09

Instrument ID: MSV6 Date Analyzed: 08/14/09 Time: 0502

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 416727

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.075	5.00

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CH2MHILL /4350/2010EM15/8-21-9

AGVIO CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-081309-01

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO::	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO::	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54	N62470-08-D-1006	TBD		
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO::	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[21] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G Volatiles by 8260B - *(Benzene Only)	G	G	G	G	G	[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW02(13.5-14)-081309		SO	08/13/09	0845	IV/C	14	4	X								1
2	JM04-54MW02(10.5-11)-081309		SO	08/13/09	0826	IV/C	14	4	X								2
3	JM04-54MW02MS(10.5-11)-081309	MS	SO	08/13/09	0826	IV/C	14	4	X								3
4	JM04-54MW02MSD(10.5-11)-081309	MSD	SO	08/13/09	0826	IV/C	14	4	X								4
5	JM04-EB02-081209 13	Equipment Blank	WO	08/13/09	0928	IV/C	14	3	X								5
6	JM04-TB02-081210 13 09 *	Trip Blank	WO	lab supplied		IV/C	14	3	X								6
7																	
8																	
9																	
10																	

[29] SAMPLER(S) AND COMPANY: (please print)
Andrew O'Conor/CH2M HILL
Sam Smith /CH2M HILL

[30] COURIER AND SHIPPING NUMBER:
FEDEX 8685 9172 7756

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
5.1

[32] RELINQUISHED BY Printed Name and Signature:	DATE	TIME	[33] RECEIVED BY Printed Name and Signature:	DATE	TIME
Andrew O'Conor/CH2M HILL	8/13/2009				
Printed Name and Signature:			Printed Name and Signature:		
[illegible]	8-14-09	930	Michelle Babcock [illegible]	8-14-09	930
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [illegible]

AGVIO
CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-081209-01**

[2] PROJECT NAME: **Naval Activity Puerto Rico**	[5] PROJECT NUMBER: **378718**	[8] LAB NAME AND CONTACT: **GCAL - Liz Martin 225.214.7077**	[11] FAX AND MAIL REPORTS/EDD TO:: **Tom Beisel/CH2M HILL**	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.): **1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK: **SWMU 54**	[6] CTO OR DO NUMBER: **N62470-08-D-1006**	[9] LAB PO NUMBER: **TBD**	[12] FAX AND MAIL REPORTS/EDD TO::	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
[4] PROJECT CONTACT: **Tom Beisel**	[7] PROJECT TEL NO AND FAX NO: **770.604.9182**	[10] LAB TEL NO AND FAX NO: **225.269.4900/225.767.5717**	[13] FAX AND MAIL REPORTS/EDD TO::	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):

[*] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G Volatiles by 8260B - *(Benzene Only)	G	G	G	G		[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW03(13-13.5)-081209		SO	08/12/09	0958	IV/C	14	4	X								1
2	JM04-54MW03(10.5-11)-081209		SO	08/12/09	0936	IV/C	14	4	X								2
3	JM04-FD01-081209	Field Duplicate	SO	08/12/09	0936	IV/C	14	4	X								3
4	JM04-EB01_081209		WO	08/12/09	1040	IV/C	14	3	X								4
5	JM04-TB01-081209	Trip Blank	WO	lab supplied		IV/C	14	3	X								5
6																	
7																	
8																	
9																	
10																	

[29] SAMPLER(S) AND COMPANY: (please print)
Andrew O'Conor/CH2M HILL
Sam Smith /CH2M HILL

[30] COURIER AND SHIPPING NUMBER:
FEDEX 8685 9172 7610

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
5.9

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Andrew O'Conor/CH2M HILL	8/12/2009	1400	Printed Name and Signature:		
Printed Name and Signature: Foley	8-13-9	930	Printed Name and Signature: Michelle Robison	8-13-9	930
Printed Name and Signature:			Printed Name and Signature:		

JM04
Puerto Rico
Data Summary Table
SWMU54 Benzene Soil Sampling 2009

Location		54MW02		54MW03	
Sample ID		JM04-54MW02(10_5-11)-081309	JM04-54MW02(13_5-14)-081309	JM04-54MW03(10_5-11)-081209	JM04-54MW03(13-13_5)-081209
Sample Depth (ft)		10.5 - 11	13.5 - 14	10.5 - 11	13 - 13.5
Sample Date		8/13/2009	8/13/2009	8/12/2009	8/12/2009
Analyte	**Units**				
SW8260B (µg/kg)					
Benzene	µg/kg	**6230**	**9990**	**4620**	**13200**

Notes:
NA = Not analyzed
ug/kg = Micrograms per Kilogram
Bold indicates the analyte was detected
Shading indicates the analyte excee

Data Validation Report

JM04 – SWMU 54 – Puerto Rico
Area: Benzene Baseline
AVGIQ – CH2MHill Joint Venture

SDG: 209090309 Date: 10/19/2009

Approved For Quality Assurance By:
Camden L. Robinson Date 10/27/09

eDATApro

Environmental Data Professional, LLC
6004 Perkins Road Suite A1 • Baton Rouge, LA 70808 • phone: 225-761-4264 • fax: 225-761-4266

Disclaimer:

The validation performed and reported herein is based on specifications and procedures presented to eDATApro with the associated data package. Any qualifications or review not specified with package requirements was based on direction and/or input from the CH2Mhill project Chemist.

Information contained in this report based solely on the hardcopy and/or electronic deliverables that were submitted to eDATApro. EDATApro reserves the rights to modify or change the validation report if new information is presented or if this report is determined to be inaccurate or incomplete.

Cover Letter

Validation Report Date: 10/19/2009

Lab Report Date: 9/11/2009

Contract Task Order (CTO) Number: JM04

Project Name: SWMU 54 – Puerto Rico

Area: Water Sampling

Sample Delivery Group: 209090309

CTO Project Manager: Bethany Garvey

Data validation personnel: Dana Harper and Mike Stewart

Data Deliverables Included:

Validation Report:

✓ Data Validation Report
- ✓ Introduction
- ✓ Data Validation Findings Summary
- ✓ Table 1-1, Summary of Qualified Data
- ✓ Appendix I – Qualified Laboratory Form 1s
- ✓ Appendix II – Chain of Custody
- ✓ Appendix III – Copies of completed checklists
- ✓ EDD with applied data qualifiers

✓ Data Validation Reference Package, including
- ✓ Table 1-2, Acronyms and Abbreviation List
- ✓ Table 1-3, Data Qualifier Reference Table
- ✓ Table 1-4, Qualification Code Reference Table

Approval Signature: _____ Date: 10/19/09

INTRODUCTION:

CTO Number: JM04
Project Name: SWMU 54 – Puerto Rico
Area: Water Sampling
Laboratory: Gulf Coast Laboratories, Inc.
Laboratory Package No. 209090309
Matrix: Water and water QC

Environmental Data Professional, LLC (eDATApro) received one data package containing six field samples, one field duplicate, one matrix spike pair, one equipment blank and on. These samples were validated utilizing CCI-approved checklists based on the Department of Defense Quality System Manual as part of the DOD QSM – Navy Installation Restoration Chemical Data Quality Manual (IRCDQM) and the project specific Scope of Work.

The following samples were reviewed:

Sample ID	Matrix	Lab ID	Parent Sample ID	Collection Date/Time	Analyses
JM04-54MW05-090209	Water	20909030901		09/02/2009 09:46	[1][2][3][4][5][6][7][8]
JM04-54MW05MS-090209	Water	20909030902	JM04-54MW05-090209	09/02/2009 09:46	[1][2][3][4][5][6][7][8]
JM04-54MW05MSD-090209	Water	20909030903	JM04-54MW05-090209	09/02/2009 09:46	[1][2][3][4][5][6][7][8]
JM04-54MW04-090209	Water	20909030904		09/02/2009 11:40	[1][2][3][4][5][6][7][8]
JM04-54MW03-090209	Water	20909030905		09/02/2009 13:11	[1][2][3][4][5][6][7][8]
JM04-54MW02-090209	Water	20909030906		09/02/2009 14:16	[1][2][3][4][5][6][7][8]
JM04-54MW01-090209	Water	20909030907		09/02/2009 15:40	[1][2][3][4][5][6][7][8]
JM04-54MW06-090209	Water	20909030908		09/02/2009 16:48	[1][2][3][4][5][6][7][8]
JM04-EB04-090209	Water	20909030909		09/02/2009 16:20	[1][2][3][4][5][6][7][8]
JM04-TB04-090209	Water	20909030910		09/02/2009	[1]
JM04-FD02-090209	Water	20909030911	JM04-54MW02-090209	09/02/2009	[1][2][3][4][5][6][7][8]
JM04-TB05-090209	Water	20909030912		09/02/2009	[1]

Analyses Performed Codes:

[1] – Benzene – SW-846 8260B
[2] – Sulfide – SM 4500 S D
[3] – Alkalinity – SM 2320B
[4] – Nitrate – EPA 300.0
[5] – Sulfate – EPA 300.0
[6] – Dissolved Iron – SW846 6010B
[7] – Total Organic Carbon (TOC) – SM 5310B
[8] – Chemical Oxygen Demand (COD) – HACH 8000

DATA VALIDATION FINDINGS SUMMARY

I. General Package:

Please note that project specific analyte lists and project specific reporting limits were not submitted with the validation package and accordingly, these items could not be evaluated during validation.

II. Executive Summary:

The findings of this quality assurance report are based upon the comprehensive review of the following data categories: chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, GCMS mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, and electronic data deliverables.

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

III. Inorganic/Organic Analyses:

- **Benzene – SW-846 8260B:**
  The samples JM04-54MW01-090209, JM04-54MW02-090209, JM04-54MW03-090209, and JM04-54MW06-090209 were analyzed at dilutions so that the results/responses were within the calibration range of the instrument. The laboratory correctly adjusted reporting limits and no qualifications were required.

  The equipment blank associated with the field samples was reported with a positive hit between the MDL and the RL. Accordingly, the positive results reported in the field sample results were qualified as "JB / F".

  The RPD between the parent sample result and the field duplicate result was reported as above acceptance criteria. Accordingly, the result for the parent sample was qualified as "J / Z".

  Please note that the action limit for Benzene as described to eDATApro for this project is 550 ug/L. According to this limit, the following samples were in exceedance:
  JM04-54MW01-090209 – 707 JB ug/L
  JM04-54MW06-090209 – 9260 JB ug/L

- **Sulfide – SM 4500 S D**
  The sample JM04-54MW05-090209 was analyzed at a dilution due to physical interference as noted by the laboratory. The laboratory correctly adjusted the reporting limits.

  The matrix spike sample was reported with a percent recovery below acceptance criteria. Accordingly, the parent sample was qualified as "UJ / Q".

All field duplicate criteria were met.

- **Alkalinity – SM 2320B**
  No qualifications were applied.

  All field duplicate criteria were met.

- **Nitrate – EPA 300.0**
  No qualifications were applied.

  All field duplicate criteria were met.

- **Sulfate – EPA 300.0**
  The samples JM04-54MW01-090209, JM04-54MW02-090209, JM04-54MW03-090209, JM04-54MW04-090209, JM04-54MW05-090209 and JM04-FD02-090209 were analyzed at dilutions so that the results were within the calibration range of the instrument. The laboratory correctly adjusted reporting limits and no qualifications were required.

  All field duplicate criteria were met.

- **Dissolved Iron – SW846 6010B**
  No qualifications were applied.

  All field duplicate criteria were met.

- **Total Organic Carbon (TOC) – SM 5310B**
  The samples JM04-54MW01-090209, JM04-54MW02-090209, JM04-54MW03-090209, JM04-54MW04-090209, JM04-54MW05-090209, JM04-54MW06-090209 and JM04-FD02-090209 were analyzed at dilutions so that the results were within the calibration range of the instrument. The laboratory correctly adjusted reporting limits and no qualifications were required.

  All field duplicate criteria were met.

- **Chemical Oxygen Demand (COD) – HACH 8000**
  The sample JM04-54MW01-090209 was analyzed at a dilution so that the result was within the calibration range of the instrument. The laboratory correctly adjusted reporting limit and no qualifications were required.

  The equipment blank associated with the field samples was reported with a positive hit between the MDL and the RL. Accordingly, the positive results reported in the field sample results were qualified as "JB / F".

  The RPD between the parent sample result and the field duplicate result was reported as above acceptance criteria. Accordingly, the result for the parent sample was qualified as "J / Z".

TABLE 1-1

SUMMARY OF QUALIFIED DATA

Target Compound	Sample(s) Affected	Qualifier	Qualification Code or Reason for Qualification
Benzene	JM04-54MW05-090209 JM04-54MW04-090209 JM04-54MW03-090209 JM04-54MW02-090209 JM04-54MW01-090209 JM04-54MW06-090209 JM04-FD02-090209	JB	F-Presumed Contamination from Field Blank or Equipment blank.
Benzene	JM04-54MW02-090209	J	Z- Field duplicate RPD showed poor agreement.
Sulfide	JM04-54MW05-090209	UJ	Q- MS/MSD recovery was poor or RPD high.
COD	JM04-54MW02-090209	JB	Z- Field duplicate RPD showed poor agreement. F-Presumed Contamination from Field Blank or Equipment blank.
COD	JM04-54MW05-090209 JM04-54MW04-090209 JM04-54MW03-090209 JM04-54MW01-090209 JM04-54MW06-090209 JM04-FD02-090209	JB	F-Presumed Contamination from Field Blank or Equipment blank.

TABLE 1-2

ACRONYMS AND ABBREVIATIONS

%R – Percent Recovery

%D – Percent Difference

EDD – Electronic Data Deliverable

LCS – Laboratory Control Sample

LCSD – Laboratory Control Sample Duplicate

MS – Matrix Spike

MSD – Matrix Spike Duplicate

QC – Quality Control

TABLE 1-3

DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicated the presence of an analyte for which there was presumptive evidence to make a "tentative identification"	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet the quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or not be present)
G	The analyte detected in the associated field, equipment, and/or trip blank.	The analyte detected in the associated field, equipment, and/or trip blank.
B	The analyte detected in the associated method and/or calibration blank	The analyte detected in the associated method and/or calibration blank

TABLE 1-4

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
F	Presumed contamination from field blank or equipment blank.	Presumed contamination from field blank or equipment blank.
Z	Field duplicate RPD showed poor agreement.	Field duplicate RPD showed poor agreement.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.

Appendix I
Form 1 Data (Qualified)

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW05-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030901

Level: (low/med)

Lab File ID: 2090908/d1572

% Moisture: not dec.

Date Collected: 09/02/09 Time: 0946

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/08/09 Time: 1450

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418012

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	2.20	J	0.075	5.00	JB	F

01-Rev Qual
02-Qual Code
N

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW04-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030904

Level: (low/med)

Lab File ID: 2090908/d1576

% Moisture: not dec.

Date Collected: 09/02/09 Time: 1140

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/08/09 Time: 1622

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418012

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	2.83	J	0.075	5.00	JB	F

01 - Rev Qual
02 - Qual Code
M

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030905

Level: (low/med)

Lab File ID: 2090908/d1577

% Moisture: not dec.

Date Collected: 09/02/09 Time: 1311

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/08/09 Time: 1646

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418012

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01 JB	02 F
71-43-2	Benzene	347		0.149	10.0		

01-Rev Qual
02-Qual Code

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20909030906

Level: (low/med) Lab File ID: 2090908/d1578

% Moisture: not dec. Date Collected: 09/02/09 Time: 1416

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 09/03/09

Instrument ID: MSV9 Date Analyzed: 09/08/09 Time: 1710

Soil Extract Volume: (µL) Dilution Factor: 2 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 418012

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-43-2	Benzene	394		0.149	10.0	01 02 JB F,Z

01 - Rev Qual
02 - Qual Code
mb

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW01-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030907

Level: (low/med)

Lab File ID: 2090909/d1614

% Moisture: not dec.

Date Collected: 09/02/09 Time: 1540

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/09/09 Time: 1034

Soil Extract Volume: (µL)

Dilution Factor: 5 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418131

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-43-2	Benzene	707		0.374	25.0	01/53 02/F

01-Reviewed
02-Qual Code.
nl

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW06-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20909030908

Level: (low/med) Lab File ID: 2090908/d1580

% Moisture: not dec. Date Collected: 09/02/09 Time: 1648

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 09/03/09

Instrument ID: MSV9 Date Analyzed: 09/08/09 Time: 1756

Soil Extract Volume: (µL) Dilution Factor: 100 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 418012

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	9260		7.47	500	JB	F

01-Rev Qual
02-Qual code
nl

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB04-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20909030909

Level: (low/med) Lab File ID: 2090908/d1581

% Moisture: not dec. Date Collected: 09/02/09 Time: 1620

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 09/03/09

Instrument ID: MSV9 Date Analyzed: 09/08/09 Time: 1818

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 418012

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	1.35	J	0.075	5.00	J	

01_Qual
02_Qual Code
nl

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB04-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 20909030910

Level: (low/med) Lab File ID: 2090908P/d1588

% Moisture: not dec. Date Collected: 09/02/09 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 09/03/09

Instrument ID: MSV9 Date Analyzed: 09/08/09 Time: 2119

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 418112

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	5.00	U	0.075	5.00		U

01 - Rev Qual
02 - Qual Code
M

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030911

Level: (low/med)

Lab File ID: 2090909/d1615

% Moisture: not dec.

Date Collected: 09/02/09 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/09/09 Time: 1057

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418131

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL		
71-43-2	Benzene	119		0.075	5.00	01 JB	02 F

01 - Revised
02 - Dual Code
ml

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB05-090209

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090309

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909030912

Level: (low/med)

Lab File ID: 2090908P/d1590

% Moisture: not dec.

Date Collected: 09/02/09 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/03/09

Instrument ID: MSV9

Date Analyzed: 09/08/09 Time: 2204

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418112

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	01	02
71-43-2	Benzene	5.00	U	0.075	5.00	u	

01 - Rev Qual
02 - Qual Code
nd

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GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/03/2009 12:11	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01	02
18496-25-8	Sulfide	0.100U	0.100	0.020	mg/L	UJ	Q

01 – Rev Qual
02 – Qual Code
NL

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:13	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01 02
18496-25-8	Sulfide	0.020	0.020	0.004	mg/L	

01 – Rev Qual
02 – Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030905	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:13	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01	02
18496-25-8	Sulfide	0.006B	0.020	0.004	mg/L	J	

01 – Rev Qual
02 – Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
209090309 06	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:14	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01	02
18496-25-8	Sulfide	0.020U	0.020	0.004	mg/L	U	

01 – Rev Qual
02 – Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:17	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01 02
18496-25-8	Sulfide	0.020U	0.020	0.004	mg/L	u

01-Rev Dual
02-Dual Cycle
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030908	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:17	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01 02
18496-25-8	Sulfide	0.020U	0.020	0.004	mg/L	u

01 Rev Qual
02 - Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 12:18	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01	02
18496-25-8	Sulfide	0.020U	0.020	0.004	mg/L		

01 – Rev Qual
02 – Qual Code
m

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QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030911	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

SM 4500S D Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 11:49	JEM	417874

CAS#	Parameter	Result	RDL	MDL	Units	01	02
18496-25-8	Sulfide	0.020U	0.020	0.004	mg/L		

01 - Rev 2 mf
02 - Qual Code
mf

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1158284

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units 01 02
000000-00-5	Total Alkalinity	580	1.0	0.17	mg/L CaCO3

01 – Rev Qual
02 – Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units	01	02
000000-00-5	Total Alkalinity	365	1.0	0.17	mg/L CaCO3		

01-Revised
02-Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030905	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units 01 02
000000-00-5	Total Alkalinity	514	1.0	0.17	mg/L CaCO3

01_RevQual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030906	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units
000000-00-5	Total Alkalinity	651	1.0	0.17	mg/L CaCO3

01 02

01-Rev Qual
02-Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units	01 02
000000-00-5	Total Alkalinity	617	1.0	0.17	mg/L CaCO3	

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
209090309.08	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units 01 02
000000-00-5	Total Alkalinity	500	1.0	0.17	mg/L CaCO3

01-Rev Ind
02-Qual Code
M

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 11:39	JEM	418055

CAS#	Parameter	Result	RDL	MDL	Units	01	02
000000-00-5	Total Alkalinity	1.0U	1.0	0.17	mg/L $CaCO_3$	U	

01 – Rev Qual
02 – Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030911	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

SM 2320B Alkalinity

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 08:59	JEM	418026

CAS#	Parameter	Result	RDL	MDL	Units 01 02
000000-00-5	Total Alkalinity	662	1.0	0.17	mg/L CaCO3

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 15:15	AEL	417903

01 02

CAS#	Parameter	Result	RDL	MDL	Units
14797-55-8	Nitrate	0.810	0.500	0.026	mg/L

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 16:20	AEL	417903

01 02

CAS#	Parameter	Result	RDL	MDL	Units
14797-55-8	Nitrate	1.24	0.500	0.026	mg/L

01-Reviewed
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030905	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 16:36	AEL	417903

01 02

CAS#	Parameter	Result	RDL	MDL	Units
14797-55-8	Nitrate	1.01	0.500	0.026	mg/L

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030906	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 16:53	AEL	417903

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14797-55-8	Nitrate	0.250B	0.500	0.026	mg/L	J

01_Rev Qual
02- Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 17:43	AEL	417903

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14797-55-8	Nitrate	0.500U	0.500	0.026	mg/L	U

01-Rev Qual
02-Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030908	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 18:00	AEL	417903

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14797-55-8	Nitrate	0.500U	0.500	0.026	mg/L	u

01 Raw Qual
02 - Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 18:16	AEL	417903

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14797-55-8	Nitrate	0.500U	0.500	0.026	mg/L	M

01 - Rev Qual
02 - Qual Code
M

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030911	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

EPA 300.0 Inorganic Anions

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 18:33	AEL	417903

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14797-55-8	Nitrate	0.350B	0.500	0.026	mg/L	J

01- Rev Qual
02- Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	09/03/2009 18:50	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units 01 02
14808-79-8	Sulfate	32.1	2.00	0.280	mg/L

01 Rev Qual
02 - Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	09/03/2009 19:40	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14808-79-8	Sulfate	81.3	2.00	0.280	mg/L	

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030905	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	09/03/2009 19:56	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14808-79-8	Sulfate	37.5	2.00	0.280	mg/L	

01-Rev Qual
02-Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030906	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	09/03/2009 20:13	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units	01 02
14808-79-8	Sulfate	48.7	2.00	0.280	mg/L	

01 - Reviewed
02 - Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			100	09/03/2009 21:53	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units 01 02
14808-79-8	Sulfate	446	20.0	2.80	mg/L

01 - Rev Qual
02 - Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030908	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 18:00	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units	01	02
14808-79-8	Sulfate	3.45	0.200	0.028	mg/L		

01-Reval Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/03/2009 18:16	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units	01	02
14808-79-8	Sulfate	0.200U	0.200	0.028	mg/L	N	

01-Rev Qual
02- Qual Code
Nf

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
2090903091 1	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

EPA 300.0 Sulfate

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			10	09/03/2009 21:36	AEL	417894

CAS#	Parameter	Result	RDL	MDL	Units 01 02
14808-79-8	Sulfate	41.5	2.00	0.280	mg/L

01-Rev Qual
02-Qual Cod.
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54MW05-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030901

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 0946

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	
Iron (Dissolved)	0.10	mg/L	U	0.022	0.10	SW-846 6010B Dissolved	P	01 02

01-Rev 2nd
02-Dual Code

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: JM04-54MW04-090209
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Water
SAS No.:
SDG No.: 209090309
Level: (low / med)
% Solids:
Lab Sample ID: 20909030904
Date Received: 09/03/09
Time: 0915
Date Collected: 09/02/09
Time: 1140

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	01	02
Iron (Dissolved)	0.036	mg/L	B	0.022	0.10	SW-846 6010B Dissolved	P	J	

01-Rev Qual
02-Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54MW03-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030905

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 1311

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	
Iron (Dissolved)	0.051	mg/L	B	0.022	0.10	SW-846 6010B Dissolved	P	01 02 J

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54MW02-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030906

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 1416

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	
Iron (Dissolved)	0.10	mg/L	U	0.022	0.10	SW-846 6010B Dissolved	P	01 02

01-RevQual
02-Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54MW01-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030907

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 1540

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	01	02
Iron (Dissolved)	0.091	mg/L	B	0.022	0.10	SW-846 6010B Dissolved	P		J

01 - Rev Qual
02 - Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: JM04-54MW06-090209
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Water
SAS No.:
SDG No.: 209090309
Level: (low / med)
% Solids:
Lab Sample ID: 20909030908
Date Received: 09/03/09
Time: 0915
Date Collected: 09/02/09
Time: 1648

Analyte	Concentration	Units	C	MDL	PQL	Method	Type
Iron (Dissolved)	0.10	mg/L	U	0.022	0.10	SW-846 6010B Dissolved	P

01 02

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-EB04-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030909

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 1620

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	01	02
Iron (Dissolved)	0.10	mg/L	U	0.022	0.10	SW-846 6010B Dissolved	P		

01-Reviewed
02-Qual code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-FD02-090209

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090309

Level: (low / med) % Solids:

Lab Sample ID: 20909030911

Date Received: 09/03/09 Time: 0915

Date Collected: 09/02/09 Time: 0000

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	01	02
Iron (Dissolved)	0.10	mg/L	U	0.022	0.10	SW-846 6010B Dissolved	P		

01_Rev Qual
02_Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

FORM I - IN

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/04/2009 07:57	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units
C-012	Total Organic Carbon	32.8	5.0	1.3	mg/L

01 02

01- Revised
02- Dual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			2	09/04/2009 08:57	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	61 02
C-012	Total Organic Carbon	18.3	2.0	0.51	mg/L	

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
209090309 05	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			2	09/04/2009 09:16	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-012	Total Organic Carbon	23.3	2.0	0.51	mg/L	

01-Rev Qual
02-Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030906	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/04/2009 09:35	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-012	Total Organic Carbon	30.6	5.0	1.3	mg/L	

01-Rev Dual
02-Dual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/04/2009 09:57	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-012	Total Organic Carbon	1010	20.0	5.1	mg/L	

01-Rev Qual
02-Qual Code
nd

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030908	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/04/2009 10:14	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-012	Total Organic Carbon	49.5	5.0	1.3	mg/L	

01 Rev Qual
02 Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/04/2009 10:33	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-012	Total Organic Carbon	1.0U	1.0	0.26	mg/L	U

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030911	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

SM 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			5	09/04/2009 10:52	AEL	417897

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-012	Total Organic Carbon	25.9	5.0	1.3	mg/L		

01 – Rev Qual
02 – Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030901	JM04-54MW05-090209	Water	09/02/2009 09:46	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:26	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	8.0	5.0	2.3	mg/L	JB	F

01-Rev Qual
02-Qual Code
N

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
2090903904	JM04-54MW04-090209	Water	09/02/2009 11:40	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:27	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units 01 02
C-004	COD	23.1	5.0	2.3	mg/L JB F

01-Rev Qual
02-Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030905	JM04-54MW03-090209	Water	09/02/2009 13:11	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:27	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	23.1	5.0	2.3	mg/L	JB	F

01_Rev Qual
02_Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030906	JM04-54MW02-090209	Water	09/02/2009 14:16	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:28	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01 02
C-004	COD	25.0	5.0	2.3	mg/L	JB Z,F

01-Rev Qual
02-Qual Code

ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030907	JM04-54MW01-090209	Water	09/02/2009 15:40	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			20	09/08/2009 16:28	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	2700	100	45.4	mg/L	JB	F

01 - Rev Qual
02 - Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030908	JM04-54MW06-090209	Water	09/02/2009 16:48	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:28	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	111	5.0	2.3	mg/L	JB	F

01-Rev Qual
02-Qual Code
nl

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030909	JM04-EB04-090209	Water	09/02/2009 16:20	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:28	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	2.3B	5.0	2.3	mg/L	J	

01 – Rev Qual
02 – Qual Code
ml

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909030911	JM04-FD02-090209	Water	09/02/2009 00:00	09/03/2009 09:15

HACH 8000 COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 16:29	JEM	418022

CAS#	Parameter	Result	RDL	MDL	Units	01	02
C-004	COD	14.3	5.0	2.3	mg/L	JB	F

01 - Rev Qual
02 - Qual code

ENID ORTIZ
LIC. #1813
ESTADO LIBRE ASOCIADO DE PUERTO RICO
QUIMICO LICENCIADO

Appendix II
Chain of Custody

AGVIQ CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-090209-01

[2] PROJECT NAME: Naval Activity Puerto Rico	[5] PROJECT NUMBER: 378718.20.02.01.07	[8] LAB NAME AND CONTACT: GCAL - Liz Martin 225.214.7077	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company): Tom Beisel/CH2M HILL
[14] RECIPIENT 1 (Address, Tel No. , and Fax No.): 1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183			
[3] PROJECT PHASE/SITE/TASK: SWMU 54 - Benzene Baseline	[6] CTO OR DO NUMBER: N62470-08-D-1006	[9] LAB PO NUMBER: TBD	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company): Amanda Struse/CH2M HILL
[15] RECIPIENT 2 (Address, Tel No. , and Fax No.): 972.663.2350			
[4] PROJECT CONTACT: Tom Beisel	[7] PROJECT TEL NO AND FAX NO: 770.604.9182	[10] LAB TEL NO AND FAX NO: 225.269.4900/225.767.5717	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company):
[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):			

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	P Sulfide (500 mL, ZnAC, NaOH preservative)	P Alkalinity/NO3/SO4/Dissolved Iron (500 mL, no preservative)	G *VOCs (3 VOAs, HCl preservative)	G TOC (2 amber VOAs HCl preservative)	G COD (250 mL, H2SO4 preservative)	[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW05-090209	54MW05	AQ	09/02/09	9:46	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	1
2	JM04-54MW05MS-090209	MS	AQ	09/02/09	9:46	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	2
3	JM04-54MW05SD-090209	MSD	AQ	09/02/09	9:46	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	3
4	JM04-54MW04-090209	54MW04	AQ	09/02/09	11:40	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	4
5	JM04-54MW03-090209	54MW03	AQ	09/02/09	13:11	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	5
6	JM04-54MW02-090209	54MW02	AQ	09/02/09	14:16	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	6
7	JM04-54MW01-090209	54MW01	AQ	09/02/09	15:40	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	7
8	JM04-54MW06-090209	54MW06	AQ	09/02/09	16:48	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	8
9	JM04-EB04-090209	Equipment Blank	AQ	09/02/09	16:20	C/IV	14 day	8	X	X	X	X	X		*VOCs benzene only.	9
10	JM04-TB04-090209	Lab Supplied	AQ	09/02/09	--	C/IV	14 day	3								10

[29] SAMPLER(S) AND COMPANY: (please print)
Andrew O'Conor/CH2M HILL
Lauren Petty/CH2M HILL

[30] COURIER AND SHIPPING NUMBER:
FedEx 8685 9172 7723

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
2.8 4.3

[32] RELINQUISHED BY

Printed Name and Signature:	DATE	TIME
Lauren Petty	9-2-09	5:30
Printed Name and Signature: Finley	9-3-9	9:15
Printed Name and Signature:		

[33] RECEIVED BY

Printed Name and Signature:	DATE	TIME
Printed Name and Signature:		
Michelle Raborn		

AGVIQ CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-090209-02

[2] PROJECT NAME: Naval Activity Puerto Rico	[5] PROJECT NUMBER: 378718.20.02.01.07	[8] LAB NAME AND CONTACT: GCAL - Liz Martin 225.214.7077	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company): Tom Beisel/CH2M HILL	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.): 1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK: SWMU 54 - Benzene Baseline	[6] CTO OR DO NUMBER: N62470-08-D-1006	[9] LAB PO NUMBER: TBD	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company): Amanda Struse/CH2M HILL	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.): 972.663.2350
[4] PROJECT CONTACT: Tom Beisel	[7] PROJECT TEL NO AND FAX NO: 770.604.9182	[10] LAB TEL NO AND FAX NO: 225.269.4900/225.767.5717	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company):	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	P Sulfide (500 mL, ZnAC, NaOH preservative)	P Alkalinity/NO3/SO4/Dissolved Iron (500 mL, no preservative)	G *VOCs (3 VOAs, HCl preservative)	G TOC (2 amber VOAs HCl preservative)	G COD (250 mL, H2SO4 preservative)						[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-FD02-090209	Field Duplicate	AQ	09/02/09	–	C/VI	14 day	8	X	X	X	X	X							*VOCs benzene only	11
2	JM04-TB05-090209	Lab Supplied	AQ	09/02/09	–	C/VI	14 DAY	8	X	X	X	X	X							*VOCs benzene only	12
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

[29] SAMPLER(S) AND COMPANY: (please print) Andrew O'Conor/CH2M HILL Lauren Petty/CH2M HILL	[30] COURIER AND SHIPPING NUMBER: FedEx 8685 9172 2723	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 2.8 4.3

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Lauren Petty	9-2-09	5:30	Printed Name and Signature:		
Printed Name and Signature: Fedex	9-3-9	915	Printed Name and Signature: Michelle Babior	9-3-9	915
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001. Rev 06/00

JM04
Puerto Rico
Data Summary Table
SWMU54 Benzene Groundwater Sampling 2009

Location			54MW01	54MW02	54MW03	54MW04	54MW05	54MW06
Sample ID			JM04-54MW01-090209	JM04-54MW02-090209	JM04-54MW03-090209	JM04-54MW04-090209	JM04-54MW05-090209	JM04-54MW06-090209
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009	9/2/2009
Analyte	**Units**	**Baker [SL]**						
A2320 (mg/L)								
Alkalinity, Total (as $CaCO_3$)	mg/L	--	**617**	**651**	**514**	**365**	**580**	**500**
A5310B (mg/L)								
Total Organic Carbon	mg/L	--	**1010**	**30.6**	**23.3**	**18.3**	**32.8**	**49.5**
E300 (mg/L)								
Nitrogen, Nitrate (as N)	mg/L	--	0.5 U	**0.25 J**	**1.01**	**1.24**	**0.81**	0.5 U
E376.2 (mg/L)								
Sulfide	mg/L	--	0.02 U	0.02 U	**0.006 J**	**0.02**	0.1 UJ	0.02 U
E410.4 (mg/L)								
COD - Chemical Oxygen Demand	mg/L	--	**2700 JB**	**25 JB**	**23.1 JB**	**23.1 JB**	**8 JB**	**111 JB**
SW6010B (mg/L)								
Iron, Dissolved	mg/L	--	**0.091 J**	0.1 U	**0.051 J**	**0.036 J**	0.1 U	0.1 U
SW8260B (µg/L)								
Benzene	µg/L	550	**707 JB**	**394 JB**	**347 JB**	**2.83 JB**	**2.2 JB**	**9260 JB**
SW9056 (mg/L)								
Sulfate (As SO4)	mg/L	--	**446**	**48.7**	**37.5**	**81.3**	**32.1**	**3.45**

Notes:
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA = Not analyzed
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
JB = The analyte detected in the associated field, equipment, and/or trip blank.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
mg/L = Milligrams per Liter
µg/L = Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening criteria

JM04
Puerto Rico
Data Summary Table
SWMU54 Benzene Groundwater Sampling Jan2010

Location			510DW1	510DW2	510MW04	510MW1	510MW2	510MW3	54MW01	54MW02	54MW03
Sample ID			JM04-510DW1-012610	JM04-510DW2-012510	JM04-510MW04-012610	JM04-510MW1-012610	JM04-510MW2-012810	JM04-510MW3-012710	JM04-54MW01-012610	JM04-54MW02-012610	JM04-54MW03-012610
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			1/26/2010	1/25/2010	1/26/2010	1/26/2010	1/28/2010	1/27/2010	1/26/2010	1/26/2010	1/26/2010
Analyte	**Units**	**Baker [SL]**									
SW8260B (µg/L)											
1,1,1-Trichloroethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,1,2,2-Tetrachloroethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,1,2-Trichloroethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,1-Dichloroethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,1-Dichloroethene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2,3-Trichlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2,4-Trichlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2-Dibromo-3-Chloropropane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2-Dibromoethane (EDB)	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2-Dichlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,2-Dichloroethane	µg/L	--	5 U	**3.33 J**	5 U	5 U	5 U	5 U	10 U	**8.4 J**	**4.06 J**
1,2-Dichloropropane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,3-Dichlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
1,4-Dichlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
2-Hexanone	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Acetone	µg/L	--	25 U	25 U	25 U	25 U	25 UJ	25 U	50 U	50 U	25 U
Benzene	µg/L	550	**21.8**	5 U	5 U	5 U	5 U	5 U	**653**	**500**	**357**
Bromochloromethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Bromodichloromethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Bromoform	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Bromomethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Carbon Disulfide	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Carbon Tetrachloride	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Chlorobenzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Chloroethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Chloroform	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Chloromethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Cis-1,2-Dichloroethylene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Cis-1,3-Dichloropropene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Cyclohexane	µg/L	--	**50.7**	5 U	5 U	**2.65 J**	5 U	5 U	**751**	**44.6**	**150**
Cymene	µg/L	--	**6.25**	5 U	5 U	5 U	5 U	5 U	**78.2**	**8.88 J**	**21.4**
Dibromochloromethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Dichlorodifluoromethane	µg/L	--	5 U	5 U	5 U	5 U	5 UJ	5 U	10 U	10 U	5 U
Ethyl Benzene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	**893**	**72.3**	**141**
Freon 113	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Methyl Acetate	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Methyl Ethyl Ketone (2-Butanone)	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	**43.7**	10 U	**2.13 J**
Methyl Tert-Butyl Ether (MTBE)	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Methylcyclohexane	µg/L	--	**11.5**	5 U	5 U	5 U	5 U	5 U	**131**	**16.7**	**90.1**
Methylene Chloride	µg/L	--	10 U	10 U	10 U	10 U	10 U	10 U	20 U	20 U	10 U
Styrene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Tetrachloroethene (PCE)	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Toluene	µg/L	--	**1.78 J**	5 U	5 U	5 U	5 U	5 U	**31.8**	**5.47 J**	**5.4**
Trans-1,2-Dichloroethene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Trans-1,3-Dichloropropene	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Trichloroethene (TCE)	µg/L	22	5 U	**0.962 J**	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Trichlorofluoromethane	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Vinyl Chloride	µg/L	--	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	5 U
Xylenes, Total	µg/L	--	**10.6**	10 U	10 U	10 U	10 U	10 U	**716**	**112**	**47.9**

Notes:
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
B -- The analyte was detected in the associated method and/or calibration blank.
J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ -- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
µg/L Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening criteria

JM04
Puerto Rico
Data Summary Table
SWMU54 Benzene Groundwater Sampling Jan2010

Location			54MW04	54MW05	54MW06	54MW19	54MW20	54MW21	54MW22	54MW23	54MW24
Sample ID			JM04-54MW04-012810	JM04-54MW05-012610	JM04-54MW06-012810	JM04-54MW19-012510	JM04-54MW20-012510	JM04-54MW21-012710	JM04-54MW22-012710	JM04-54MW23-012610	JM04-54MW24-012710
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			1/28/2010	1/26/2010	1/28/2010	1/25/2010	1/25/2010	1/27/2010	1/27/2010	1/26/2010	1/27/2010
Analyte	**Units**	**Baker [SL*]**									
SW8260B (µg/L)											
1,1,1-Trichloroethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	µg/L	--	**2.89 J**	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-Chloropropane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (EDB)	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	µg/L	--	**2.05 J**	**3.54 J**	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
2-Hexanone	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Acetone	µg/L	--	25 U	25 U	500 UJ	25 U	50 U	25 UJ	25 U	25 U	25 UJ
Benzene	µg/L	550	5 U	**1.52 J**	**14200**	**45.2**	**208 J**	**15.2**	**20.7**	5 U	5 U
Bromochloromethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Bromodichloromethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Bromoform	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Bromomethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Carbon Disulfide	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Chlorobenzene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Chloroethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Chloroform	µg/L	--	**1.34 J**	5 U	**10.9 J**	5 U	10 U	5 U	**2.04 B**	5 U	5 U
Chloromethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Cis-1,2-Dichloroethylene	µg/L	--	**1.51 J**	**2.24 J**	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Cyclohexane	µg/L	--	**51.4**	**47.6**	**522**	**129**	**628**	**85 J**	**46.4**	**67.1**	5 U
Cymene	µg/L	--	**7.14**	**4.51 J**	100 U	**11.6**	**78.7 J**	**7.61**	**4.95 J**	**13.8**	5 U
Dibromochloromethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	µg/L	--	5 U	5 U	100 UJ	5 U	10 U	5 UJ	5 U	5 U	5 UJ
Ethyl Benzene	µg/L	--	**4.92 J**	**1.21 J**	**1300**	**43.5**	**503**	**27.4**	**1.2 J**	**8.11**	5 U
Freon 113	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Methyl Acetate	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Methyl Ethyl Ketone (2-Butanone)	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/L	--	5 U	5 U	100 U	**1.79 J**	10 U	5 U	5 U	5 U	5 U
Methyl Tert-Butyl Ether (MTBE)	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Methylcyclohexane	µg/L	--	**51.9**	**27.2**	**125**	**26.3**	**300 J**	**38.6**	**24.8**	**82.4**	5 U
Methylene Chloride	µg/L	--	10 U	10 U	200 U	10 U	20 U	10 U	10 U	10 U	10 U
Styrene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Toluene	µg/L	--	5 U	5 U	**1150**	**3.64 J**	**108 J**	**0.783 J**	5 U	5 U	5 U
Trans-1,2-Dichloroethene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	µg/L	22	**24.9**	**40.9**	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Vinyl Chloride	µg/L	--	5 U	5 U	100 U	5 U	10 U	5 U	5 U	5 U	5 U
Xylenes, Total	µg/L	--	**3.17 J**	10 U	**6020**	**37.6**	**737**	**17.3**	**10.1**	**2.92 J**	10 U

Notes:
Baker [SL*] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
B -- The analyte was detected in the associated method and/or calibration blank.
J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ -- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
µg/L Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening criteria

JM04
Puerto Rico
Data Summary Table
SWMU54 Benzene Groundwater Sampling Jan2010

Location			54MW25	54MW26	54MW27	54MW28
Sample ID			JM04-54MW25-012710	JM04-54MW26-012710	JM04-54MW27-012510	JM04-54MW28-012510
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			1/27/2010	1/27/2010	1/25/2010	1/25/2010
Analyte	**Units**	**Baker** [SL*]				
SW8260B (µg/L)						
1,1,1-Trichloroethane	µg/L	--	5 U	5 U	50 U	5 U
1,1,2,2-Tetrachloroethane	µg/L	--	5 U	5 U	50 U	5 U
1,1,2-Trichloroethane	µg/L	--	5 U	5 U	50 U	5 U
1,1-Dichloroethane	µg/L	--	5 U	5 U	50 U	5 U
1,1-Dichloroethene	µg/L	--	5 U	5 U	50 U	5 U
1,2,3-Trichlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
1,2,4-Trichlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
1,2-Dibromo-3-Chloropropane	µg/L	--	5 U	5 U	50 U	5 U
1,2-Dibromoethane (EDB)	µg/L	--	5 U	5 U	50 U	5 U
1,2-Dichlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
1,2-Dichloroethane	µg/L	--	5 U	5 U	50 U	5 U
1,2-Dichloropropane	µg/L	--	5 U	5 U	50 U	5 U
1,3-Dichlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
1,4-Dichlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
2-Hexanone	µg/L	--	5 U	5 U	50 U	5 U
Acetone	µg/L	--	25 U	25 U	250 U	**37.4**
Benzene	µg/L	550	5 U	5 U	**7410**	5 U
Bromochloromethane	µg/L	--	5 U	5 U	50 U	5 U
Bromodichloromethane	µg/L	--	5 U	5 U	50 U	5 U
Bromoform	µg/L	--	5 U	5 U	50 U	5 U
Bromomethane	µg/L	--	5 U	5 U	50 U	5 U
Carbon Disulfide	µg/L	--	5 U	5 U	50 U	5 U
Carbon Tetrachloride	µg/L	--	5 U	5 U	50 U	5 U
Chlorobenzene	µg/L	--	5 U	5 U	50 U	5 U
Chloroethane	µg/L	--	5 U	5 U	50 U	5 U
Chloroform	µg/L	--	5 U	5 U	50 U	5 U
Chloromethane	µg/L	--	5 U	5 U	50 U	5 U
Cis-1,2-Dichloroethylene	µg/L	--	5 U	5 U	50 U	5 U
Cis-1,3-Dichloropropene	µg/L	--	5 U	5 U	50 U	5 U
Cyclohexane	µg/L	--	5 U	5 U	**881**	**38.1**
Cymene	µg/L	--	5 U	5 U	**83.9**	**4.44 J**
Dibromochloromethane	µg/L	--	5 U	5 U	50 U	5 U
Dichlorodifluoromethane	µg/L	--	5 U	5 U	50 U	5 U
Ethyl Benzene	µg/L	--	5 U	5 U	**2110**	**3.12 J**
Freon 113	µg/L	--	5 U	5 U	50 U	5 U
Methyl Acetate	µg/L	--	5 U	5 U	50 U	5 U
Methyl Ethyl Ketone (2-Butanone)	µg/L	--	5 U	5 U	50 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/L	--	5 U	5 U	**9.27 J**	5 U
Methyl Tert-Butyl Ether (MTBE)	µg/L	--	**1.21 J**	5 U	50 U	5 U
Methylcyclohexane	µg/L	--	5 U	5 U	**148**	**14.7**
Methylene Chloride	µg/L	--	10 U	10 U	100 U	10 U
Styrene	µg/L	--	5 U	5 U	50 U	5 U
Tetrachloroethene (PCE)	µg/L	--	5 U	5 U	50 U	5 U
Toluene	µg/L	--	5 U	5 U	**757**	5 U
Trans-1,2-Dichloroethene	µg/L	--	5 U	5 U	50 U	5 U
Trans-1,3-Dichloropropene	µg/L	--	5 U	5 U	50 U	5 U
Trichloroethene (TCE)	µg/L	22	5 U	5 U	50 U	5 U
Trichlorofluoromethane	µg/L	--	5 U	5 U	50 U	5 U
Vinyl Chloride	µg/L	--	5 U	5 U	50 U	5 U
Xylenes, Total	µg/L	--	10 U	10 U	**7170**	**10.2**

Notes:
Baker [SL*] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
B -- The analyte was detected in the associated method and/or calibration blank.
J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ -- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
µg/L Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening criteria

NA Puerto Rico

PREPARED FOR:	NA Puerto Rico / SWMU 54 Benzene Groundwater Baseline Sampling 2010
FINAL REVIEWER/ INITIAL REVIEWER	Camden Robinson/ Associate Project Chemist/CH2M Hill
COPIES:	Tom Beisel /Project Manager/AGVIQ-CH2M HILL
DATE:	March 12, 2010
SUBJECT:	Quality Assessment for Samples January 25th, 2010 thru January 28th, 2010

This quality assurance memorandum is based upon a review of analytical data generated for the groundwater samples and the associated field quality control samples collected January 25th, 2010 thru January 28th, 2010 at the Naval Activity Puerto Rico in Ceiba, Puerto Rico. The samples were collected as a part of the SWMU 54 Benzene Groundwater Baseline sampling event conducted at the site. Table 1-1 presents a summary of the AGVIQ-CH2M HILL sample identification numbers, laboratory sample identification numbers, dates of collection, and the analyses performed.

Gulf Coast Analytical Laboratories, Inc. of Baton Rouge, Louisiana served as the laboratory for this SWMU 54 Benzene Groundwater Baseline sampling event. The samples were submitted for Volatile Organic Compounds (VOC) by SW-846 method 8260B.

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with AQVIQ-CH2M HILL Sampling Analysis Plan. All analysis results have been validated or qualified according to general guidance provided in the Department of Defense (DOD) Quality Systems Manual - Version 3 Final (based on NELAC Voted Version 5 – June 2003).

The findings of this quality assurance report are based upon the comprehensive review of the following results summaries reported according to the AGVIQ-CH2M HILL Level C (CLP-like data deliverables format): chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, bromofluorobenzene (BFB) mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, and electronic data deliverables.

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

Table 1-1
Summary Sample Data
NA Puerto Rico

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW27-012510		21001261801	01/25/2010	[1]
JM04-54MW28-012510		21001261802	01/25/2010	[1]
JM04-EB01-012510		21001261803	01/25/2010	[1]
JM04-54MW20-012510		21001261804	01/25/2010	[1]
JM04-54MW19-012510		21001261805	01/25/2010	[1]
JM04-510DW2-012510		21001261806	01/25/2010	[1]
JM04-FD01-012510	JM04-510DW2-012510	21001261807	01/25/2010	[1]
JM04-TB01-012510		21001261808	01/25/2010	[1]
JM04-510MW1-012610		21001271301	01/26/2010	[1]
JM04-510DW1-012610		21001271302	01/26/2010	[1]
JM04-510MW04-012610		21001271305	01/26/2010	[1]
JM04-54MW01-012610		21001271306	01/26/2010	[1]
JM04-54MW02-012610		21001271307	01/26/2010	[1]
JM04-54MW03-012610		21001271308	01/26/2010	[1]
JM04-FD02-012610	JM04-54MW03-012610	21001271309	01/26/2010	[1]
JM04-54MW05-012610		21001271310	01/26/2010	[1]

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW23-012610		21001271311	01/26/2010	[1]
JM04-EB02-012610		21001271312	01/26/2010	[1]
JM04-TB02-012610		21001271313	01/26/2010	[1]
JM04-54MW22-012710		21001281101	01/27/2010	[1]
JM04-54MW21-012710		21001281102	01/27/2010	[1]
JM04-54MW25-012710		21001281105	01/27/2010	[1]
JM04-54MW26-012710		21001281106	01/27/2010	[1]
JM04-510MW3-012710		21001281107	01/27/2010	[1]
JM04-54MW24-012710		21001281108	01/27/2010	[1]
JM04-FD03-012710	JM04-54MW24-012710	21001281109	01/27/2010	[1]
JM04-EB03-012710		21001281110	01/27/2010	[1]
JM04-TB03-012710		21001281111	01/27/2010	[1]
JM04-510MW2-012810		21001291201	01/28/2010	[1]
JM04-54MW04-012810		21001291202	01/28/2010	[1]
JM04-54MW06-012810		21001291203	01/28/2010	[1]
JM04-EB04-012810		21001291204	01/28/2010	[1]
JM04-TB04-012810		21001291205	01/28/2010	[1]

ANALYSES PERFORMED CODES:

[1] – Volatile Organic Compounds (VOC) by SW-846 method 8260B

General Data Qualifiers

As required by U.S. EPA protocols, all compounds, which were qualitatively identified at concentrations below their respective, reporting limits (RL) but above the method detection limit (MDL) have been qualified with "J" qualifiers on the data summary reports to indicate that they are quantitative estimates.

GROUNDWATER CLEANUP TARGET ACTION LEVEL REGULARTORY LIMITS

All samples collected and analyzed for the month of January 2010 for the volatile organic compounds – benzene and trichloroethene were less than the groundwater cleanup target level regulatory limits with the exception of the samples listed below:

Analyte (Volatile List)	Affected Sample	Sample Results (ug/l)	Groundwater Cleanup Target Levels (ug/l)
Benzene	JM04-54MW01-012610	653	550
Benzene	JM04-54MW06-012810	14200	550
Benzene	JM04-54MW27-012510	7410	550
Trichloroethene	JM04-54MW04-012810	24.9	22
Trichloroethene	JM04-54MW05-012610	40.9	22
Trichloroethene	JM04-54MW06-012810	1020	22

Organic Data Qualifiers

As a result of the second-source calibration standards exceeding criterion for volatile organic compounds acetone and dichlorodifluoromethane for the samples listed in the table below, the quantitation limits for these compounds should be considered qualitative estimates. Poor second-source recovery indicates a lack of accuracy between this standard and the associated initial calibration for the compounds listed. The quantitation limits for acetone and dichlorodifluoromethane for the samples listed below have been apprended with a "J" qualifier to indicate they are qualitative estimates. This should be noted when reviewing these samples for the quantitative absence of these compounds.

Compound	Affected Samples
Acetone	JM04-54MW21-012710, JM04-54MW24-012710, JM04-FD03-012710, JM04-510MW2-012810, and JM04-54MW06-012810
Dichlorodifluoromethane	JM04-54MW21-012710, JM04-54MW24-012710, JM04-FD03-012710, JM04-510MW2-012810, and JM04-54MW06-012810

The positive results reported for volatile organic compounds benzene, isopropylbenzene, methylcyclohexane, and toluene for sample JM04-54MW20-012510 are considered quantitative estimates and may be lower than reported. The surrogate compound recovery for 1,2-dichloroethane-d4 was reported above acceptance criteria during the analysis of this sample. The high recovery may be due to matrix interferences present in this sample. The positive results reported for volatile organic compounds benzene, isopropylbenzene, methylcyclohexane, and toluene for sample JM04-54MW20-012510 have been appended with a "J" qualifier on the data summary table to indicate that they are biased low quantitative estimates.

The positive result reported for cyclohexane for sample JM04-54MW21-012710 should be considered a biased low quantitative estimate and may be higher than reported. The associated recoveries for the client specific matrix spike (MS) and matrix spike duplicate (MSD) samples were below the established quality control (QC) limit for this compound. The biased low recoveries for this compound may indicate the possible presence of matrix interferences in samples of similar matrix. This has been indicated by appending a "J" qualifier next to the cyclohexane result for sample JM04-54MW21-0127in the data summary tables.

The positive results for chloroform reported in the samples listed below are considered quantitative estimates due to the levels at which the compounds were present in the associated method blank. This has been indicated in the data summary tables by placing a "B" qualifier next to the reported values associated with the method blank contamination.

Compound	Affected Samples
Chloroform	JM04-54MW22-012710 and JM04-54MW21-012710

The samples presented below were analyzed at dilutions for the analysis indicated. These dilutions were required to prevent saturation of the instrument, to allow quantitation of the compounds within the linear range of the calibration curve, to reduce the effects of the matrix on the target compounds. Positive results for compounds reported above the calibration range in the initial analysis have been reported from the diluted analyses. When possible, results and quantitation limits for all other compounds were reported from the initial analysis. Higher quantitation limits were reported for specific volatile organic compounds, which were not detected in the diluted sample. This should be noted when assessing these samples for the qualitative absence of specific volatile organic compounds.

Sample ID	Analysis	Dilution Factor
JM04-54MW27-012510	VOC	10X and 100X
JM04-54MW20-012510	VOC	2X and 20X
JM04-54MW01-012610	VOC	2X and 20X
JM04-54MW02-012610	VOC	2X and 20X
JM04-54MW03-012610	VOC	5X
JM04-FD02-012610	VOC	5X
JM04-54MW06-012810	VOC	20X and 200X

Samples JM04-510DW2-0125, JM04-54MW03-012610, and JM04-54MW24-012710 and their blind field duplicates samples JM04-FD01-012510, JM04-FD02-012610, and JM04-FD03-012710 were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met AGVIQ-CH2M HILL's blind duplicate precision criteria of 30% for groundwater samples relative percent difference (RPD) for the volatile organic compounds analyses.

Summary

The organic analyses were performed acceptably, but required qualifying statements. This analytical quality assurance report has identified the aspects of the data, which required qualification. These qualifiers are noted on the attached analytical sample summary reports. A support documentation package has been prepared for this quality assurance review and is filed with the NA Puerto Rico / SWMU 54 Benzene Groundwater Baseline Sampling 2010 project file.

Attachment A

VALID QUALIFIERS

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

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
K	Second source %D was noncompliant.	Second source %D was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
MB	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) blank or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or high RPD.	MS/MSD recovery was poor or high RPD.
G	Result is over the calibration range. No other acceptable result was provided.	Result is over the calibration range. Not other acceptable result was provided.
E	Not applicable.	Lab duplicate RPD showed poor agreement.
Z	Field duplicate RPD showed poor agreement.	Field duplicate RPD showed poor agreement
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
TN	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive—reported compound was not present.	Not applicable.
-	False negative—compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Confirmation analysis RPD exceeded 40%.	Post Digestion Spike recovery was not within control limits.
T/D	Not applicable.	Total metals results were less than the dissolved metals result.
SD	Not applicable.	Seed correction factor was below the acceptable limit.
M	Results should be considered estimated due to matrix effects caused by saturation of non-target analytes.	Not applicable
OT	Results should be considered estimated due to sample was analyzed from jar.	Not applicable
LC	Laboratory contamination	Not applicable
ST	Sample Temperature non-conformance	Sample Temperature non-conformance

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW27-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261801

Level: (low/med)

Lab File ID: 2100131P/a1636

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1145

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0226

Soil Extract Volume: (µL)

Dilution Factor: 10 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	50.0	U	0.432	50.0
79-34-5	1,1,2,2-Tetrachloroethane	50.0	U	1.05	50.0
79-00-5	1,1,2-Trichloroethane	50.0	U	0.547	50.0
75-34-3	1,1-Dichloroethane	50.0	U	0.346	50.0
75-35-4	1,1-Dichloroethene	50.0	U	1.19	50.0
87-61-6	1,2,3-Trichlorobenzene	50.0	U	0.688	50.0
120-82-1	1,2,4-Trichlorobenzene	50.0	U	1.07	50.0
96-12-8	1,2-Dibromo-3-chloropropane	50.0	U	1.29	50.0
106-93-4	1,2-Dibromoethane	50.0	U	0.651	50.0
95-50-1	1,2-Dichlorobenzene	50.0	U	1.02	50.0
107-06-2	1,2-Dichloroethane	50.0	U	0.640	50.0
78-87-5	1,2-Dichloropropane	50.0	U	0.559	50.0
541-73-1	1,3-Dichlorobenzene	50.0	U	0.937	50.0
106-46-7	1,4-Dichlorobenzene	50.0	U	1.29	50.0
78-93-3	2-Butanone	50.0	U	4.05	50.0
591-78-6	2-Hexanone	50.0	U	0.661	50.0
108-10-1	4-Methyl-2-pentanone	9.27	J	1.23	50.0
67-64-1	Acetone	250	U	7.91	250
74-97-5	Bromochloromethane	50.0	U	1.37	50.0
75-27-4	Bromodichloromethane	50.0	U	0.574	50.0
75-25-2	Bromoform	50.0	U	1.98	50.0
74-83-9	Bromomethane	50.0	U	1.41	50.0
75-15-0	Carbon disulfide	50.0	U	1.79	50.0
56-23-5	Carbon tetrachloride	50.0	U	0.825	50.0
108-90-7	Chlorobenzene	50.0	U	0.715	50.0
75-00-3	Chloroethane	50.0	U	1.40	50.0
67-66-3	Chloroform	50.0	U	2.87	50.0
100-41-4	Ethylbenzene	2210	~~E~~ R	0.522	50.0
74-87-3	Chloromethane	50.0	U	1.16	50.0
110-82-7	Cyclohexane	881		0.782	50.0
124-48-1	Dibromochloromethane	50.0	U	0.626	50.0

D

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW27-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261801

Level: (low/med)

Lab File ID: 2100131P/a1636

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1145

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0226

Soil Extract Volume: (µL)

Dilution Factor: 10 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
75-71-8	Dichlorodifluoromethane	50.0	U	0.608	50.0	
10061-01-5	cis-1,3-Dichloropropene	50.0	U	0.315	50.0	
10061-02-6	trans-1,3-Dichloropropene	50.0	U	0.561	50.0	
98-82-8	Isopropylbenzene (Cumene)	83.9		0.708	50.0	
79-20-9	Methyl Acetate	50.0	U	3.73	50.0	
108-87-2	Methylcyclohexane	148		0.456	50.0	
75-09-2	Methylene chloride	100	U	1.42	100	
100-42-5	Styrene	50.0	U	0.453	50.0	
127-18-4	Tetrachloroethene	50.0	U	0.998	50.0	
108-88-3	Toluene	757		0.820	50.0	
79-01-6	Trichloroethene	50.0	U	0.974	50.0	
75-69-4	Trichlorofluoromethane	50.0	U	0.720	50.0	
76-13-1	Trichlorotrifluoroethane	50.0	U	0.682	50.0	
75-01-4	Vinyl chloride	50.0	U	0.767	50.0	
156-59-2	cis-1,2-Dichloroethene	50.0	U	1.03	50.0	
1634-04-4	tert-Butyl methyl ether (MTBE)	50.0	U	0.770	50.0	
156-60-5	trans-1,2-Dichloroethene	50.0	U	0.955	50.0	
1330-20-7	Xylene (total)	6480	~~E~~ R	3.34	100	D
71-43-2	Benzene	6350	~~E~~ R	0.747	50.0	D

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW27-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261801

Level: (low/med)

Lab File ID: 2100131P/a1617

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1145

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 1828

Soil Extract Volume: (µL)

Dilution Factor: 100 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	7410		7.47	500
100-41-4	Ethylbenzene	2110		5.22	500
1330-20-7	Xylene (total)	7170		33.4	1000

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW28-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261802

Level: (low/med)

Lab File ID: 2100128p/a1500

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1100

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2010

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	37.4		0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	38.1		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW28-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261802

Level: (low/med)

Lab File ID: 2100128p/a1500

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1100

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2010

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	3.12	J	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	4.44	J	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	14.7		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.2		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261803

Level: (low/med)

Lab File ID: 2100128p/a1501

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2034

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261803

Level: (low/med)

Lab File ID: 2100128p/a1501

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2034

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW20-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001261804

Level: (low/med) Lab File ID: 2100128p/a1507

% Moisture: not dec. Date Collected: 01/25/10 Time: 1350

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/26/10

Instrument ID: MSV0 Date Analyzed: 01/28/10 Time: 2304

Soil Extract Volume: (µL) Dilution Factor: 2 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-55-6	1,1,1-Trichloroethane	10.0	U	0.086	10.0	
79-34-5	1,1,2,2-Tetrachloroethane	10.0	U	0.210	10.0	
79-00-5	1,1,2-Trichloroethane	10.0	U	0.109	10.0	
75-34-3	1,1-Dichloroethane	10.0	U	0.069	10.0	
75-35-4	1,1-Dichloroethene	10.0	U	0.238	10.0	
87-61-6	1,2,3-Trichlorobenzene	10.0	U	0.138	10.0	
120-82-1	1,2,4-Trichlorobenzene	10.0	U	0.214	10.0	
96-12-8	1,2-Dibromo-3-chloropropane	10.0	U	0.258	10.0	
106-93-4	1,2-Dibromoethane	10.0	U	0.130	10.0	
95-50-1	1,2-Dichlorobenzene	10.0	U	0.204	10.0	
107-06-2	1,2-Dichloroethane	10.0	U	0.128	10.0	
78-87-5	1,2-Dichloropropane	10.0	U	0.112	10.0	
541-73-1	1,3-Dichlorobenzene	10.0	U	0.187	10.0	
106-46-7	1,4-Dichlorobenzene	10.0	U	0.258	10.0	
78-93-3	2-Butanone	10.0	U	0.810	10.0	
591-78-6	2-Hexanone	10.0	U	0.132	10.0	
108-10-1	4-Methyl-2-pentanone	10.0	U	0.246	10.0	
67-64-1	Acetone	50.0	U	1.58	50.0	
71-43-2	Benzene	208	J	0.149	10.0	S
74-97-5	Bromochloromethane	10.0	U	0.274	10.0	
75-27-4	Bromodichloromethane	10.0	U	0.115	10.0	
75-25-2	Bromoform	10.0	U	0.396	10.0	
74-83-9	Bromomethane	10.0	U	0.282	10.0	
75-15-0	Carbon disulfide	10.0	U	0.358	10.0	
56-23-5	Carbon tetrachloride	10.0	U	0.165	10.0	
108-90-7	Chlorobenzene	10.0	U	0.143	10.0	
75-00-3	Chloroethane	10.0	U	0.280	10.0	
100-41-4	Ethylbenzene	872	ER	0.104	10.0	D
67-66-3	Chloroform	10.0	U	0.574	10.0	
74-87-3	Chloromethane	10.0	U	0.232	10.0	
124-48-1	Dibromochloromethane	10.0	U	0.065	10.0	

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QUIMICO LICENCIADO

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW20-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261804

Level: (low/med)

Lab File ID: 2100128p/a1507

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1350

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2304

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
75-71-8	Dichlorodifluoromethane	10.0	U	0.122	10.0	
10061-01-5	cis-1,3-Dichloropropene	10.0	U	0.063	10.0	
10061-02-6	trans-1,3-Dichloropropene	10.0	U	0.112	10.0	
98-82-8	Isopropylbenzene (Cumene)	78.7	J	0.142	10.0	S
79-20-9	Methyl Acetate	10.0	U	0.746	10.0	
108-87-2	Methylcyclohexane	300	J	0.091	10.0	S
75-09-2	Methylene chloride	20.0	U	0.284	20.0	
100-42-5	Styrene	10.0	U	0.091	10.0	
127-18-4	Tetrachloroethene	10.0	U	0.200	10.0	
108-88-3	Toluene	108	J	0.164	10.0	S
79-01-6	Trichloroethene	10.0	U	0.195	10.0	
75-69-4	Trichlorofluoromethane	10.0	U	0.144	10.0	
76-13-1	Trichlorotrifluoroethane	10.0	U	0.136	10.0	
75-01-4	Vinyl chloride	10.0	U	0.153	10.0	
156-59-2	cis-1,2-Dichloroethene	10.0	U	0.206	10.0	
1634-04-4	tert-Butyl methyl ether (MTBE)	10.0	U	0.154	10.0	
156-60-5	trans-1,2-Dichloroethene	10.0	U	0.191	10.0	
1330-20-7	Xylene (total)	1260	~~E~~ R	0.668	20.0	D
110-82-7	Cyclohexane	940	~~E~~ R	0.144	10.0	D

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW20-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261804

Level: (low/med)

Lab File ID: 2100128p/a1502

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1350

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2059

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
110-82-7	Cyclohexane	628		1.44	100
100-41-4	Ethylbenzene	503		1.04	100
1330-20-7	Xylene (total)	737		6.68	200

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW19-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261805

Level: (low/med)

Lab File ID: 2100131P/a1631

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1500

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0018

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	1.79	J	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	45.2		0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	129		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW19-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261805

Level: (low/med)

Lab File ID: 2100131P/a1631

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1500

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0018

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	43.5		0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	11.6		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	26.3		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	3.64	J	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	37.6		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510DW2-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001261806

Level: (low/med) Lab File ID: 2100128p/a1504

% Moisture: not dec. Date Collected: 01/25/10 Time: 1615

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/26/10

Instrument ID: MSV0 Date Analyzed: 01/28/10 Time: 2148

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	3.33	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.072	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510DW2-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261806

Level: (low/med)

Lab File ID: 2100128p/a1504

% Moisture: not dec.

Date Collected: 01/25/10 Time: 1615

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2148

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	0.962	J	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261807

Level: (low/med)

Lab File ID: 2100128p/a1505

% Moisture: not dec.

Date Collected: 01/25/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2214

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	3.73	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261807

Level: (low/med)

Lab File ID: 2100128p/a1505

% Moisture: not dec.

Date Collected: 01/25/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2214

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	1.13	J	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261808

Level: (low/med)

Lab File ID: 2100128p/a1506

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2238

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	[illegible]	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-012510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012618

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001261808

Level: (low/med)

Lab File ID: 2100128p/a1506

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/26/10

Instrument ID: MSV0

Date Analyzed: 01/28/10 Time: 2238

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425551

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
A 1158301
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW1-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271301

Level: (low/med)

Lab File ID: 2100131P/a1622

% Moisture: not dec.

Date Collected: 01/26/10 Time: 0920

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2032

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	2.65	J	[illegible]	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1013
CERTIFICADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW1-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271301

Level: (low/med)

Lab File ID: 2100131P/a1622

% Moisture: not dec.

Date Collected: 01/26/10 Time: 0920

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2032

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510DW1-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271302

Level: (low/med)

Lab File ID: 2100202/a1718

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1015

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1406

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	21.8		0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	50.7		[illegible]	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510DW1-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271302

Level: (low/med)

Lab File ID: 2100202/a1718

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1015

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1406

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	6.25		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	11.5		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	1.78	J	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.6		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

C.A

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW04-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271305

Level: (low/med)

Lab File ID: 2100131P/a1623

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2057

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

C.L

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW04-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271305

Level: (low/med)

Lab File ID: 2100131P/a1623

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2057

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW01-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271306

Level: (low/med)

Lab File ID: 2100131P/a1635

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1235

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0201

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	10.0	U	0.086	10.0
79-34-5	1,1,2,2-Tetrachloroethane	10.0	U	0.210	10.0
79-00-5	1,1,2-Trichloroethane	10.0	U	0.109	10.0
75-34-3	1,1-Dichloroethane	10.0	U	0.069	10.0
75-35-4	1,1-Dichloroethene	10.0	U	0.238	10.0
87-61-6	1,2,3-Trichlorobenzene	10.0	U	0.138	10.0
120-82-1	1,2,4-Trichlorobenzene	10.0	U	0.214	10.0
96-12-8	1,2-Dibromo-3-chloropropane	10.0	U	0.258	10.0
106-93-4	1,2-Dibromoethane	10.0	U	0.130	10.0
95-50-1	1,2-Dichlorobenzene	10.0	U	0.204	10.0
107-06-2	1,2-Dichloroethane	10.0	U	0.128	10.0
78-87-5	1,2-Dichloropropane	10.0	U	0.112	10.0
541-73-1	1,3-Dichlorobenzene	10.0	U	0.187	10.0
106-46-7	1,4-Dichlorobenzene	10.0	U	0.258	10.0
78-93-3	2-Butanone	10.0	U	0.810	10.0
591-78-6	2-Hexanone	10.0	U	0.132	10.0
108-10-1	4-Methyl-2-pentanone	43.7		0.246	10.0
67-64-1	Acetone	50.0	U	1.58	50.0
74-97-5	Bromochloromethane	10.0	U	0.274	10.0
75-27-4	Bromodichloromethane	10.0	U	0.115	10.0
75-25-2	Bromoform	10.0	U	0.396	10.0
74-83-9	Bromomethane	10.0	U	0.282	10.0
75-15-0	Carbon disulfide	10.0	U	0.358	10.0
56-23-5	Carbon tetrachloride	10.0	U	0.165	10.0
108-90-7	Chlorobenzene	10.0	U	0.143	10.0
75-00-3	Chloroethane	10.0	U	0.280	10.0
67-66-3	Chloroform	10.0	U	0.574	10.0
100-41-4	Ethylbenzene	834	E R	0.104	10.0 D
74-87-3	Chloromethane	10.0	U	0.232	10.0
124-48-1	Dibromochloromethane	10.0	U	0.065	10.0
75-71-8	Dichlorodifluoromethane	10.0	U	0.122	10.0

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW01-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271306

Level: (low/med)

Lab File ID: 2100131P/a1635

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1235

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0201

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
10061-01-5	cis-1,3-Dichloropropene	10.0	U	0.063	10.0	
10061-02-6	trans-1,3-Dichloropropene	10.0	U	0.112	10.0	
98-82-8	Isopropylbenzene (Cumene)	78.2		0.142	10.0	
79-20-9	Methyl Acetate	10.0	U	0.746	10.0	
108-87-2	Methylcyclohexane	131		0.091	10.0	
75-09-2	Methylene chloride	20.0	U	0.284	20.0	
100-42-5	Styrene	10.0	U	0.091	10.0	
127-18-4	Tetrachloroethene	10.0	U	0.200	10.0	
108-88-3	Toluene	31.8		0.164	10.0	
79-01-6	Trichloroethene	10.0	U	0.195	10.0	
75-69-4	Trichlorofluoromethane	10.0	U	0.144	10.0	
76-13-1	Trichlorotrifluoroethane	10.0	U	0.136	10.0	
75-01-4	Vinyl chloride	10.0	U	0.153	10.0	
156-59-2	cis-1,2-Dichloroethene	10.0	U	0.206	10.0	
1634-04-4	tert-Butyl methyl ether (MTBE)	10.0	U	0.154	10.0	
156-60-5	trans-1,2-Dichloroethene	10.0	U	0.191	10.0	
1330-20-7	Xylene (total)	743	~~E~~ R	0.668	20.0	D
110-82-7	Cyclohexane	668	~~E~~ R	0.144	10.0	D
71-43-2	Benzene	607	~~E~~ R	0.149	10.0	D

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW01-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271306

Level: (low/med)

Lab File ID: 2100131P/a1627

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1235

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2236

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	653		1.49	100
110-82-7	Cyclohexane	751		1.44	100
100-41-4	Ethylbenzene	893		1.04	100
1330-20-7	Xylene (total)	716		6.68	200

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LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271307

Level: (low/med)

Lab File ID: 2100131P/a1632

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1320

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0044

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	10.0	U	0.086	10.0
79-34-5	1,1,2,2-Tetrachloroethane	10.0	U	0.210	10.0
79-00-5	1,1,2-Trichloroethane	10.0	U	0.109	10.0
75-34-3	1,1-Dichloroethane	10.0	U	0.069	10.0
75-35-4	1,1-Dichloroethene	10.0	U	0.238	10.0
87-61-6	1,2,3-Trichlorobenzene	10.0	U	0.138	10.0
120-82-1	1,2,4-Trichlorobenzene	10.0	U	0.214	10.0
96-12-8	1,2-Dibromo-3-chloropropane	10.0	U	0.258	10.0
106-93-4	1,2-Dibromoethane	10.0	U	0.130	10.0
95-50-1	1,2-Dichlorobenzene	10.0	U	0.204	10.0
107-06-2	1,2-Dichloroethane	8.40	J	0.128	10.0
78-87-5	1,2-Dichloropropane	10.0	U	0.112	10.0
541-73-1	1,3-Dichlorobenzene	10.0	U	0.187	10.0
106-46-7	1,4-Dichlorobenzene	10.0	U	0.258	10.0
78-93-3	2-Butanone	10.0	U	0.810	10.0
591-78-6	2-Hexanone	10.0	U	0.132	10.0
108-10-1	4-Methyl-2-pentanone	10.0	U	0.246	10.0
67-64-1	Acetone	50.0	U	1.58	50.0
74-97-5	Bromochloromethane	10.0	U	0.274	10.0
75-27-4	Bromodichloromethane	10.0	U	0.115	10.0
75-25-2	Bromoform	10.0	U	0.396	10.0
74-83-9	Bromomethane	10.0	U	0.282	10.0
75-15-0	Carbon disulfide	10.0	U	0.358	10.0
56-23-5	Carbon tetrachloride	10.0	U	0.165	10.0
108-90-7	Chlorobenzene	10.0	U	0.143	10.0
75-00-3	Chloroethane	10.0	U	0.280	10.0
67-66-3	Chloroform	10.0	U	0.574	10.0
74-87-3	Chloromethane	10.0	U	0.232	10.0
110-82-7	Cyclohexane	44.6		0.144	10.0
124-48-1	Dibromochloromethane	10.0	U	0.065	10.0
75-71-8	Dichlorodifluoromethane	10.0	U	0.122	10.0

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271307

Level: (low/med)

Lab File ID: 2100131P/a1632

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1320

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0044

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
10061-01-5	cis-1,3-Dichloropropene	10.0	U	0.063	10.0
10061-02-6	trans-1,3-Dichloropropene	10.0	U	0.112	10.0
100-41-4	Ethylbenzene	72.3		0.104	10.0
98-82-8	Isopropylbenzene (Cumene)	8.88	J	0.142	10.0
79-20-9	Methyl Acetate	10.0	U	0.746	10.0
108-87-2	Methylcyclohexane	16.7		0.091	10.0
75-09-2	Methylene chloride	20.0	U	0.284	20.0
100-42-5	Styrene	10.0	U	0.091	10.0
127-18-4	Tetrachloroethene	10.0	U	0.200	10.0
108-88-3	Toluene	5.47	J	0.164	10.0
79-01-6	Trichloroethene	10.0	U	0.195	10.0
75-69-4	Trichlorofluoromethane	10.0	U	0.144	10.0
76-13-1	Trichlorotrifluoroethane	10.0	U	0.136	10.0
75-01-4	Vinyl chloride	10.0	U	0.153	10.0
1330-20-7	Xylene (total)	112		0.668	20.0
156-59-2	cis-1,2-Dichloroethene	10.0	U	0.206	10.0
1634-04-4	tert-Butyl methyl ether (MTBE)	10.0	U	0.154	10.0
156-60-5	trans-1,2-Dichloroethene	10.0	U	0.191	10.0
71-43-2	Benzene	493	~~E~~ R	0.149	10.0

D

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271307

Level: (low/med)

Lab File ID: 2100131P/a1626

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1320

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2211

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	500		1.49	100

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271308

Level: (low/med)

Lab File ID: 2100131P/a1633

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0110

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	4.06	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	2.13	J	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	150		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271308

Level: (low/med)

Lab File ID: 2100131P/a1633

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0110

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	141		0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	21.4		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	90.1		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.40		0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	47.9		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00
71-43-2	Benzene	331	~~E~~ R	0.075	5.00

D

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW03-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271308

Level: (low/med)

Lab File ID: 2100131P/a1628

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2301

Soil Extract Volume: (µL)

Dilution Factor: 5 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	357		0.374	25.0

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271309

Level: (low/med)

Lab File ID: 2100131P/a1634

% Moisture: not dec.

Date Collected: 01/26/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0135

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	3.80	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	2.05	J	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	160		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271309

Level: (low/med)

Lab File ID: 2100131P/a1634

% Moisture: not dec.

Date Collected: 01/26/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/01/10 Time: 0135

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	136		0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	21.4		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	88.2		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.46		0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	47.7		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00
71-43-2	Benzene	319	~~E~~ R	0.075	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001271309

Level: (low/med) Lab File ID: 2100131P/a1629

% Moisture: not dec. Date Collected: 01/26/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/27/10

Instrument ID: MSV0 Date Analyzed: 01/31/10 Time: 2326

Soil Extract Volume: (µL) Dilution Factor: 5 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	350		0.374	25.0

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW05-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001271310

Level: (low/med) Lab File ID: 2100131P/a1624

% Moisture: not dec. Date Collected: 01/26/10 Time: 1525

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/27/10

Instrument ID: MSV0 Date Analyzed: 01/31/10 Time: 2122

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	3.54	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	1.52	J	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	47.6		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW05-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271310

Level: (low/med)

Lab File ID: 2100131P/a1624

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1525

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2122

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	1.21	J	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	4.51	J	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	27.2		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	40.9		0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	2.24	J	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW23-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271311

Level: (low/med)

Lab File ID: 2100131P/a1625

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1615

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 01/31/10 Time: 2146

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	67.1		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW23-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001271311

Level: (low/med) Lab File ID: 2100131P/a1625

% Moisture: not dec. Date Collected: 01/26/10 Time: 1615

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/27/10

Instrument ID: MSV0 Date Analyzed: 01/31/10 Time: 2146

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425688

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	8.11		0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	13.8		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	82.4		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	2.92	J	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001271312

Level: (low/med) Lab File ID: 2100202/a1719

% Moisture: not dec. Date Collected: 01/26/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/27/10

Instrument ID: MSV0 Date Analyzed: 02/02/10 Time: 1430

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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ESTADO LIBRE ASOCIADO DE PUERTO RICO
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QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271312

Level: (low/med)

Lab File ID: 2100202/a1719

% Moisture: not dec.

Date Collected: 01/26/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1430

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001271313

Level: (low/med) Lab File ID: 2100202/a1723

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/27/10

Instrument ID: MSV0 Date Analyzed: 02/02/10 Time: 1610

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB02-012610

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012713

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001271313

Level: (low/med)

Lab File ID: 2100202/a1723

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/27/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1610

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW22-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281101

Level: (low/med) Lab File ID: 2100202/a1724

% Moisture: not dec. Date Collected: 01/27/10 Time: 0915

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/02/10 Time: 1633

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00	
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00	
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00	
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00	
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00	
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00	
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00	
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00	
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00	
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00	
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00	
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00	
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00	
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00	
78-93-3	2-Butanone	5.00	U	0.405	5.00	
591-78-6	2-Hexanone	5.00	U	0.066	5.00	
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00	
67-64-1	Acetone	25.0	U	0.791	25.0	
71-43-2	Benzene	20.7		0.075	5.00	
74-97-5	Bromochloromethane	5.00	U	0.137	5.00	
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00	
75-25-2	Bromoform	5.00	U	0.198	5.00	
74-83-9	Bromomethane	5.00	U	0.141	5.00	
75-15-0	Carbon disulfide	5.00	U	0.179	5.00	
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00	
108-90-7	Chlorobenzene	5.00	U	0.072	5.00	
75-00-3	Chloroethane	5.00	U	0.140	5.00	
67-66-3	Chloroform	2.04	~~J~~ B	0.287	5.00	mB
74-87-3	Chloromethane	5.00	U	0.116	5.00	
110-82-7	Cyclohexane	46.4		0.072	5.00	
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW22-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281101

Level: (low/med)

Lab File ID: 2100202/a1724

% Moisture: not dec.

Date Collected: 01/27/10 Time: 0915

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1633

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	1.20	J	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	4.95	J	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	24.8		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.1		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW21-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281102

Level: (low/med)

Lab File ID: 2100203/a1777

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1015

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1758

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00	
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00	
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00	
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00	
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00	
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00	
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00	
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00	
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00	
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00	
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00	
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00	
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00	
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00	
78-93-3	2-Butanone	5.00	U	0.405	5.00	
591-78-6	2-Hexanone	5.00	U	0.066	5.00	
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00	
67-64-1	Acetone	25.0	U J	0.791	25.0	K
71-43-2	Benzene	15.2		0.075	5.00	
74-97-5	Bromochloromethane	5.00	U	0.137	5.00	
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00	
75-25-2	Bromoform	5.00	U	0.198	5.00	
74-83-9	Bromomethane	5.00	U	0.141	5.00	
75-15-0	Carbon disulfide	5.00	U	0.179	5.00	
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00	
108-90-7	Chlorobenzene	5.00	U	0.072	5.00	
75-00-3	Chloroethane	5.00	U	0.140	5.00	
67-66-3	Chloroform	5.00	U	0.287	5.00	
74-87-3	Chloromethane	5.00	U	0.116	5.00	
110-82-7	Cyclohexane	85.0	J	0.072	5.00	Q
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW21-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281102

Level: (low/med)

Lab File ID: 2100203/a1777

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1015

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1758

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U J	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	27.4		0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	7.61		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	38.6		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	0.783	J	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	17.3		0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW25-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281105

Level: (low/med) Lab File ID: 2100202/a1725

% Moisture: not dec. Date Collected: 01/27/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/02/10 Time: 1656

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW25-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281105

Level: (low/med)

Lab File ID: 2100202/a1725

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1656

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	1.21	J	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1613
QUIMICO LICENCIADO

FORM I VOA

C-2

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW26-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281106

Level: (low/med) Lab File ID: 2100202/a1726

% Moisture: not dec. Date Collected: 01/27/10 Time: 1230

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/02/10 Time: 1720

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425810

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW26-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281106

Level: (low/med)

Lab File ID: 2100202/a1726

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1230

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1720

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW3-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281107

Level: (low/med)

Lab File ID: 2100202/a1727

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1345

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1744

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW3-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281107

Level: (low/med)

Lab File ID: 2100202/a1727

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1345

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/02/10 Time: 1744

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425810

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW24-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281108

Level: (low/med)

Lab File ID: 2100203/a1778

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1600

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1822

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U J	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

K

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1013
QUIMICO(A) LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW24-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281108

Level: (low/med)

Lab File ID: 2100203/a1778

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1600

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1822

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U J	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

K

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1313
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281109

Level: (low/med) Lab File ID: 2100203/a1779

% Moisture: not dec. Date Collected: 01/27/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/03/10 Time: 1848

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00	
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00	
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00	
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00	
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00	
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00	
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00	
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00	
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00	
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00	
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00	
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00	
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00	
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00	
78-93-3	2-Butanone	5.00	U	0.405	5.00	
591-78-6	2-Hexanone	5.00	U	0.066	5.00	
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00	
67-64-1	Acetone	25.0	U J	0.791	25.0	K
71-43-2	Benzene	5.00	U	0.075	5.00	
74-97-5	Bromochloromethane	5.00	U	0.137	5.00	
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00	
75-25-2	Bromoform	5.00	U	0.198	5.00	
74-83-9	Bromomethane	5.00	U	0.141	5.00	
75-15-0	Carbon disulfide	5.00	U	0.179	5.00	
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00	
108-90-7	Chlorobenzene	5.00	U	0.072	5.00	
75-00-3	Chloroethane	5.00	U	0.140	5.00	
67-66-3	Chloroform	5.00	U	0.287	5.00	
74-87-3	Chloromethane	5.00	U	0.116	5.00	
110-82-7	Cyclohexane	5.00	U	0.072	5.00	
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00	

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281109

Level: (low/med)

Lab File ID: 2100203/a1779

% Moisture: not dec.

Date Collected: 01/27/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1848

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U J	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281110

Level: (low/med) Lab File ID: 2100203/a1780

% Moisture: not dec. Date Collected: 01/27/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/03/10 Time: 1915

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	21.6	J	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281110

Level: (low/med)

Lab File ID: 2100203/a1780

% Moisture: not dec.

Date Collected: 01/27/10 Time: 1630

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1915

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001281111

Level: (low/med) Lab File ID: 2100203/a1781

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/28/10

Instrument ID: MSV0 Date Analyzed: 02/03/10 Time: 1941

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

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LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB03-012710

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012811

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001281111

Level: (low/med)

Lab File ID: 2100203/a1781

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/28/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 1941

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
LIC. #
1158303
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW2-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291201

Level: (low/med)

Lab File ID: 2100203/a1785

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1025

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 2127

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U J	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-510MW2-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291201

Level: (low/med)

Lab File ID: 2100203/a1785

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1025

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 2127

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U J	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

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FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291202

Level: (low/med)

Lab File ID: 2100204p/a1832

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 1851

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	2.89	J	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	2.05	J	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	1.34	J	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	51.4		0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291202

Level: (low/med)

Lab File ID: 2100204p/a1832

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 1851

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	4.92	J	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	7.14		0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	51.9		0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	24.9		0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	3.17	J	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	1.51	J	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW06-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001291203

Level: (low/med) Lab File ID: 2100204p/a1835

% Moisture: not dec. Date Collected: 01/28/10 Time: 1340

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/29/10

Instrument ID: MSV0 Date Analyzed: 02/04/10 Time: 2009

Soil Extract Volume: (µL) Dilution Factor: 20 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-55-6	1,1,1-Trichloroethane	100	U	0.864	100	
79-34-5	1,1,2,2-Tetrachloroethane	100	U	2.10	100	
79-00-5	1,1,2-Trichloroethane	100	U	1.09	100	
75-34-3	1,1-Dichloroethane	100	U	0.692	100	
75-35-4	1,1-Dichloroethene	100	U	2.38	100	
87-61-6	1,2,3-Trichlorobenzene	100	U	1.38	100	
120-82-1	1,2,4-Trichlorobenzene	100	U	2.14	100	
96-12-8	1,2-Dibromo-3-chloropropane	100	U	2.58	100	
106-93-4	1,2-Dibromoethane	100	U	1.30	100	
95-50-1	1,2-Dichlorobenzene	100	U	2.04	100	
107-06-2	1,2-Dichloroethane	100	U	1.28	100	
78-87-5	1,2-Dichloropropane	100	U	1.12	100	
541-73-1	1,3-Dichlorobenzene	100	U	1.87	100	
106-46-7	1,4-Dichlorobenzene	100	U	2.58	100	
78-93-3	2-Butanone	100	U	8.10	100	
591-78-6	2-Hexanone	100	U	1.32	100	
108-10-1	4-Methyl-2-pentanone	100	U	2.46	100	
67-64-1	Acetone	500	U J	15.8	500	K
74-97-5	Bromochloromethane	100	U	2.74	100	
75-27-4	Bromodichloromethane	100	U	1.15	100	
75-25-2	Bromoform	100	U	3.96	100	
74-83-9	Bromomethane	100	U	2.82	100	
75-15-0	Carbon disulfide	100	U	3.58	100	
56-23-5	Carbon tetrachloride	100	U	1.65	100	
108-90-7	Chlorobenzene	100	U	1.43	100	
75-00-3	Chloroethane	100	U	2.80	100	
67-66-3	Chloroform	10.9	J	5.74	100	
74-87-3	Chloromethane	100	U	2.32	100	
110-82-7	Cyclohexane	522		1.44	100	
124-48-1	Dibromochloromethane	100	U	0.652	100	
75-71-8	Dichlorodifluoromethane	100	U J	1.22	100	K

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW06-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291203

Level: (low/med)

Lab File ID: 2100204p/a1835

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1340

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 2009

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
10061-01-5	cis-1,3-Dichloropropene	100	U	0.630	100
10061-02-6	trans-1,3-Dichloropropene	100	U	1.12	100
100-41-4	Ethylbenzene	1300		1.04	100
98-82-8	Isopropylbenzene (Cumene)	100	U	1.42	100
79-20-9	Methyl Acetate	100	U	7.46	100
108-87-2	Methylcyclohexane	125		0.912	100
75-09-2	Methylene chloride	200	U	2.84	200
100-42-5	Styrene	100	U	0.906	100
127-18-4	Tetrachloroethene	100	U	2.00	100
108-88-3	Toluene	1150		1.64	100
79-01-6	Trichloroethene	100	U	1.95	100
75-69-4	Trichlorofluoromethane	100	U	1.44	100
76-13-1	Trichlorotrifluoroethane	100	U	1.36	100
75-01-4	Vinyl chloride	100	U	1.53	100
1330-20-7	Xylene (total)	6020		6.68	200
156-59-2	cis-1,2-Dichloroethene	100	U	2.06	100
1634-04-4	tert-Butyl methyl ether (MTBE)	100	U	1.54	100
156-60-5	trans-1,2-Dichloroethene	100	U	1.91	100
71-43-2	Benzene	9770	~~E~~ R	1.49	100

DL

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW06-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291203

Level: (low/med)

Lab File ID: 2100203/a1786

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1340

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/03/10 Time: 2154

Soil Extract Volume: (µL)

Dilution Factor: 200 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425890

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	14200		14.9	1000

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291204

Level: (low/med)

Lab File ID: 2100204p/a1833

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 1917

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	8.76	J	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

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ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO ASOCIADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291204

Level: (low/med)

Lab File ID: 2100204p/a1833

% Moisture: not dec.

Date Collected: 01/28/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 1917

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001291205

Level: (low/med)

Lab File ID: 2100204p/a1834

% Moisture: not dec.

Date Collected: 01/28/10 Time: 0100

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/29/10

Instrument ID: MSV0

Date Analyzed: 02/04/10 Time: 1943

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.043	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.105	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.055	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.035	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.119	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.069	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.107	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.129	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.065	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.102	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.064	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.056	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.094	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.129	5.00
78-93-3	2-Butanone	5.00	U	0.405	5.00
591-78-6	2-Hexanone	5.00	U	0.066	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.123	5.00
67-64-1	Acetone	25.0	U	0.791	25.0
71-43-2	Benzene	5.00	U	0.075	5.00
74-97-5	Bromochloromethane	5.00	U	0.137	5.00
75-27-4	Bromodichloromethane	5.00	U	0.057	5.00
75-25-2	Bromoform	5.00	U	0.198	5.00
74-83-9	Bromomethane	5.00	U	0.141	5.00
75-15-0	Carbon disulfide	5.00	U	0.179	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.083	5.00
108-90-7	Chlorobenzene	5.00	U	0.072	5.00
75-00-3	Chloroethane	5.00	U	0.140	5.00
67-66-3	Chloroform	5.00	U	0.287	5.00
74-87-3	Chloromethane	5.00	U	0.116	5.00
110-82-7	Cyclohexane	5.00	U	0.072	5.00
124-48-1	Dibromochloromethane	5.00	U	0.033	5.00

FORM I VOA

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB04-012810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210012912

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21001291205

Level: (low/med) Lab File ID: 2100204p/a1834

% Moisture: not dec. Date Collected: 01/28/10 Time: 0100

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 01/29/10

Instrument ID: MSV0 Date Analyzed: 02/04/10 Time: 1943

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 425973

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.032	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.056	5.00
100-41-4	Ethylbenzene	5.00	U	0.052	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.071	5.00
79-20-9	Methyl Acetate	5.00	U	0.373	5.00
108-87-2	Methylcyclohexane	5.00	U	0.046	5.00
75-09-2	Methylene chloride	10.0	U	0.142	10.0
100-42-5	Styrene	5.00	U	0.045	5.00
127-18-4	Tetrachloroethene	5.00	U	0.100	5.00
108-88-3	Toluene	5.00	U	0.082	5.00
79-01-6	Trichloroethene	5.00	U	0.097	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.072	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.068	5.00
75-01-4	Vinyl chloride	5.00	U	0.077	5.00
1330-20-7	Xylene (total)	10.0	U	0.334	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.103	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.077	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.096	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
1158302
QUIMICO LICENCIADO

FORM I VOA

C.A

AGVIQ CH2M HILL

1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-012510-01

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	N62470-08-D-1006	TBD	Amanda Struse/CH2M HILL DFW	972.663.2350
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G: VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW27-012510	54MW27	AQ	01/25/10	1145	C/IV	7/ day	3	x									full list VOCs	1
2	JM04-54MW28-012510	54MW28	AQ	01/25/10	1100	C/IV	7/ day	3	x									full list VOCs	2
3	JM04-EB01-012510	Equipment Blank	AQ	01/25/10	1630	C/IV	7/ day	3	x									full list VOCs	3
4	JM04-54MW20-012510	54MW20	AQ	01/25/10	1350	C/IV	7/ day	3	x									full list VOCs	4
5	JM04-54MW19-012510	54MW19	AQ	01/25/10	1500	C/IV	7/ day	3	x									full list VOCs	5
6	JM04-510DW2-012510	510DW2	AQ	01/25/10	1615	C/IV	7/ day	3	x									full list VOCs	6
7	JM04-FD01-012510	Dup	AQ	01/25/10		C/IV	7/ day	3	x									full list VOCs	7
8	JM04-TB01-012510	Lab Supplied	AQ	lab supplied		C/IV	7/ day	2	x									full list VOCs	8
9																			
10																			

[29] SAMPLER(S) AND COMPANY: (please print)
Philip Jones /CH2M HILL

[30] COURIER AND SHIPPING NUMBER:
FedEx - 8686 0320 5148 0402

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
4.3

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Philip Jones	1/25/2010	1700	Printed Name and Signature:		
Printed Name and Signature: FedEx	1-26-10	945	Printed Name and Signature: Michelle Pabon	1-26-10	945
Printed Name and Signature:			Printed Name and Signature:		

AGVIQ CH2M HILL

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Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-012610-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	N62470-08-D-1006	TBD	Amanda Struse/CH2M HILL DFW	972.663.2350
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G: VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-510MW1-012610	510MW1	AQ	01/26/10	0920	C/IV	7/ day	3	x									full list VOCs	1
2	JM04-510DW1-012610	510DW1	AQ	01/26/10	1015	C/IV	7/ day	3	x									full list VOCs	2
3	JM04-510DW1MS-012610	510DW1	AQ	01/26/10	1015	C/IV	7/ day	3	x								MS	full list VOCs	3
4	JM04-510DW1MSD-012610	510DW1	AQ	01/26/10	1015	C/IV	7/ day	3	x								MSD	full list VOCs	4
5	JM04-510MW04-012610	510MW04	AQ	01/26/10	1120	C/IV	7/ day	3	x									full list VOCs	5
6	JM04-54MW01-012610	54MW01	AQ	01/26/10	1235	C/IV	7/ day	3	x									full list VOCs	6
7	JM04-54MW02-012610	54MW02	AQ	01/26/10	1320	C/IV	7/ day	3	x									full list VOCs	7
8	JM04-54MW03-012610	54MW03	AQ	01/26/10	1430	C/IV	7/ day	3	x									full list VOCs	8
9	JM04-FD02-012610	Dup	AQ	01/26/10		C/IV	7/ day	3	x								FD	full list VOCs	9
10	JM04-54MW05-012610	54MW05	AQ	01/26/10	1525	C/IV	7/ day	3	x									full list VOCs	10

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Philip Jones /CH2M HILL	FedEx - 8686 0320 5159	2.9°

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Philip Jones	1/26/2010	1700	Printed Name and Signature:		
Printed Name and Signature: Fedex	1-27-10	1000	Printed Name and Signature:	1-27-10	1000
Printed Name and Signature:			Printed Name and Signature:		

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CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-012610-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	N62470-08-D-1006	TBD	Amanda Struse/CH2M HILL DFW	972.663.2350
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G: VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW23-012610	54MW23	AQ	01/26/10	1615	C/IV	7/ day	3	x									full list VOCs	11
2	JM04-EB02-012610	Equipment Blank	AQ	01/26/10	1630	C/IV	7/ day	3	x								EB	full list VOCs	12
3	JM04-TB02-012610	Trip Blank	AQ	lab supplied		C/IV	7/ day	2	x								TB	full list VOCs	13
4																			
5																			
6																			
7																			
8																			
9																			
10																			

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Philip Jones /CH2M HILL	FedEX - 8686 0320 5159	2.9

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
	1/26/2010	1700			
Printed Name and Signature:			Printed Name and Signature:		
Fahey	1-27-10	1000	Mattie Lewis	1-27-10	1000
Printed Name and Signature:			Printed Name and Signature:		

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Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-012710-01

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	N62470-08-D-1006	TBD	Amanda Struse/CH2M HILL DFW	972.663.2350
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G: VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW22-012710	54MW22	AQ	01/27/10	0915	C/IV	7/ day	3	x									full list VOCs	1
2	JM04-54MW21-012710	54MW21	AQ	01/27/10	1015	C/IV	7/ day	3	x									full list VOCs	2
3	JM04-54MW21MS-012710	54MW21	AQ	01/27/10	1015	C/IV	7/ day	3	x								MS	full list VOCs	3
4	JM04-54MW21MSD-012710	54MW21	AQ	01/27/10	1015	C/IV	7/ day	3	x								MSD	full list VOCs	4
5	JM04-54MW25-012710	54MW25	AQ	01/27/10	1120	C/IV	7/ day	3	x									full list VOCs	5
6	JM04-54MW26-012710	54MW26	AQ	01/27/10	1230	C/IV	7/ day	3	x									full list VOCs	6
7	JM04-510MW3-012710	510MW3	AQ	01/27/10	1345	C/IV	7/ day	3	x									full list VOCs	7
8	JM04-54MW24-012710	54MW24	AQ	01/27/10	1600	C/IV	7/ day	3	x									full list VOCs	8
9	JM04-FD03-012710	Dup	AQ	01/27/10		C/IV	7/ day	3	x								FD	full list VOCs	9
10	JM04-EB03-012710	Equipment Blank	AQ	01/27/10	1630	C/IV	7/ day	3	x								EB	full list VOCs	10
11	JM04-TB03-012710	Trip Blank	AQ	lab supplied		C/IV	7/ day	2	x								TB	full list VOCs	11

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Philip Jones /CH2M HILL	FedEX - 8686 0320 5159	4.3°

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
Philip Jones, Philip Jones	1/27/2010	1700			
Printed Name and Signature:			Printed Name and Signature:		
Printed Name and Signature: Fedex	1-28-10	945	Printed Name and Signature: Michelle Babula	1-28-10	945

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AGVIQ CH2M HILL

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Atlanta, GA 30328
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Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-012810-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	**378718.20.02.01.07**	**GCAL - Liz Martin 225.214.7077**	**Tom Beisel/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	**N62470-08-D-1006**	**TBD**	**Amanda Struse/CH2M HILL DFW**	**972.663.2350**
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	**770.604.9182**	**225.269.4900/225.767.5717**		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED *	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	**JM04-510MW2-012810**	**510MW2**	**AQ**	~~01/27/10~~ 01/28/10	**1025**	**C/IV**	**7/ day**	**3**	x									**full list VOCs**	1
2	**JM04-54MW04-012810**	**54MW04**	**AQ**	~~01/27/10~~ 01/28/10	**1120**	**C/IV**	**7/ day**	**3**	x									**full list VOCs**	2
3	**JM04-54MW06-012810**	**54MW06**	**AQ**	~~01/27/10~~ 01/28/10	**1340**	**C/IV**	**7/ day**	**3**	x									**full list VOCs**	3
4	**JM04-EB04-012810**	**Equipment Blank**	**AQ**	~~01/27/10~~ 01/28/10	**1430**	**C/IV**	**7/ day**	**3**	x								**EB**	**full list VOCs**	4
5	**JM04-TB04-012810**	**Trip Blank**	**AQ**	**lab supplied**		**C/IV**	**7/ day**	**2**	x								**TB**	**full list VOCs**	5
6																			
7																			
8																			
9																		* collection dates revised per	
10																		Bethany Garvey 02/03/10	
11																			

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Philip Jones /CH2M HILL	**FedEX -**	4.1

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Philip Jones	1/28/2010	1630	Printed Name and Signature:		
Printed Name and Signature:			Printed Name and Signature:		
Printed Name and Signature:	1-29-10	1000	Printed Name and Signature: Michelle Robaire	1-29-10	1000

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NA Puerto Rico

PREPARED FOR:	NA Puerto Rico / SWMU 54 Benzene Groundwater Sampling Baseline #3 2010
FINAL REVIEWER/ INITIAL REVIEWER	Camden Robinson/ Associate Project Chemist/CH2M Hill
COPIES:	Tom Beisel /Project Manager/AGVIQ-CH2M HILL
DATE:	June 16, 2010
SUBJECT:	Quality Assessment for Samples April 14th, 2010 thru April 15th, 2010

This quality assurance memorandum is based upon a review of analytical data generated for the groundwater samples and the associated field quality control samples collected April 14th, 2010 thru April 15th, 2010 at the Naval Activity Puerto Rico in Ceiba, Puerto Rico. The samples were collected as a part of the SWMU 54 Benzene Groundwater Sampling Baseline #3 conducted at the site. Table 1-1 presents a summary of the AGVIQ-CH2M HILL sample identification numbers, laboratory sample identification numbers, dates of collection, and the analyses performed.

Gulf Coast Analytical Laboratories, Inc. of Baton Rouge, Louisiana served as the laboratory for this SWMU 54 Benzene Baseline Sampling Baseline #3. The samples were submitted for Volatile Organic Compounds (VOC) – Benzene and/or Trichloroethene by SW-846 method 8260B.

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with AQVIQ-CH2M HILL Sampling Analysis Plan. All analysis results have been validated or qualified according to general guidance provided in the Department of Defense (DOD) Quality Systems Manual - Version 3 Final (based on NELAC Voted Version 5 – June 2003).

The findings of this quality assurance report are based upon the comprehensive review of the following results summaries reported according to the AGVIQ-CH2M HILL Level C (CLP-like data deliverables format): chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, bromofluorobenzene (BFB) mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, and electronic data deliverables.

The analyses were performed acceptably. Any aspects of the data, which are not discussed in this report, should be considered qualitatively and quantitatively valid as reported, based on the deliverables reviewed. The validated results are presented in the data summary tables. Attachment A contains a copy of the chain of custody and the validated sample results.

Table 1-1
Summary Sample Data
NA Puerto Rico

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW33-041410		21004154301	04/14/2010	[1]
JM04-54MW32-041410		21004154302	04/14/2010	[1]
JM04-FD01-041410	JM04-54MW32-041410	21004154303	04/14/2010	[1]
JM04-54MW31-041410		21004154304	04/14/2010	[1]
JM04-54MW37-041410		21004154305	04/14/2010	[1]
JM04-54MW29-041410		21004154306	04/14/2010	[1]
JM04-EB01-041410		21004154307	04/14/2010	[1]
JM04-TB01-041410		21004154308	04/14/2010	[1]
JM04-54MW34-041410		21004154309	04/14/2010	[1]
JM04-54MW30-041510		21004161401	04/15/2010	[1]
JM04-FD02-041510	JM04-54MW30-041510	21004161402	04/15/2010	[1]
JM04-54MW38-041510		21004161403	04/15/2010	[1]
JM04-54MW41-041510		21004161404	04/15/2010	[1]
JM04-54MW39-041510		21004161405	04/15/2010	[1]
JM04-54MW40-041510		21004161406	04/15/2010	[1]
JM04-TB02-041510		21004161407	04/15/2010	[1]
JM04-54MW35-041510		21004161408	04/15/2010	[1]

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW36-041510		21004161409	04/15/2010	[1]
JM04-EB02-041510		21004161410	04/15/2010	[1]

ANALYSES PERFORMED CODES:
[1] – Volatile Organic Compounds (VOC) – Benzene and/or Trichloroethene by SW-846 method 8260B

General Data Qualifiers

As required by U.S. EPA protocols, all compounds, which were qualitatively identified at concentrations below their respective, reporting limits (RL) but above the method detection limit (MDL) have been qualified with "J" qualifiers on the data summary reports to indicate that they are quantitative estimates.

GROUNDWATER CLEANUP TARGET ACTION LEVEL REGULARTORY LIMITS

All samples collected and analyzed for the month of April 2010 for the volatile organic compounds – benzene and trichloroethene were less than the groundwater cleanup target level regulatory limits with the exception of the samples listed below:

Analyte (Volatile List)	Affected Sample	Sample Results (ug/l)	Groundwater Cleanup Target Levels (ug/l)
Benzene	JM04-54MW30-041510	621	550
Benzene	JM04-FD02-041510	696	550
Benzene	JM04-54MW32-041410	1100J	550
Benzene	JM04-54MW34-041410	10800J	550
Benzene	JM04-FD01-041410	1790J	550

Organic Data Qualifiers

The positive result for benzene for sample JM04-54MW34-041410 should be considered a biased low quantitative estimate and may be higher than reported. The associated recoveries for the client specific matrix spike (MS) and matrix spike duplicate (MSD) samples were below the established quality control (QC) limit for this compound. The biased low recoveries for this compound may indicate the possible presence of matrix interferences in samples of similar matrix. This has been indicated by appending a "J" qualifier next to the benzene result for sample JM04-54MW34-041410 in the data summary tables.

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

Sample ID	Analysis	Dilution Factor
JM04-54MW33-041410	VOC	5x
JM04-54MW32-041410	VOC	20x
JM04-FD01-041410	VOC	50x
JM04-54MW34-041410	VOC	100x
JM04-54MW30-041510	VOC	10x
JM04-FD02-041510	VOC	20x
JM04-54MW36-041510	VOC	5x

Samples JM04-54MW32-041410 and JM04-54MW30-041510 and their blind field duplicate samples JM04-FD01-041410 and JM04-FD02-041510 were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met AGVIQ-CH2M HILL's blind duplicate precision criteria of 30% relative percent difference (RPD) for volatile organic compounds with the exception of benzene. A "J" qualifier was appended to results for this compound in the native sample and field duplicate sample to indicate that the reported values should be considered quantitative estimates due to the field duplicate RPD exceedance. The RPD was not calculated for the compounds that were not detected in both samples.

Compound	Affected Samples
Benzene	JM04-54MW32-041410 and JM04-FD01-041410

Summary

The organic analyses were performed acceptably, but required qualifying statements. This analytical quality assurance report has identified the aspects of the data, which required qualification. These qualifiers are noted on the attached analytical sample summary reports. A support documentation package has been prepared for this quality assurance review and is filed with the NA Puerto Rico / SWMU 54 Benzene Groundwater Sampling Baseline #3 2010 project file.

Attachment A

VALID QUALIFIERS

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

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
K	Second source %D was noncompliant.	Second source %D was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
MB	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) blank or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or high RPD.	MS/MSD recovery was poor or high RPD.
G	Result is over the calibration range. No other acceptable result was provided.	Result is over the calibration range. Not other acceptable result was provided.
E	Not applicable.	Lab duplicate RPD showed poor agreement.
Z	Field duplicate RPD showed poor agreement.	Field duplicate RPD showed poor agreement
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
TN	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive—reported compound was not present.	Not applicable.
-	False negative—compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Confirmation analysis RPD exceeded 40%.	Post Digestion Spike recovery was not within control limits.
T/D	Not applicable.	Total metals results were less than the dissolved metals result.
SD	Not applicable.	Seed correction factor was below the acceptable limit.
M	Results should be considered estimated due to matrix effects caused by saturation of non-target analytes.	Not applicable
OT	Results should be considered estimated due to sample was analyzed from jar.	Not applicable
LC	Laboratory contamination	Not applicable
ST	Sample Temperature non-conformance	Sample Temperature non-conformance

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW33-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Level: (low/med)

% Moisture: not dec.

GC Column: RTX-VMS-30 ID: .25 (mm)

Instrument ID: MSV6

Soil Extract Volume: (µL)

Soil Aliquot Volume: (µL)

Lab Sample ID: 21004154301

Lab File ID: 2100418/f4914

Date Collected: 04/14/10 Time: 1000

Date Received: 04/15/10

Date Analyzed: 04/18/10 Time: 1838

Dilution Factor: 5 Analyst: CLH

Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	238		0.271	25.0

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW32-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004154302

Level: (low/med)

Lab File ID: 2100418/f4915

% Moisture: not dec.

Date Collected: 04/14/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/15/10

Instrument ID: MSV6

Date Analyzed: 04/18/10 Time: 1900

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	1100	J	1.08	100

Z

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD01-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004154303

Level: (low/med)

Lab File ID: 2100418/f4916

% Moisture: not dec.

Date Collected: 04/14/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/15/10

Instrument ID: MSV6

Date Analyzed: 04/18/10 Time: 1923

Soil Extract Volume: (µL)

Dilution Factor: 50 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
71-43-2	Benzene	1790	J	2.71	250	Z

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW31-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004154304

Level: (low/med)

Lab File ID: 2100418/f4917

% Moisture: not dec.

Date Collected: 04/14/10 Time: 1415

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/15/10

Instrument ID: MSV6

Date Analyzed: 04/18/10 Time: 1945

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	31.4		0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW37-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004154305

Level: (low/med) Lab File ID: 2100418/f4918

% Moisture: not dec. Date Collected: 04/14/10 Time: 1230

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/15/10

Instrument ID: MSV6 Date Analyzed: 04/18/10 Time: 2007

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	13.0		0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW29-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004154306

Level: (low/med)

Lab File ID: 2100418/f4919

% Moisture: not dec.

Date Collected: 04/14/10 Time: 1410

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/15/10

Instrument ID: MSV6

Date Analyzed: 04/18/10 Time: 2030

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429657

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	2.45	J	0.054	5.00

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SAMPLE NO.

JM04-EB01-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004154307

Level: (low/med) Lab File ID: 2100417P/f4883

% Moisture: not dec. Date Collected: 04/14/10 Time: 1430

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/15/10

Instrument ID: MSV6 Date Analyzed: 04/18/10 Time: 0603

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429654

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00

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SAMPLE NO.

JM04-TB01-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004154308

Level: (low/med) Lab File ID: 2100420/f5015

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/15/10

Instrument ID: MSV6 Date Analyzed: 04/20/10 Time: 1259

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429761

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW34-041410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041543

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004154309

Level: (low/med) Lab File ID: 2100417P/f4882

% Moisture: not dec. Date Collected: 04/14/10 Time: 1120

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/15/10

Instrument ID: MSV6 Date Analyzed: 04/18/10 Time: 0541

Soil Extract Volume: (µL) Dilution Factor: 100 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429654

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	10800	J	5.42	500
79-01-6	Trichloroethene	500	U	6.18	500

Q

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SAMPLE NO.

JM04-54MW30-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004161401

Level: (low/med) Lab File ID: 2104021p/f5106

% Moisture: not dec. Date Collected: 04/15/10 Time: 0915

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/16/10

Instrument ID: MSV6 Date Analyzed: 04/22/10 Time: 0529

Soil Extract Volume: (µL) Dilution Factor: 10 Analyst: CLH

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429897

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	621		0.542	50.0

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161402

Level: (low/med)

Lab File ID: 2104021p/f5107

% Moisture: not dec.

Date Collected: 04/15/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/22/10 Time: 0551

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429897

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	696		1.08	100

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW38-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161403

Level: (low/med)

Lab File ID: 2104021p/f5108

% Moisture: not dec.

Date Collected: 04/15/10 Time: 1215

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/22/10 Time: 0614

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 429897

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	117		0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW41-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL Lab Sample ID: 21004161404

Level: (low/med) Lab File ID: 2104021p/f5109

% Moisture: not dec. Date Collected: 04/15/10 Time: 1310

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 04/16/10

Instrument ID: MSV6 Date Analyzed: 04/22/10 Time: 0636

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL) Prep Batch: Analytical Batch: 429897

CONCENTRATION UNITS: ug/L Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	115		0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW39-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161405

Level: (low/med)

Lab File ID: 2104023/f5185

% Moisture: not dec.

Date Collected: 04/15/10 Time: 0950

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1431

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW40-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161406

Level: (low/med)

Lab File ID: 2104023/f5197

% Moisture: not dec.

Date Collected: 04/15/10 Time: 1100

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1901

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJO

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

CONCENTRATION UNITS: ug/L

Analytical Method: SW-846 8260

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	0.740	J	0.054	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB02-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161407

Level: (low/med)

Lab File ID: 2104023/f5198

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1923

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJO

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00

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C-2

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB02-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161407

Level: (low/med)

Lab File ID: 2104023/f5198

% Moisture: not dec.

Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1923

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJO

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW35-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161408

Level: (low/med)

Lab File ID: 2104023/f5199

% Moisture: not dec.

Date Collected: 04/15/10 Time: 1115

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1946

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJO

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	6.17		0.054	5.00
79-01-6	Trichloroethene	21.1		0.062	5.00

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW36-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161409

Level: (low/med)

Lab File ID: 2104023/f5184

% Moisture: not dec.

Date Collected: 04/15/10 Time: 1015

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 1408

Soil Extract Volume: (µL)

Dilution Factor: 5 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	330		0.271	25.0
79-01-6	Trichloroethene	5.00	U	0.309	5.00

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-041510

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210041614

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21004161410

Level: (low/med)

Lab File ID: 2104023/f5200

% Moisture: not dec.

Date Collected: 04/15/10 Time: 1300

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 04/16/10

Instrument ID: MSV6

Date Analyzed: 04/23/10 Time: 2008

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJO

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 430010

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	5.00	U	0.054	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
CURSO LICENCIADO
A 1314284

FORM I VOA

CH2MHILL/43 80/2100415 43/4-22-10

AGVIQ CH2M HILL

1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-041410-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	N62470-08-D-1006	TBD	Amanda Struse/CH2M HILL DFW	972.663.2350
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[23] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G: VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW33-041410	54MW33	AQ	04/14/10	1000	C/IV	7/ day	3	x									Benzene Only	1
2	JM04-54MW32-041410	54MW32	AQ	04/14/10	1120	C/IV	7/ day	3	x									Benzene Only	2
3	JM04-FD01-041410		AQ	04/14/10		C/IV	7/ day	3	x									Benzene Only	3
4	JM04-54MW31-041410	54MW31	AQ	04/14/10	1415	C/IV	7/ day	3	x									Benzene Only	4
5	JM04-54MW34-041410	54MW34	AQ	04/14/10	1120	C/IV	7/ day	3	x									Benzene & TCE only	9
6	JM04-54MW34MS-041410	54MW34	AQ	04/14/10	1120	C/IV	7/ day	3	x									Benzene & TCE only	10
7	JM04-54MW34SD-041410	54MW34	AQ	04/14/10	1120	C/IV	7/ day	3	x									Benzene & TCE only	11
8	JM04-54MW37-041410	54MW37	AQ	04/14/10	1230	C/IV	7/ day	3	x									Benzene Only	5
9	JM04-54MW29-041410	54MW29	AQ	04/14/10	1410	C/IV	7/ day	3	x									Benzene Only	6
10	JM04-EB01-041410	Equipment Blank	AQ	04/14/10	1430	C/IV	7/ day	3	x									Benzene Only	7
11	JM04-TB01-041410	Trip Blank	AQ		Lab supplied	C/IV	7/ day	3	x									Benzene Only	8

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Alicia Nobles and Joe Calixte /CH2M HILL-Agviq	FedEX - 8716-9327-0629	3.4°

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Andrew O'Conor / ATL	4/14/2010	1500	Printed Name and Signature:		
Printed Name and Signature:			Printed Name and Signature:		
Printed Name and Signature: Fedex	4-15-10	9:45	Printed Name and Signature: Michele Roberts	4-15-10	9:45

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

254

CH2MHILL /4380/210041614/4-2310

AGVIQ CH2M HILL

1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-041510-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	**378718.20.02.01.07**	**GCAL - Liz Martin 225.214.7077**	**Tom Beisel/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Benzene side Baseline	**N62470-08-D-1006**	**TBD**	**Amanda Struse/CH2M HILL DFW**	**972.663.2350**
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	**770.604.9182**	**225.269.4900/225.767.5717**		

[22] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G / VOCs (3- 40mL VOAs HCl) EPA Method 8260B								[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	**JM04-54MW30-041510**	**54MW30**	**AQ**	**04/15/10**	**0915**	**C/IV**	**7/ day**	**3**	x									**Benzene Only**	1
2	**JM04-54MW35-041510**	**54MW35**	**AQ**	**04/15/10**	**1115**	**C/IV**	**7/ day**	**3**	x									*****Benzene & TCE only*****	8
3	**JM04-FD02-041510**		**AQ**	**04/15/10**		**C/IV**	**7/ day**	**3**	x								**BD**	**Benzene Only**	2
4	**JM04-54MW36-041510**	**54MW36**	**AQ**	**04/15/10**	**1015**	**C/IV**	**7/ day**	**3**	x									*****Benzene & TCE only*****	9
5	**JM04-54MW38-041510**	**54MW38**	**AQ**	**04/15/10**	**1215**	**C/IV**	**7/ day**	**3**	x									**Benzene Only**	3
6	**JM04-54MW41-041510**	**54MW41**	**AQ**	**04/15/10**	**1310**	**C/IV**	**7/ day**	**3**	x									**Benzene Only**	4
7	**JM04-54MW39-041510**	**54MW39**	**AQ**	**04/15/10**	**0950**	**C/IV**	**7/ day**	**3**	x									**Benzene Only**	5
8	**JM04-54MW40-041510**	**54MW40**	**AQ**	**04/15/10**	**1100**	**C/IV**	**7/ day**	**3**	x									**Benzene Only**	6
10	**JM04-EB02-041510**	**Equipment Blank**	**AQ**	**04/15/10**	**1300**	**C/IV**	**7/ day**	**3**	x								**EB**	**Benzene and TCE only**	10
11	**JM04-TB02-041510**	**Trip Blank**	**AQ**		**Lab supplied**	**C/IV**	**7/ day**	**3**	x								**TB**	**Benzene Only**	7

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Andrew O'Conor and Joe Calixte /CH2M HILL-Agviq	**FedEX:**	4.2

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
Andrew O'Conor / ATL	4/15/2010	1500			
Printed Name and Signature:	4/16/10	1025	Printed Name and Signature: Michelle Rabon	4-16-10	1020

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

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JM04
Puerto Rico
Data Summary Table
SWMU54 Groundwater Sampling 2nd Event2010

Location			54MW29	54MW30		54MW31	54MW32	54MW33	54MW34	
Sample ID			JM04-54MW29-041410	JM04-54MW30-041510	JM04-FD02-041510	JM04-54MW31-041410	JM04-54MW32-041410	JM04-54MW33-041410	JM04-54MW34-041410	JM04-FD01-041410
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			4/14/2010	4/15/2010	4/15/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010	4/14/2010
Analyte	**Units**	**Baker [SL]**								
SW8260B (µg/L)										
BENZENE	µg/L	550	**2.45 J**	**621**	**696**	**31.4**	**1100 J**	**238**	**10800 J**	**1790 J**
TRICHLOROETHENE (TCE)	µg/L	22	NA	NA	NA	NA	NA	NA	500 U	NA

Notes:
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
µg/L -- Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening crit`

JM04
Puerto Rico
Data Summary Table
SWMU54 Groundwater Sampling 2nd Event2010

Location			54MW35	54MW36	54MW37	54MW38	54MW39	54MW40	54MW41
Sample ID			JM04-54MW35-041510	JM04-54MW36-041510	JM04-54MW37-041410	JM04-54MW38-041510	JM04-54MW39-041510	JM04-54MW40-041510	JM04-54MW41-041510
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			4/15/2010	4/15/2010	4/14/2010	4/15/2010	4/15/2010	4/15/2010	4/15/2010
Analyte	**Units**	**Baker [SL]**							
SW8260B (µg/L)									
BENZENE	µg/L	550	**6.17**	**330**	**13**	**117**	5 U	**0.74 J**	**115**
TRICHLOROETHENE (TCE)	µg/L	22	**21.1**	5 U	NA	NA	NA	NA	NA

Notes:
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
µg/L -- Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceeded screening criteria

NA Puerto Rico

PREPARED FOR:	NA Puerto Rico / SWMU 54 Benzene Groundwater Sampling Baseline #4 2010
FINAL REVIEWER/ INITIAL REVIEWER	Camden Robinson/ Associate Project Chemist/CH2M Hill
COPIES:	Tom Beisel /Project Manager/AGVIQ-CH2M HILL
DATE:	December 2, 2010
SUBJECT:	Quality Assessment for Samples October 14th, 2010 and October 18th, 2010

This quality assurance memorandum is based upon a review of analytical data generated for the groundwater samples and the associated field quality control samples collected October 14th, 2010 and October 18th, 2010 at the Naval Activity Puerto Rico in Ceiba, Puerto Rico. The samples were collected as a part of the SWMU 54 Benzene Groundwater Sampling Baseline #4 conducted at the site. Table 1-1 presents a summary of the AGVIQ-CH2M HILL sample identification numbers, laboratory sample identification numbers, dates of collection, and the analyses performed.

Gulf Coast Analytical Laboratories, Inc. of Baton Rouge, Louisiana served as the laboratory for this SWMU 54 Benzene Baseline Sampling Baseline #4. The samples were submitted for Volatile Organic Compounds (VOC) by SW-846 method 8260B.

Data for the analyses were reviewed for adherence to the specified analytical protocols in accordance with AQVIQ-CH2M HILL Sampling Analysis Plan. All analysis results have been validated or qualified according to general guidance provided in the Department of Defense (DOD) Quality Systems Manual - Version 3 Final (based on NELAC Voted Version 5 – June 2003).

The findings of this quality assurance report are based upon the comprehensive review of the following results summaries reported according to the AGVIQ-CH2M HILL Level C (CLP-like data deliverables format): chain of custody documentation, holding times, laboratory method and field blank analyses, surrogate compound recoveries, matrix spike compound recoveries and reproducibility, bromofluorobenzene (BFB) mass tuning results, initial and continuing calibration, second source recovery and internal standard area performance summaries, target compound identification, laboratory control sample results, laboratory and blind field duplicate sample results, detection limits/sensitivity, and electronic data deliverables.

The analyses were performed acceptably. Any aspects of the data, which are not discussed in this report, should be considered qualitatively and quantitatively valid as reported, based on the deliverables reviewed. The validated results are presented in the data summary tables. Attachment A contains a copy of the chain of custody and the validated sample results.

Table 1-1
Summary Sample Data
NA Puerto Rico

Sample Number	Reference Sample Number	Lab Sample ID	Date Sampled	Analyses Required
JM04-54MW44-101410		21010151701	10/14/2010	[1]
JM04-54MW42-101410		21010151704	10/14/2010	[1]
JM04-FD02-101410	JM04-54MW42-101410	21010151705	10/14/2010	[1]
JM04-EB02-101410		21010151706	10/14/2010	[1]
JM04-TB01-101410		21010151707	10/14/2010	[1]
JM04-54MW43-101810		21010191402	10/18/2010	[1]
JM04-EB01-101810		21010191403	10/18/2010	[1]
JM04-TB01-101810		21010191404	10/18/2010	[1]

ANALYSES PERFORMED CODES:
[1] – Volatile Organic Compounds (VOC) by SW-846 method 8260B

General Data Qualifiers

As required by U.S. EPA protocols, all compounds, which were qualitatively identified at concentrations below their respective, reporting limits (RL) but above the method detection limit (MDL) have been qualified with "J" qualifiers on the data summary reports to indicate that they are quantitative estimates.

GROUNDWATER CLEANUP TARGET ACTION LEVEL REGULARTORY LIMITS

All samples collected and analyzed for the month of October 2010 for the volatile organic compounds were less than the groundwater cleanup target level regulatory limits.

Organic Data Qualifiers

The sample presented below was analyzed at dilutions for the analysis indicated. These dilutions were required to prevent saturation of the instrument, to allow quantitation of the compounds within the linear range of the calibration curve, and/or to reduce the effects of the matrix on the target compounds. Positive results for these compounds in the samples below have been reported from the diluted analyses. All other

results and quantitation limits have been reported on the sample report summary from the initial analysis. However, higher quantitation limits have resulted for specific volatile organic compounds, which were not detected, in these samples. This should be noted when assessing these samples for the qualitative absence of specific volatile organic compounds.

Sample ID	Analysis	Dilution Factor
JM04-54MW43-101810	VOC	2x and 20x

Sample JM04-54MW42-101410 and its blind field duplicate sample JM04-FD02-041410 were submitted to the laboratory to evaluate sampling and analytical precision for those compounds determined to be confidently detected. All compounds met AGVIQ-CH2M HILL's blind duplicate precision criteria of 30% relative percent difference (RPD) for volatile organic compounds. The RPD was not calculated for the compounds that were not detected in both samples.

Summary

The organic analyses were performed acceptably, but required qualifying statements. This analytical quality assurance report has identified the aspects of the data, which required qualification. These qualifiers are noted on the attached analytical sample summary reports. A support documentation package has been prepared for this quality assurance review and is filed with the NA Puerto Rico / SWMU 54 Benzene Groundwater Sampling Baseline #4 2010 project file.

Attachment A

VALID QUALIFIERS

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

QUALIFICATION CODE REFERENCE

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
K	Second source %D was noncompliant.	Second source %D was noncompliant.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
MB	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) blank or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or high RPD.	MS/MSD recovery was poor or high RPD.
G	Result is over the calibration range. No other acceptable result was provided.	Result is over the calibration range. Not other acceptable result was provided.
E	Not applicable.	Lab duplicate RPD showed poor agreement.
Z	Field duplicate RPD showed poor agreement.	Field duplicate RPD showed poor agreement
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D was not within control limits.
TN	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive—reported compound was not present.	Not applicable.
-	False negative—compound was present but not reported.	Not applicable.
F	Presumed contamination from FB or ER.	Presumed contamination from FB or ER.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Confirmation analysis RPD exceeded 40%.	Post Digestion Spike recovery was not within control limits.
T/D	Not applicable.	Total metals results were less than the dissolved metals result.
SD	Not applicable.	Seed correction factor was below the acceptable limit.
M	Results should be considered estimated due to matrix effects caused by saturation of non-target analytes.	Not applicable
OT	Results should be considered estimated due to sample was analyzed from jar.	Not applicable
LC	Laboratory contamination	Not applicable
ST	Sample Temperature non-conformance	Sample Temperature non-conformance

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW44-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Level: (low/med)

% Moisture: not dec.

GC Column: RTX-VMS-30 ID: .25 (mm)

Instrument ID: MSV11

Soil Extract Volume: (µL)

Soil Aliquot Volume: (µL)

Lab Sample ID: 21010151701

Lab File ID: 2101022/a6523

Date Collected: 10/14/10 Time: 1055

Date Received: 10/15/10

Date Analyzed: 10/22/10 Time: 1543

Dilution Factor: 1 Analyst: RJU

Prep Batch: Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	3.93	J	1.15	25.0
71-43-2	Benzene	5.00	U	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	2.50	J	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	16.8		0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	5.00	U	0.064	5.00
124-48-1	Dibromochloromethane	0.688	J	0.041	5.00

ERIC ORTIZ
LIC. #1813

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW44-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Level: (low/med)

% Moisture: not dec.

GC Column: RTX-VMS-30 ID: .25 (mm)

Instrument ID: MSV11

Soil Extract Volume: (µL)

Soil Aliquot Volume: (µL)

Lab Sample ID: 21010151701

Lab File ID: 2101022/a6523

Date Collected: 10/14/10 Time: 1055

Date Received: 10/15/10

Date Analyzed: 10/22/10 Time: 1543

Dilution Factor: 1 Analyst: RJU

Prep Batch: Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	5.00	U	0.072	5.00
75-09-2	Methylene chloride	0.659	J	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	10.0	U	0.050	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

EDWIN ORTIZ
LIC. #1813

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW42-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151704

Level: (low/med)

Lab File ID: 2101022/a6530

% Moisture: not dec.

Date Collected: 10/14/10 Time: 1320

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV11

Date Analyzed: 10/22/10 Time: 1828

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch:

Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	2.78	J	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	11.9		0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW42-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151704

Level: (low/med)

Lab File ID: 2101022/a6530

% Moisture: not dec.

Date Collected: 10/14/10 Time: 1320

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV11

Date Analyzed: 10/22/10 Time: 1828

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	0.506	J	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	10.7		0.072	5.00
75-09-2	Methylene chloride	10.0	U	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	10.0	U	0.050	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

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LIC. #1913
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151705

Level: (low/med)

Lab File ID: 2101022/a6531

% Moisture: not dec.

Date Collected: 10/14/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV11

Date Analyzed: 10/22/10 Time: 1851

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	2.85	J	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	12.6		0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-FD02-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151705

Level: (low/med)

Lab File ID: 2101022/a6531

% Moisture: not dec.

Date Collected: 10/14/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV11

Date Analyzed: 10/22/10 Time: 1851

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: RJU

Soil Aliquot Volume: (µL)

Prep Batch:

Analytical Batch: 444062

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	0.482	J	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	11.1		0.072	5.00
75-09-2	Methylene chloride	10.0	U	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	10.0	U	0.050	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

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QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151706

Level: (low/med)

Lab File ID: 2101019/b0273

% Moisture: not dec.

Date Collected: 10/14/10 Time: 1115

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV0

Date Analyzed: 10/19/10 Time: 2253

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 443991

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	5.00	U	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	5.00	U	0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB02-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151706

Level: (low/med)

Lab File ID: 2101019/b0273

% Moisture: not dec.

Date Collected: 10/14/10 Time: 1115

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV0

Date Analyzed: 10/19/10 Time: 2253

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 443991

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	5.00	U	0.072	5.00
75-09-2	Methylene chloride	10.0	U	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	10.0	U	0.050	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

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LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151707

Level: (low/med)

Lab File ID: 2101019/b0274

% Moisture: not dec.

Date Collected: 10/14/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV0

Date Analyzed: 10/19/10 Time: 2317

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 443991

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	5.00	U	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	5.00	U	0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-101410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101517

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010151707

Level: (low/med)

Lab File ID: 2101019/b0274

% Moisture: not dec.

Date Collected: 10/14/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/15/10

Instrument ID: MSV0

Date Analyzed: 10/19/10 Time: 2317

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 443991

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	5.00	U	0.072	5.00
75-09-2	Methylene chloride	10.0	U	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	10.0	U	0.050	10.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

COLEGIO DE QUIMICOS DE PUERTO RICO
ENID ORTIZ
LIC. #1813
A 1327588

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW43-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010191402

Level: (low/med)

Lab File ID: 2101024P/b6653

% Moisture: not dec.

Date Collected: 10/18/10 Time: 0830

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/19/10

Instrument ID: MSV7

Date Analyzed: 10/25/10 Time: 0321

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	10.0	U	0.212	10.0
79-34-5	1,1,2,2-Tetrachloroethane	10.0	U	0.146	10.0
79-00-5	1,1,2-Trichloroethane	10.0	U	0.190	10.0
75-34-3	1,1-Dichloroethane	10.0	U	0.061	10.0
75-35-4	1,1-Dichloroethene	10.0	U	0.328	10.0
87-61-6	1,2,3-Trichlorobenzene	10.0	U	0.220	10.0
120-82-1	1,2,4-Trichlorobenzene	10.0	U	0.238	10.0
96-12-8	1,2-Dibromo-3-chloropropane	10.0	U	0.165	10.0
106-93-4	1,2-Dibromoethane	10.0	U	0.094	10.0
95-50-1	1,2-Dichlorobenzene	10.0	U	0.158	10.0
107-06-2	1,2-Dichloroethane	10.0	U	0.172	10.0
78-87-5	1,2-Dichloropropane	10.0	U	0.128	10.0
541-73-1	1,3-Dichlorobenzene	10.0	U	0.198	10.0
106-46-7	1,4-Dichlorobenzene	10.0	U	0.236	10.0
78-93-3	2-Butanone	13.2		0.187	10.0
591-78-6	2-Hexanone	10.0	U	1.01	10.0
108-10-1	4-Methyl-2-pentanone	6.34	J	0.131	10.0
67-64-1	Acetone	50.0	U	2.30	50.0
74-97-5	Bromochloromethane	10.0	U	0.189	10.0
75-27-4	Bromodichloromethane	10.0	U	0.106	10.0
75-25-2	Bromoform	10.0	U	0.208	10.0
74-83-9	Bromomethane	10.0	U	0.528	10.0
75-15-0	Carbon disulfide	10.0	U	0.286	10.0
56-23-5	Carbon tetrachloride	10.0	U	0.296	10.0
108-90-7	Chlorobenzene	10.0	U	0.055	10.0
75-00-3	Chloroethane	10.0	U	0.702	10.0
100-41-4	Ethylbenzene	1140	ER	0.125	10.0
67-66-3	Chloroform	11.4		0.113	10.0
74-87-3	Chloromethane	10.0	U	0.177	10.0
124-48-1	Dibromochloromethane	10.0	U	0.081	10.0
75-71-8	Dichlorodifluoromethane	10.0	U	0.1[illegible]	[illegible]

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1313
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW43-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Level: (low/med)

% Moisture: not dec.

GC Column: RTX-VMS-30 ID: .25 (mm)

Instrument ID: MSV7

Soil Extract Volume: (µL)

Soil Aliquot Volume: (µL)

Lab Sample ID: 21010191402

Lab File ID: 2101024P/b6653

Date Collected: 10/18/10 Time: 0830

Date Received: 10/19/10

Date Analyzed: 10/25/10 Time: 0321

Dilution Factor: 2 Analyst: CLH

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL	
98-82-8	Isopropylbenzene (Cumene)	79.4		0.069	10.0	
79-20-9	Methyl Acetate	10.0	U	2.84	10.0	
108-87-2	Methylcyclohexane	249		0.144	10.0	
75-09-2	Methylene chloride	20.0	U	0.654	20.0	
100-42-5	Styrene	10.0	U	0.101	10.0	
127-18-4	Tetrachloroethene	10.0	U	0.242	10.0	
108-88-3	Toluene	9.78	J	0.118	10.0	
79-01-6	Trichloroethene	10.0	U	0.124	10.0	
75-69-4	Trichlorofluoromethane	10.0	U	0.246	10.0	
76-13-1	Trichlorotrifluoroethane	10.0	U	0.254	10.0	
75-01-4	Vinyl chloride	10.0	U	0.186	10.0	
1330-20-7	Xylene (total)	294		0.100	30.0	
156-59-2	cis-1,2-Dichloroethene	10.0	U	0.123	10.0	
10061-01-5	cis-1,3-Dichloropropene	10.0	U	0.062	10.0	
1634-04-4	tert-Butyl methyl ether (MTBE)	10.0	U	0.103	10.0	
156-60-5	trans-1,2-Dichloroethene	10.0	U	0.214	10.0	
10061-02-6	trans-1,3-Dichloropropene	10.0	U	0.108	10.0	
110-82-7	Cyclohexane	444	E R	0.129	10.0	D
71-43-2	Benzene	567	E R	0.108	10.0	D

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54MW43-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010191402

Level: (low/med)

Lab File ID: 2101024P/b6652

% Moisture: not dec.

Date Collected: 10/18/10 Time: 0830

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/19/10

Instrument ID: MSV7

Date Analyzed: 10/25/10 Time: 0301

Soil Extract Volume: (µL)

Dilution Factor: 20 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-43-2	Benzene	477		1.08	100
110-82-7	Cyclohexane	387		1.29	100
100-41-4	Ethylbenzene	908		1.25	100

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LENID ORTIZ
LIC. #1813
A 1327592
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB01-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010191403

Level: (low/med)

Lab File ID: 2101024P/b6630

% Moisture: not dec.

Date Collected: 10/18/10 Time: 0835

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/19/10

Instrument ID: MSV7

Date Analyzed: 10/24/10 Time: 1930

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	5.00	U	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	5.00	U	0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-EB01-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Level: (low/med)

% Moisture: not dec.

GC Column: RTX-VMS-30 ID: .25 (mm)

Instrument ID: MSV7

Soil Extract Volume: (µL)

Soil Aliquot Volume: (µL)

Lab Sample ID: 21010191403

Lab File ID: 2101024P/b6630

Date Collected: 10/18/10 Time: 0835

Date Received: 10/19/10

Date Analyzed: 10/24/10 Time: 1930

Dilution Factor: 1 Analyst: CLH

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	5.00	U	0.072	5.00
75-09-2	Methylene chloride	10.0	U	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	15.0	U	0.050	15.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1013
QUIMICO LICENCIADO

C-2

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010191404

Level: (low/med)

Lab File ID: 2101024P/b6631

% Moisture: not dec.

Date Collected: 10/18/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/19/10

Instrument ID: MSV7

Date Analyzed: 10/24/10 Time: 1951

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
71-55-6	1,1,1-Trichloroethane	5.00	U	0.106	5.00
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U	0.073	5.00
79-00-5	1,1,2-Trichloroethane	5.00	U	0.095	5.00
75-34-3	1,1-Dichloroethane	5.00	U	0.031	5.00
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
87-61-6	1,2,3-Trichlorobenzene	5.00	U	0.110	5.00
120-82-1	1,2,4-Trichlorobenzene	5.00	U	0.119	5.00
96-12-8	1,2-Dibromo-3-chloropropane	5.00	U	0.082	5.00
106-93-4	1,2-Dibromoethane	5.00	U	0.047	5.00
95-50-1	1,2-Dichlorobenzene	5.00	U	0.079	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
78-87-5	1,2-Dichloropropane	5.00	U	0.064	5.00
541-73-1	1,3-Dichlorobenzene	5.00	U	0.099	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
591-78-6	2-Hexanone	5.00	U	0.503	5.00
108-10-1	4-Methyl-2-pentanone	5.00	U	0.065	5.00
67-64-1	Acetone	25.0	U	1.15	25.0
71-43-2	Benzene	5.00	U	0.054	5.00
74-97-5	Bromochloromethane	5.00	U	0.095	5.00
75-27-4	Bromodichloromethane	5.00	U	0.053	5.00
75-25-2	Bromoform	5.00	U	0.104	5.00
74-83-9	Bromomethane	5.00	U	0.264	5.00
75-15-0	Carbon disulfide	5.00	U	0.143	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
75-00-3	Chloroethane	5.00	U	0.351	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
74-87-3	Chloromethane	5.00	U	0.089	5.00
110-82-7	Cyclohexane	5.00	U	0.064	5.00
124-48-1	Dibromochloromethane	5.00	U	0.041	5.00

FORM I VOA

ESTADO LIBRE ASOCIADO DE PUERTO RICO
GENIO CRUZ
LIC. #1813
QUIMICO CERTIFICADO

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-TB01-101810

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210101933

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21010191404

Level: (low/med)

Lab File ID: 2101024P/b6631

% Moisture: not dec.

Date Collected: 10/18/10 Time: 0000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 10/19/10

Instrument ID: MSV7

Date Analyzed: 10/24/10 Time: 1951

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 444267

Analytical Method: SW-846 8260B

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-71-8	Dichlorodifluoromethane	5.00	U	0.096	5.00
100-41-4	Ethylbenzene	5.00	U	0.063	5.00
98-82-8	Isopropylbenzene (Cumene)	5.00	U	0.035	5.00
79-20-9	Methyl Acetate	5.00	U	1.42	5.00
108-87-2	Methylcyclohexane	5.00	U	0.072	5.00
75-09-2	Methylene chloride	1.60	J	0.327	10.0
100-42-5	Styrene	5.00	U	0.051	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
108-88-3	Toluene	5.00	U	0.059	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-69-4	Trichlorofluoromethane	5.00	U	0.123	5.00
76-13-1	Trichlorotrifluoroethane	5.00	U	0.127	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00
1330-20-7	Xylene (total)	15.0	U	0.050	15.0
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.061	5.00
10061-01-5	cis-1,3-Dichloropropene	5.00	U	0.031	5.00
1634-04-4	tert-Butyl methyl ether (MTBE)	5.00	U	0.052	5.00
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.107	5.00
10061-02-6	trans-1,3-Dichloropropene	5.00	U	0.054	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1013
QUIMICO LICENCIADO

FORM I VOA

CH2MH.11/4350/2010 10 17/10 22 10

AGVIO CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-101410-03**

[2] PROJECT NAME: **Naval Activity Puerto Rico**	[5] PROJECT NUMBER: **378718.20.07.91.07**	[8] LAB NAME AND CONTACT: **GCAL - Dana Merrill 225-214-7044**	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company) **Tom Beisel/CH2M HILL**	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.): **1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK: **SWMU 54 - Baseline - 54MW42, 54MW43, & 54MW44**	[6] CTO OR DO NUMBER: **N62470-08-D-1006**	[9] LAB PO NUMBER: **TBD**	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company) **Amanda Struse/CH2M HILL**	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.): **12377 Merit Drive Suite 1000, Dallas, TX 75251 972.663.2350/972.385.0846**
[4] PROJECT CONTACT: **Tom Beisel**	[7] PROJECT TEL NO AND FAX NO: **770.604.9182**	[10] LAB TEL NO AND FAX NO: **225.769.4900/225.767.5717**	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):

[23] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G / VOCs - 8260B										[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54MW44-101410	54MW44	W	10/14/10	1055	B	7/day	3	X											~~Benzene only~~	1
2	JM04-54MW44MS-101410	54MW44	W	10/14/10	1055	B	7/day	3	X										MS	~~Benzene only~~	2
3	JM04-54MW44SD-101410	54MW44	W	10/14/10	1055	B	7/day	3	X										MSD	~~Benzene only~~	3
4	JM04-54MW42-101410	54MW42	W	10/14/10	1320	B	7/day	3	X											~~Benzene only~~	4
5	JM04-FD02-101410	Field Dup	W	10/14/10	--	B	7/day	3	X										FD	~~Benzene only~~	5
6	JM04-EB02-101410	Equipment Blank	W	10/14/10	1115	B	7/day	3	X										EB	~~Benzene only~~	6
7	JM04-TB01-101410	Trip Blank	W	lab supplied	--	B	7/day	3	X										TB	~~Benzene only~~	7

[29] SAMPLER(S) AND COMPANY: (please print): **Alicia Nobles / CH2M HILL**

[30] COURIER AND SHIPPING NUMBER: **FedEX - 8708 1560 1657**

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 33

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
Alicia Nobles	10/14/2010	1500			
Printed Name and Signature:			Printed Name and Signature:		
FedEx	10-15-10	900	Michelle Rabin	10-15-10	900
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

GCAL

GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Client Name	Client #	Workorder #	Due Date
CH2M HILL	4350	210191933 ~~210191914~~	10-26-10

Report to:

Client: CH2M HILL
Address: [illegible]
Contact: [illegible]
Phone: 678-530-4633
Fax: 770-604-9382

Bill to:

Client: CH2M HILL
Address: [illegible]
Contact: [illegible]
Phone: 678-530-4633
Fax: 770-604-9382

P.O. Number:
Project Name/Number: [illegible]
Sampled By:

Lab use only:
Custody Seal
used ☐ yes ☐ no
intact ☐ yes ☐ no
Temperature °C 5.3

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	VOCs-SW8260B	SVOCs-SW8270C	Metals-SW6010B	Metals-SW7470A	PCBs-SW8082	Chlorinated Pesticides-SW8081A	Organophosphorus Pesticides-SW8141A	Herbicides-SW8151A	TCLP VOCs-SW8260B		Remarks: 210101944	Lab ID
W	10/18/10	0900	X		3MGM-SMPKGW-101810	[illegible]	11	X	X	X	X	X	X	X	X			[illegible] 483 14-Day TAT	1
↓	↓	[illegible]		X	3MGM-SMMW43-101810	HCl	3									X	X	2-Day TAT 2 ~~3~~	2
↓	↓	[illegible]		X	3MGM-[illegible]-101810	↓	↓									X	X	3 ~~2~~	3
↓	Lab Supplied				3MGM-TRX1-101810	↓	↓									X	X	4 ~~3~~	4

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☐ Standard ☐ Other 7-Day for 3MGM-SMMW43-101810

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[illegible] 10/18/10 1900			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Fedex	[illegible]	10-19-10	855
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: 14-Day TAT for 3MGM-SMPKGW-101810

1 samples on ice this week

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

3CAL-06 11/98

JM04
Puerto Rico
Data Summary Table
SWMU54 Groundwater Sampling Oct 2010

Location			54MW42		54MW43	54MW44
Sample ID			JM04-54MW42-101410	JM04-FD02-101410	JM04-54MW43-101810	JM04-54MW44-101410
Sample Depth (ft)			0 - 0	0 - 0	0 - 0	0 - 0
Sample Date			10/14/2010	10/14/2010	10/18/2010	10/14/2010
Analyte	**Units**	**Baker [SL]**				
SW8260B (µg/L)						
1,1,1-TRICHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
1,1,2,2-TETRACHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
1,1,2-TRICHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
1,1-DICHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
1,1-DICHLOROETHENE	µg/L	--	5 U	5 U	10 U	5 U
1,2,3-TRICHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
1,2,4-TRICHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	µg/L	--	5 U	5 U	10 U	5 U
1,2-DIBROMOETHANE (EDB)	µg/L	--	5 U	5 U	10 U	5 U
1,2-DICHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
1,2-DICHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
1,2-DICHLOROPROPANE	µg/L	--	5 U	5 U	10 U	5 U
1,3-DICHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
1,4-DICHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
2-HEXANONE	µg/L	--	5 U	5 U	10 U	5 U
ACETONE	µg/L	--	25 U	25 U	50 U	**3.93 J**
BENZENE	µg/L	550	**2.78 J**	**2.85 J**	**477**	5 U
BROMOCHLOROMETHANE	µg/L	--	5 U	5 U	10 U	5 U
BROMODICHLOROMETHANE	µg/L	--	5 U	5 U	10 U	**2.5 J**
BROMOFORM	µg/L	--	5 U	5 U	10 U	5 U
BROMOMETHANE	µg/L	--	5 U	5 U	10 U	5 U
CARBON DISULFIDE	µg/L	--	5 U	5 U	10 U	5 U
CARBON TETRACHLORIDE	µg/L	--	5 U	5 U	10 U	5 U
CHLOROBENZENE	µg/L	--	5 U	5 U	10 U	5 U
CHLOROETHANE	µg/L	--	5 U	5 U	10 U	5 U
CHLOROFORM	µg/L	--	5 U	5 U	**11.4**	**16.8**
CHLOROMETHANE	µg/L	--	5 U	5 U	10 U	5 U
cis-1,2-DICHLOROETHYLENE	µg/L	--	5 U	5 U	10 U	5 U
cis-1,3-DICHLOROPROPENE	µg/L	--	5 U	5 U	10 U	5 U
CYCLOHEXANE	µg/L	--	**11.9**	**12.6**	**387**	5 U
CYMENE	µg/L	--	**0.506 J**	**0.482 J**	**79.4**	5 U
DIBROMOCHLOROMETHANE	µg/L	--	5 U	5 U	10 U	**0.688 J**
DICHLORODIFLUOROMETHANE	µg/L	--	5 U	5 U	10 U	5 U
ETHYL BENZENE	µg/L	--	5 U	5 U	**908**	5 U
FREON 113	µg/L	--	5 U	5 U	10 U	5 U
METHYL ACETATE	µg/L	--	5 U	5 U	10 U	5 U
METHYL ETHYL KETONE (2-BUTANONE)	µg/L	--	5 U	5 U	**13.2**	5 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	µg/L	--	5 U	5 U	**6.34 J**	5 U
METHYL TERT-BUTYL ETHER (MTBE)	µg/L	--	5 U	5 U	10 U	5 U
METHYLCYCLOHEXANE	µg/L	--	**10.7**	**11.1**	**249**	5 U
METHYLENE CHLORIDE	µg/L	--	10 U	10 U	20 U	**0.659 J**
STYRENE	µg/L	--	5 U	5 U	10 U	5 U
TETRACHLOROETHENE (PCE)	µg/L	--	5 U	5 U	10 U	5 U
TOLUENE	µg/L	--	5 U	5 U	**9.78 J**	5 U
trans-1,2-DICHLOROETHENE	µg/L	--	5 U	5 U	10 U	5 U
trans-1,3-DICHLOROPROPENE	µg/L	--	5 U	5 U	10 U	5 U
TRICHLOROETHENE (TCE)	µg/L	22	5 U	5 U	10 U	5 U
TRICHLOROFLUOROMETHANE	µg/L	--	5 U	5 U	10 U	5 U
VINYL CHLORIDE	µg/L	--	5 U	5 U	10 U	5 U
XYLENES, TOTAL	µg/L	--	10 U	10 U	**294**	10 U

Notes:
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
NA Not analyzed
J The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
µg/L Micrograms per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceded screening criteria

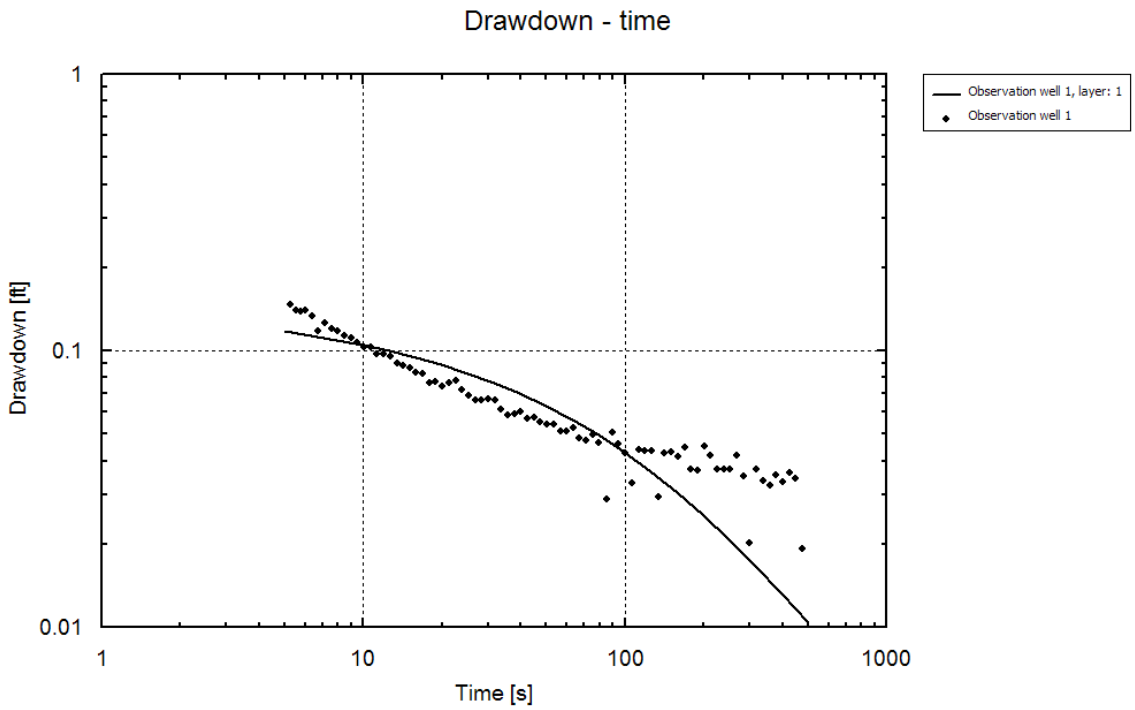
APPENDIX D

Aquifer Slug Test Data

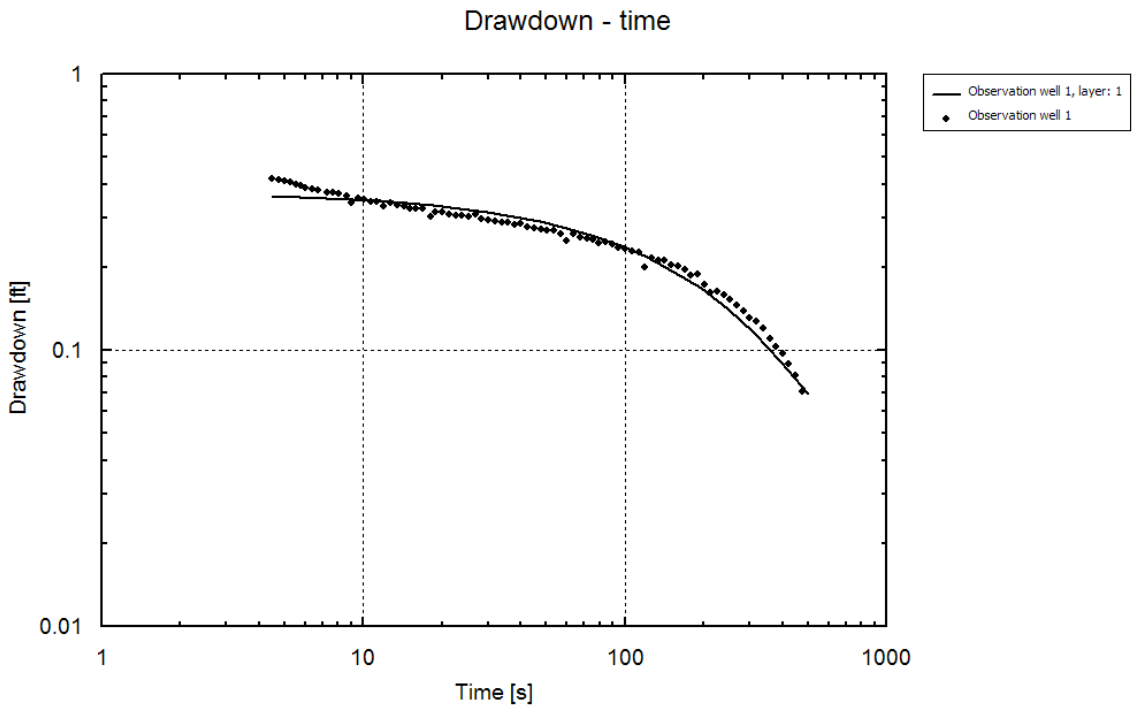
MLU Output Graphs

SWMU 54 Benzene Site

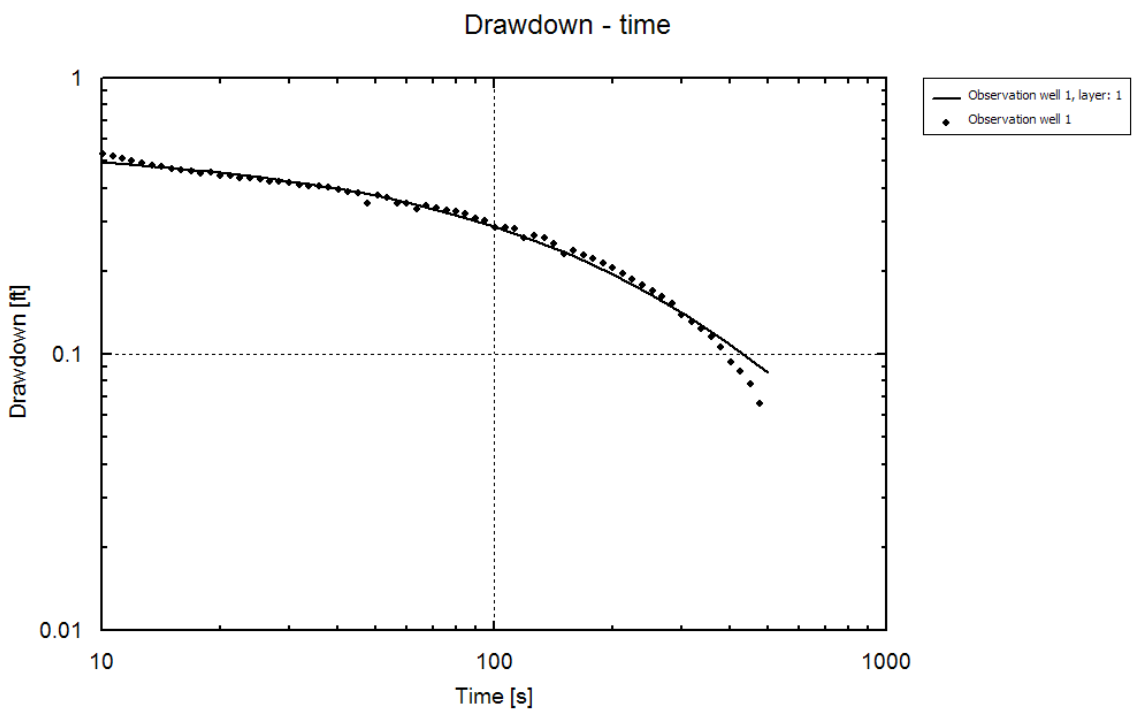
54MW01



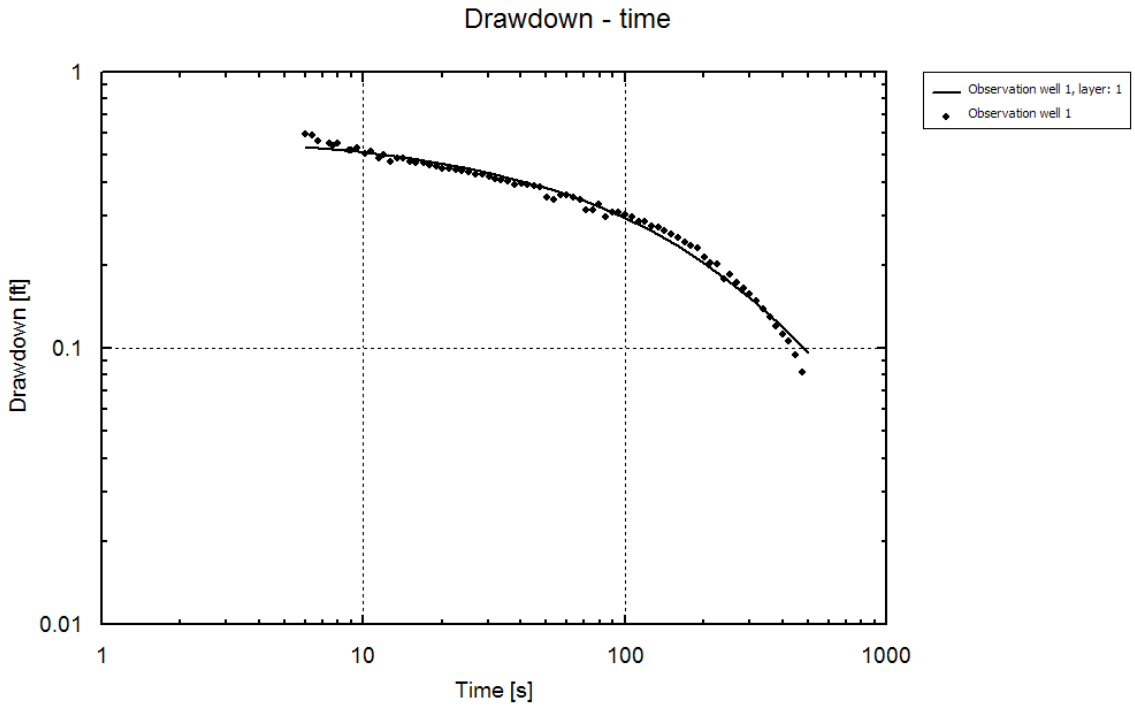
54MW02



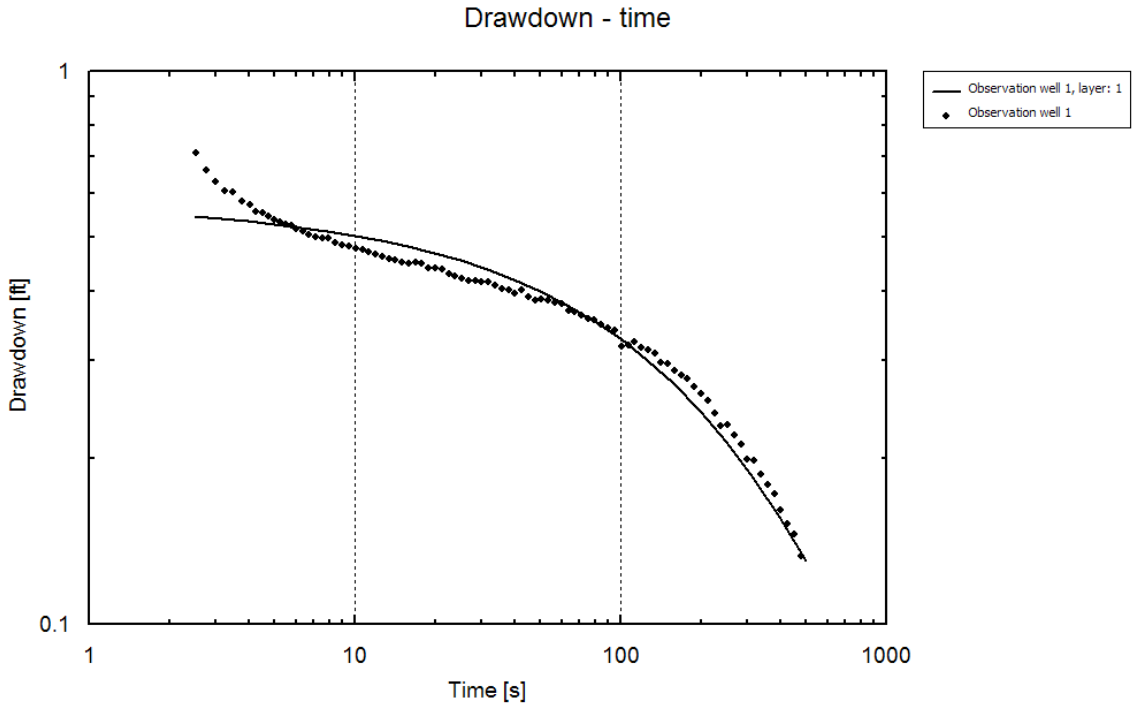
54MW03



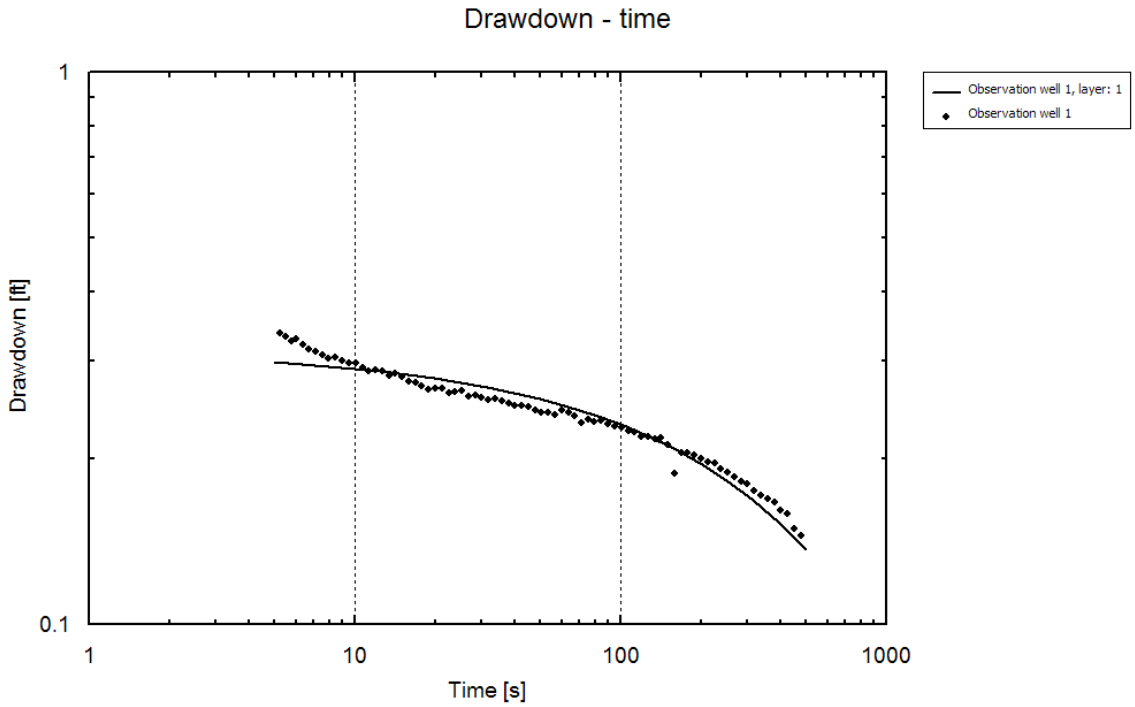
54MW04



54MW05

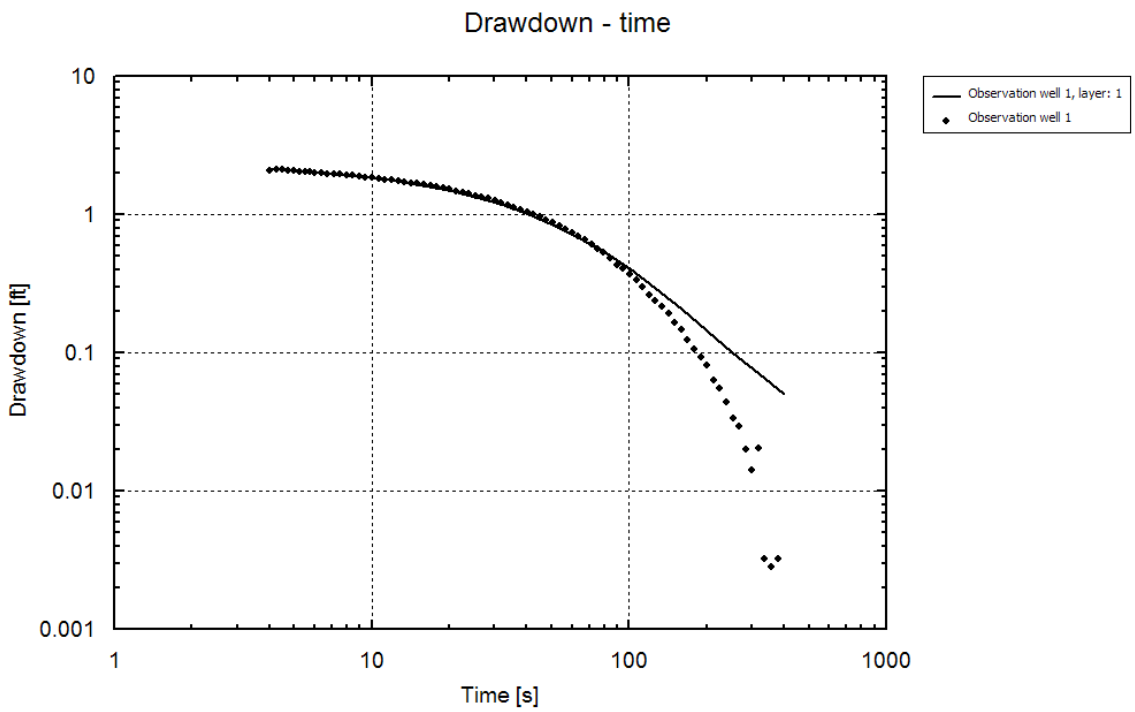


54MW06

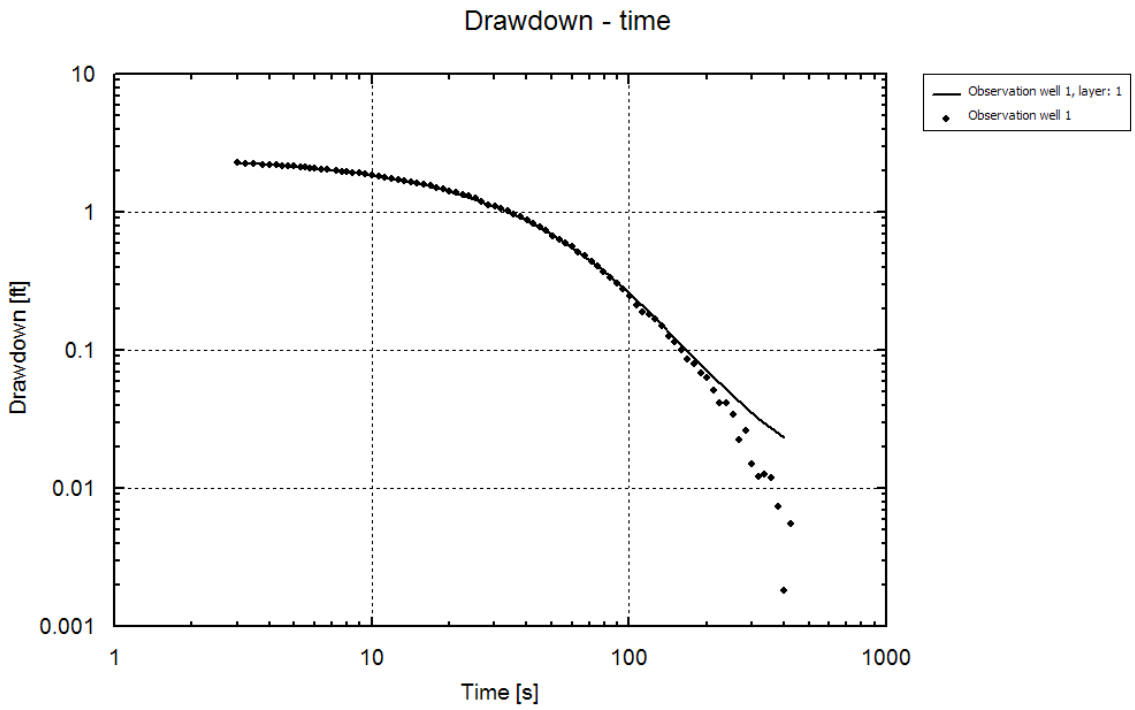

Drawdown - time
Observation well 1, layer: 1
Observation well 1
Drawdown [ft]
1
0.1
1
10
100
1000
Time [s]

SWMU 54 TCE Site

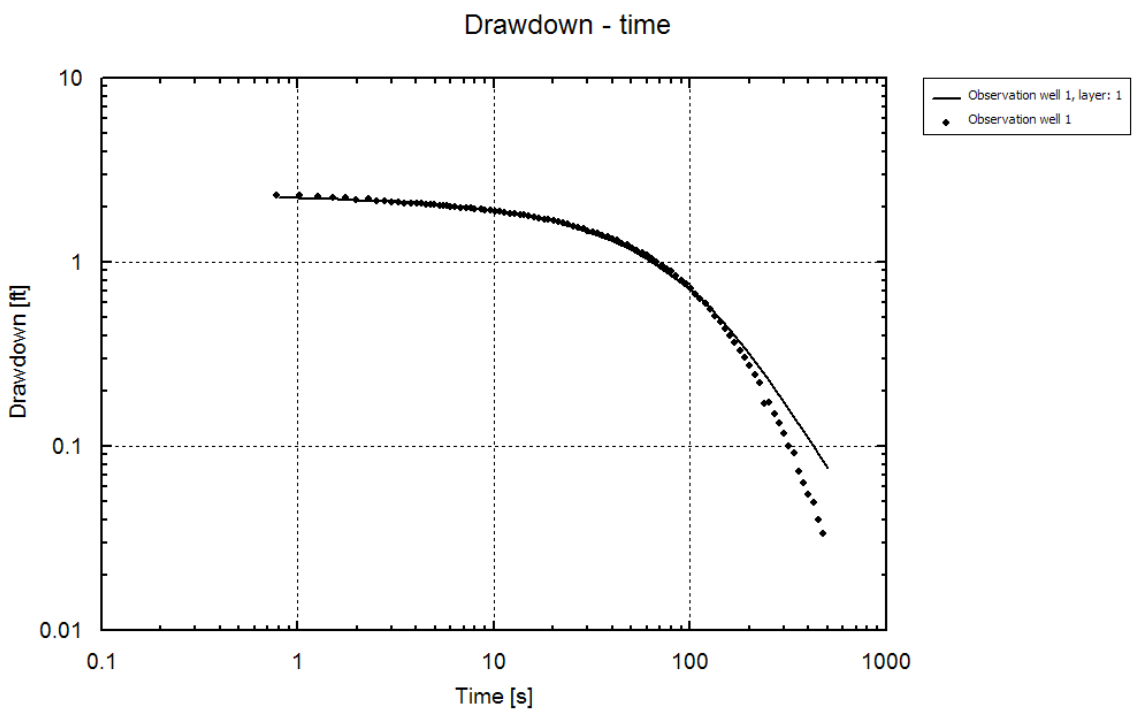
54MW07



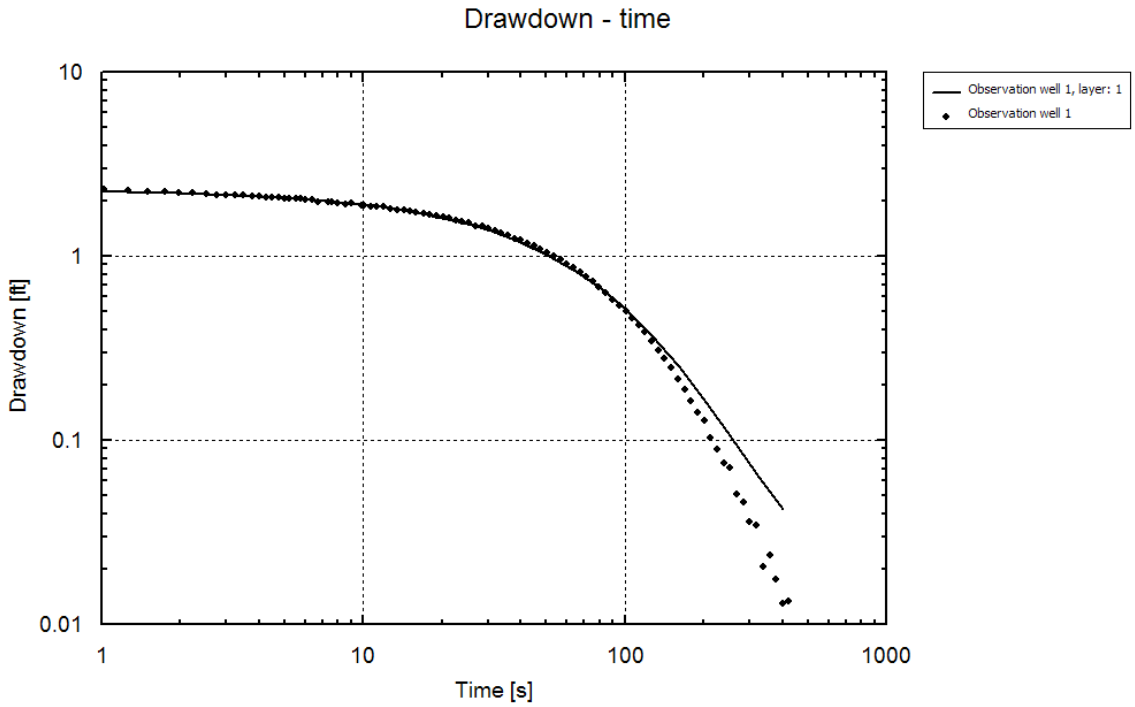
54MW08



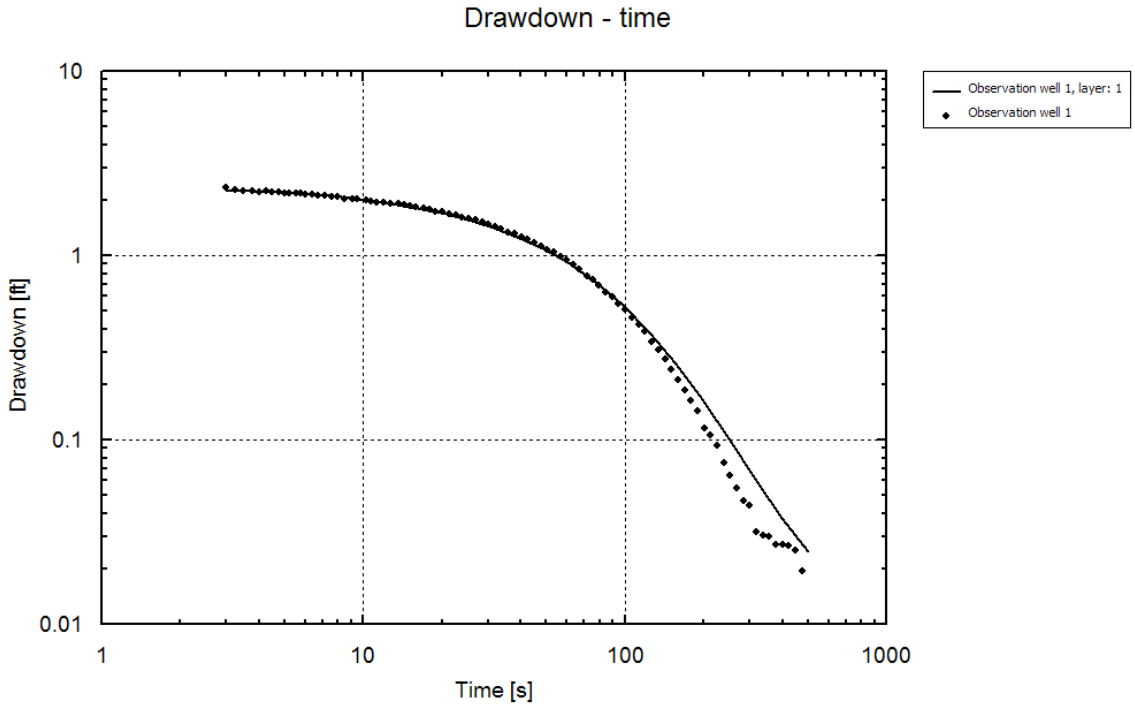
54MW09



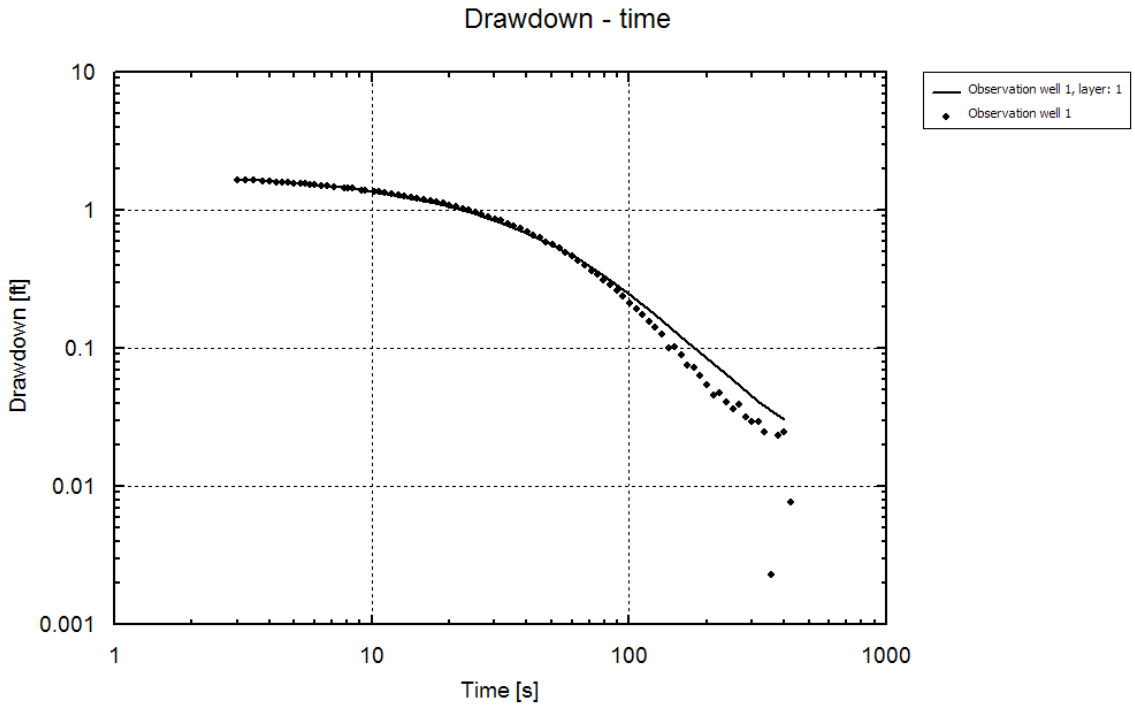
54MW10



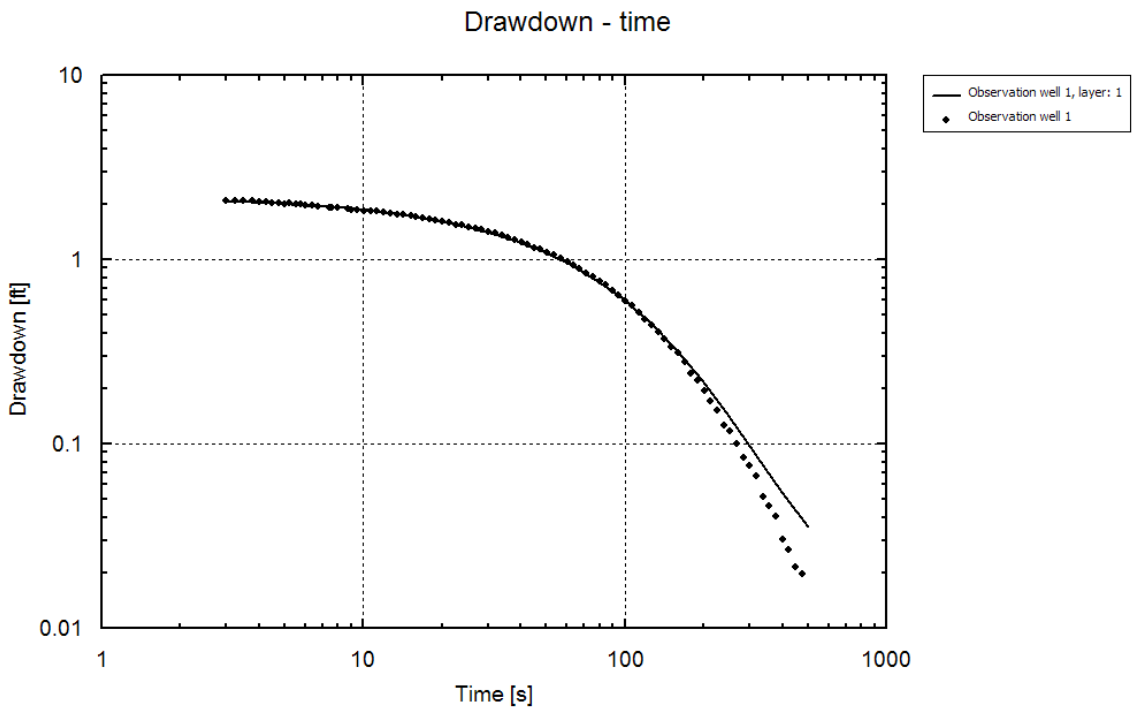
54MW11



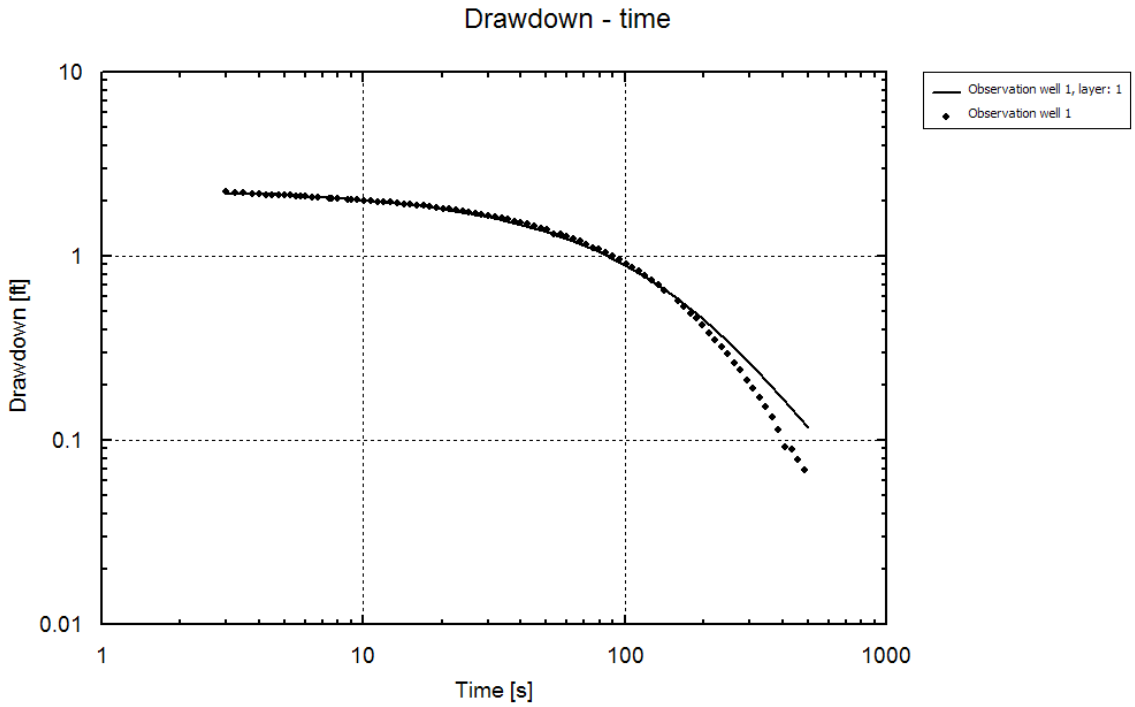
54MW12



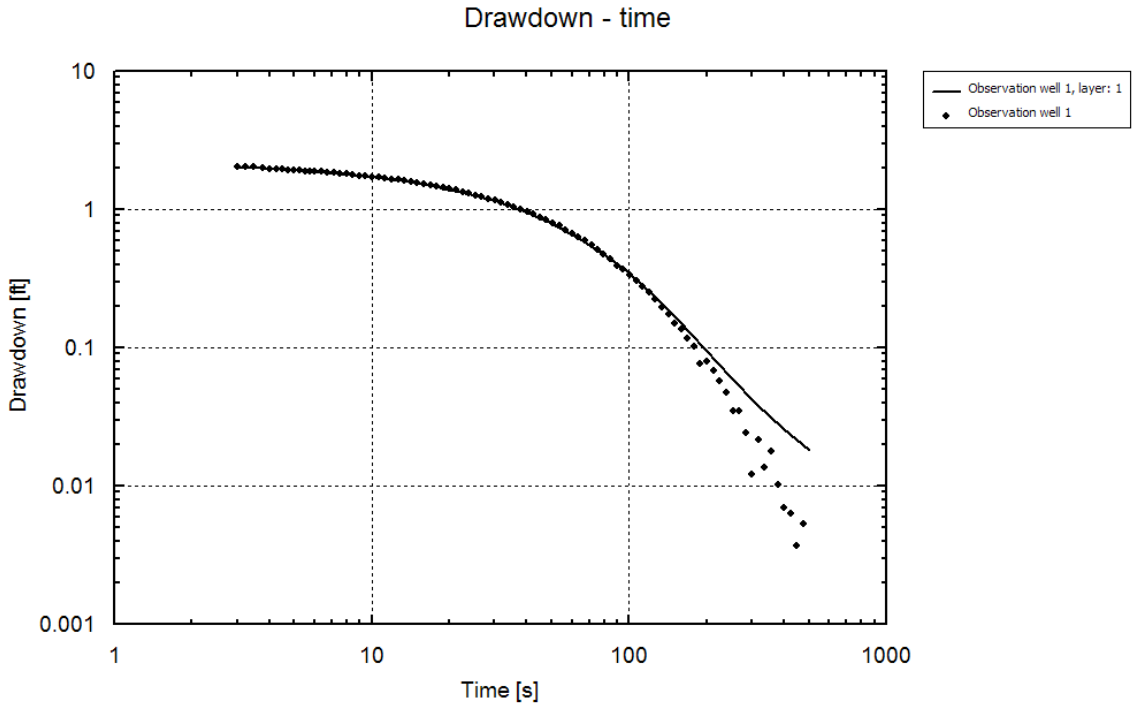
54MW13



54MW14



510MW5R



Pressure Transducer Data

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW01_Append_20091007_213205859.wsl
Create Date	10/7/2009 17:32

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW01
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 16:58
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 16:58	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 17:12	Manual Start Command
10/7/2009 17:14	Log Download - Used Battery: 21% Used Memory: 40% Name: bburking
10/7/2009 17:31	Log Download - Used Battery: 21% Used Memory: 40% Name: bburking

Log Data:
Record Count 116

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 17:12	0	2.6468
10/7/2009 17:12	0.004	5.2537
10/7/2009 17:12	0.008	3.3196
10/7/2009 17:12	0.013	4.2848
10/7/2009 17:12	0.017	4.2647
10/7/2009 17:12	0.021	4.4783
10/7/2009 17:12	0.025	4.6281
10/7/2009 17:12	0.029	4.7768
10/7/2009 17:12	0.033	4.8728
10/7/2009 17:12	0.038	4.989
10/7/2009 17:12	0.042	5.0581
10/7/2009 17:12	0.046	5.1087
10/7/2009 17:12	0.05	5.1334
10/7/2009 17:12	0.054	5.1736
10/7/2009 17:12	0.058	5.1873
10/7/2009 17:12	0.063	5.1952
10/7/2009 17:13	0.067	5.2073
10/7/2009 17:13	0.071	5.2113
10/7/2009 17:13	0.075	5.2163
10/7/2009 17:13	0.079	5.224
10/7/2009 17:13	0.083	5.2277
10/7/2009 17:13	0.088	5.2336
10/7/2009 17:13	0.092	5.2411
10/7/2009 17:13	0.096	5.2416
10/7/2009 17:13	0.1	5.2408
10/7/2009 17:13	0.106	5.2467
10/7/2009 17:13	0.112	5.2627
10/7/2009 17:13	0.119	5.2553
10/7/2009 17:13	0.126	5.2609
10/7/2009 17:13	0.133	5.2624
10/7/2009 17:13	0.141	5.2678
10/7/2009 17:13	0.15	5.2697
10/7/2009 17:13	0.158	5.274
10/7/2009 17:13	0.168	5.2779
10/7/2009 17:13	0.178	5.2775
10/7/2009 17:13	0.188	5.2837
10/7/2009 17:13	0.199	5.2836
10/7/2009 17:13	0.211	5.2854
10/7/2009 17:13	0.224	5.2904
10/7/2009 17:13	0.237	5.292
10/7/2009 17:13	0.251	5.2942
10/7/2009 17:13	0.266	5.297
10/7/2009 17:13	0.282	5.2981
10/7/2009 17:13	0.298	5.304
10/7/2009 17:13	0.316	5.3031

10/7/2009 17:13	0.335	5.3065
10/7/2009 17:13	0.355	5.3045
10/7/2009 17:13	0.376	5.3026
10/7/2009 17:13	0.398	5.3083
10/7/2009 17:13	0.422	5.3116
10/7/2009 17:13	0.447	5.3147
10/7/2009 17:13	0.473	5.3147
10/7/2009 17:13	0.501	5.3136
10/7/2009 17:13	0.531	5.3142
10/7/2009 17:13	0.562	5.3191
10/7/2009 17:13	0.596	5.3222
10/7/2009 17:13	0.631	5.3215
10/7/2009 17:13	0.668	5.3203
10/7/2009 17:13	0.708	5.324
10/7/2009 17:13	0.75	5.3234
10/7/2009 17:13	0.794	5.3254
10/7/2009 17:13	0.841	5.3265
10/7/2009 17:13	0.891	5.3263
10/7/2009 17:13	0.944	5.3296
10/7/2009 17:13	1	5.3294
10/7/2009 17:13	1.06	5.3281
10/7/2009 17:14	1.12	5.3324
10/7/2009 17:14	1.19	5.3334
10/7/2009 17:14	1.262	5.3309
10/7/2009 17:14	1.33	5.3343
10/7/2009 17:14	1.417	5.3517
10/7/2009 17:14	1.5	5.33
10/7/2009 17:14	1.58	5.3345
10/7/2009 17:14	1.68	5.3382
10/7/2009 17:14	1.78	5.3475
10/7/2009 17:14	1.88	5.3367
10/7/2009 17:14	1.99	5.3374
10/7/2009 17:15	2.11	5.337
10/7/2009 17:15	2.24	5.351
10/7/2009 17:15	2.37	5.3382
10/7/2009 17:15	2.51	5.3377
10/7/2009 17:15	2.66	5.3393
10/7/2009 17:15	2.82	5.3361
10/7/2009 17:15	2.98	5.3435
10/7/2009 17:16	3.16	5.3437
10/7/2009 17:16	3.35	5.3356
10/7/2009 17:16	3.552	5.3389
10/7/2009 17:16	3.762	5.3435
10/7/2009 17:16	3.983	5.3433
10/7/2009 17:17	4.22	5.3432
10/7/2009 17:17	4.47	5.3388
10/7/2009 17:17	4.732	5.3454
10/7/2009 17:17	5.01	5.3605
10/7/2009 17:18	5.312	5.3432
10/7/2009 17:18	5.62	5.3468
10/7/2009 17:18	5.962	5.3481

10/7/2009 17:19	6.312	5.345
10/7/2009 17:19	6.683	5.3472
10/7/2009 17:20	7.083	5.3445
10/7/2009 17:20	7.5	5.3462
10/7/2009 17:20	7.943	5.3614
10/7/2009 17:21	8.41	5.3555
10/7/2009 17:21	8.91	5.3502
10/7/2009 17:22	9.44	5.3512
10/7/2009 17:22	10.002	5.3493
10/7/2009 17:23	10.602	5.3522
10/7/2009 17:24	11.202	5.3558
10/7/2009 17:24	11.9	5.3516
10/7/2009 17:25	12.6	5.3538
10/7/2009 17:26	13.3	5.3586
10/7/2009 17:27	14.1	5.357
10/7/2009 17:27	15	5.3586
10/7/2009 17:28	15.8	5.358
10/7/2009 17:29	16.8	5.364
10/7/2009 17:30	17.8	5.3593
10/7/2009 17:31	18.801	5.3806

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW02_Append_20091007_205019156.wsl
Create Date	10/7/2009 16:50

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW02
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 16:29
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 16:29	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 16:37	Manual Start Command
10/7/2009 16:39	Log Download - Used Battery: 21% Used Memory: 39% Name: bburking
10/7/2009 16:48	Log Download - Used Battery: 21% Used Memory: 39% Name: bburking
10/7/2009 16:50	Log Download - Used Battery: 21% Used Memory: 39% Name: bburking

Log Data:
Record Count 109

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 16:37	0	4.6357
10/7/2009 16:37	0.004	5.1333
10/7/2009 16:37	0.008	6.2641
10/7/2009 16:37	0.013	5.2198
10/7/2009 16:37	0.017	5.0208
10/7/2009 16:37	0.021	5.1588
10/7/2009 16:37	0.025	5.3302
10/7/2009 16:37	0.029	5.497
10/7/2009 16:37	0.033	5.6475
10/7/2009 16:37	0.038	5.7918
10/7/2009 16:37	0.042	5.8965
10/7/2009 16:37	0.046	5.9923
10/7/2009 16:37	0.05	6.0496
10/7/2009 16:37	0.054	6.0859
10/7/2009 16:37	0.058	6.1095
10/7/2009 16:37	0.063	6.1293
10/7/2009 16:37	0.067	6.1347
10/7/2009 16:37	0.071	6.1492
10/7/2009 16:37	0.075	6.1604
10/7/2009 16:37	0.079	6.1662
10/7/2009 16:37	0.083	6.1685
10/7/2009 16:37	0.088	6.1753
10/7/2009 16:37	0.092	6.1825
10/7/2009 16:37	0.096	6.1865
10/7/2009 16:37	0.1	6.1931
10/7/2009 16:37	0.106	6.1961
10/7/2009 16:37	0.112	6.2018
10/7/2009 16:37	0.121	6.2067
10/7/2009 16:37	0.128	6.2083
10/7/2009 16:37	0.134	6.2109
10/7/2009 16:37	0.144	6.2181
10/7/2009 16:37	0.15	6.2376
10/7/2009 16:37	0.16	6.2261
10/7/2009 16:37	0.168	6.2269
10/7/2009 16:37	0.178	6.2338
10/7/2009 16:37	0.188	6.2353
10/7/2009 16:37	0.199	6.2471
10/7/2009 16:37	0.211	6.2393
10/7/2009 16:37	0.226	6.2459
10/7/2009 16:37	0.238	6.2481
10/7/2009 16:37	0.251	6.2554
10/7/2009 16:37	0.266	6.253
10/7/2009 16:37	0.282	6.2532
10/7/2009 16:37	0.301	6.2765
10/7/2009 16:37	0.316	6.262

10/7/2009 16:37	0.335	6.2638
10/7/2009 16:37	0.355	6.2693
10/7/2009 16:37	0.376	6.2714
10/7/2009 16:37	0.398	6.2723
10/7/2009 16:37	0.422	6.2749
10/7/2009 16:37	0.447	6.2705
10/7/2009 16:37	0.473	6.2809
10/7/2009 16:37	0.502	6.2839
10/7/2009 16:37	0.531	6.2873
10/7/2009 16:37	0.563	6.2888
10/7/2009 16:37	0.596	6.2888
10/7/2009 16:37	0.631	6.2948
10/7/2009 16:37	0.668	6.2922
10/7/2009 16:37	0.709	6.3
10/7/2009 16:38	0.75	6.3022
10/7/2009 16:38	0.796	6.306
10/7/2009 16:38	0.842	6.309
10/7/2009 16:38	0.892	6.3093
10/7/2009 16:38	0.946	6.3155
10/7/2009 16:38	1.001	6.3317
10/7/2009 16:38	1.063	6.3159
10/7/2009 16:38	1.122	6.3228
10/7/2009 16:38	1.192	6.327
10/7/2009 16:38	1.261	6.3279
10/7/2009 16:38	1.33	6.3349
10/7/2009 16:38	1.413	6.333
10/7/2009 16:38	1.5	6.338
10/7/2009 16:38	1.58	6.3437
10/7/2009 16:38	1.68	6.3475
10/7/2009 16:39	1.783	6.3512
10/7/2009 16:39	1.88	6.3543
10/7/2009 16:39	1.99	6.3798
10/7/2009 16:39	2.11	6.364
10/7/2009 16:39	2.24	6.368
10/7/2009 16:39	2.37	6.3692
10/7/2009 16:39	2.51	6.3763
10/7/2009 16:39	2.662	6.3792
10/7/2009 16:40	2.821	6.3834
10/7/2009 16:40	2.98	6.3923
10/7/2009 16:40	3.162	6.3913
10/7/2009 16:40	3.35	6.407
10/7/2009 16:40	3.55	6.418
10/7/2009 16:41	3.763	6.417
10/7/2009 16:41	3.98	6.421
10/7/2009 16:41	4.222	6.4266
10/7/2009 16:41	4.47	6.435
10/7/2009 16:41	4.731	6.441
10/7/2009 16:42	5.01	6.4486
10/7/2009 16:42	5.312	6.4524
10/7/2009 16:42	5.62	6.4595
10/7/2009 16:43	5.962	6.4699

10/7/2009 16:43	6.312	6.4768
10/7/2009 16:43	6.68	6.4827
10/7/2009 16:44	7.08	6.4902
10/7/2009 16:44	7.5	6.499
10/7/2009 16:45	7.942	6.5088
10/7/2009 16:45	8.413	6.5141
10/7/2009 16:46	8.913	6.5281
10/7/2009 16:46	9.442	6.5353
10/7/2009 16:47	10	6.5415
10/7/2009 16:47	10.6	6.5508
10/7/2009 16:48	11.2	6.5626
10/7/2009 16:49	11.9	6.5703
10/7/2009 16:49	12.6	6.5797

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW03_Append_20091007_202144906.wsl
Create Date	10/7/2009 16:21

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW03
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 16:07
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 16:07	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 16:08	Manual Start Command
10/7/2009 16:09	Log Download - Used Battery: 21% Used Memory: 37% Name: bburking
10/7/2009 16:12	Log Download - Used Battery: 21% Used Memory: 37% Name: bburking
10/7/2009 16:21	Log Download - Used Battery: 21% Used Memory: 37% Name: bburking

Log Data:
Record Count 109

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 16:08	0	5.4527
10/7/2009 16:08	0.004	6.2686
10/7/2009 16:08	0.008	5.2945
10/7/2009 16:08	0.013	4.7558
10/7/2009 16:08	0.017	4.7911
10/7/2009 16:08	0.021	4.8669
10/7/2009 16:08	0.025	5.0225
10/7/2009 16:08	0.029	5.1134
10/7/2009 16:08	0.033	5.1904
10/7/2009 16:08	0.038	5.27
10/7/2009 16:08	0.042	5.3409
10/7/2009 16:08	0.046	5.4033
10/7/2009 16:08	0.05	5.4804
10/7/2009 16:08	0.054	5.5251
10/7/2009 16:08	0.058	5.5796
10/7/2009 16:08	0.063	5.6445
10/7/2009 16:08	0.067	5.6838
10/7/2009 16:08	0.071	5.7134
10/7/2009 16:08	0.075	5.7422
10/7/2009 16:08	0.079	5.7678
10/7/2009 16:08	0.083	5.7907
10/7/2009 16:08	0.088	5.8035
10/7/2009 16:08	0.092	5.8269
10/7/2009 16:08	0.096	5.8407
10/7/2009 16:08	0.1	5.8625
10/7/2009 16:08	0.106	5.8809
10/7/2009 16:08	0.112	5.9203
10/7/2009 16:08	0.119	5.9408
10/7/2009 16:08	0.126	5.9679
10/7/2009 16:08	0.133	6.0016
10/7/2009 16:08	0.141	6.0352
10/7/2009 16:08	0.15	6.069
10/7/2009 16:08	0.158	6.0937
10/7/2009 16:08	0.168	6.1259
10/7/2009 16:08	0.178	6.1381
10/7/2009 16:08	0.188	6.1471
10/7/2009 16:08	0.199	6.1564
10/7/2009 16:08	0.211	6.1632
10/7/2009 16:08	0.224	6.1749
10/7/2009 16:08	0.237	6.1804
10/7/2009 16:08	0.251	6.1864
10/7/2009 16:08	0.266	6.1946
10/7/2009 16:08	0.282	6.1986
10/7/2009 16:08	0.298	6.2048
10/7/2009 16:08	0.316	6.2034

10/7/2009 16:08	0.335	6.2125
10/7/2009 16:08	0.355	6.2138
10/7/2009 16:08	0.376	6.2219
10/7/2009 16:08	0.398	6.223
10/7/2009 16:08	0.422	6.2289
10/7/2009 16:08	0.447	6.2335
10/7/2009 16:08	0.473	6.2361
10/7/2009 16:08	0.501	6.2405
10/7/2009 16:08	0.531	6.246
10/7/2009 16:08	0.562	6.2508
10/7/2009 16:09	0.596	6.2526
10/7/2009 16:09	0.631	6.2569
10/7/2009 16:09	0.668	6.2608
10/7/2009 16:09	0.708	6.2705
10/7/2009 16:09	0.75	6.2739
10/7/2009 16:09	0.794	6.3051
10/7/2009 16:09	0.841	6.2825
10/7/2009 16:09	0.891	6.2892
10/7/2009 16:09	0.944	6.3068
10/7/2009 16:09	1	6.3041
10/7/2009 16:09	1.06	6.3214
10/7/2009 16:09	1.12	6.3127
10/7/2009 16:09	1.19	6.3189
10/7/2009 16:09	1.26	6.3247
10/7/2009 16:09	1.33	6.3284
10/7/2009 16:09	1.41	6.3357
10/7/2009 16:09	1.5	6.346
10/7/2009 16:09	1.58	6.3521
10/7/2009 16:10	1.681	6.3695
10/7/2009 16:10	1.78	6.3695
10/7/2009 16:10	1.88	6.3714
10/7/2009 16:10	1.99	6.3924
10/7/2009 16:10	2.11	6.3882
10/7/2009 16:10	2.24	6.394
10/7/2009 16:10	2.37	6.4054
10/7/2009 16:10	2.51	6.4273
10/7/2009 16:11	2.663	6.4205
10/7/2009 16:11	2.821	6.4292
10/7/2009 16:11	2.98	6.4361
10/7/2009 16:11	3.163	6.4445
10/7/2009 16:11	3.35	6.4516
10/7/2009 16:11	3.551	6.4616
10/7/2009 16:12	3.76	6.4703
10/7/2009 16:12	3.98	6.48
10/7/2009 16:12	4.22	6.4877
10/7/2009 16:12	4.47	6.4951
10/7/2009 16:13	4.733	6.5051
10/7/2009 16:13	5.01	6.518
10/7/2009 16:13	5.31	6.5259
10/7/2009 16:14	5.62	6.5334
10/7/2009 16:14	5.96	6.5412

10/7/2009 16:14	6.31	6.551
10/7/2009 16:15	6.681	6.5632
10/7/2009 16:15	7.081	6.5702
10/7/2009 16:15	7.5	6.5788
10/7/2009 16:16	7.94	6.5909
10/7/2009 16:16	8.41	6.5964
10/7/2009 16:17	8.91	6.6115
10/7/2009 16:17	9.44	6.6177
10/7/2009 16:18	10.003	6.6268
10/7/2009 16:19	10.6	6.6323
10/7/2009 16:19	11.2	6.6405
10/7/2009 16:20	11.9	6.6479
10/7/2009 16:21	12.6	6.657

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW04_Append_20091007_195221875.wsl
Create Date	10/7/2009 15:52

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW04
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 15:35
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 15:35	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 15:40	Manual Start Command
10/7/2009 15:42	Log Download - Used Battery: 21% Used Memory: 35% Name: bburking
10/7/2009 15:52	Log Download - Used Battery: 21% Used Memory: 35% Name: bburking

Log Data:
Record Count 107

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 15:40	0	10.9998
10/7/2009 15:40	0.004	10.9184
10/7/2009 15:40	0.008	11.1422
10/7/2009 15:40	0.013	11.312
10/7/2009 15:40	0.017	11.5168
10/7/2009 15:40	0.021	11.6496
10/7/2009 15:40	0.025	11.7328
10/7/2009 15:40	0.029	11.7862
10/7/2009 15:40	0.033	11.8273
10/7/2009 15:40	0.037	11.9028
10/7/2009 15:40	0.042	11.9627
10/7/2009 15:40	0.046	12.0241
10/7/2009 15:40	0.05	12.0619
10/7/2009 15:40	0.054	12.1158
10/7/2009 15:40	0.058	12.1438
10/7/2009 15:40	0.063	12.1717
10/7/2009 15:40	0.067	12.1907
10/7/2009 15:40	0.071	12.2175
10/7/2009 15:40	0.075	12.2372
10/7/2009 15:40	0.079	12.2526
10/7/2009 15:40	0.083	12.2632
10/7/2009 15:40	0.087	12.2678
10/7/2009 15:40	0.092	12.2775
10/7/2009 15:40	0.096	12.2923
10/7/2009 15:40	0.1	12.3024
10/7/2009 15:40	0.106	12.3044
10/7/2009 15:40	0.112	12.3326
10/7/2009 15:40	0.124	12.3462
10/7/2009 15:40	0.128	12.3565
10/7/2009 15:40	0.133	12.3425
10/7/2009 15:40	0.147	12.3766
10/7/2009 15:40	0.15	12.3763
10/7/2009 15:40	0.158	12.3667
10/7/2009 15:40	0.169	12.3917
10/7/2009 15:40	0.178	12.3816
10/7/2009 15:40	0.191	12.4069
10/7/2009 15:40	0.199	12.3947
10/7/2009 15:40	0.211	12.421
10/7/2009 15:40	0.224	12.4068
10/7/2009 15:40	0.237	12.408
10/7/2009 15:40	0.251	12.4216
10/7/2009 15:41	0.266	12.4249
10/7/2009 15:41	0.283	12.4261
10/7/2009 15:41	0.3	12.4356
10/7/2009 15:41	0.318	12.4392

10/7/2009 15:41	0.335	12.4478
10/7/2009 15:41	0.355	12.4487
10/7/2009 15:41	0.376	12.4524
10/7/2009 15:41	0.398	12.4582
10/7/2009 15:41	0.422	12.4631
10/7/2009 15:41	0.447	12.4693
10/7/2009 15:41	0.474	12.4704
10/7/2009 15:41	0.504	12.4775
10/7/2009 15:41	0.533	12.4843
10/7/2009 15:41	0.562	12.4915
10/7/2009 15:41	0.596	12.4936
10/7/2009 15:41	0.632	12.5058
10/7/2009 15:41	0.669	12.5001
10/7/2009 15:41	0.708	12.5036
10/7/2009 15:41	0.75	12.5095
10/7/2009 15:41	0.794	12.5124
10/7/2009 15:41	0.844	12.5426
10/7/2009 15:41	0.891	12.5494
10/7/2009 15:41	0.946	12.539
10/7/2009 15:41	1	12.5375
10/7/2009 15:41	1.061	12.5455
10/7/2009 15:41	1.121	12.5506
10/7/2009 15:41	1.19	12.5785
10/7/2009 15:41	1.26	12.5783
10/7/2009 15:42	1.33	12.5653
10/7/2009 15:42	1.411	12.5966
10/7/2009 15:42	1.501	12.5848
10/7/2009 15:42	1.58	12.5858
10/7/2009 15:42	1.68	12.5901
10/7/2009 15:42	1.78	12.5983
10/7/2009 15:42	1.88	12.6097
10/7/2009 15:42	1.992	12.6094
10/7/2009 15:42	2.11	12.6181
10/7/2009 15:42	2.241	12.6219
10/7/2009 15:43	2.371	12.6287
10/7/2009 15:43	2.512	12.6373
10/7/2009 15:43	2.662	12.644
10/7/2009 15:43	2.821	12.653
10/7/2009 15:43	2.98	12.661
10/7/2009 15:43	3.162	12.6654
10/7/2009 15:44	3.35	12.6821
10/7/2009 15:44	3.55	12.6927
10/7/2009 15:44	3.762	12.6937
10/7/2009 15:44	3.98	12.7181
10/7/2009 15:44	4.221	12.7103
10/7/2009 15:45	4.471	12.7228
10/7/2009 15:45	4.73	12.7315
10/7/2009 15:45	5.012	12.7386
10/7/2009 15:46	5.312	12.7479
10/7/2009 15:46	5.621	12.7576
10/7/2009 15:46	5.962	12.7661

10/7/2009 15:47	6.312	12.7761
10/7/2009 15:47	6.68	12.7831
10/7/2009 15:47	7.08	12.7901
10/7/2009 15:48	7.5	12.8013
10/7/2009 15:48	7.942	12.8143
10/7/2009 15:49	8.413	12.8211
10/7/2009 15:49	8.913	12.8321
10/7/2009 15:50	9.443	12.8467
10/7/2009 15:50	10	12.8531
10/7/2009 15:51	10.603	12.8644
10/7/2009 15:51	11.204	12.8957

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW05_Append_20091007_191737890.wsl
Create Date	10/7/2009 15:17

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW05
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 14:57
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 14:57	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 14:58	Manual Start Command
10/7/2009 15:00	Log Download - Used Battery: 21% Used Memory: 32% Name: bburking
10/7/2009 15:10	Log Download - Used Battery: 21% Used Memory: 32% Name: bburking
10/7/2009 15:17	Log Download - Used Battery: 21% Used Memory: 32% Name: bburking

Log Data:
Record Count 116

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 14:58	0	10.9674
10/7/2009 14:58	0.004	11.7755
10/7/2009 14:58	0.008	11.642
10/7/2009 14:58	0.013	11.222
10/7/2009 14:58	0.017	11.4012
10/7/2009 14:58	0.021	11.5487
10/7/2009 14:58	0.025	11.7096
10/7/2009 14:58	0.029	11.8318
10/7/2009 14:58	0.033	11.9392
10/7/2009 14:58	0.037	12.0262
10/7/2009 14:58	0.042	12.0852
10/7/2009 14:58	0.046	12.1339
10/7/2009 14:58	0.05	12.1665
10/7/2009 14:58	0.054	12.1893
10/7/2009 14:58	0.058	12.1928
10/7/2009 14:58	0.063	12.2143
10/7/2009 14:58	0.067	12.2228
10/7/2009 14:58	0.071	12.2393
10/7/2009 14:58	0.075	12.2431
10/7/2009 14:58	0.079	12.2519
10/7/2009 14:58	0.083	12.2579
10/7/2009 14:58	0.087	12.2644
10/7/2009 14:58	0.092	12.2693
10/7/2009 14:58	0.096	12.2718
10/7/2009 14:58	0.1	12.2789
10/7/2009 14:58	0.106	12.2826
10/7/2009 14:58	0.112	12.2918
10/7/2009 14:58	0.119	12.295
10/7/2009 14:58	0.126	12.2987
10/7/2009 14:58	0.133	12.2995
10/7/2009 14:58	0.141	12.3082
10/7/2009 14:58	0.15	12.3114
10/7/2009 14:58	0.158	12.3156
10/7/2009 14:58	0.168	12.3192
10/7/2009 14:58	0.178	12.3211
10/7/2009 14:58	0.188	12.3269
10/7/2009 14:58	0.199	12.3304
10/7/2009 14:58	0.211	12.3341
10/7/2009 14:58	0.224	12.3388
10/7/2009 14:58	0.237	12.3411
10/7/2009 14:58	0.251	12.3451
10/7/2009 14:58	0.266	12.3492
10/7/2009 14:58	0.282	12.3471
10/7/2009 14:58	0.298	12.3477
10/7/2009 14:58	0.316	12.3565

10/7/2009 14:58	0.335	12.3569
10/7/2009 14:58	0.355	12.358
10/7/2009 14:58	0.376	12.3682
10/7/2009 14:58	0.398	12.3716
10/7/2009 14:58	0.422	12.3746
10/7/2009 14:58	0.447	12.3794
10/7/2009 14:58	0.473	12.3791
10/7/2009 14:58	0.501	12.3822
10/7/2009 14:58	0.531	12.3819
10/7/2009 14:58	0.562	12.3866
10/7/2009 14:58	0.596	12.3932
10/7/2009 14:58	0.631	12.3943
10/7/2009 14:58	0.668	12.4002
10/7/2009 14:58	0.708	12.3961
10/7/2009 14:58	0.75	12.4063
10/7/2009 14:59	0.794	12.4116
10/7/2009 14:59	0.841	12.4101
10/7/2009 14:59	0.891	12.412
10/7/2009 14:59	0.944	12.4164
10/7/2009 14:59	1	12.4185
10/7/2009 14:59	1.06	12.4282
10/7/2009 14:59	1.12	12.4299
10/7/2009 14:59	1.19	12.435
10/7/2009 14:59	1.26	12.4412
10/7/2009 14:59	1.33	12.4417
10/7/2009 14:59	1.41	12.4487
10/7/2009 14:59	1.5	12.4542
10/7/2009 14:59	1.58	12.4578
10/7/2009 14:59	1.68	12.479
10/7/2009 14:59	1.78	12.4774
10/7/2009 15:00	1.88	12.4736
10/7/2009 15:00	1.99	12.4803
10/7/2009 15:00	2.11	12.4835
10/7/2009 15:00	2.24	12.4879
10/7/2009 15:00	2.373	12.5007
10/7/2009 15:00	2.51	12.5018
10/7/2009 15:00	2.66	12.5101
10/7/2009 15:01	2.823	12.5147
10/7/2009 15:01	2.981	12.5191
10/7/2009 15:01	3.161	12.5279
10/7/2009 15:01	3.35	12.5366
10/7/2009 15:01	3.55	12.5439
10/7/2009 15:01	3.762	12.5567
10/7/2009 15:02	3.98	12.5684
10/7/2009 15:02	4.22	12.5676
10/7/2009 15:02	4.47	12.5776
10/7/2009 15:02	4.73	12.5855
10/7/2009 15:03	5.011	12.5983
10/7/2009 15:03	5.31	12.5992
10/7/2009 15:03	5.621	12.6101
10/7/2009 15:04	5.962	12.6183

10/7/2009 15:04	6.312	12.6249
10/7/2009 15:04	6.68	12.6365
10/7/2009 15:05	7.08	12.6452
10/7/2009 15:05	7.5	12.6514
10/7/2009 15:06	7.943	12.6647
10/7/2009 15:06	8.41	12.6712
10/7/2009 15:07	8.911	12.685
10/7/2009 15:07	9.44	12.6896
10/7/2009 15:08	10	12.7035
10/7/2009 15:08	10.6	12.7059
10/7/2009 15:09	11.2	12.725
10/7/2009 15:10	11.9	12.7255
10/7/2009 15:10	12.6	12.7372
10/7/2009 15:11	13.3	12.744
10/7/2009 15:12	14.1	12.7562
10/7/2009 15:13	15	12.7684
10/7/2009 15:14	15.8	12.7675
10/7/2009 15:15	16.8	12.7791
10/7/2009 15:16	17.8	12.784
10/7/2009 15:17	18.8	12.7971

Report Date:	10/8/2009 7:56
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW06_Append_20091007_222322062.wsl
Create Date	10/7/2009 18:23

Device Properties

Device	Level TROLL 700
Site	SWMU 54 Benzene Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW06
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 17:42
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 17:42	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 17:52	Manual Start Command
10/7/2009 17:55	Log Download - Used Battery: 21% Used Memory: 42% Name: bburking
10/7/2009 18:02	Log Download - Used Battery: 21% Used Memory: 42% Name: bburking
10/7/2009 18:22	Log Download - Used Battery: 21% Used Memory: 42% Name: bburking
10/7/2009 18:22	Manual Stop Command

Log Data:
Record Count 127

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 17:52	0	6.8553
10/7/2009 17:52	0.004	6.3095
10/7/2009 17:52	0.008	5.9622
10/7/2009 17:52	0.013	6.259
10/7/2009 17:52	0.017	6.4078
10/7/2009 17:52	0.021	6.5895
10/7/2009 17:52	0.025	6.7249
10/7/2009 17:52	0.029	6.8623
10/7/2009 17:52	0.033	6.9546
10/7/2009 17:52	0.037	7.0444
10/7/2009 17:52	0.042	7.0922
10/7/2009 17:52	0.046	7.1292
10/7/2009 17:52	0.05	7.1557
10/7/2009 17:52	0.054	7.1682
10/7/2009 17:52	0.058	7.1844
10/7/2009 17:52	0.063	7.1972
10/7/2009 17:52	0.067	7.206
10/7/2009 17:52	0.071	7.2174
10/7/2009 17:52	0.075	7.2237
10/7/2009 17:52	0.079	7.2306
10/7/2009 17:52	0.083	7.2316
10/7/2009 17:52	0.087	7.2369
10/7/2009 17:52	0.092	7.2419
10/7/2009 17:52	0.096	7.2485
10/7/2009 17:52	0.1	7.2457
10/7/2009 17:52	0.106	7.2531
10/7/2009 17:52	0.112	7.259
10/7/2009 17:52	0.119	7.2622
10/7/2009 17:52	0.126	7.2662
10/7/2009 17:52	0.133	7.2705
10/7/2009 17:52	0.141	7.269
10/7/2009 17:52	0.15	7.2744
10/7/2009 17:52	0.158	7.2766
10/7/2009 17:52	0.168	7.2765
10/7/2009 17:52	0.178	7.283
10/7/2009 17:52	0.188	7.2859
10/7/2009 17:52	0.199	7.2854
10/7/2009 17:52	0.211	7.2867
10/7/2009 17:52	0.224	7.2917
10/7/2009 17:52	0.237	7.2896
10/7/2009 17:52	0.251	7.2936
10/7/2009 17:52	0.266	7.2989
10/7/2009 17:52	0.282	7.3001
10/7/2009 17:52	0.298	7.3038

10/7/2009 17:52	0.316	7.3076
10/7/2009 17:52	0.335	7.3069
10/7/2009 17:53	0.355	7.306
10/7/2009 17:53	0.376	7.3119
10/7/2009 17:53	0.398	7.3108
10/7/2009 17:53	0.422	7.3095
10/7/2009 17:53	0.447	7.3148
10/7/2009 17:53	0.473	7.3142
10/7/2009 17:53	0.501	7.3164
10/7/2009 17:53	0.531	7.3189
10/7/2009 17:53	0.562	7.3173
10/7/2009 17:53	0.596	7.3207
10/7/2009 17:53	0.631	7.3225
10/7/2009 17:53	0.668	7.3254
10/7/2009 17:53	0.708	7.3255
10/7/2009 17:53	0.75	7.3266
10/7/2009 17:53	0.794	7.3298
10/7/2009 17:53	0.841	7.3322
10/7/2009 17:53	0.891	7.3322
10/7/2009 17:53	0.944	7.3344
10/7/2009 17:53	1	7.3301
10/7/2009 17:53	1.06	7.3325
10/7/2009 17:53	1.12	7.3359
10/7/2009 17:53	1.19	7.3424
10/7/2009 17:53	1.26	7.3384
10/7/2009 17:53	1.33	7.3413
10/7/2009 17:54	1.41	7.3403
10/7/2009 17:54	1.5	7.3431
10/7/2009 17:54	1.58	7.346
10/7/2009 17:54	1.68	7.3468
10/7/2009 17:54	1.78	7.3501
10/7/2009 17:54	1.88	7.3506
10/7/2009 17:54	1.99	7.355
10/7/2009 17:54	2.11	7.3551
10/7/2009 17:54	2.24	7.3571
10/7/2009 17:55	2.37	7.3559
10/7/2009 17:55	2.51	7.3625
10/7/2009 17:55	2.66	7.3866
10/7/2009 17:55	2.82	7.369
10/7/2009 17:55	2.98	7.369
10/7/2009 17:55	3.16	7.3712
10/7/2009 17:56	3.35	7.3746
10/7/2009 17:56	3.552	7.3769
10/7/2009 17:56	3.76	7.3779
10/7/2009 17:56	3.98	7.3829
10/7/2009 17:56	4.223	7.3855
10/7/2009 17:57	4.473	7.3891
10/7/2009 17:57	4.73	7.3929
10/7/2009 17:57	5.01	7.3945
10/7/2009 17:57	5.31	7.3993
10/7/2009 17:58	5.623	7.4024

10/7/2009 17:58	5.96	7.405
10/7/2009 17:58	6.31	7.4072
10/7/2009 17:59	6.68	7.4128
10/7/2009 17:59	7.08	7.4154
10/7/2009 18:00	7.5	7.4251
10/7/2009 18:00	7.94	7.4291
10/7/2009 18:01	8.411	7.4351
10/7/2009 18:01	8.911	7.4341
10/7/2009 18:02	9.441	7.4416
10/7/2009 18:02	10	7.444
10/7/2009 18:03	10.6	7.455
10/7/2009 18:03	11.202	7.4597
10/7/2009 18:04	11.902	7.4641
10/7/2009 18:05	12.602	7.4708
10/7/2009 18:05	13.303	7.4749
10/7/2009 18:06	14.1	7.479
10/7/2009 18:07	15	7.4853
10/7/2009 18:08	15.8	7.4961
10/7/2009 18:09	16.8	7.4996
10/7/2009 18:10	17.8	7.5074
10/7/2009 18:11	18.8	7.5171
10/7/2009 18:12	19.8	7.5236
10/7/2009 18:13	20.8	7.5258
10/7/2009 18:14	21.8	7.5352
10/7/2009 18:15	22.802	7.5393
10/7/2009 18:16	23.802	7.5455
10/7/2009 18:17	24.8	7.5508
10/7/2009 18:18	25.802	7.5693
10/7/2009 18:19	26.8	7.5595
10/7/2009 18:20	27.8	7.5673
10/7/2009 18:21	28.801	7.5701
10/7/2009 18:22	29.801	7.5738

Report Date:	10/8/2009 7:51
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW07_Append_20091007_182525875.wsl
Create Date	10/7/2009 14:25

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW07
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 14:08
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 14:08	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 14:18	Manual Start Command
10/7/2009 14:20	Log Download - Used Battery: 21% Used Memory: 29% Name: bburking
10/7/2009 14:25	Log Download - Used Battery: 21% Used Memory: 29% Name: bburking

Log Data:
Record Count 98

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 14:18	0	14.6012
10/7/2009 14:18	0.004	15.2649
10/7/2009 14:18	0.008	13.3884
10/7/2009 14:18	0.013	15.044
10/7/2009 14:18	0.017	14.2369
10/7/2009 14:18	0.021	14.291
10/7/2009 14:18	0.025	14.7291
10/7/2009 14:18	0.029	14.2357
10/7/2009 14:18	0.033	14.6221
10/7/2009 14:18	0.037	14.5009
10/7/2009 14:18	0.042	14.4734
10/7/2009 14:18	0.046	14.625
10/7/2009 14:18	0.05	14.4892
10/7/2009 14:18	0.054	14.6043
10/7/2009 14:18	0.058	14.5958
10/7/2009 14:18	0.063	14.5637
10/7/2009 14:18	0.067	14.648
10/7/2009 14:18	0.071	14.6344
10/7/2009 14:18	0.075	14.635
10/7/2009 14:18	0.079	14.6673
10/7/2009 14:18	0.083	14.6669
10/7/2009 14:18	0.087	14.6905
10/7/2009 14:18	0.092	14.6997
10/7/2009 14:18	0.096	14.7019
10/7/2009 14:18	0.1	14.7315
10/7/2009 14:18	0.106	14.733
10/7/2009 14:18	0.112	14.7636
10/7/2009 14:18	0.119	14.7712
10/7/2009 14:18	0.126	14.7907
10/7/2009 14:18	0.133	14.8089
10/7/2009 14:18	0.141	14.8248
10/7/2009 14:18	0.15	14.8528
10/7/2009 14:18	0.158	14.8724
10/7/2009 14:18	0.168	14.8947
10/7/2009 14:18	0.178	14.9186
10/7/2009 14:18	0.188	14.938
10/7/2009 14:18	0.199	14.9644
10/7/2009 14:18	0.211	14.9881
10/7/2009 14:18	0.224	15.0118
10/7/2009 14:18	0.237	15.0412
10/7/2009 14:18	0.251	15.0682
10/7/2009 14:18	0.266	15.0945
10/7/2009 14:18	0.282	15.1277
10/7/2009 14:18	0.298	15.1577
10/7/2009 14:18	0.316	15.1888

10/7/2009 14:18	0.335	15.2189
10/7/2009 14:18	0.355	15.2545
10/7/2009 14:18	0.376	15.2916
10/7/2009 14:18	0.398	15.327
10/7/2009 14:18	0.422	15.363
10/7/2009 14:19	0.447	15.4002
10/7/2009 14:19	0.473	15.4341
10/7/2009 14:19	0.501	15.4778
10/7/2009 14:19	0.531	15.5215
10/7/2009 14:19	0.562	15.558
10/7/2009 14:19	0.596	15.6051
10/7/2009 14:19	0.631	15.6443
10/7/2009 14:19	0.668	15.6893
10/7/2009 14:19	0.708	15.7305
10/7/2009 14:19	0.75	15.7748
10/7/2009 14:19	0.794	15.816
10/7/2009 14:19	0.841	15.8602
10/7/2009 14:19	0.891	15.9068
10/7/2009 14:19	0.944	15.9519
10/7/2009 14:19	1	15.9989
10/7/2009 14:19	1.06	16.0374
10/7/2009 14:19	1.12	16.0823
10/7/2009 14:19	1.193	16.1291
10/7/2009 14:19	1.26	16.1698
10/7/2009 14:19	1.33	16.2025
10/7/2009 14:19	1.41	16.2492
10/7/2009 14:20	1.5	16.3016
10/7/2009 14:20	1.58	16.328
10/7/2009 14:20	1.68	16.3662
10/7/2009 14:20	1.78	16.4009
10/7/2009 14:20	1.88	16.4331
10/7/2009 14:20	1.991	16.4705
10/7/2009 14:20	2.112	16.4939
10/7/2009 14:20	2.241	16.5163
10/7/2009 14:20	2.371	16.5418
10/7/2009 14:21	2.512	16.5687
10/7/2009 14:21	2.662	16.5873
10/7/2009 14:21	2.821	16.6085
10/7/2009 14:21	2.98	16.6276
10/7/2009 14:21	3.162	16.6396
10/7/2009 14:21	3.35	16.6524
10/7/2009 14:22	3.55	16.6699
10/7/2009 14:22	3.762	16.6773
10/7/2009 14:22	3.98	16.6891
10/7/2009 14:22	4.221	16.6994
10/7/2009 14:23	4.471	16.7038
10/7/2009 14:23	4.73	16.713
10/7/2009 14:23	5.012	16.7189
10/7/2009 14:23	5.312	16.7125
10/7/2009 14:24	5.622	16.7297
10/7/2009 14:24	5.96	16.7301
10/7/2009 14:24	6.31	16.7297
10/7/2009 14:25	6.683	16.7329

Report Date:	10/8/2009 7:51
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW08_Append_20091007_180136343.wsl
Create Date	10/7/2009 14:01

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW08
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 13:37
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 13:37	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 13:53	Manual Start Command
10/7/2009 13:54	Log Download - Used Battery: 21% Used Memory: 28% Name: bburking
10/7/2009 13:57	Log Download - Used Battery: 21% Used Memory: 28% Name: bburking
10/7/2009 14:01	Log Download - Used Battery: 21% Used Memory: 28% Name: bburking

Log Data:
Record Count 101

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 13:53	0	13.2428
10/7/2009 13:53	0.004	13.169
10/7/2009 13:53	0.008	11.3095
10/7/2009 13:53	0.013	12.4398
10/7/2009 13:53	0.017	11.5042
10/7/2009 13:53	0.021	12.7241
10/7/2009 13:53	0.025	11.5706
10/7/2009 13:53	0.029	12.2196
10/7/2009 13:53	0.033	12.1054
10/7/2009 13:53	0.038	12.0474
10/7/2009 13:53	0.042	12.1824
10/7/2009 13:53	0.046	12.1377
10/7/2009 13:53	0.05	12.1733
10/7/2009 13:53	0.054	12.196
10/7/2009 13:53	0.058	12.2058
10/7/2009 13:53	0.063	12.23
10/7/2009 13:53	0.067	12.2356
10/7/2009 13:53	0.071	12.2542
10/7/2009 13:53	0.075	12.2803
10/7/2009 13:53	0.079	12.2893
10/7/2009 13:53	0.083	12.3035
10/7/2009 13:53	0.088	12.3229
10/7/2009 13:53	0.092	12.3474
10/7/2009 13:53	0.096	12.3657
10/7/2009 13:53	0.1	12.3752
10/7/2009 13:53	0.106	12.3995
10/7/2009 13:53	0.112	12.4233
10/7/2009 13:53	0.122	12.4662
10/7/2009 13:53	0.128	12.4777
10/7/2009 13:53	0.133	12.4944
10/7/2009 13:53	0.141	12.5161
10/7/2009 13:53	0.15	12.5435
10/7/2009 13:53	0.158	12.5694
10/7/2009 13:53	0.168	12.5986
10/7/2009 13:53	0.178	12.6281
10/7/2009 13:53	0.188	12.6609
10/7/2009 13:53	0.199	12.693
10/7/2009 13:53	0.211	12.7236
10/7/2009 13:53	0.224	12.7607
10/7/2009 13:53	0.237	12.7889
10/7/2009 13:53	0.251	12.828
10/7/2009 13:53	0.266	12.8616
10/7/2009 13:53	0.282	12.9017
10/7/2009 13:53	0.298	12.9404
10/7/2009 13:53	0.316	12.9775

10/7/2009 13:53	0.335	13.0235
10/7/2009 13:53	0.355	13.0709
10/7/2009 13:53	0.376	13.1087
10/7/2009 13:53	0.398	13.1471
10/7/2009 13:53	0.422	13.1952
10/7/2009 13:53	0.447	13.2505
10/7/2009 13:53	0.473	13.3175
10/7/2009 13:53	0.503	13.3522
10/7/2009 13:53	0.531	13.3875
10/7/2009 13:53	0.562	13.4235
10/7/2009 13:53	0.596	13.4763
10/7/2009 13:53	0.631	13.5217
10/7/2009 13:53	0.668	13.5674
10/7/2009 13:53	0.708	13.6186
10/7/2009 13:53	0.75	13.6656
10/7/2009 13:54	0.794	13.7094
10/7/2009 13:54	0.841	13.7729
10/7/2009 13:54	0.893	13.8196
10/7/2009 13:54	0.944	13.8461
10/7/2009 13:54	1	13.882
10/7/2009 13:54	1.06	13.9317
10/7/2009 13:54	1.12	13.9669
10/7/2009 13:54	1.19	14.0059
10/7/2009 13:54	1.26	14.0412
10/7/2009 13:54	1.33	14.0751
10/7/2009 13:54	1.41	14.1107
10/7/2009 13:54	1.5	14.1438
10/7/2009 13:54	1.58	14.1713
10/7/2009 13:54	1.68	14.1997
10/7/2009 13:55	1.78	14.2353
10/7/2009 13:55	1.88	14.2572
10/7/2009 13:55	1.993	14.264
10/7/2009 13:55	2.11	14.2789
10/7/2009 13:55	2.24	14.2971
10/7/2009 13:55	2.37	14.3201
10/7/2009 13:55	2.512	14.3327
10/7/2009 13:55	2.662	14.3459
10/7/2009 13:56	2.822	14.3602
10/7/2009 13:56	2.98	14.3678
10/7/2009 13:56	3.163	14.3791
10/7/2009 13:56	3.35	14.3837
10/7/2009 13:56	3.55	14.3952
10/7/2009 13:56	3.761	14.4052
10/7/2009 13:57	3.98	14.4054
10/7/2009 13:57	4.22	14.4127
10/7/2009 13:57	4.472	14.4244
10/7/2009 13:57	4.73	14.4207
10/7/2009 13:58	5.01	14.4316
10/7/2009 13:58	5.31	14.4345
10/7/2009 13:58	5.621	14.4341
10/7/2009 13:59	5.96	14.4347

10/7/2009 13:59	6.31	14.4392
10/7/2009 13:59	6.68	14.4448
10/7/2009 14:00	7.08	14.4411
10/7/2009 14:00	7.502	14.4466
10/7/2009 14:01	7.94	14.4423

Report Date:	10/8/2009 7:42
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW09_Append_20091007_123048453.wsl
Create Date	10/7/2009 8:30

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW09
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 8:04
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 8:05	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 8:15	Manual Start Command
10/7/2009 8:18	Log Download - Used Battery: 20% Used Memory: 15% Name: bburking
10/7/2009 8:30	Log Download - Used Battery: 20% Used Memory: 15% Name: bburking

Log Data:
Record Count 112

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 8:15	0	14.4465
10/7/2009 8:15	0.004	14.5375
10/7/2009 8:15	0.008	14.6007
10/7/2009 8:15	0.013	14.6814
10/7/2009 8:15	0.017	14.7015
10/7/2009 8:15	0.021	14.728
10/7/2009 8:15	0.025	14.7616
10/7/2009 8:15	0.029	14.7713
10/7/2009 8:15	0.033	14.805
10/7/2009 8:15	0.038	14.8041
10/7/2009 8:15	0.042	14.8523
10/7/2009 8:15	0.046	14.8483
10/7/2009 8:15	0.05	14.8675
10/7/2009 8:15	0.054	14.8811
10/7/2009 8:15	0.058	14.8979
10/7/2009 8:15	0.063	14.907
10/7/2009 8:15	0.067	14.9137
10/7/2009 8:15	0.071	14.9194
10/7/2009 8:15	0.075	14.9349
10/7/2009 8:15	0.079	14.9468
10/7/2009 8:15	0.083	14.9506
10/7/2009 8:15	0.088	14.9616
10/7/2009 8:15	0.092	14.9726
10/7/2009 8:15	0.096	14.9824
10/7/2009 8:15	0.1	14.9903
10/7/2009 8:15	0.106	15.0005
10/7/2009 8:15	0.112	15.0182
10/7/2009 8:15	0.12	15.0269
10/7/2009 8:15	0.127	15.0429
10/7/2009 8:15	0.133	15.0533
10/7/2009 8:15	0.143	15.0694
10/7/2009 8:15	0.15	15.0812
10/7/2009 8:15	0.16	15.0964
10/7/2009 8:15	0.168	15.1071
10/7/2009 8:15	0.178	15.123
10/7/2009 8:15	0.188	15.1354
10/7/2009 8:15	0.201	15.1579
10/7/2009 8:15	0.212	15.1674
10/7/2009 8:15	0.226	15.1876
10/7/2009 8:15	0.238	15.2041
10/7/2009 8:15	0.251	15.2283
10/7/2009 8:15	0.266	15.2426
10/7/2009 8:15	0.282	15.261
10/7/2009 8:15	0.3	15.2823
10/7/2009 8:15	0.316	15.3047

10/7/2009 8:15	0.335	15.3266
10/7/2009 8:15	0.355	15.3503
10/7/2009 8:15	0.376	15.3712
10/7/2009 8:15	0.398	15.3966
10/7/2009 8:15	0.422	15.4225
10/7/2009 8:15	0.447	15.4476
10/7/2009 8:15	0.476	15.4784
10/7/2009 8:15	0.501	15.5153
10/7/2009 8:15	0.532	15.5494
10/7/2009 8:15	0.562	15.562
10/7/2009 8:15	0.596	15.5957
10/7/2009 8:15	0.633	15.6305
10/7/2009 8:15	0.67	15.6565
10/7/2009 8:15	0.708	15.6894
10/7/2009 8:15	0.75	15.7303
10/7/2009 8:15	0.796	15.7629
10/7/2009 8:15	0.841	15.799
10/7/2009 8:16	0.891	15.8345
10/7/2009 8:16	0.946	15.872
10/7/2009 8:16	1	15.9123
10/7/2009 8:16	1.06	15.9509
10/7/2009 8:16	1.12	15.9889
10/7/2009 8:16	1.19	16.0339
10/7/2009 8:16	1.26	16.0821
10/7/2009 8:16	1.331	16.1098
10/7/2009 8:16	1.41	16.1532
10/7/2009 8:16	1.502	16.2025
10/7/2009 8:16	1.581	16.2373
10/7/2009 8:16	1.681	16.2822
10/7/2009 8:16	1.78	16.3256
10/7/2009 8:16	1.881	16.3624
10/7/2009 8:17	1.99	16.4028
10/7/2009 8:17	2.11	16.4431
10/7/2009 8:17	2.24	16.4843
10/7/2009 8:17	2.37	16.522
10/7/2009 8:17	2.51	16.5594
10/7/2009 8:17	2.66	16.5956
10/7/2009 8:17	2.821	16.6305
10/7/2009 8:18	2.981	16.6648
10/7/2009 8:18	3.16	16.695
10/7/2009 8:18	3.35	16.7238
10/7/2009 8:18	3.553	16.7521
10/7/2009 8:18	3.762	16.7745
10/7/2009 8:19	3.983	16.8256
10/7/2009 8:19	4.223	16.8233
10/7/2009 8:19	4.473	16.8471
10/7/2009 8:19	4.73	16.8629
10/7/2009 8:20	5.01	16.8785
10/7/2009 8:20	5.31	16.8961
10/7/2009 8:20	5.623	16.9048
10/7/2009 8:21	5.96	16.9228

10/7/2009 8:21	6.31	16.9326
10/7/2009 8:21	6.68	16.9416
10/7/2009 8:22	7.08	16.9465
10/7/2009 8:22	7.502	16.9562
10/7/2009 8:23	7.94	16.9625
10/7/2009 8:23	8.41	16.9675
10/7/2009 8:24	8.91	16.9751
10/7/2009 8:24	9.44	16.9797
10/7/2009 8:25	10.002	16.9885
10/7/2009 8:25	10.602	16.9844
10/7/2009 8:26	11.202	16.9867
10/7/2009 8:27	11.902	16.9895
10/7/2009 8:27	12.602	16.9907
10/7/2009 8:28	13.3	16.9959
10/7/2009 8:29	14.1	16.9936
10/7/2009 8:30	15	16.9916

Report Date:	10/8/2009 7:51
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW10_Append_20091007_153931375.wsl
Create Date	10/7/2009 11:39

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW10
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 11:19
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 11:19	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 11:30	Manual Start Command
10/7/2009 11:32	Log Download - Used Battery: 21% Used Memory: 26% Name: bburking
10/7/2009 11:39	Log Download - Used Battery: 21% Used Memory: 26% Name: bburking

Log Data:

Record Count	102

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 11:30	0	15.4967
10/7/2009 11:30	0.004	13.3883
10/7/2009 11:30	0.008	13.136
10/7/2009 11:30	0.013	13.8086
10/7/2009 11:30	0.017	13.9303
10/7/2009 11:30	0.021	13.9757
10/7/2009 11:30	0.025	14.0082
10/7/2009 11:30	0.029	14.0085
10/7/2009 11:30	0.033	14.0305
10/7/2009 11:30	0.037	14.0452
10/7/2009 11:30	0.042	14.0579
10/7/2009 11:30	0.046	14.0788
10/7/2009 11:30	0.05	14.0866
10/7/2009 11:30	0.054	14.1018
10/7/2009 11:30	0.058	14.1061
10/7/2009 11:30	0.063	14.1149
10/7/2009 11:30	0.067	14.1281
10/7/2009 11:30	0.071	14.1403
10/7/2009 11:31	0.075	14.1412
10/7/2009 11:31	0.079	14.1545
10/7/2009 11:31	0.083	14.171
10/7/2009 11:31	0.087	14.1788
10/7/2009 11:31	0.092	14.1872
10/7/2009 11:31	0.096	14.1976
10/7/2009 11:31	0.1	14.2088
10/7/2009 11:31	0.106	14.2261
10/7/2009 11:31	0.112	14.262
10/7/2009 11:31	0.122	14.2676
10/7/2009 11:31	0.126	14.2789
10/7/2009 11:31	0.133	14.2865
10/7/2009 11:31	0.143	14.3127
10/7/2009 11:31	0.15	14.3072
10/7/2009 11:31	0.164	14.3559
10/7/2009 11:31	0.168	14.3551
10/7/2009 11:31	0.178	14.3816
10/7/2009 11:31	0.188	14.3734
10/7/2009 11:31	0.199	14.3917
10/7/2009 11:31	0.212	14.4338
10/7/2009 11:31	0.224	14.4543
10/7/2009 11:31	0.24	14.4644
10/7/2009 11:31	0.252	14.4794
10/7/2009 11:31	0.266	14.5056
10/7/2009 11:31	0.284	14.5304
10/7/2009 11:31	0.3	14.5569
10/7/2009 11:31	0.317	14.5771
10/7/2009 11:31	0.338	14.6094
10/7/2009 11:31	0.355	14.6286
10/7/2009 11:31	0.377	14.668

10/7/2009 11:31	0.398	14.6915
10/7/2009 11:31	0.422	14.7236
10/7/2009 11:31	0.447	14.7907
10/7/2009 11:31	0.476	14.7931
10/7/2009 11:31	0.501	14.8323
10/7/2009 11:31	0.531	14.8677
10/7/2009 11:31	0.562	14.9013
10/7/2009 11:31	0.596	14.9425
10/7/2009 11:31	0.631	14.9895
10/7/2009 11:31	0.668	15.0199
10/7/2009 11:31	0.71	15.0588
10/7/2009 11:31	0.752	15.1057
10/7/2009 11:31	0.794	15.1454
10/7/2009 11:31	0.843	15.1877
10/7/2009 11:31	0.892	15.2396
10/7/2009 11:31	0.944	15.2793
10/7/2009 11:31	1.002	15.331
10/7/2009 11:31	1.06	15.3726
10/7/2009 11:32	1.123	15.4239
10/7/2009 11:32	1.19	15.4671
10/7/2009 11:32	1.26	15.5117
10/7/2009 11:32	1.331	15.5576
10/7/2009 11:32	1.413	15.6018
10/7/2009 11:32	1.5	15.6553
10/7/2009 11:32	1.582	15.6954
10/7/2009 11:32	1.682	15.7384
10/7/2009 11:32	1.782	15.7759
10/7/2009 11:32	1.882	15.816
10/7/2009 11:32	1.991	15.8519
10/7/2009 11:33	2.112	15.8941
10/7/2009 11:33	2.241	15.9294
10/7/2009 11:33	2.37	15.9595
10/7/2009 11:33	2.512	15.9886
10/7/2009 11:33	2.662	16.0214
10/7/2009 11:33	2.82	16.0494
10/7/2009 11:33	2.983	16.0735
10/7/2009 11:34	3.162	16.0956
10/7/2009 11:34	3.35	16.1098
10/7/2009 11:34	3.55	16.1341
10/7/2009 11:34	3.762	16.1482
10/7/2009 11:34	3.983	16.1624
10/7/2009 11:35	4.22	16.1665
10/7/2009 11:35	4.47	16.1861
10/7/2009 11:35	4.733	16.1911
10/7/2009 11:35	5.012	16.2011
10/7/2009 11:36	5.31	16.2026
10/7/2009 11:36	5.62	16.2166
10/7/2009 11:36	5.962	16.2134
10/7/2009 11:37	6.312	16.2195
10/7/2009 11:37	6.683	16.2241
10/7/2009 11:38	7.08	16.2236
10/7/2009 11:38	7.5	16.237
10/7/2009 11:38	7.941	16.2317
10/7/2009 11:39	8.41	16.2333

Report Date:	10/8/2009 7:50
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW11_2_Append_20091007_131912187.wsl
Create Date	10/7/2009 9:19

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW11_2
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 9:08
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 9:08	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 9:10	Manual Start Command
10/7/2009 9:10	Log Download - Used Battery: 20% Used Memory: 18% Name: bburking
10/7/2009 9:11	Log Download - Used Battery: 20% Used Memory: 18% Name: bburking
10/7/2009 9:19	Log Download - Used Battery: 20% Used Memory: 18% Name: bburking

Log Data:
Record Count 103

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 9:10	0	13.7135
10/7/2009 9:10	0.004	11.2169
10/7/2009 9:10	0.008	15.4521
10/7/2009 9:10	0.013	11.9623
10/7/2009 9:10	0.017	14.4845
10/7/2009 9:10	0.021	13.0622
10/7/2009 9:10	0.025	13.6426
10/7/2009 9:10	0.029	13.6722
10/7/2009 9:10	0.033	13.4105
10/7/2009 9:10	0.037	13.7801
10/7/2009 9:10	0.042	13.4737
10/7/2009 9:10	0.046	13.724
10/7/2009 9:10	0.05	13.5925
10/7/2009 9:10	0.054	13.6637
10/7/2009 9:10	0.058	13.668
10/7/2009 9:10	0.063	13.6736
10/7/2009 9:10	0.067	13.6986
10/7/2009 9:10	0.071	13.6873
10/7/2009 9:10	0.075	13.7081
10/7/2009 9:10	0.079	13.7169
10/7/2009 9:10	0.083	13.7313
10/7/2009 9:10	0.087	13.7407
10/7/2009 9:10	0.092	13.7454
10/7/2009 9:10	0.096	13.7597
10/7/2009 9:10	0.1	13.7663
10/7/2009 9:10	0.106	13.7841
10/7/2009 9:10	0.112	13.7941
10/7/2009 9:10	0.119	13.814
10/7/2009 9:10	0.126	13.8274
10/7/2009 9:10	0.133	13.8431
10/7/2009 9:10	0.141	13.8872
10/7/2009 9:10	0.151	13.8975
10/7/2009 9:10	0.158	13.8921
10/7/2009 9:10	0.171	13.9349
10/7/2009 9:10	0.178	13.9503
10/7/2009 9:10	0.188	13.9701
10/7/2009 9:10	0.199	13.9737
10/7/2009 9:10	0.211	14.0189
10/7/2009 9:10	0.227	14.0176
10/7/2009 9:10	0.239	14.0426
10/7/2009 9:10	0.252	14.0679
10/7/2009 9:10	0.266	14.0889
10/7/2009 9:10	0.283	14.1238
10/7/2009 9:10	0.298	14.1472
10/7/2009 9:10	0.316	14.1803

10/7/2009 9:10	0.335	14.1998
10/7/2009 9:10	0.356	14.2322
10/7/2009 9:10	0.376	14.2698
10/7/2009 9:10	0.398	14.301
10/7/2009 9:10	0.422	14.335
10/7/2009 9:10	0.447	14.3688
10/7/2009 9:10	0.474	14.4059
10/7/2009 9:10	0.501	14.4477
10/7/2009 9:10	0.533	14.4852
10/7/2009 9:10	0.562	14.5268
10/7/2009 9:10	0.596	14.5891
10/7/2009 9:10	0.631	14.6094
10/7/2009 9:10	0.669	14.6532
10/7/2009 9:10	0.708	14.6945
10/7/2009 9:10	0.753	14.7453
10/7/2009 9:10	0.795	14.7915
10/7/2009 9:10	0.841	14.8421
10/7/2009 9:10	0.891	14.8832
10/7/2009 9:11	0.945	14.9363
10/7/2009 9:11	1	14.9819
10/7/2009 9:11	1.061	15.0307
10/7/2009 9:11	1.12	15.0759
10/7/2009 9:11	1.192	15.1523
10/7/2009 9:11	1.26	15.1793
10/7/2009 9:11	1.331	15.2315
10/7/2009 9:11	1.41	15.2918
10/7/2009 9:11	1.502	15.3258
10/7/2009 9:11	1.58	15.3723
10/7/2009 9:11	1.68	15.4097
10/7/2009 9:11	1.78	15.4599
10/7/2009 9:11	1.88	15.5014
10/7/2009 9:12	1.99	15.5338
10/7/2009 9:12	2.113	15.5783
10/7/2009 9:12	2.24	15.614
10/7/2009 9:12	2.373	15.6471
10/7/2009 9:12	2.51	15.6803
10/7/2009 9:12	2.66	15.7088
10/7/2009 9:12	2.823	15.7344
10/7/2009 9:13	2.98	15.7559
10/7/2009 9:13	3.16	15.7777
10/7/2009 9:13	3.352	15.805
10/7/2009 9:13	3.552	15.8147
10/7/2009 9:13	3.761	15.8275
10/7/2009 9:14	3.98	15.8452
10/7/2009 9:14	4.223	15.8565
10/7/2009 9:14	4.473	15.8651
10/7/2009 9:14	4.73	15.8734
10/7/2009 9:15	5.01	15.8763
10/7/2009 9:15	5.313	15.8884
10/7/2009 9:15	5.623	15.8896
10/7/2009 9:16	5.96	15.8901

10/7/2009 9:16	6.31	15.893
10/7/2009 9:16	6.68	15.8932
10/7/2009 9:17	7.08	15.8936
10/7/2009 9:17	7.502	15.895
10/7/2009 9:18	7.94	15.9008
10/7/2009 9:18	8.41	15.8983
10/7/2009 9:18	8.91	15.9201

Report Date:	10/8/2009 7:50
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW12_Append_20091007_134844828.wsl
Create Date	10/7/2009 9:48

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW12
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 9:25
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 9:25	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 9:41	Manual Start Command
10/7/2009 9:43	Log Download - Used Battery: 20% Used Memory: 20% Name: bburking
10/7/2009 9:48	Log Download - Used Battery: 20% Used Memory: 20% Name: bburking

Log Data:
Record Count 100

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 9:41	0	14.1511
10/7/2009 9:41	0.004	14.1586
10/7/2009 9:41	0.008	13.7683
10/7/2009 9:41	0.013	13.7652
10/7/2009 9:41	0.017	13.8018
10/7/2009 9:41	0.021	13.8295
10/7/2009 9:41	0.025	13.836
10/7/2009 9:41	0.029	13.8606
10/7/2009 9:41	0.033	13.8688
10/7/2009 9:41	0.038	13.8882
10/7/2009 9:41	0.042	13.8995
10/7/2009 9:41	0.046	13.9067
10/7/2009 9:41	0.05	13.9275
10/7/2009 9:41	0.054	13.9427
10/7/2009 9:41	0.058	13.9449
10/7/2009 9:41	0.063	13.9621
10/7/2009 9:41	0.067	13.9709
10/7/2009 9:41	0.071	13.981
10/7/2009 9:41	0.075	13.9942
10/7/2009 9:41	0.079	14.0032
10/7/2009 9:41	0.083	14.0132
10/7/2009 9:41	0.088	14.0262
10/7/2009 9:41	0.092	14.0384
10/7/2009 9:41	0.096	14.0472
10/7/2009 9:41	0.1	14.0586
10/7/2009 9:41	0.106	14.0686
10/7/2009 9:41	0.112	14.0896
10/7/2009 9:41	0.119	14.1139
10/7/2009 9:41	0.131	14.1492
10/7/2009 9:41	0.135	14.15
10/7/2009 9:41	0.141	14.1443
10/7/2009 9:41	0.153	14.1971
10/7/2009 9:41	0.158	14.2017
10/7/2009 9:41	0.171	14.2262
10/7/2009 9:41	0.178	14.2295
10/7/2009 9:41	0.188	14.2435
10/7/2009 9:41	0.199	14.2657
10/7/2009 9:41	0.211	14.2909
10/7/2009 9:41	0.224	14.3107
10/7/2009 9:41	0.237	14.3327
10/7/2009 9:41	0.251	14.3616
10/7/2009 9:41	0.266	14.3848
10/7/2009 9:41	0.282	14.4149
10/7/2009 9:41	0.298	14.4423
10/7/2009 9:41	0.316	14.4662

10/7/2009 9:41	0.335	14.5
10/7/2009 9:41	0.355	14.5221
10/7/2009 9:41	0.376	14.5561
10/7/2009 9:41	0.398	14.5826
10/7/2009 9:41	0.422	14.6203
10/7/2009 9:41	0.447	14.6508
10/7/2009 9:41	0.473	14.6836
10/7/2009 9:41	0.501	14.7143
10/7/2009 9:41	0.531	14.739
10/7/2009 9:41	0.562	14.7824
10/7/2009 9:41	0.596	14.8158
10/7/2009 9:41	0.631	14.8486
10/7/2009 9:41	0.668	14.8843
10/7/2009 9:41	0.708	14.9213
10/7/2009 9:41	0.75	14.9531
10/7/2009 9:41	0.794	14.9888
10/7/2009 9:42	0.841	15.0183
10/7/2009 9:42	0.891	15.0493
10/7/2009 9:42	0.944	15.0837
10/7/2009 9:42	1	15.1184
10/7/2009 9:42	1.06	15.1477
10/7/2009 9:42	1.12	15.1781
10/7/2009 9:42	1.19	15.2141
10/7/2009 9:42	1.26	15.239
10/7/2009 9:42	1.33	15.2697
10/7/2009 9:42	1.41	15.2911
10/7/2009 9:42	1.5	15.3195
10/7/2009 9:42	1.58	15.3416
10/7/2009 9:42	1.68	15.3658
10/7/2009 9:42	1.78	15.3861
10/7/2009 9:43	1.88	15.4054
10/7/2009 9:43	1.99	15.4218
10/7/2009 9:43	2.11	15.4378
10/7/2009 9:43	2.24	15.4539
10/7/2009 9:43	2.373	15.4793
10/7/2009 9:43	2.51	15.4776
10/7/2009 9:43	2.66	15.4896
10/7/2009 9:43	2.82	15.5029
10/7/2009 9:44	2.98	15.5066
10/7/2009 9:44	3.16	15.5149
10/7/2009 9:44	3.35	15.5247
10/7/2009 9:44	3.552	15.5328
10/7/2009 9:44	3.76	15.5317
10/7/2009 9:45	3.98	15.5377
10/7/2009 9:45	4.22	15.5425
10/7/2009 9:45	4.47	15.5392
10/7/2009 9:45	4.73	15.5472
10/7/2009 9:46	5.01	15.5491
10/7/2009 9:46	5.31	15.5493
10/7/2009 9:46	5.62	15.5541
10/7/2009 9:47	5.961	15.5763

10/7/2009 9:47	6.31	15.5554
10/7/2009 9:47	6.68	15.5541
10/7/2009 9:48	7.08	15.5709
10/7/2009 9:48	7.5	15.5786

Report Date:	10/8/2009 7:50
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW13_Append_20091007_141746015.wsl
Create Date	10/7/2009 10:17

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW13
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 9:55
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 9:55	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 10:03	Manual Start Command
10/7/2009 10:16	Log Download - Used Battery: 20% Used Memory: 21% Name: bburking
10/7/2009 10:17	Log Download - Used Battery: 20% Used Memory: 21% Name: bburking

Log Data:
Record Count 110

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 10:03	0	17.2986
10/7/2009 10:03	0.004	13.6468
10/7/2009 10:03	0.008	15.9939
10/7/2009 10:03	0.013	15.1004
10/7/2009 10:03	0.017	15.1919
10/7/2009 10:03	0.021	15.2993
10/7/2009 10:03	0.025	15.3467
10/7/2009 10:03	0.029	15.3473
10/7/2009 10:03	0.033	15.3545
10/7/2009 10:03	0.037	15.3623
10/7/2009 10:03	0.042	15.3749
10/7/2009 10:03	0.046	15.3896
10/7/2009 10:03	0.05	15.3998
10/7/2009 10:03	0.054	15.4052
10/7/2009 10:03	0.058	15.416
10/7/2009 10:03	0.063	15.4183
10/7/2009 10:03	0.067	15.4452
10/7/2009 10:03	0.071	15.448
10/7/2009 10:03	0.075	15.4585
10/7/2009 10:03	0.079	15.4693
10/7/2009 10:03	0.083	15.4826
10/7/2009 10:03	0.087	15.4791
10/7/2009 10:03	0.092	15.505
10/7/2009 10:03	0.096	15.5084
10/7/2009 10:03	0.1	15.517
10/7/2009 10:03	0.106	15.5284
10/7/2009 10:03	0.112	15.5444
10/7/2009 10:03	0.124	15.5853
10/7/2009 10:03	0.127	15.5855
10/7/2009 10:03	0.133	15.5773
10/7/2009 10:03	0.146	15.6172
10/7/2009 10:03	0.15	15.6262
10/7/2009 10:03	0.158	15.6277
10/7/2009 10:03	0.168	15.6511
10/7/2009 10:03	0.178	15.6539
10/7/2009 10:03	0.188	15.6692
10/7/2009 10:03	0.199	15.6904
10/7/2009 10:03	0.212	15.7105
10/7/2009 10:03	0.224	15.7397
10/7/2009 10:04	0.237	15.7428
10/7/2009 10:04	0.253	15.763
10/7/2009 10:04	0.266	15.7856
10/7/2009 10:04	0.282	15.8071
10/7/2009 10:04	0.3	15.8341
10/7/2009 10:04	0.316	15.8563

10/7/2009 10:04	0.335	15.8783
10/7/2009 10:04	0.355	15.9033
10/7/2009 10:04	0.376	15.9465
10/7/2009 10:04	0.398	15.9576
10/7/2009 10:04	0.422	15.9842
10/7/2009 10:04	0.448	16.0151
10/7/2009 10:04	0.473	16.0457
10/7/2009 10:04	0.502	16.0798
10/7/2009 10:04	0.532	16.1061
10/7/2009 10:04	0.565	16.1433
10/7/2009 10:04	0.598	16.1796
10/7/2009 10:04	0.632	16.2081
10/7/2009 10:04	0.669	16.2494
10/7/2009 10:04	0.708	16.2813
10/7/2009 10:04	0.752	16.3273
10/7/2009 10:04	0.794	16.3591
10/7/2009 10:04	0.841	16.3973
10/7/2009 10:04	0.891	16.4333
10/7/2009 10:04	0.945	16.4773
10/7/2009 10:04	1.003	16.517
10/7/2009 10:04	1.062	16.56
10/7/2009 10:04	1.12	16.6008
10/7/2009 10:04	1.19	16.6445
10/7/2009 10:05	1.262	16.6876
10/7/2009 10:05	1.333	16.7321
10/7/2009 10:05	1.412	16.7662
10/7/2009 10:05	1.5	16.8134
10/7/2009 10:05	1.58	16.8521
10/7/2009 10:05	1.68	16.8935
10/7/2009 10:05	1.781	16.9297
10/7/2009 10:05	1.882	16.9715
10/7/2009 10:05	1.99	17.016
10/7/2009 10:05	2.11	17.0513
10/7/2009 10:06	2.24	17.0867
10/7/2009 10:06	2.37	17.1211
10/7/2009 10:06	2.51	17.1546
10/7/2009 10:06	2.66	17.1788
10/7/2009 10:06	2.82	17.2138
10/7/2009 10:06	2.98	17.2512
10/7/2009 10:06	3.16	17.2695
10/7/2009 10:07	3.351	17.2954
10/7/2009 10:07	3.551	17.3197
10/7/2009 10:07	3.76	17.339
10/7/2009 10:07	3.98	17.3646
10/7/2009 10:07	4.221	17.3732
10/7/2009 10:08	4.473	17.3905
10/7/2009 10:08	4.73	17.4058
10/7/2009 10:08	5.01	17.4146
10/7/2009 10:09	5.31	17.4236
10/7/2009 10:09	5.622	17.4389
10/7/2009 10:09	5.96	17.4439

10/7/2009 10:10	6.31	17.4499
10/7/2009 10:10	6.68	17.4597
10/7/2009 10:10	7.08	17.4635
10/7/2009 10:11	7.5	17.4688
10/7/2009 10:11	7.941	17.4705
10/7/2009 10:12	8.41	17.4766
10/7/2009 10:12	8.91	17.4778
10/7/2009 10:13	9.44	17.4742
10/7/2009 10:13	10.003	17.4862
10/7/2009 10:14	10.603	17.4845
10/7/2009 10:14	11.203	17.4803
10/7/2009 10:15	11.903	17.485
10/7/2009 10:16	12.6	17.4872
10/7/2009 10:17	13.3	17.4902

Report Date:	10/8/2009 7:50
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	54MW14_Append_20091007_151251953.wsl
Create Date	10/7/2009 11:12

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	54MW14
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 10:49
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 10:49	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 10:56	Manual Start Command
10/7/2009 10:59	Suspend Command
10/7/2009 10:59	Resume Command
10/7/2009 10:59	Log Download - Used Battery: 20% Used Memory: 25% Name: bburking
10/7/2009 11:09	Log Download - Used Battery: 20% Used Memory: 25% Name: bburking
10/7/2009 11:12	Log Download - Used Battery: 20% Used Memory: 25% Name: bburking

Log Data:
Record Count 113

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 10:56	0	14.9049
10/7/2009 10:56	0.004	14.5873
10/7/2009 10:56	0.008	14.2496
10/7/2009 10:56	0.013	13.1579
10/7/2009 10:56	0.017	13.224
10/7/2009 10:56	0.021	13.3486
10/7/2009 10:56	0.025	13.2621
10/7/2009 10:56	0.029	13.3764
10/7/2009 10:56	0.033	13.3461
10/7/2009 10:56	0.038	13.4033
10/7/2009 10:56	0.042	13.401
10/7/2009 10:56	0.046	13.4328
10/7/2009 10:56	0.05	13.4428
10/7/2009 10:56	0.054	13.4649
10/7/2009 10:56	0.058	13.4733
10/7/2009 10:56	0.063	13.4878
10/7/2009 10:56	0.067	13.4845
10/7/2009 10:56	0.071	13.5151
10/7/2009 10:56	0.075	13.5233
10/7/2009 10:56	0.079	13.5246
10/7/2009 10:56	0.083	13.5319
10/7/2009 10:56	0.088	13.5385
10/7/2009 10:56	0.092	13.5624
10/7/2009 10:56	0.096	13.5464
10/7/2009 10:56	0.1	13.5599
10/7/2009 10:56	0.106	13.581
10/7/2009 10:56	0.112	13.5889
10/7/2009 10:56	0.124	13.6223
10/7/2009 10:56	0.127	13.632
10/7/2009 10:56	0.133	13.6166
10/7/2009 10:56	0.146	13.6533
10/7/2009 10:56	0.15	13.6599
10/7/2009 10:56	0.158	13.6488
10/7/2009 10:56	0.168	13.6856
10/7/2009 10:56	0.178	13.6756
10/7/2009 10:56	0.19	13.7075
10/7/2009 10:56	0.199	13.7021
10/7/2009 10:56	0.211	13.7173
10/7/2009 10:56	0.224	13.7339
10/7/2009 10:56	0.238	13.749
10/7/2009 10:56	0.251	13.7629
10/7/2009 10:56	0.267	13.7768
10/7/2009 10:56	0.284	13.8006

10/7/2009 10:56	0.3	13.8168
10/7/2009 10:56	0.317	13.8357
10/7/2009 10:56	0.338	13.8594
10/7/2009 10:56	0.355	13.8804
10/7/2009 10:56	0.376	13.8966
10/7/2009 10:57	0.401	13.9141
10/7/2009 10:57	0.422	13.9339
10/7/2009 10:57	0.447	13.9639
10/7/2009 10:57	0.473	13.9857
10/7/2009 10:57	0.501	14.0121
10/7/2009 10:57	0.534	14.0445
10/7/2009 10:57	0.563	14.0673
10/7/2009 10:57	0.596	14.0956
10/7/2009 10:57	0.631	14.1386
10/7/2009 10:57	0.668	14.1536
10/7/2009 10:57	0.708	14.1875
10/7/2009 10:57	0.753	14.2176
10/7/2009 10:57	0.795	14.2546
10/7/2009 10:57	0.841	14.2874
10/7/2009 10:57	0.891	14.3508
10/7/2009 10:57	0.946	14.3587
10/7/2009 10:57	1.001	14.3941
10/7/2009 10:57	1.06	14.4357
10/7/2009 10:57	1.122	14.4681
10/7/2009 10:57	1.19	14.5135
10/7/2009 10:57	1.26	14.5669
10/7/2009 10:57	1.33	14.5901
10/7/2009 10:58	1.412	14.6353
10/7/2009 10:58	1.5	14.6791
10/7/2009 10:58	1.582	14.7172
10/7/2009 10:58	1.683	14.765
10/7/2009 10:58	1.782	14.811
10/7/2009 10:58	1.883	14.8455
10/7/2009 10:58	1.992	14.8893
10/7/2009 10:58	2.113	14.9358
10/7/2009 10:58	2.24	14.9769
10/7/2009 10:58	2.37	15.0214
10/7/2009 10:59	2.66	15.1051
10/7/2009 10:59	2.81	15.1451
10/7/2009 10:59	2.97	15.1835
10/7/2009 10:59	3.13	15.2151
10/7/2009 10:59	3.31	15.2522
10/7/2009 11:00	3.501	15.2894
10/7/2009 11:00	3.701	15.3216
10/7/2009 11:00	3.91	15.35
10/7/2009 11:00	4.131	15.3775
10/7/2009 11:00	4.373	15.4103
10/7/2009 11:01	4.623	15.4315
10/7/2009 11:01	4.882	15.4615
10/7/2009 11:01	5.16	15.4813
10/7/2009 11:02	5.46	15.5037

10/7/2009 11:02	5.77	15.5214
10/7/2009 11:02	6.11	15.5388
10/7/2009 11:03	6.46	15.5585
10/7/2009 11:03	6.83	15.5815
10/7/2009 11:03	7.23	15.5843
10/7/2009 11:04	7.65	15.5944
10/7/2009 11:04	8.092	15.604
10/7/2009 11:05	8.56	15.6127
10/7/2009 11:05	9.06	15.6194
10/7/2009 11:06	9.59	15.6289
10/7/2009 11:06	10.152	15.6263
10/7/2009 11:07	10.752	15.6386
10/7/2009 11:07	11.352	15.6382
10/7/2009 11:08	12.053	15.645
10/7/2009 11:09	12.75	15.6731
10/7/2009 11:10	13.451	15.6521
10/7/2009 11:10	14.251	15.6498
10/7/2009 11:11	15.152	15.6528
10/7/2009 11:12	15.953	15.6561

Report Date:	10/8/2009 7:50
Report User Name:	bburking
Report Computer Name:	ATL31046423

Log File Properties

File Name	510MW5R_Append_20091007_144256953.wsl
Create Date	10/7/2009 10:42

Device Properties

Device	Level TROLL 700
Site	SWMU 54 TCE Plume
Device Name	
Serial Number	115278
Firmware Version	2.04
Hardware Version	1

Log Configuration

Log Name	510MW5R
Created By	bburking
Computer Name	ATL31046423
Application	WinSitu.exe
Application Version	5.6.9.7
Create Date	10/7/2009 10:25
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Depth
Specific Gravity	0.999

Other Log Settings

Zero Pressure Offset:	0.0551014

Log Notes:

Date and Time	Note
10/7/2009 10:25	Sensor: 115278 Factory calibration has expired.: 3/24/2008 11:51:22 PM
10/7/2009 10:33	Manual Start Command
10/7/2009 10:37	Log Download - Used Battery: 20% Used Memory: 23% Name: bburking
10/7/2009 10:42	Log Download - Used Battery: 20% Used Memory: 23% Name: bburking

Log Data:
Record Count 103

Date and Time	Elapsed Time Minutes	Sensor: Pres 69ft SN#: 115278 Depth (ft)
10/7/2009 10:33	0	13.8709
10/7/2009 10:33	0.004	14.2181
10/7/2009 10:33	0.008	13.9028
10/7/2009 10:33	0.013	13.7709
10/7/2009 10:33	0.017	13.8246
10/7/2009 10:33	0.021	13.8185
10/7/2009 10:33	0.025	13.8631
10/7/2009 10:33	0.029	13.8732
10/7/2009 10:33	0.033	13.8726
10/7/2009 10:33	0.037	13.937
10/7/2009 10:33	0.042	13.9268
10/7/2009 10:33	0.046	13.9285
10/7/2009 10:33	0.05	13.9665
10/7/2009 10:33	0.054	13.9727
10/7/2009 10:33	0.058	13.9816
10/7/2009 10:33	0.063	14.0033
10/7/2009 10:33	0.067	14.0231
10/7/2009 10:33	0.071	14.0388
10/7/2009 10:33	0.075	14.0483
10/7/2009 10:33	0.079	14.0602
10/7/2009 10:33	0.083	14.0732
10/7/2009 10:33	0.087	14.0855
10/7/2009 10:33	0.092	14.0964
10/7/2009 10:33	0.096	14.102
10/7/2009 10:33	0.1	14.1163
10/7/2009 10:33	0.106	14.1309
10/7/2009 10:33	0.112	14.1528
10/7/2009 10:33	0.119	14.1596
10/7/2009 10:33	0.126	14.1782
10/7/2009 10:34	0.133	14.198
10/7/2009 10:34	0.141	14.2165
10/7/2009 10:34	0.15	14.2391
10/7/2009 10:34	0.158	14.2558
10/7/2009 10:34	0.168	14.2752
10/7/2009 10:34	0.178	14.2982
10/7/2009 10:34	0.188	14.3181
10/7/2009 10:34	0.199	14.3426
10/7/2009 10:34	0.211	14.3662
10/7/2009 10:34	0.224	14.3892
10/7/2009 10:34	0.237	14.4155
10/7/2009 10:34	0.251	14.4465
10/7/2009 10:34	0.266	14.4706
10/7/2009 10:34	0.282	14.5005
10/7/2009 10:34	0.298	14.5324
10/7/2009 10:34	0.316	14.558

10/7/2009 10:34	0.335	14.5881
10/7/2009 10:34	0.355	14.6213
10/7/2009 10:34	0.376	14.6595
10/7/2009 10:34	0.398	14.6942
10/7/2009 10:34	0.422	14.7316
10/7/2009 10:34	0.447	14.764
10/7/2009 10:34	0.473	14.7986
10/7/2009 10:34	0.501	14.8412
10/7/2009 10:34	0.531	14.8769
10/7/2009 10:34	0.562	14.9194
10/7/2009 10:34	0.596	14.9563
10/7/2009 10:34	0.631	14.9937
10/7/2009 10:34	0.668	15.0368
10/7/2009 10:34	0.708	15.0771
10/7/2009 10:34	0.75	15.1204
10/7/2009 10:34	0.794	15.1582
10/7/2009 10:34	0.841	15.2049
10/7/2009 10:34	0.891	15.2405
10/7/2009 10:34	0.944	15.2867
10/7/2009 10:34	1	15.3295
10/7/2009 10:34	1.06	15.3706
10/7/2009 10:34	1.12	15.405
10/7/2009 10:35	1.19	15.4489
10/7/2009 10:35	1.26	15.4898
10/7/2009 10:35	1.33	15.5213
10/7/2009 10:35	1.41	15.561
10/7/2009 10:35	1.5	15.6044
10/7/2009 10:35	1.58	15.6271
10/7/2009 10:35	1.68	15.6628
10/7/2009 10:35	1.78	15.6928
10/7/2009 10:35	1.88	15.719
10/7/2009 10:35	1.99	15.7461
10/7/2009 10:35	2.11	15.7746
10/7/2009 10:36	2.24	15.8024
10/7/2009 10:36	2.37	15.8229
10/7/2009 10:36	2.51	15.8474
10/7/2009 10:36	2.66	15.8621
10/7/2009 10:36	2.82	15.8801
10/7/2009 10:36	2.98	15.895
10/7/2009 10:37	3.16	15.9209
10/7/2009 10:37	3.35	15.9182
10/7/2009 10:37	3.55	15.9299
10/7/2009 10:37	3.76	15.94
10/7/2009 10:37	3.98	15.9501
10/7/2009 10:38	4.221	15.9631
10/7/2009 10:38	4.471	15.963
10/7/2009 10:38	4.73	15.9737
10/7/2009 10:38	5.01	15.9856
10/7/2009 10:39	5.31	15.9763
10/7/2009 10:39	5.62	15.9841
10/7/2009 10:39	5.96	15.98

10/7/2009 10:40	6.31	15.9875
10/7/2009 10:40	6.68	15.9908
10/7/2009 10:40	7.08	15.9914
10/7/2009 10:41	7.502	15.994
10/7/2009 10:41	7.94	15.9924
10/7/2009 10:42	8.41	15.9946
10/7/2009 10:42	8.91	15.9977

APPENDIX E

AS Pilot-Scale Test Headspace Monitoring Results

Air Sparge Pilot Test PID Measurement Log
Naval Station Roosevelt Roads, Puerto Rico, Cieba, Puerto Rico

Date: May 11, 2010

Well ID	Baseline VOC (ppm)	VOC Results (ppm)									
	08:40 - 08:50	09:40 - 09:50	10:30 - 10:40	11:20 - 11:30	12:30 - 12:40	13:30 - 13:40	14:30 - 14:40	15:30 - 15:40	16:30 - 16:40	17:50 - 18:00	18:30 - 18:40
510MW1	0.5	1	1.6	8.5	10	3.0	3.3	4.4	3.3	3.7	25.6
54MW27	260	208	338	342	469	308	458	194	365	367	water
54MW28	1.9	24.7	10.3	50	23.4	7.0	10.6	9	20.3	6.5	188
54MW19	170	179	169	123	78.5	101	81.6	92.4	76.4	84.6	113
54MW20	28	38.2	48	34.5	10.3	3506	33.2	33.8	19.5	20.5	21.5
54MW06	17.1	10.2	14.3	15.1	23.2	16.1	9.2	21	13	17.5	6.1
54MW32	236	118	121	103	105.6	100	93.8	110	101	100	110
54MW33	6.6	470	134	91	14.5	23.5	36.8	23.8	22.2	16.7	53.8
54MW37	11.7	27.1	16	16.4	11.7	15.0	13.2	14	12.1	11.2	10.6
54MW01	484	559	508	538	433	478	304	473	390	455	465
54MW36	161	295	429	281	350	605	833	442	755	880	368
54MW34	1182	-	1334	1212	1096	722	459	419	357	373	461

Water = Water observed when valve opened to collected air sample

Air Sparge Pilot Test PID Measurement Log
Naval Station Roosevelt Roads, Puerto Rico, Cieba, Puerto Rico

Date: May 12, 2010

Well ID	VOC Results (ppm)				
	09:15 - 09:20	10:30 - 10:25	11:30 - 11:35	14:00 - 14P:05	15:00 - 15:05
510MW1	386	481	790	646	734
54MW27	water	water	water	water	water
54MW28	488	303	420	433	741
54MW19	275	338	331	265	639
54MW20	37.4	20.5	18.5	35.4	119
54MW06	4.8	1.3	3.5	2.4	1.7
54MW32	615	184	583	344	304
54MW33	13.3	43.9	water	water	water
54MW37	18.7	12.2	14.3	18.1	5.6
54MW01	500	561	606	535	550
510MW36	1516	1000	1370	1695	1495
54MW34	1093	939	1165	871	972
54MW30	979	1322	1132	1171	1136
54MW03	-	-	-	-	455
54MW05	-	-	-	-	717

Water = Water observed when valve opened to collected air sample

APPENDIX F

Waste Characterization Analytical Data

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54IDWSO-081809

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209081914

Matrix: (soil/water) Soil

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20908191401

Level: (low/med) LOW

Lab File ID: 2090822/f1683

% Moisture: not dec. 21.1

Date Collected: 08/18/09 Time: 1130

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 08/19/09

Instrument ID: MSV7

Date Analyzed: 08/22/09 Time: 1210

Soil Extract Volume: (µL)

Dilution Factor: 40 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 417233

Analytical Method: 1311/8260B

CONCENTRATION UNITS: mg/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-35-4	1,1-Dichloroethene	0.200	U	0.00476	0.200
107-06-2	1,2-Dichloroethane	0.200	U	0.00256	0.200
78-93-3	2-Butanone	0.200	U	0.016	0.200
71-43-2	Benzene	0.200	U	0.00299	0.200
56-23-5	Carbon tetrachloride	0.200	U	0.00330	0.200
108-90-7	Chlorobenzene	0.200	U	0.00286	0.200
67-66-3	Chloroform	0.200	U	0.011	0.200
127-18-4	Tetrachloroethene	0.200	U	0.00399	0.200
79-01-6	Trichloroethene	0.200	U	0.00390	0.200
75-01-4	Vinyl chloride	0.200	U	0.00307	0.200

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LIC. #1813
QUIMICO LICENCIADO

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209081914

Matrix: Soil

Sample wt/vol: 200 Units: mL

Level: (low/med) LOW

% Moisture: 21.1 decanted: (Y/N)

GC Column: RTX-5MS-30 ID: .25 (mm)

Concentrated Extract Volume: 1000 (µL)

Injection Volume: 1.0 (µL)

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: mg/L

Sample ID: JM04-54IDWSO-081809

Contract:

Lab File ID: 2090827p/d9017

Lab Sample ID: 20908191401

Date Collected: 08/18/09 Time: 1130

Date Received: 08/19/09

Date Extracted: 08/26/09

Date Analyzed: 08/27/09 Time: 1908

Dilution Factor: 1 Analyst: RLY

Prep Method: 1311/3510

Analytical Method: 1311/8270C

Instrument ID: MSSV5

Prep Batch: 417318 Analytical Batch: 417480

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
106-46-7	1,4-Dichlorobenzene	0.050	U	0.00110	0.050
95-95-4	2,4,5-Trichlorophenol	0.050	U	0.00170	0.050
88-06-2	2,4,6-Trichlorophenol	0.050	U	0.00160	0.050
121-14-2	2,4-Dinitrotoluene	0.050	U	0.00120	0.050
1319-77-3	Cresols	0.100	U	0.00210	0.100
118-74-1	Hexachlorobenzene	0.050	U	0.00140	0.050
87-68-3	Hexachlorobutadiene	0.050	U	0.00130	0.050
67-72-1	Hexachloroethane	0.050	U	0.00470	0.050
98-95-3	Nitrobenzene	0.050	U	0.000700	0.050
87-86-5	Pentachlorophenol	0.250	U	0.014	0.250
110-86-1	Pyridine	0.050	U J	0.00170	0.050
1319-77-3M	m,p-Cresol	0.050	U	0.00110	0.050
95-48-7	o-Cresol	0.050	U	0.00100	0.050

C

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QUIMICO LICENCIADO

C.L

FORM I SV-1

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: Soil

Sample wt/vol: 100 Units: mL

Level: (low/med) LOW

% Moisture: 21.1 decanted: (Y/N)

GC Column: RTX-35MS-3 ID: .25 (mm)

Concentrated Extract Volume: 10000 (µL)

Soil Aliquot Volume: (µL)

Injection Volume: 1 (µL)

GPC Cleanup: (Y/N) N pH:

Prep Batch: 417206 Analytical Batch: 417406

CONCENTRATION UNITS: mg/L

Sample ID: JM04-54IDWSO-081809

Contract:

SAS No.: SDG No.: 209081914

Lab Sample ID: 20908191401

Date Collected: 08/18/09 Time: 1130

Date Received: 08/19/09

Date Extracted: 08/24/09

Date Analyzed: 08/25/09 Time: 1103

Dilution Factor: 1 Analyst: TLS

Prep Method: SW-846 3510

Analytical Method: 1311/8081B

Sulfur Cleanup: (Y/N) N Instrument ID: GCS15A

Lab File ID: 2090825/sv15a010

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
57-74-9	Chlordane	0.02500	U	0.00016	0.02500
72-20-8	Endrin	0.00100	U	0.00003	0.00100
76-44-8	Heptachlor	0.00050	U	0.00002	0.00050
1024-57-3	Heptachlor epoxide	0.00050	U	0.00005	0.00050
72-43-5	Methoxychlor	0.02500	U	0.00009	0.02500
8001-35-2	Toxaphene	0.25000	U	0.00050	0.25000
58-89-9	gamma-BHC (Lindane)	0.00050	U	0.00003	0.00050

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QUIMICO LICENCIADO

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 30.1 Units: g
Level: (low/med) LOW
% Moisture: 21.1 decanted: (Y/N)
GC Column: RTX-35MS-3 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 417064 Analytical Batch: 417451

Sample ID: JM04-54IDWSO-081809
Contract:
SAS No.: SDG No.: 209081914
Lab Sample ID: 20908191401
Date Collected: 08/18/09 Time: 1130
Date Received: 08/19/09
Date Extracted: 08/23/09
Date Analyzed: 08/26/09 Time: 1312
Dilution Factor: 1 Analyst: DLB
Prep Method: 3550B
Analytical Method: SW-846 8082
Sulfur Cleanup: (Y/N) N Instrument ID: GCS18A
Lab File ID: 2090826/sv18a015

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
12674-11-2	Aroclor-1016	50.5	U	9.29	50.5
11104-28-2	Aroclor-1221	50.5	U	15.1	50.5
11141-16-5	Aroclor-1232	50.5	U	11.0	50.5
53469-21-9	Aroclor-1242	50.5	U	19.5	50.5
12672-29-6	Aroclor-1248	50.5	U	18.0	50.5
11097-69-1	Aroclor-1254	50.5	U	13.0	50.5
11096-82-5	Aroclor-1260	50.5	U	7.77	50.5

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QUIMICO LICENCIADO

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 100 Units: mL
Level: (low/med) LOW
% Moisture: 21.1 decanted: (Y/N)
GC Column: RTX-XLB-30 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 417416 Analytical Batch: 417666

Sample ID: JM04-54IDWSO-081809
Contract:
SAS No.: SDG No.: 209081914
Lab Sample ID: 20908191401
Date Collected: 08/18/09 Time: 1130
Date Received: 08/19/09
Date Extracted: 08/26/09
Date Analyzed: 08/28/09 Time: 1252
Dilution Factor: 1 Analyst: TLS
Prep Method: SW-846 3510
Analytical Method: 1311/8151
Sulfur Cleanup: (Y/N) N Instrument ID: GCS17B
Lab File ID: 2090828/sv17b006

CONCENTRATION UNITS: mg/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
94-75-7	2,4'-D	0.00500	U	0.00005	0.00500
93-72-1	2,4,5-TP (SILVEX)	0.00500	U	0.00006	0.00500

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LIC. #1813
QUIMICO LICENCIADO

FORM I ORG-1

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: JM04-54IDWSO-081809
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 209081914
Level: (low / med)
% Solids: 78.92
Lab Sample ID: 20908191401
Date Received: 08/19/09
Time: 0940
Date Collected: 08/18/09
Time: 1130

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	
Arsenic	0.20	mg/L	U	0.0038	0.20	SW-846 1311/6010B	P	
Barium	0.35	mg/L	B	0.00052	1.00	SW-846 1311/6010B	P	MB
Cadmium	0.00021	mg/L	B	0.00017	0.010	SW-846 1311/6010B	P	MB
Chromium	0.00090	mg/L	B	0.00030	0.050	SW-846 1311/6010B	P	MB
Lead	0.10	mg/L	U	0.0027	0.10	SW-846 1311/6010B	P	
Mercury	0.00009	mg/L	~~B~~ J	0.000066	0.0020	SW-846 1311/7470A	AV	
Selenium	0.0049	mg/L	~~B~~ J	0.0045	0.10	SW-846 1311/6010B	P	
Silver	0.050	mg/L	U	0.00062	0.050	SW-846 1311/6010B	P	

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I - IN

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20908191401	JM04-54IDWSO-081809	Solid	08/18/2009 11:30	08/19/2009 09:40

SW-846 9045C pH

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	08/21/2009 10:00	JPA	417185

CAS#	Parameter	Result	RDL	MDL	Units
pH	pH	8.92	1.00	1.00	pH unit

RESULTS REPORTED ON A DRY WEIGHT BASIS

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20908191401	JM04-54IDWSO-081809	Solid	08/18/2009 11:30	08/19/2009 09:40

SW-846 1010 Flashpoint

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	08/20/2009 08:15	JEM	417104

CAS#	Parameter	Result	RDL	MDL	Units
000000-01-3	FlashPoint	>170	50	50	Deg F

RESULTS REPORTED ON A DRY WEIGHT BASIS

C-1

ENID ORTIZ
LIC. #1813

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20908191401	JM04-54IDWSO-081809	Solid	08/18/2009 11:30	08/19/2009 09:40

SW-846 9012A Reactivity CN

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/20/2009 15:00	417097	7.3.3.2	1	08/21/2009 11:43	AEL	417172

CAS#	Parameter	Result	RDL	MDL	Units
57-12-5R	Reactivity Cyanide	250U	250	250	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20908191401	JM04-54IDWSO-081809	Solid	08/18/2009 11:30	08/19/2009 09:40

SW-846 9034 Reactivity Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
08/20/2009 15:00	417098	Sec 7.3.4.2	1	08/21/2009 12:00	BMC	417186

CAS#	Parameter	Result	RDL	MDL	Units
18496-25-8R	Reactivity Sulfide	80U	80	80	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

AGVIQ CH2M HILL

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Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-081809-02**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	**378718.20.02.01.07**	**GCAL - Liz Martin 225.214.7077**	**Tom Beisel/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - SOIL IDW	**N62470-08-D-1006**	**TBD**	**Lisa Schwann/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. (770) 604-9182 x54312/(678) 579-8025**
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	**770.604.9182**	**225.269.4900/225.767.5717**		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G TCLP VOCs - 1311/8260B	G TCLP SVOCs - 1311/8270C	G TCLP Pesticides - 1311/8081A	G TCLP Herbicides - 1311/8151A	G TCLP Metals - 1311/6010B/7000 series	G PCBs - 8082	G Corrosivity - 9045D	G Ignitability - 1030	G Reactivity - Ch 7.3.2		[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	**JM04-54IDWSO-081809**	**IDW**	**SO**	**08/18/09**	**11:30**	**B**	**14/ day**	**4**	x	x	x	x	x	x	x	x	x				1
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Samuel Smith/CH2M HILL	**FedEX - 8685 9172 7653**	3.9

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Sam Smith SS	8/18/2009	1430	Printed Name and Signature:		
Printed Name and Signature: Fedex	8-19-9	940	Printed Name and Signature: Michelle Raborn MR	8-19-9	970
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

JM04
Data Summary Table
NAS Puerto Rico
SWMU 54 Soil Waste Char. 2009

Location			54IDWSO
Sample ID			JM04-54IDWSO-081809
Sample Depth (ft)			0 - 0
Sample Date			8/18/2009
Analyte	**Units**	**TCLP SL**	
SW6010B (mg/L)			
Arsenic	mg/L	5	0.2 U
Barium	mg/L	100	**0.35 B**
Cadmium	mg/L	1	**0.00021 B**
Chromium, Total	mg/L	5	**0.0009 B**
Lead	mg/L	5	0.1 U
Selenium	mg/L	1	**0.0049 J**
Silver	mg/L	5	0.05 U
SW7470A (mg/L)			
Mercury	mg/L	0.2	**0.00009 J**
SW8081 (mg/L)			
Chlordane	mg/L	0.03	0.025 U
Endrin	mg/L	0.02	0.001 U
Gamma BHC (Lindane)	mg/L	0.4	0.0005 U
Heptachlor	mg/L	0.008	0.0005 U
Heptachlor Epoxide	mg/L	0.008	0.0005 U
Methoxychlor	mg/L	10	0.025 U
Toxaphene	mg/L	0.5	0.25 U
SW8151A (mg/L)			
2,4-D (Dichlorophenoxyacetic Acid)	mg/L	10	0.005 U
Silvex (2,4,5-TP)	mg/L	1	0.005 U
SW8260B (mg/L)			
1,1-Dichloroethene	mg/L	0.7	0.2 U
1,2-Dichloroethane	mg/L	0.5	0.2 U
Benzene	mg/L	0.5	0.2 U
Carbon Tetrachloride	mg/L	0.5	0.2 U
Chlorobenzene	mg/L	100	0.2 U
Chloroform	mg/L	6	0.2 U
Methyl Ethyl Ketone (2-Butanone)	mg/L	200	0.2 U
Tetrachloroethene (PCE)	mg/L	0.7	0.2 U
Trichloroethene (TCE)	mg/L	0.5	0.2 U
Vinyl Chloride	mg/L	0.2	0.2 U
SW8270C (mg/L)			
1,4-Dichlorobenzene	mg/L	7.5	0.05 U
2,4,5-Trichlorophenol	mg/L	400	0.05 U
2,4,6-Trichlorophenol	mg/L	2	0.05 U
2,4-Dinitrotoluene	mg/L	0.13	0.05 U
2-Methylphenol (O-Cresol)	mg/L	200	0.05 U
3 & 4-Methylphenol (M,P-Cresol)	mg/L	200	0.05 U
Cresols, Total	mg/L	200	0.1 U
Hexachlorobenzene	mg/L	0.13	0.05 U
Hexachlorobutadiene	mg/L	0.5	0.05 U
Hexachloroethane	mg/L	3	0.05 U
Nitrobenzene	mg/L	2	0.05 U
Pentachlorophenol	mg/L	100	0.25 U
Pyridine	mg/L	5	0.05 UJ

Notes:
TCLP SL - EPA TCLP Screening Limit
NA = Not analyzed
B = The analyte was detected in the associated method and/or calibration blank.
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
mg/l = Milligrams per Liter
Bold indicates the analyte was detected
Shading indicates the analyte exceded screening limit

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54AQW-090309

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209090342

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 20909034201

Level: (low/med) LOW

Lab File ID: 2090911p/d1707

% Moisture: not dec.

Date Collected: 09/03/09 Time: 1100

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 09/04/09

Instrument ID: MSV9

Date Analyzed: 09/11/09 Time: 2143

Soil Extract Volume: (µL)

Dilution Factor: 2 Analyst: SLR

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 418324

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-35-4	1,1-Dichloroethene	5.00	U	0.238	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.128	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.258	5.00
78-93-3	2-Butanone	5.00	U	0.810	5.00
71-43-2	Benzene	311		0.149	5.00
56-23-5	Carbon tetrachloride	5.00	U	0.165	5.00
108-90-7	Chlorobenzene	5.00	U	0.143	5.00
67-66-3	Chloroform	5.00	U	0.574	5.00
127-18-4	Tetrachloroethene	5.00	U	0.200	5.00
79-01-6	Trichloroethene	4.30	J	0.195	5.00
75-01-4	Vinyl chloride	5.00	U	0.153	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209090342

Matrix: Water

Sample wt/vol: 990 Units: mL

Level: (low/med) LOW

% Moisture: decanted: (Y/N)

GC Column: RTX-5MS-30 ID: .25 (mm)

Concentrated Extract Volume: 1000 (µL)

Injection Volume: 1.0 (µL)

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: ug/L

Sample ID: JM04-54AQW-090309

Contract:

Lab File ID: 2090909/d9324

Lab Sample ID: 20909034201

Date Collected: 09/03/09 Time: 1100

Date Received: 09/04/09

Date Extracted: 09/08/09

Date Analyzed: 09/09/09 Time: 1220

Dilution Factor: 1 Analyst: RLY

Prep Method: 3510C

Analytical Method: SW-846 8270

Instrument ID: MSSV5

Prep Batch: 418044 Analytical Batch: 418116

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
106-46-7	1,4-Dichlorobenzene	10.1	U	0.230	10.1
95-95-4	2,4,5-Trichlorophenol	10.1	U	0.339	10.1
88-06-2	2,4,6-Trichlorophenol	10.1	U	0.329	10.1
121-14-2	2,4-Dinitrotoluene	10.1	U	0.242	10.1
118-74-1	Hexachlorobenzene	10.1	U	0.292	10.1
87-68-3	Hexachlorobutadiene	10.1	U	0.257	10.1
67-72-1	Hexachloroethane	10.1	U	0.956	10.1
98-95-3	Nitrobenzene	10.1	U	0.132	10.1
87-86-5	Pentachlorophenol	10.1	U	2.78	10.1
110-86-1	Pyridine	10.1	U	0.353	10.1
1319-77-3M	m,p-Cresol	0.531	J	0.221	10.1
95-48-7	o-Cresol	0.212	J	0.196	10.1

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I SV-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Water
Sample wt/vol: 990 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: RTX-35MS-3 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 417979 Analytical Batch: 418311

Sample ID: JM04-54AQW-090309
Contract:
SAS No.: SDG No.: 209090342
Lab Sample ID: 20909034201
Date Collected: 09/03/09 Time: 1100
Date Received: 09/04/09
Date Extracted: 09/08/09
Date Analyzed: 09/10/09 Time: 0457
Dilution Factor: 1 Analyst: TLS
Prep Method: 3510C
Analytical Method: SW-846 8081B
Sulfur Cleanup: (Y/N) N Instrument ID: GCS18A
Lab File ID: 2090909/sv18a043

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
57-74-9	Chlordane	0.253	U	0.021	0.253
72-20-8	Endrin	0.101	U	0.00343	0.101
76-44-8	Heptachlor	0.051	U	0.00232	0.051
1024-57-3	Heptachlor epoxide	0.051	U	0.00525	0.051
72-43-5	Methoxychlor	0.505	U	0.00879	0.505
8001-35-2	Toxaphene	5.05	U	0.556	5.05
58-89-9	gamma-BHC (Lindane)	0.051	U	0.00283	0.051

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I ORG-1

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: Water

Sample wt/vol: 990 Units: mL

Level: (low/med) LOW

% Moisture: decanted: (Y/N)

GC Column: RTX-35MS-3 ID: .25 (mm)

Concentrated Extract Volume: 10000 (µL)

Soil Aliquot Volume: (µL)

Injection Volume: 1 (µL)

GPC Cleanup: (Y/N) N pH:

Prep Batch: 417980 Analytical Batch: 418312

CONCENTRATION UNITS: ug/L

Sample ID: JM04-54AQW-090309

Contract:

SAS No.: SDG No.: 209090342

Lab Sample ID: 20909034201

Date Collected: 09/03/09 Time: 1100

Date Received: 09/04/09

Date Extracted: 09/08/09

Date Analyzed: 09/10/09 Time: 0457

Dilution Factor: 1 Analyst: TLS

Prep Method: 3510C

Analytical Method: SW-846 8082

Sulfur Cleanup: (Y/N) N Instrument ID: GCS18A

Lab File ID: 2090909/sv18a043

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
12674-11-2	Aroclor-1016	1.01	U	0.201	1.01
11104-28-2	Aroclor-1221	1.01	U	0.242	1.01
11141-16-5	Aroclor-1232	1.01	U	0.385	1.01
53469-21-9	Aroclor-1242	1.01	U	0.406	1.01
12672-29-6	Aroclor-1248	1.01	U	0.266	1.01
11097-69-1	Aroclor-1254	1.01	U	0.399	1.01
11096-82-5	Aroclor-1260	1.01	U	0.090	1.01

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ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

c-f

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Water
Sample wt/vol: 1000 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 418137 Analytical Batch: 418293

Sample ID: JM04-54AQW-090309
Contract:
SAS No.: SDG No.: 209090342
Lab Sample ID: 20909034201
Date Collected: 09/03/09 Time: 1100
Date Received: 09/04/09
Date Extracted: 09/09/09
Date Analyzed: 09/10/09 Time: 1114
Dilution Factor: 1 Analyst: TLS
Prep Method: SW-846 8151A
Analytical Method: SW-846 8151A
Sulfur Cleanup: (Y/N) N Instrument ID: GCS17A
Lab File ID: 2090910/sv17a006

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
94-75-7	2,4'-D	0.500	U	0.00480	0.500
93-72-1	2,4,5-TP (SILVEX)	0.500	U	0.00590	0.500

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I ORG-1

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54AQW-090309

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 209090342

Level: (low / med) % Solids:

Lab Sample ID: 20909034201

Date Received: 09/04/09 Time: 0910

Date Collected: 09/03/09 Time: 1100

Analyte	Concentration	Units	C	MDL	PQL	Method	Type
Arsenic	0.010	mg/L	U	0.0038	0.010	SW-846 6010B	P
Barium	0.092	mg/L		0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	mg/L	U	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	mg/L	U	0.00030	0.010	SW-846 6010B	P
Lead	0.015	mg/L	U	0.0027	0.015	SW-846 6010B	P
Mercury	0.00020	mg/L	U J	0.000066	0.00020	SW-846 7470A	AV Q
Selenium	0.040	mg/L	U	0.0045	0.040	SW-846 6010B	P
Silver	0.010	mg/L	U	0.00062	0.010	SW-846 6010B	P

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
1158285
QUIMICO LICENCIADO

C.L

FORM I - IN

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909034201	JM04-54AQW-090309	Water	09/03/2009 11:00	09/04/2009 09:10

SW-846 1010 Flashpoint

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/08/2009 09:00	JEM	418092

CAS#	Parameter	Result	RDL	MDL	Units
000000-01-3	FlashPoint	>170	50	50	Deg F

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ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909034201	JM04-54AQW-090309	Water	09/03/2009 11:00	09/04/2009 09:10

SW-846 9012A Reactivity CN

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/10/2009 10:30	418225	7.3.3.2	1	09/14/2009 06:05	AEL	418351

CAS#	Parameter	Result	RDL	MDL	Units
57-12-5R	Reactivity Cyanide	250U	250	250	mg/L

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ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

C.P

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909034201	JM04-54AQW-090309	Water	09/03/2009 11:00	09/04/2009 09:10

SW-846 9034 Reactivity Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
09/10/2009 10:30	418226	Sec 7.3.4.2	1	09/11/2009 09:50	JEM	418295

CAS#	Parameter	Result	RDL	MDL	Units
18496-25-8R	Reactivity Sulfide	80U	80	80	mg/L

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20909034201	JM04-54AQW-090309	Water	09/03/2009 11:00	09/04/2009 09:10

SM 4500 H+B/SW-846 9040A pH

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	09/04/2009 11:15	OLT	417968

CAS#	Parameter	Result	RDL	MDL	Units
pH	pH	7.71	1.00	1.00	pH unit

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

CH2MH-11/43842090908421/9-11-9

AGVIQ CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-090309-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Aqueous IDW	N62470-08-D-1006	TBD	Lisa Schwann/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. (770) 604-9182 x54312/(678) 579-8025
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G VOCs - ~~1311~~/8260B	G SVOCs - ~~1311~~/8270C	G Pesticides - ~~1311~~/8081A	G Herbicides - ~~1311~~/8151A	P Metals - ~~1311~~/6010B/7000 series	G PCBs - 8082	G Corrosivity - 9045D	G Ignitability - 1030	P Reactivity - Ch 7.3.2		[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54AQW-090309	IDW	AQ	09/03/09	11:00	B	14/ day	12	x	x	x	x	x	x	x	x	x			run totals not TCLP per client 9/3/09 PBm 9/22/09	1
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
Andrew O'Conor/CH2M HILL	FedEX - 8685 9172 7745	3.2

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Andrew O'Conor	9/3/2009	11:30 AM	Printed Name and Signature:		
Printed Name and Signature: Fedex	9-4-9	910	Printed Name and Signature: Michelle Rubuck	9-4-9	9N
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

JM04
Data Summary Table
NAS Puerto Rico
SWMU 54 Aqueous Waste Char. 2009

Location			54AQW
Sample ID			JM04-54AQW-090309
Sample Depth (ft)			0 - 0
Sample Date			9/3/2009
Analyte	**Units**	**TCLP SL**	
SW1010 (DEG F)			
Flash Point	DEG F	--	170 U
SW6010B (mg/L)			
Arsenic	mg/L	5	0.01 U
Barium	mg/L	100	**0.092 =**
Cadmium	mg/L	1	0.005 U
Chromium, Total	mg/L	5	0.01 U
Lead	mg/L	5	0.015 U
Selenium	mg/L	1	0.04 U
Silver	mg/L	5	0.01 U
SW7470 (mg/L)			
Mercury	mg/L	0.2	0.0002 UJ
SW8081 (µg/L)			
Chlordane	µg/L	30	0.253 U
Endrin	µg/L	20	0.101 U
Gamma Bhc (Lindane)	µg/L	400	0.051 U
Heptachlor	µg/L	8	0.051 U
Heptachlor Epoxide	µg/L	8	0.051 U
Methoxychlor	µg/L	10000	0.505 U
Toxaphene	µg/L	500	5.05 U
SW8082 (µg/L)			
PCB-1016 (Aroclor 1016)	µg/L	--	1.01 U
PCB-1221 (Aroclor 1221)	µg/L	--	1.01 U
PCB-1232 (Aroclor 1232)	µg/L	--	1.01 U
PCB-1242 (Aroclor 1242)	µg/L	--	1.01 U
PCB-1248 (Aroclor 1248)	µg/L	--	1.01 U
PCB-1254 (Aroclor 1254)	µg/L	--	1.01 U
PCB-1260 (Aroclor 1260)	µg/L	--	1.01 U
SW8151A (µg/L)			
2,4-D (Dichlorophenoxyacetic Acid)	µg/L	10000	0.5 U
Silvex (2,4,5-Tp)	µg/L	1000	0.5 U
SW8260B (µg/L)			
1,1-Dichloroethene	µg/L	700	5 U
1,2-Dichloroethane	µg/L	500	5 U
1,4-Dichlorobenzene	µg/L	7500	5 U
Benzene	µg/L	500	**311 =**
Carbon Tetrachloride	µg/L	500	5 U
Chlorobenzene	µg/L	100000	5 U
Chloroform	µg/L	6000	5 U
Methyl Ethyl Ketone (2-Butanone)	µg/L	200000	5 U
Tetrachloroethene (PCE)	µg/L	700	5 U
Trichloroethene (TCE)	µg/L	500	**4.3 J**
Vinyl Chloride	µg/L	200	5 U
SW8270C (µg/L)			
1,4-Dichlorobenzene	µg/L	7500	10.1 U
2,4,5-Trichlorophenol	µg/L	400000	10.1 U
2,4,6-Trichlorophenol	µg/L	2000	10.1 U
2,4-Dinitrotoluene	µg/L	130	10.1 U

2-Methylphenol (o-Cresol)	µg/L	200000	**0.212 J**
3 & 4-Methylphenol (m,p-Cresol)	µg/L	200000	**0.531 J**
Hexachlorobenzene	µg/L	130	10.1 U
Hexachlorobutadiene	µg/L	500	10.1 U
Hexachloroethane	µg/L	3000	10.1 U
Nitrobenzene	µg/L	2000	10.1 U
Pentachlorophenol	µg/L	100000	10.1 U
Pyridine	µg/L	5000	10.1 U
SW9012 (mg/L)			
Cyanide, Reactive	mg/L	--	250 U
SW9034 (mg/L)			
Reactive Sulfide	mg/L	--	80 U
SW9040 (PH UNITS)			
pH	PH UNITS	--	**7.71 =**

Notes:

TCLP ^{SL} - EPA TCLP Screening Limit

NA = Not analyzed

J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.

Bold indicates the analyte was detected

Shading indicates the analyte exceded screening criteria

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54IDWSO-010410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210010513

Matrix: (soil/water) Soil

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21001051301

Level: (low/med) LOW

Lab File ID: 2100107/j6009

% Moisture: not dec.

Date Collected: 01/04/10 Time: 1000

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 01/05/10

Instrument ID: MSV5

Date Analyzed: 01/07/10 Time: 1112

Soil Extract Volume: (µL)

Dilution Factor: 40 Analyst: AGC

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 424462

Analytical Method: 1311/8260B

CONCENTRATION UNITS: mg/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-35-4	1,1-Dichloroethene	0.200	U	0.00476	0.200
107-06-2	1,2-Dichloroethane	0.200	U	0.00256	0.200
78-93-3	2-Butanone	0.200	U	0.016	0.200
71-43-2	Benzene	0.200	U	0.00299	0.200
56-23-5	Carbon tetrachloride	0.200	U	0.00330	0.200
108-90-7	Chlorobenzene	0.200	U	0.00286	0.200
67-66-3	Chloroform	0.200	U	0.011	0.200
127-18-4	Tetrachloroethene	0.200	U	0.00399	0.200
79-01-6	Trichloroethene	0.200	U	0.00390	0.200
75-01-4	Vinyl chloride	0.200	U	0.00307	0.200

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 210010513

Matrix: Soil

Sample wt/vol: 200 Units: mL

Level: (low/med) LOW

% Moisture: decanted: (Y/N)

GC Column: RTX-5MS-30 ID: .25 (mm)

Concentrated Extract Volume: 1000 (µL)

Injection Volume: 1.0 (µL)

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS: mg/L

Sample ID: JM04-54IDWSO-010410

Contract:

Lab File ID: 2100108/c5945

Lab Sample ID: 21001051301

Date Collected: 01/04/10 Time: 1000

Date Received: 01/05/10

Date Extracted: 01/07/10

Date Analyzed: 01/08/10 Time: 1516

Dilution Factor: 1 Analyst: KCB

Prep Method: 1311/3510

Analytical Method: 1311/8270C

Instrument ID: MSSV3

Prep Batch: 424491 Analytical Batch: 424575

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
106-46-7	1,4-Dichlorobenzene	0.050	U	0.00110	0.050
95-95-4	2,4,5-Trichlorophenol	0.050	U	0.00170	0.050
88-06-2	2,4,6-Trichlorophenol	0.050	U	0.00160	0.050
121-14-2	2,4-Dinitrotoluene	0.050	U	0.00120	0.050
1319-77-3	Cresols	0.100	U	0.00210	0.100
118-74-1	Hexachlorobenzene	0.050	U	0.00140	0.050
87-68-3	Hexachlorobutadiene	0.050	U	0.00130	0.050
67-72-1	Hexachloroethane	0.050	U	0.00470	0.050
98-95-3	Nitrobenzene	0.050	U	0.000700	0.050
87-86-5	Pentachlorophenol	0.250	U	0.014	0.250
110-86-1	Pyridine	0.050	U	0.00170	0.050
1319-77-3M	m,p-Cresol	0.050	U	0.00110	0.050
95-48-7	o-Cresol	0.050	U	0.00100	0.050

ESTADO LIBRE ASOCIADO DE PUERTO RICO
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LIC. #1613
QUIMICO-LICENCIADO

FORM I SV-1

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: Soil

Sample wt/vol: 100 Units: mL

Level: (low/med) LOW

% Moisture: decanted: (Y/N)

GC Column: RTX-35MS-3 ID: .25 (mm)

Concentrated Extract Volume: 10000 (µL)

Soil Aliquot Volume: (µL)

Injection Volume: 1 (µL)

GPC Cleanup: (Y/N) N pH:

Prep Batch: 424520 Analytical Batch: 424815

CONCENTRATION UNITS: mg/L

Sample ID: JM04-54IDWSO-010410

Contract:

SAS No.: SDG No.: 210010513

Lab Sample ID: 21001051301

Date Collected: 01/04/10 Time: 1000

Date Received: 01/05/10

Date Extracted: 01/11/10

Date Analyzed: 01/13/10 Time: 1228

Dilution Factor: 1 Analyst: TLS

Prep Method: SW-846 3510

Analytical Method: 1311/8081B

Sulfur Cleanup: (Y/N) N Instrument ID: GCS16A

Lab File ID: 2100113/sv16a014

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
57-74-9	Chlordane	0.02500	U	0.00016	0.02500
72-20-8	Endrin	0.00100	U	0.00003	0.00100
76-44-8	Heptachlor	0.00050	U	0.00002	0.00050
1024-57-3	Heptachlor epoxide	0.00050	U	0.00005	0.00050
72-43-5	Methoxychlor	0.02500	U	0.00009	0.02500
8001-35-2	Toxaphene	0.25000	U	0.00050	0.25000
58-89-9	gamma-BHC (Lindane)	0.00050	U	0.00003	0.00050

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
QUIMICO-LICENCIADO

FORM I ORG-1

1D

ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: Soil

Sample wt/vol: 30.1 Units: g

Level: (low/med) LOW

% Moisture: 11.3 decanted: (Y/N)

GC Column: RTX-XLB-30 ID: .25 (mm)

Concentrated Extract Volume: 10000 (µL)

Soil Aliquot Volume: (µL)

Injection Volume: 1 (µL)

GPC Cleanup: (Y/N) N pH:

Prep Batch: 424622 Analytical Batch: 424810

CONCENTRATION UNITS: ug/kg

Sample ID: JM04-54IDWSO-010410-A

Contract:

SAS No.: SDG No.: 210010513

Lab Sample ID: 21001051302

Date Collected: 01/04/10 Time: 1000

Date Received: 01/05/10

Date Extracted: 01/11/10

Date Analyzed: 01/13/10 Time: 1013

Dilution Factor: 1 Analyst: TLS

Prep Method: 3550B

Analytical Method: SW-846 8082

Sulfur Cleanup: (Y/N) N Instrument ID: GCS18B

Lab File ID: 2100113/sv18b006

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
12674-11-2	Aroclor-1016	45.0	U	8.26	45.0
11104-28-2	Aroclor-1221	45.0	U	13.5	45.0
11141-16-5	Aroclor-1232	45.0	U	9.75	45.0
53469-21-9	Aroclor-1242	45.0	U	17.3	45.0
12672-29-6	Aroclor-1248	45.0	U	16.0	45.0
11097-69-1	Aroclor-1254	45.0	U	11.5	45.0
11096-82-5	Aroclor-1260	45.0	U	6.92	45.0

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QUIMICO LICENCIADO

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Soil
Sample wt/vol: 100 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: ID: (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 424495 Analytical Batch: 424663

Sample ID: JM04-54IDWSO-010410
Contract:
SAS No.: SDG No.: 210010513
Lab Sample ID: 21001051301
Date Collected: 01/04/10 Time: 1000
Date Received: 01/05/10
Date Extracted: 01/07/10
Date Analyzed: 01/11/10 Time: 1117
Dilution Factor: 1 Analyst: SMH
Prep Method: SW-846 3510
Analytical Method: 1311/8151
Sulfur Cleanup: (Y/N) N Instrument ID: GCS17A
Lab File ID: 2100111/sv17a003

CONCENTRATION UNITS: mg/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
94-75-7	2,4'-D	0.00500	U	0.00005	0.00500
93-72-1	2,4,5-TP (SILVEX)	0.00500	U	0.00006	0.00500

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LIC. #1813
QUIMICO LICENCIADO

FORM I ORG-1

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54IDWSO-010410

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 210010513

Level: (low / med) % Solids:

Lab Sample ID: 21001051301

Date Received: 01/05/10 Time: 1005

Date Collected: 01/04/10 Time: 1000

Analyte	Concentration	Units	C	MDL	PQL	Method	Type	
Arsenic	0.20	mg/L	U	0.0030	0.20	SW-846 1311/6010B	P	
Barium	1.37	mg/L	B	0.00031	1.00	SW-846 1311/6010B	P	mB
Cadmium	0.010	mg/L	U	0.00016	0.010	SW-846 1311/6010B	P	
Chromium	0.046	mg/L	B	0.00032	0.050	SW-846 1311/6010B	P	mB
Lead	0.025	mg/L	~~B~~ J	0.0015	0.10	SW-846 1311/6010B	P	
Mercury	0.00013	mg/L	~~B~~ J	0.000055	0.0020	SW-846 1311/7470A	AV	
Selenium	0.10	mg/L	U	0.0037	0.10	SW-846 1311/6010B	P	
Silver	0.050	mg/L	U	0.00058	0.050	SW-846 1311/6010B	P	

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1818
QUIMICO LICENCIADO

FORM I - IN

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21001051301	JM04-54IDWSO-010410	Solid	01/04/2010 10:00	01/05/2010 10:05

SW-846 9045C pH

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	01/06/2010 07:15	JPA	424542

CAS#	Parameter	Result	RDL	MDL	Units
pH	pH	7.15	1.00	1.00	pH unit

SW-846 1010 Flashpoint

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	01/06/2010 08:15	JEM	424473

CAS#	Parameter	Result	RDL	MDL	Units
000000-01-3	FlashPoint	>170	50	50	Deg F

SW-846 9012A Reactivity CN

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/07/2010 05:30	424438	7.3.3.2	1	01/08/2010 11:04	AEL	424561

CAS#	Parameter	Result	RDL	MDL	Units
57-12-5R	Reactivity Cyanide	250U	250	250	mg/kg

SW-846 9034 Reactivity Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/07/2010 05:30	424440	Sec 7.3.4.2	1	01/08/2010 09:25	JEM	424553

CAS#	Parameter	Result	RDL	MDL	Units
18496-25-8R	Reactivity Sulfide	80U	80	80	mg/kg

RESULTS REPORTED ON A WET WEIGHT BASIS

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813
A-1158296
QUIMICO LICENCIADO

CH2M1111/4380/2100C513/1-12-10

AGVIO CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: 378718-~~081809~~-01

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.): - 010410 -
Naval Activity Puerto Rico	378718.20.02.01.07	GCAL - Liz Martin 225.214.7077	Tom Beisel/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - SOIL IDW	N62470-08-D-1006	TBD	Lisa Schwann/CH2M HILL	1000 Abernathy Road, Atlanta GA 30328. (770) 604-9182 x54312/(678) 579-8025
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	770.604.9182	225.269.4900/225.767.5717		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G TCLP VOCs - 1311/8260B	G TCLP SVOCs - 1311/8270C	G TCLP Pesticides - 1311/8081A	G TCLP Herbicides - 1311/8151A	G TCLP Metals - 1311/6010B/7000 series	G PCBs - 8082	G Corrosivity - 9045D	G Ignitability - 1030	G Reactivity - Ch 7.3.2		[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	JM04-54IDWSO-010410	IDW	SO	01/04/10	10:00	B	14/ day	4	X	X	X	X	X	~~X~~	X	X	X			From rolloff #223	-1
2	JM04-54IDWSO-010410-A	"	"	"	"	"	"							X							-2
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

[29] SAMPLER(S) AND COMPANY: (please print): Amber Guilfoyle/CH2M HILL

[30] COURIER AND SHIPPING NUMBER: FedEx - 8685 9172 7653

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 2.5°

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
Amber Guilfoyle	~~8/18/2009~~ 1/4/10	1430			
Printed Name and Signature:			Printed Name and Signature:		
Fedex	1-5-10	1005	Michelle Robinson	1-5-10	1005
Printed Name and Signature:			Printed Name and Signature:		

JM04
Data Summary Table
NS Puerto Rico
SWMU 54 Waste Char. 2010

Location			54IDWSO
Sample ID			JM04-54IDWSO-010410
Sample Depth (ft)			0 - 0
Sample Date			1/4/2010
Analyte	**Units**	**TCLP SL**	
SW6010B (mg/L)			
ARSENIC	mg/L	5	0.2 U
BARIUM	mg/L	100	**1.37 B**
CADMIUM	mg/L	1	0.01 U
CHROMIUM, TOTAL	mg/L	5	**0.046 B**
LEAD	mg/L	5	**0.025 J**
SELENIUM	mg/L	1	0.1 U
SILVER	mg/L	5	0.05 U
SW7470A (mg/L)			
Mercury	mg/L	0.2	**0.00013 J**
SW8081B (mg/L)			
CHLORDANE	mg/L	0.03	0.025 U
ENDRIN	mg/L	0.02	0.001 U
GAMMA BHC (LINDANE)	mg/L	0.4	0.0005 U
HEPTACHLOR	mg/L	0.008	0.0005 U
HEPTACHLOR EPOXIDE	mg/L	0.008	0.0005 U
METHOXYCHLOR	mg/L	10	0.025 U
TOXAPHENE	mg/L	0.5	0.25 U
SW8151A (mg/L)			
2,4-D (DICHLOROPHENOXYACETIC ACID)	mg/L	10	0.005 U
SILVEX (2,4,5-TP)	mg/L	1	0.005 U
SW8260B (mg/L)			
1,1-DICHLOROETHENE	mg/L	0.7	0.2 U
1,2-DICHLOROETHANE	mg/L	0.5	0.2 U
BENZENE	mg/L	0.5	0.2 U
CARBON TETRACHLORIDE	mg/L	0.5	0.2 U
CHLOROBENZENE	mg/L	100	0.2 U
CHLOROFORM	mg/L	6	0.2 U
METHYL ETHYL KETONE (2-BUTANONE)	mg/L	200	0.2 U
TETRACHLOROETHENE (PCE)	mg/L	0.7	0.2 U
TRICHLOROETHENE (TCE)	mg/L	0.5	0.2 U
VINYL CHLORIDE	mg/L	0.2	0.2 U
SW8270C (mg/L)			
1,4-DICHLOROBENZENE	mg/L	7.5	0.05 U
2,4,5-TRICHLOROPHENOL	mg/L	400	0.05 U
2,4,6-TRICHLOROPHENOL	mg/L	2	0.05 U
2,4-DINITROTOLUENE	mg/L	0.13	0.05 U
2-METHYLPHENOL (O-CRESOL)	mg/L	200	0.05 U
3 & 4-METHYLPHENOL (M,P-CRESOL)	mg/L	200	0.05 U
CRESOLS, TOTAL	mg/L	200	0.1 U
HEXACHLOROBENZENE	mg/L	0.13	0.05 U
HEXACHLOROBUTADIENE	mg/L	0.5	0.05 U
HEXACHLOROETHANE	mg/L	3	0.05 U
NITROBENZENE	mg/L	2	0.05 U
PENTACHLOROPHENOL	mg/L	100	0.25 U
PYRIDINE	mg/L	5	0.05 U

Notes:
TCLP SL - EPA TCLP Screening Limit
B = The analyte was detected in the associated method and/or calibration blank.
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
Bold indicates the analyte was detected
Shading indicates the analyte exceded screening criteria

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JM04-54AQW-050410

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 210050501

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/ml) mL

Lab Sample ID: 21005050101

Level: (low/med) LOW

Lab File ID: 2100516/c5281

% Moisture: not dec.

Date Collected: 05/04/10 Time: 1310

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 05/05/10

Instrument ID: MSV8

Date Analyzed: 05/16/10 Time: 2020

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: CLH

Soil Aliquot Volume: (µL)

Prep Batch: Analytical Batch: 431854

Analytical Method: SW-846 8260

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
75-35-4	1,1-Dichloroethene	5.00	U	0.164	5.00
107-06-2	1,2-Dichloroethane	5.00	U	0.086	5.00
106-46-7	1,4-Dichlorobenzene	5.00	U	0.118	5.00
78-93-3	2-Butanone	5.00	U	0.093	5.00
71-43-2	Benzene	5.00	U	0.054	5.00
56-23-5	Carbon tetrachloride	5.00	U J	0.148	5.00
108-90-7	Chlorobenzene	5.00	U	0.027	5.00
67-66-3	Chloroform	5.00	U	0.057	5.00
127-18-4	Tetrachloroethene	5.00	U	0.121	5.00
79-01-6	Trichloroethene	5.00	U	0.062	5.00
75-01-4	Vinyl chloride	5.00	U	0.093	5.00

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1813

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 210050501

Matrix: Water

Sample wt/vol: 980 Units: mL

Level: (low/med) LOW

% Moisture: decanted: (Y/N)

GC Column: RTX-5MS-30 ID: .25 (mm)

Concentrated Extract Volume: 1000 (µL)

Injection Volume: 1.0 (µL)

GPC Cleanup: (Y/N) N pH:

Sample ID: JM04-54AQW-050410

Contract:

Lab File ID: 2100510/e5116

Lab Sample ID: 21005050101

Date Collected: 05/04/10 Time: 1310

Date Received: 05/05/10

Date Extracted: 05/10/10

Date Analyzed: 05/10/10 Time: 1649

Dilution Factor: 1 Analyst: RLY

Prep Method: 3510C

Analytical Method: SW-846 8270

Instrument ID: MSSV5

Prep Batch: 431013 Analytical Batch: 431233

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT		MDL	RL
106-46-7	1,4-Dichlorobenzene	10.2	U	0.112	10.2
95-95-4	2,4,5-Trichlorophenol	10.2	U	0.128	10.2
88-06-2	2,4,6-Trichlorophenol	10.2	U	0.168	10.2
121-14-2	2,4-Dinitrotoluene	10.2	U	0.253	10.2
118-74-1	Hexachlorobenzene	10.2	U	0.262	10.2
87-68-3	Hexachlorobutadiene	10.2	U	0.222	10.2
67-72-1	Hexachloroethane	10.2	U	1.12	10.2
98-95-3	Nitrobenzene	10.2	U	0.224	10.2
87-86-5	Pentachlorophenol	10.2	U	1.55	10.2
110-86-1	Pyridine	10.2	U	1.57	10.2
1319-77-3M	m,p-Cresol	10.2	U	0.339	10.2
95-48-7	o-Cresol	10.2	U	0.186	10.2

COLEGIO DE QUIMICOS ASOCIADO DE PUERTO RICO
ELMO ORTIZ
LIC. 61513
QUIMICO LICENCIADO

FORM I SV-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Water
Sample wt/vol: 980 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: RTX-35MS-3 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 430878 Analytical Batch: 431425

Sample ID: JM04-54AQW-050410
Contract:
SAS No.: SDG No.: 210050501
Lab Sample ID: 21005050101
Date Collected: 05/04/10 Time: 1310
Date Received: 05/05/10
Date Extracted: 05/07/10
Date Analyzed: 05/09/10 Time: 1643
Dilution Factor: 1 Analyst: TLS
Prep Method: 3510C
Analytical Method: SW-846 8081B
Sulfur Cleanup: (Y/N) N Instrument ID: GCS16A
Lab File ID: 2100509/sv16a011

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
57-74-9	Chlordane	0.255	U	0.021	0.255
72-20-8	Endrin	0.102	U	0.00347	0.102
76-44-8	Heptachlor	0.051	U	0.00235	0.051
1024-57-3	Heptachlor epoxide	0.051	U	0.00531	0.051
72-43-5	Methoxychlor	0.510	U	0.00888	0.510
8001-35-2	Toxaphene	5.10	U	0.561	5.10
58-89-9	gamma-BHC (Lindane)	0.051	U	0.00286	0.051

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ENID ORTIZ
LIC. #1613
ESTANDARD

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Water
Sample wt/vol: 980 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: RTX-35MS-3 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 431014 Analytical Batch: 431428

Sample ID: JM04-54AQW-050410
Contract:
SAS No.: SDG No.: 210050501
Lab Sample ID: 21005050101
Date Collected: 05/04/10 Time: 1310
Date Received: 05/05/10
Date Extracted: 05/07/10
Date Analyzed: 05/09/10 Time: 1643
Dilution Factor: 1 Analyst: TLS
Prep Method: 3510C
Analytical Method: SW-846 8082
Sulfur Cleanup: (Y/N) N Instrument ID: GCS16A
Lab File ID: 2100509/sv16a011

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
12674-11-2	Aroclor-1016	1.02	U	0.241	1.02
11104-28-2	Aroclor-1221	1.02	U	0.227	1.02
11141-16-5	Aroclor-1232	1.02	U	0.103	1.02
53469-21-9	Aroclor-1242	1.02	U	0.172	1.02
12672-29-6	Aroclor-1248	1.02	U	0.104	1.02
11097-69-1	Aroclor-1254	1.02	U	0.088	1.02
11096-82-5	Aroclor-1260	1.02	U	0.197	1.02

ASOCIADO DE PUERTO RICO
LINO ORTIZ
LIC. #1813
QUIMICO ASOCIADO

c-1

FORM I ORG-1

1D
ORGANICS ANALYSIS DATA SHEET

Lab Name: GCAL
Lab Code: LA024 Case No.:
Matrix: Water
Sample wt/vol: 990 Units: mL
Level: (low/med) LOW
% Moisture: decanted: (Y/N)
GC Column: RTX-XLB-30 ID: .25 (mm)
Concentrated Extract Volume: 10000 (µL)
Soil Aliquot Volume: (µL)
Injection Volume: 1 (µL)
GPC Cleanup: (Y/N) N pH:
Prep Batch: 431185 Analytical Batch: 431541

Sample ID: JM04-54AQW-050410
Contract:
SAS No.: SDG No.: 210050501
Lab Sample ID: 21005050101
Date Collected: 05/04/10 Time: 1310
Date Received: 05/05/10
Date Extracted: 05/10/10
Date Analyzed: 05/11/10 Time: 2356
Dilution Factor: 1 Analyst: TLS
Prep Method: SW-846 8151A
Analytical Method: SW-846 8151A
Sulfur Cleanup: (Y/N) N Instrument ID: GCS17B
Lab File ID: 2100511/sv17b013

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND	RESULT	Q	MDL	RL
94-75-7	2,4'-D	0.505	U	0.073	0.505
93-72-1	2,4,5-TP (SILVEX)	0.505	U	0.055	0.505

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ORTIZ
LIC. #1813
QUIMICO LICENCIADO

c.·.l

FORM I ORG-1

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: JM04-54AQW-050410

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.: SDG No.: 210050501

Level: (low / med) % Solids:

Lab Sample ID: 21005050101

Date Received: 05/05/10 Time: 1015

Date Collected: 05/04/10 Time: 1310

Analyte	Concentration	Units	C	MDL	PQL	Method	Type
Arsenic	0.010	mg/L	U	0.0030	0.010	SW-846 6010B	P
Barium	0.099	mg/L		0.00031	0.010	SW-846 6010B	P
Cadmium	0.0050	mg/L	U	0.00016	0.0050	SW-846 6010B	P
Chromium	0.010	mg/L	U	0.00032	0.010	SW-846 6010B	P
Lead	0.0044	mg/L	~~B~~ J	0.0015	0.015	SW-846 6010B	P
Mercury	0.00020	mg/L	U	0.000055	0.00020	SW-846 7470A	AV
Selenium	0.040	mg/L	U	0.0037	0.040	SW-846 6010B	P
Silver	0.010	mg/L	U	0.00058	0.010	SW-846 6010B	P

ENID ORTIZ
LIC. #1818

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FORM I - IN

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21005050101	**JM04-54AQW-050410**	Water	05/04/2010 13:10	05/05/2010 10:15

SW-846 1010 Flashpoint

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	05/17/2010 09:00	JEM	431925

CAS#	Parameter	Result	RDL	MDL	Units
000000-01-3	FlashPoint	>170	50	50	Deg F

ENID ORTIZ
LIC. #1813
QUIMICO LICENCIADO

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GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21005050101	**JM04-54AQW-050410**	Water	05/04/2010 13:10	05/05/2010 10:15

SW-846 9012A Reactivity CN

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
05/09/2010 14:00	431147	7.3.3.2	1	05/10/2010 11:41	AEL	431197

CAS#	Parameter	Result	RDL	MDL	Units
57-12-5R	Reactivity Cyanide	250U	250	250	mg/L

ENID ORTIZ
LIC. #1818
QUIMICO LICENSIADO

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21005050101	**JM04-54AQW-050410**	Water	05/04/2010 13:10	05/05/2010 10:15

SW-846 9034 Reactivity Sulfide

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
05/09/2010 14:00	431149	Sec 7.3.4.2	1	05/10/2010 14:30	JEM	431246

CAS#	Parameter	Result	RDL	MDL	Units
18496-25-8R	Reactivity Sulfide	80U	80	80	mg/L

C-4

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21005050101	**JM04-54AQW-050410**	Water	05/04/2010 13:10	05/05/2010 10:15

SM 4500 H+B/SW-846 9040A pH

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			1	05/05/2010 14:20	JPA	430898

CAS#	Parameter	Result	RDL	MDL	Units
pH	pH	7.37	1.00	1.00	pH unit

ESTADO LIBRE ASOCIADO DE PUERTO RICO
LIC. #1813
A 1314294

CH2MHILL 79350/2100585 012 5-12-10

AGVIQ CH2M HILL

1000 Abernathy Road, Suite 1600
Atlanta, GA 30328
Tel No: (770) 604-9182
Fax No: (770) 604-9183

CHAIN-OF-CUSTODY RECORD

[1] COC NUMBER: **378718-050410-01**

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
Naval Activity Puerto Rico	**378718.20.02.01.07**	**GCAL - Liz Martin 225.214.7077**	**Tom Beisel/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. 678.530.4033/770.604.9183**
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
SWMU 54 - Aqueous Waste Sample	**N62470-08-D-1006**	**TBD**	**Lisa Schwann/CH2M HILL**	**1000 Abernathy Road, Atlanta GA 30328. (770) 604-9182 x54312/(678) 579-8025**
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
Tom Beisel	**770.604.9182**	**225.269.4900/225.767.5717**		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	Bottle Type / Number of Bottles	G VOCs - ~~1311~~/8260B	G SVOCs - ~~1311~~/8270C	G Pesticides - ~~1311~~/8081A	G PCBs - 8082	P Metals - ~~1311~~/6010B/7000 series	G Herbicides - ~~1311~~/8151A	G Corrosivity - 9045D	G Ignitability - 1030	P Reactivity - Ch 7.3.2		[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	**JM04-54AQW-050410**	**SWMU 54**	**AQ**	**05/04/10**	**1310**	**B**	**14/ day**	**11**	**X**	**X**	**X**		**X**	**X**	**X**					**T&D #s 322 and 339**	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

[29] SAMPLER(S) AND COMPANY: (please print)
Andrew O'Conor/CH2M - AQVIQ and Carlos Brown / CH2M -AGVIQ

[30] COURIER AND SHIPPING NUMBER:
FedEX - 8685 9528 4813

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):
2 S

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: Andrew O'Conor	5/4/2010	4:00 PM	Printed Name and Signature:		
Printed Name and Signature: Fedex	5-5-10	10:15	Printed Name and Signature: Michele Robinson	5-5-10	10:15
Printed Name and Signature:			Printed Name and Signature:		

JM04
Data Summary Table
NAS Puerto Rico
SWMU 54 Aqueous Waste Char. 2010

Location			54AQW
Sample ID			JM04-54AQW-050410
Sample Depth (ft)			0 - 0
Sample Date			5/4/2010
Analyte	**Units**	**TCLP SL**	
SW1010 (DEG F)			
FLASH POINT	DEG F	--	170 U
SW6010B (mg/L)			
ARSENIC	mg/L	5	0.01 U
BARIUM	mg/L	100	**0.099**
CADMIUM	mg/L	1	0.005 U
CHROMIUM, TOTAL	mg/L	5	0.01 U
LEAD	mg/L	5	**0.0044 J**
SELENIUM	mg/L	1	0.04 U
SILVER	mg/L	5	0.01 U
SW7470 (mg/L)			
Mercury	mg/L	0.2	0.0002 U
SW8081B (µg/L)			
CHLORDANE	µg/L	30	0.255 U
ENDRIN	µg/L	20	0.102 U
GAMMA BHC (LINDANE)	µg/L	400	0.051 U
HEPTACHLOR	µg/L	8	0.051 U
HEPTACHLOR EPOXIDE	µg/L	8	0.051 U
METHOXYCHLOR	µg/L	10000	0.51 U
TOXAPHENE	µg/L	500	5.1 U
SW8082 (µg/L)			
PCB-1016 (AROCLOR 1016)	µg/L	--	1.02 U
PCB-1221 (AROCLOR 1221)	µg/L	--	1.02 U
PCB-1232 (AROCLOR 1232)	µg/L	--	1.02 U
PCB-1242 (AROCLOR 1242)	µg/L	--	1.02 U
PCB-1248 (AROCLOR 1248)	µg/L	--	1.02 U
PCB-1254 (AROCLOR 1254)	µg/L	--	1.02 U
PCB-1260 (AROCLOR 1260)	µg/L	--	1.02 U
SW8151A (µg/L)			
2,4-D (DICHLOROPHENOXYACETIC ACID)	µg/L	10000	0.505 U
SILVEX (2,4,5-TP)	µg/L	1000	0.505 U
SW8260B (µg/L)			
1,1-DICHLOROETHENE	µg/L	700	5 U
1,2-DICHLOROETHANE	µg/L	500	5 U
1,4-DICHLOROBENZENE	µg/L	7500	5 U
BENZENE	µg/L	500	5 U
CARBON TETRACHLORIDE	µg/L	500	5 UJ
CHLOROBENZENE	µg/L	100000	5 U
CHLOROFORM	µg/L	6000	5 U
METHYL ETHYL KETONE (2-BUTANONE)	µg/L	200000	5 U
TETRACHLOROETHENE (PCE)	µg/L	700	5 U
TRICHLOROETHENE (TCE)	µg/L	500	5 U
VINYL CHLORIDE	µg/L	200	5 U
SW8270C (µg/L)			
1,4-DICHLOROBENZENE	µg/L	7500	10.2 U
2,4,5-TRICHLOROPHENOL	µg/L	400000	10.2 U
2,4,6-TRICHLOROPHENOL	µg/L	2000	10.2 U
2,4-DINITROTOLUENE	µg/L	130	10.2 U

JM04
Data Summary Table
NAS Puerto Rico
SWMU 54 Aqueous Waste Char. 2010

Location			54AQW
Sample ID			JM04-54AQW-050410
Sample Depth (ft)			0 - 0
Sample Date			5/4/2010
Analyte	**Units**	**TCLP SL**	
2-METHYLPHENOL (O-CRESOL)	µg/L	200000	10.2 U
3 & 4-METHYLPHENOL (M,P-CRESOL)	µg/L	200000	10.2 U
HEXACHLOROBENZENE	µg/L	130	10.2 U
HEXACHLOROBUTADIENE	µg/L	500	10.2 U
HEXACHLOROETHANE	µg/L	3000	10.2 U
NITROBENZENE	µg/L	2000	10.2 U
PENTACHLOROPHENOL	µg/L	100000	10.2 U
PYRIDINE	µg/L	5000	10.2 U
SW9012A (mg/L)			
CYANIDE, REACTIVE	mg/L	--	250 U
SW9034 (mg/L)			
TOTAL RELEASABLE SULFIDE	mg/L	--	80 U
SW9040 (PH UNITS)			
pH	PH UNITS	--	**7.37**

Notes:

TCLP SL - EPA TCLP Screening Limit

NA Not analyzed

J -- The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.

U -- The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ -- The analyte was below the reported sample quantitation limit. However, the reported value is approximate.

mg/l -- Milligrams per Liter

ug/l -- Micrograms per Liter

Bold indicates the analyte was detected

Shading indicates the analyte exceded screening criteria

APPENDIX G

Additional Analytical Data Summary

TABLE G-1
VOCs Analytical Data Summary
SWMU 54
Naval Activity Puerto Rico

Analyte	Units	Baker [SL]	Location	510DW1		510DW2		510MW1		510MW2		510MW3		510MW4		54MW01		54MW02		54MW03	
			Sample ID	JM04-510DW1-012610		JM04-510DW2-012510		JM04-510MW1-012610		JM04-510MW2-012810		JM04-510MW3-012710		JM04-510MW4-012610		JM04-54MW01-012610		JM04-54MW02-012610		JM04-54MW03-012610	
			Sample Date	1/26/2010		1/25/2010		1/26/2010		1/28/2010		1/27/2010		1/26/2010		1/26/2010		1/26/2010		1/26/2010	
1,2,3-Trichlorobenzene	µg/L	NA		5	U	5	U	5	U	5	U	5	U	5	U	10	U	10	U	5	U
1,2-Dichloroethane	µg/L	830		5	U	**3.33**	**J**	5	U	5	U	5	U	5	U	10	U	**8.4**	**J**	**4.06**	**J**
Benzene	µg/L	550		**21.8**		5	U	5	U	5	U	5	U	5	U	**653**		**500**		**357**	
Chloroform	µg/L	250		5	U	5	U	5	U	5	U	5	U	5	U	10	U	10	U	5	U
Cis-1,2-Dichloroethylene	µg/L	NA		5	U	5	U	5	U	5	U	5	U	5	U	10	U	10	U	5	U
Cyclohexane	µg/L	NA		**50.7**		5	U	**2.65**	J	5	U	5	U	5	U	**751**		**44.6**		**150**	
Cymene	µg/L	NA		**6.25**		5	U	5	U	5	U	5	U	5	U	**78.2**		**8.88 J**	J	**21.4**	
Ethyl Benzene	µg/L	110000		5	U	5	U	5	U	5	U	5	U	5	U	**893**		**72.3**		**141**	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/L	NA		5	U	5	U	5	U	5	U	5	U	5	U	**43.7**		10	U	**2.13**	**J**
Methylcyclohexane	µg/L	NA		**11.5**		5	U	5	U	5	U	5	U	5	U	**131**		**16.7**		**90.1**	
Toluene	µg/L	510000		**1.78**	**J**	5	U	5	U	5	U	5	U	5	U	**31.8**		**5.47 J**		**5.4**	
Trichloroethene (TCE)	µg/L	22		5	U	**0.962**	**J**	5	U	5	U	5	U	5	U	10	U	10	U	5	U
Xylenes, Total	µg/L	50000		**10.6**		10	U	10	U	10	U	10	U	10	U	**716**		**112**		**47.9**	

Notes
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
µg/L = microgram per liter
Bold indicates the analyte was detected.
Baker [SL] Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
= wells screened primarily less than 15 ft bgs
= wells screened primarily greater than 15 ft bgs
Shading indicates the analyte exceded screening criteria.

TABLE G-1
VOCs Analytical Data Summary
SWMU 54
Naval Activity Puerto Rico

Analyte	Units	Baker [SL]	Location	54MW04		54MW05		54MW06	
			Sample ID	JM04-54MW04-012810		JM04-54MW05-012610		JM04-54MW06-012810	
			Sample Date	1/28/2010		1/26/2010		1/28/2010	
1,2,3-Trichlorobenzene	µg/L	NA		**2.89**	**J**	5	U	100	U
1,2-Dichloroethane	µg/L	830		**2.05**	**J**	**3.54**	**J**	100	U
Benzene	µg/L	550		5	U	**1.52**	**J**	**14200**	
Chloroform	µg/L	250		**1.34**	**J**	5	U	**10.9**	**J**
Cis-1,2-Dichloroethylene	µg/L	NA		**1.51**	**J**	**2.24**	**J**	100	U
Cyclohexane	µg/L	NA		**51.4**		**47.6**		**522**	
Cymene	µg/L	NA		**7.14**		**4.51**	**J**	100	U
Ethyl Benzene	µg/L	110000		**4.92**	**J**	**1.21**	**J**	**1300**	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/L	NA		5	U	5	U	100	U
Methylcyclohexane	µg/L	NA		**51.9**		**27.2**		**125**	
Toluene	µg/L	510000		5	U	5	U	**1150**	
Trichloroethene (TCE)	µg/L	22		**24.9**		**40.9**		100	U
Xylenes, Total	µg/L	50000		**3.17**	**J**	10	U	**6020**	

Notes
J = The analyte was positively identified: the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was below the reported sample quantitation limit. However, the reported value is approximate.
µg/L = microgram per liter
Bold indicates the analyte was detected.
Baker [SL] - Final Corrective Measures Study Final Report for SWMUs 54 and 55 (Baker, 2005)
= wells screened primarily less than 15 ft bgs
= wells screened primarily greater than 15 ft bgs
Shading indicates the analyte exceded screening criteria.

TABLE G-2

Soil Analytical Data Summary

SWMU 54

Naval Activity Puerto Rico

Location	Sample ID	Analyte	Benzene
		Units	mg/kg
		Sample Date	
54MW02	JM04-54MW02(10.5-11)-081309	8/13/2009	**6.23**
	JM04-54MW02(13.5-14)-081309	8/13/2009	**9.99**
54MW03	JM04-54MW03(10.5-11)-081209	8/12/2009	**4.62**
	JM04-54MW03(13.0-13.5)-081209	8/12/2009	**13.2**

Notes

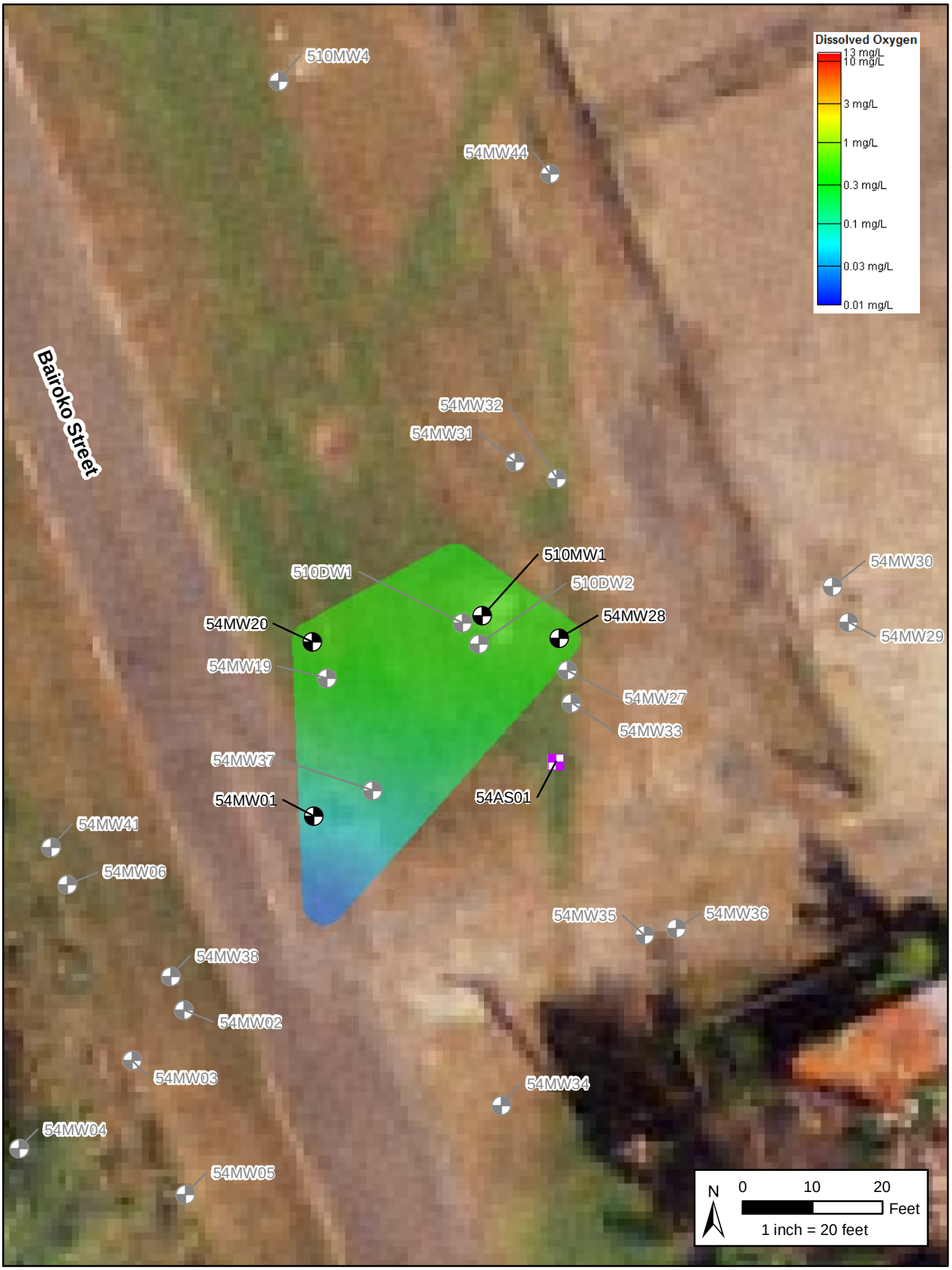
mg/kg = milligram per kilogram

Bold indicates the analyte was detected.

= wells screened primarily less than 15 ft bgs

APPENDIX H

AS Pilot-Scale Test DO and ORP Results



Monitoring Well Location Used in Survey

Other Monitoring Well Location

Air Sparge Well

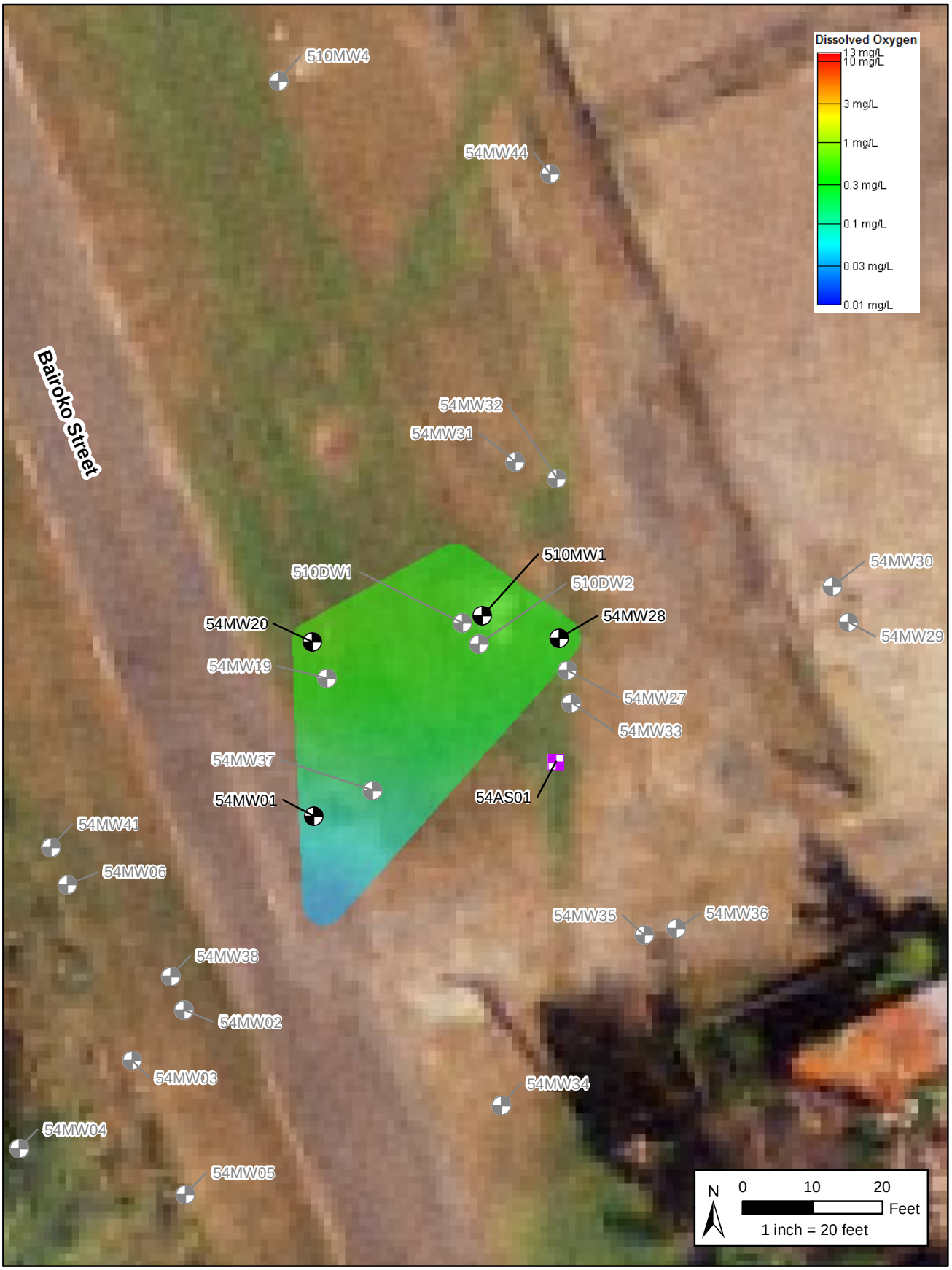
Originated By: Kylie McCord *Kylie McCord*

Checked By: Tom Kessler *Tom Kessler*

FIGURE G1
Shallow Zone Dissolved Oxygen Concentration – Baseline
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_BASE_SHALLOW-20110121.MXD SSMITH21 1/25/2011 12:18:29



Monitoring Well Location Used in Survey

Other Monitoring Well Location

Air Sparge Well

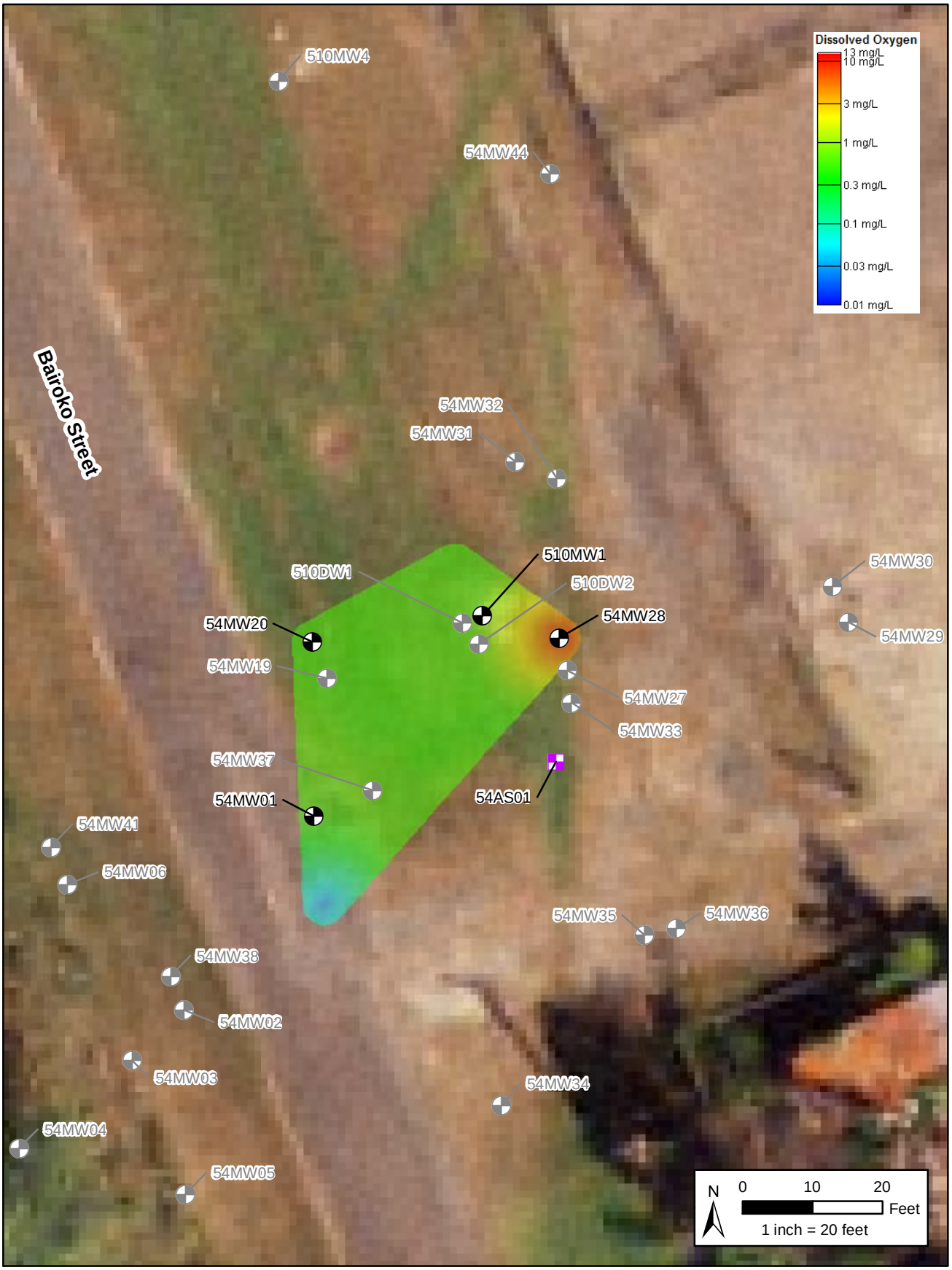
Originated By: Kylie McCord *Kylie McCord*

Checked By: Tom Kessler *Tom Kessler*

FIGURE G2
Shallow Zone Dissolved Oxygen
Concentration – 4 scfm
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_4SCFM_SHALLOW-20110121.MXD SSMITH21 1/25/2011 12:18:33



Monitoring Well Location Used in Survey

Other Monitoring Well Location

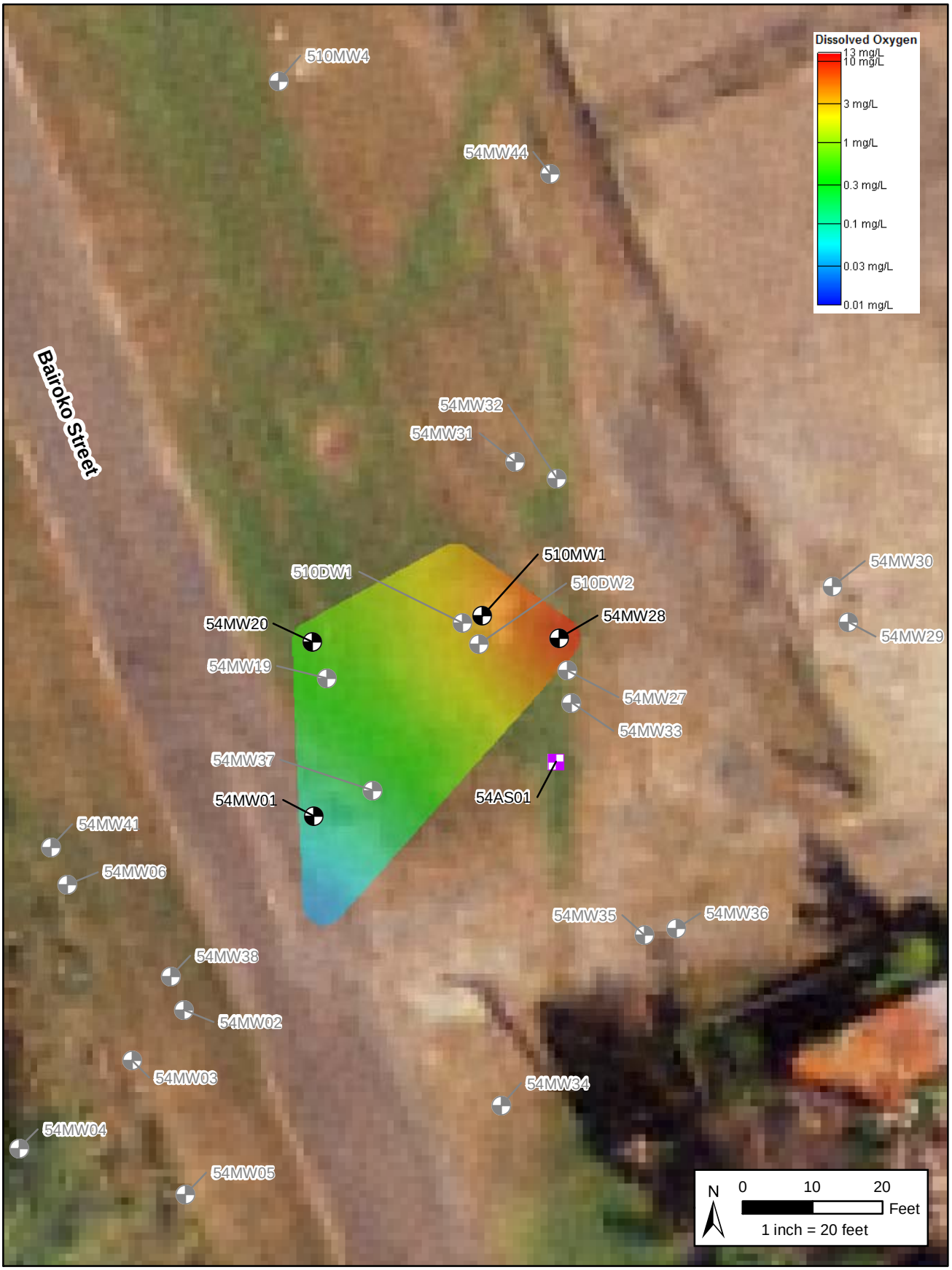
Air Sparge Well

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE G3
Shallow Zone Dissolved Oxygen
Concentration – 8 scfm
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_8SCFM_SHALLOW-20110121.MXD SSMITH21 1/25/2011 12:18:38



Monitoring Well Location Used in Survey

Other Monitoring Well Location

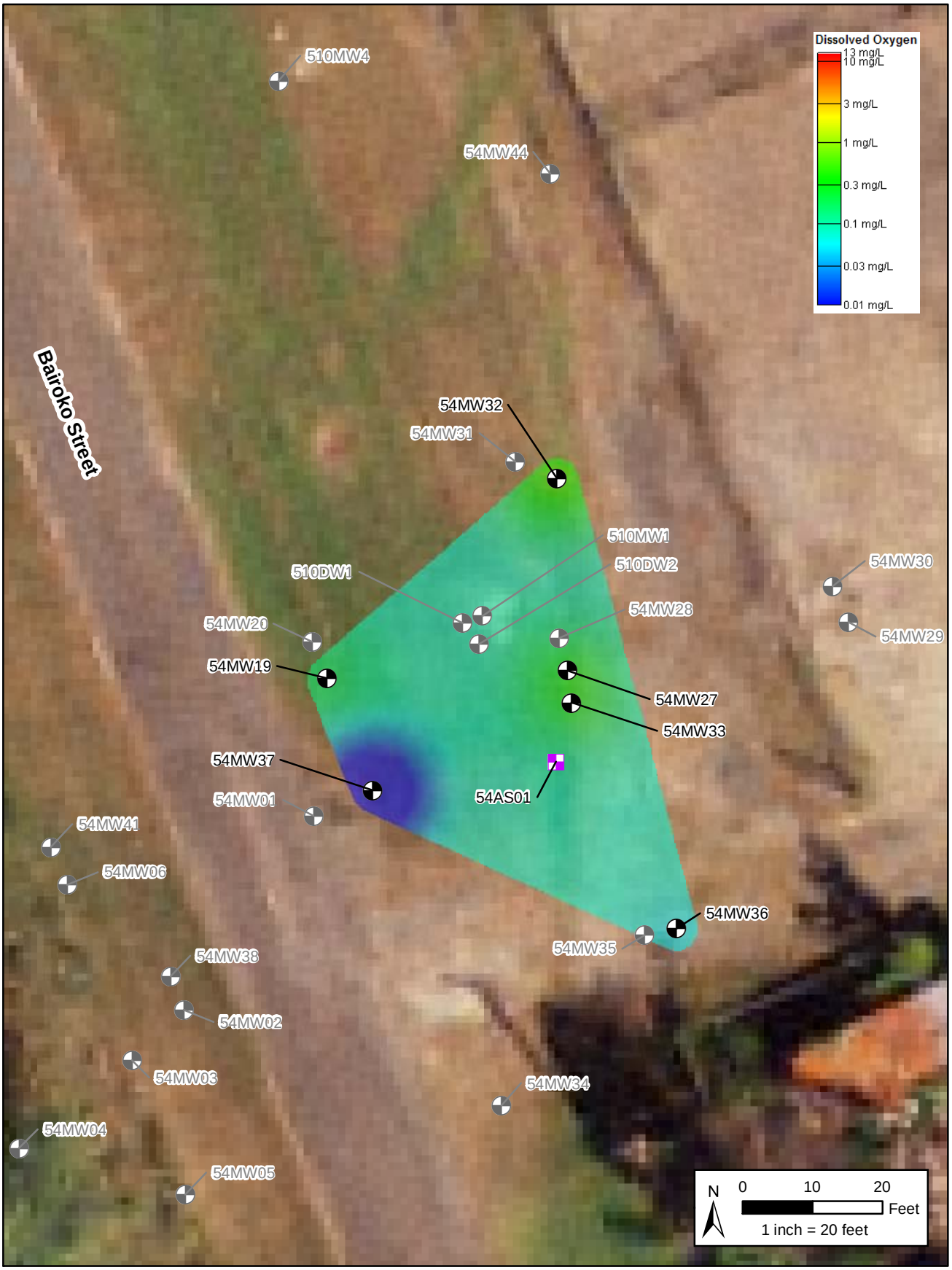
Air Sparge Well

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE G4
Shallow Zone Dissolved Oxygen
Concentration – 15 scfm
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_15SCFM_SHALLOW-20110121.MXD SSMITH21 1/25/2011 12:18:42



Monitoring Well Location Used in Survey

Other Monitoring Well Location

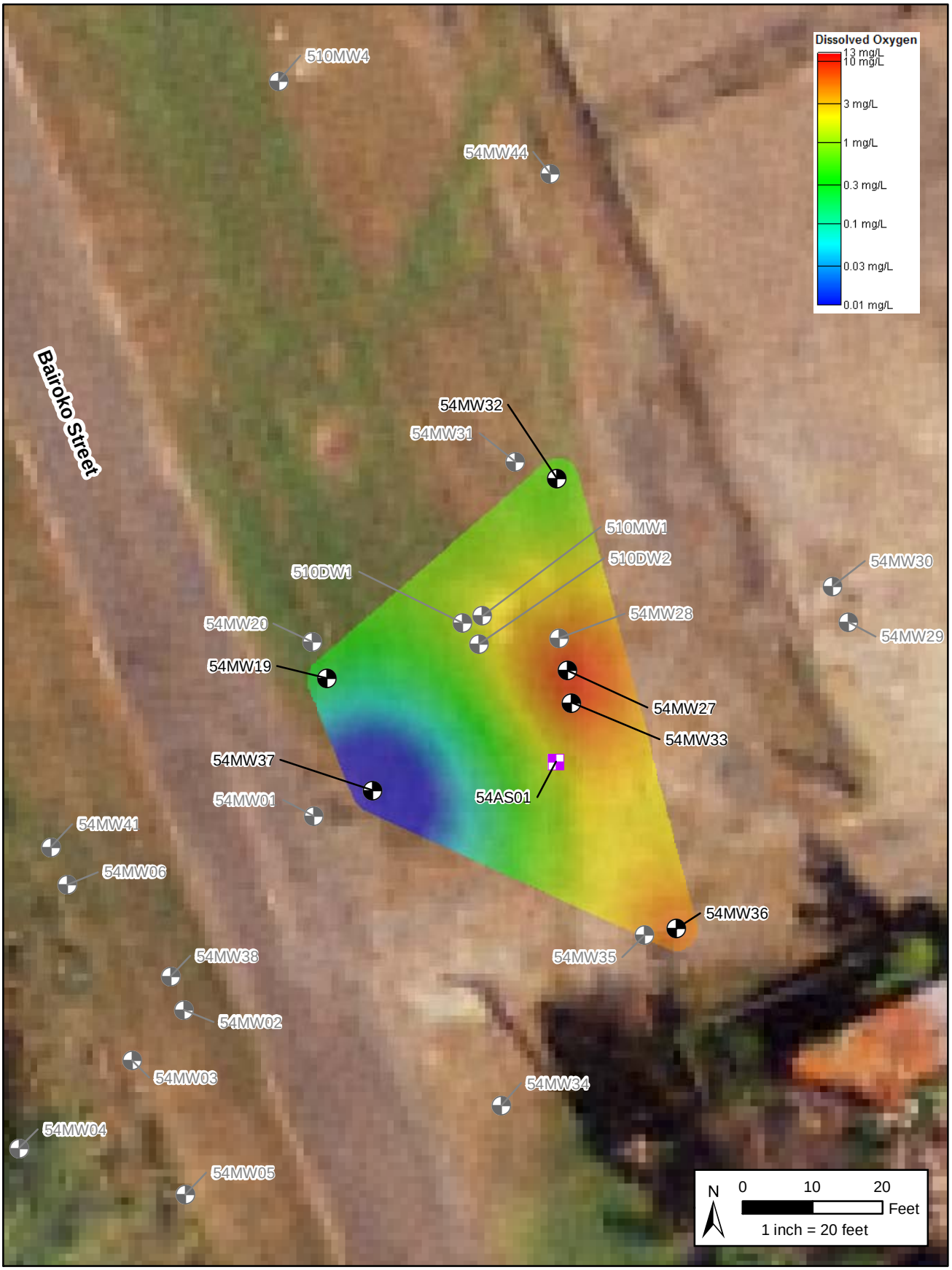
Air Sparge Well

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE G5
Deep Zone Dissolved Oxygen Concentration – Base
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_BASE_DEEP-20110121.MXD SSMITH21 1/25/2011 11:49:35



Monitoring Well Location Used in Survey

Other Monitoring Well Location

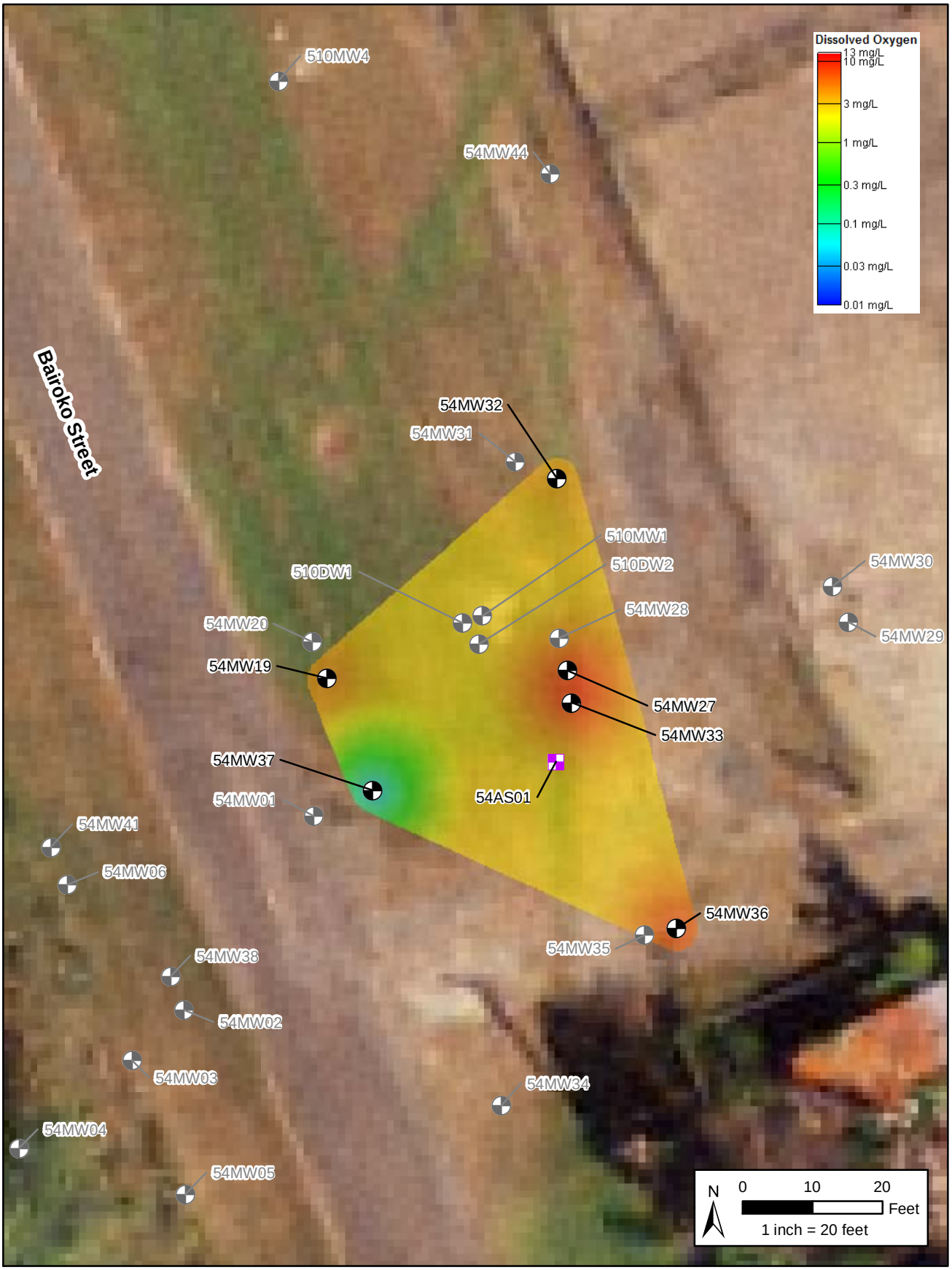
Air Sparge Well

Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

FIGURE G6
Deep Zone Dissolved Oxygen
Concentration – 4 scfm
SWMU 54
Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_4SCFM_DEEP-20110121.MXD SSMITH21 1/25/2011 11:47:05



Monitoring Well Location Used in Survey

Other Monitoring Well Location

Air Sparge Well

Originated By: Kylie McCord *Kylie McCord*

Checked By: Tom Kessler *Tom Kessler*

FIGURE G7

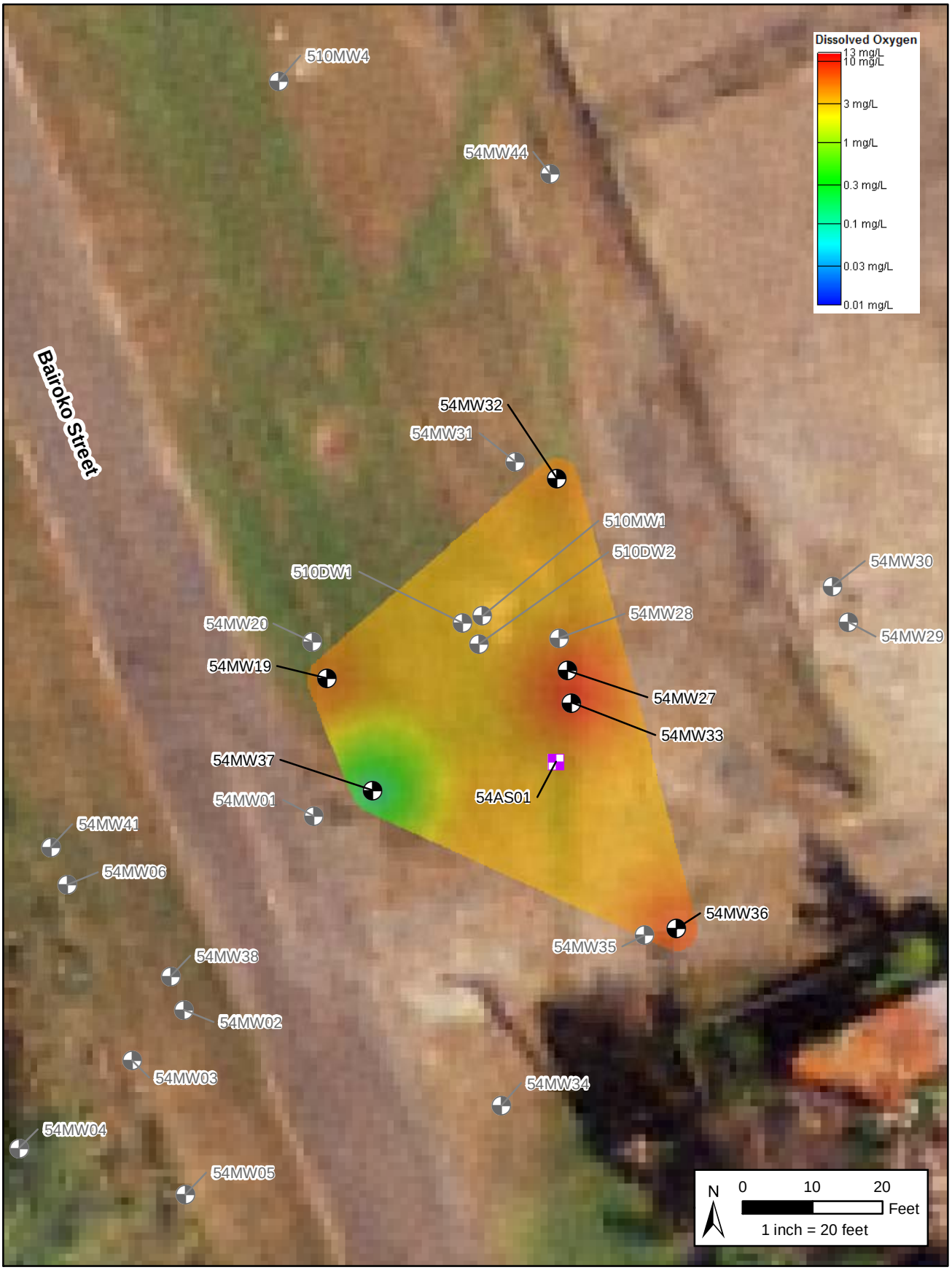
Deep Zone Dissolved Oxygen Concentration – 8 scfm

SWMU 54

Naval Activity Puerto Rico

CH2MHILL

\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_8SCFM_DEEP-20110121.MXD SSMITH21 1/25/2011 11:46:32



Monitoring Well Location Used in Survey

Other Monitoring Well Location

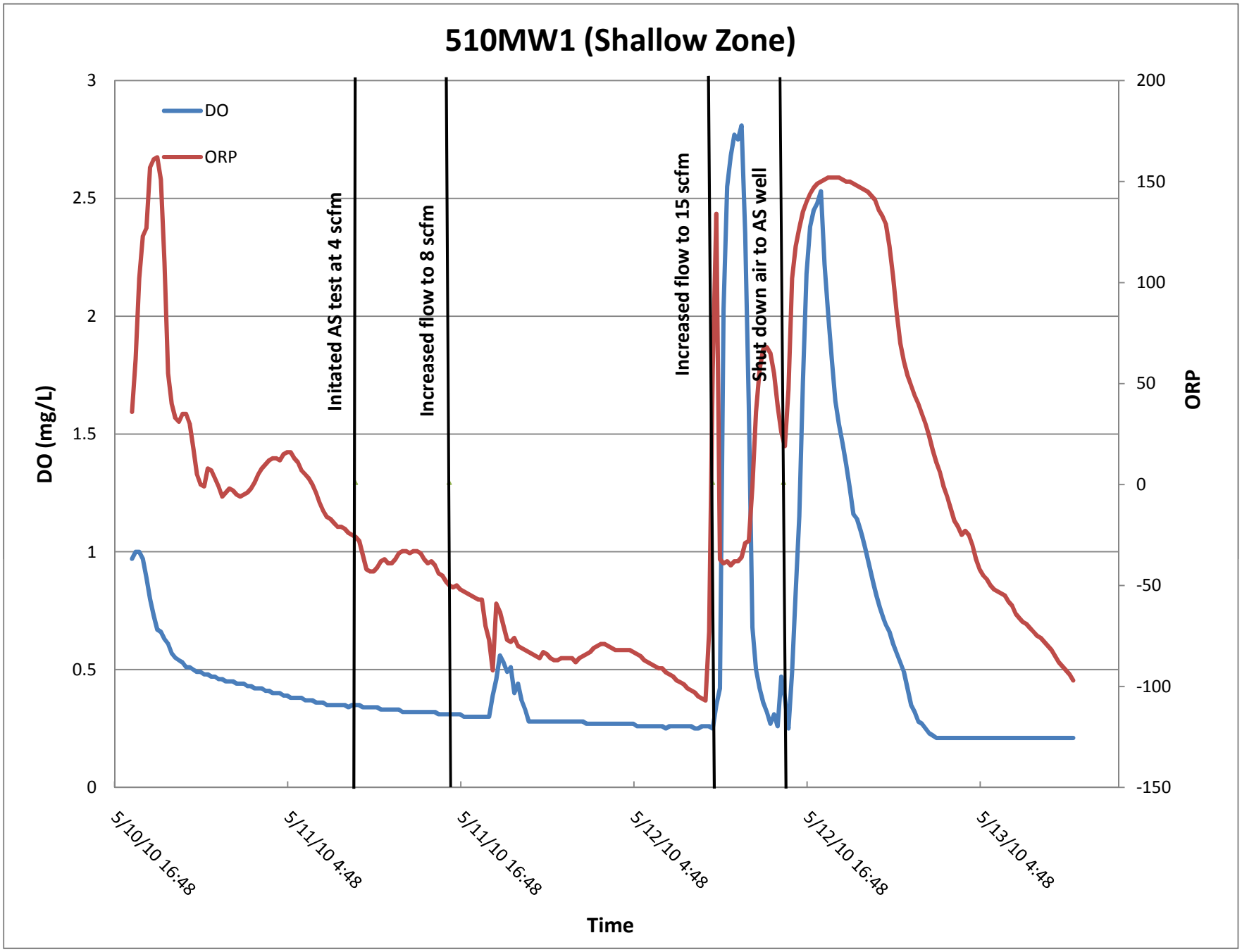
Air Sparge Well

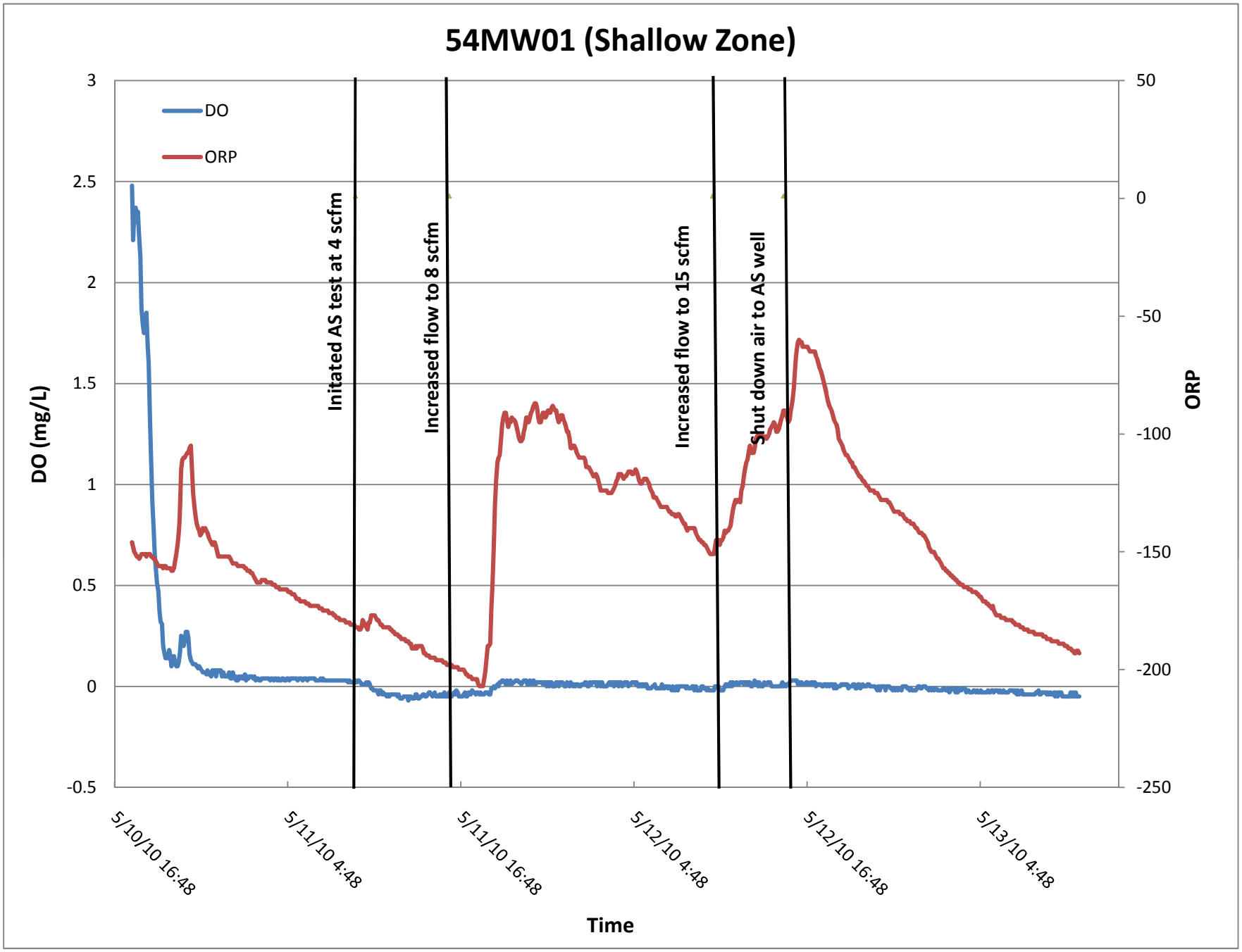
Originated By: Kylie McCord *Kylie McCord*
Checked By: Tom Kessler *Tom Kessler*

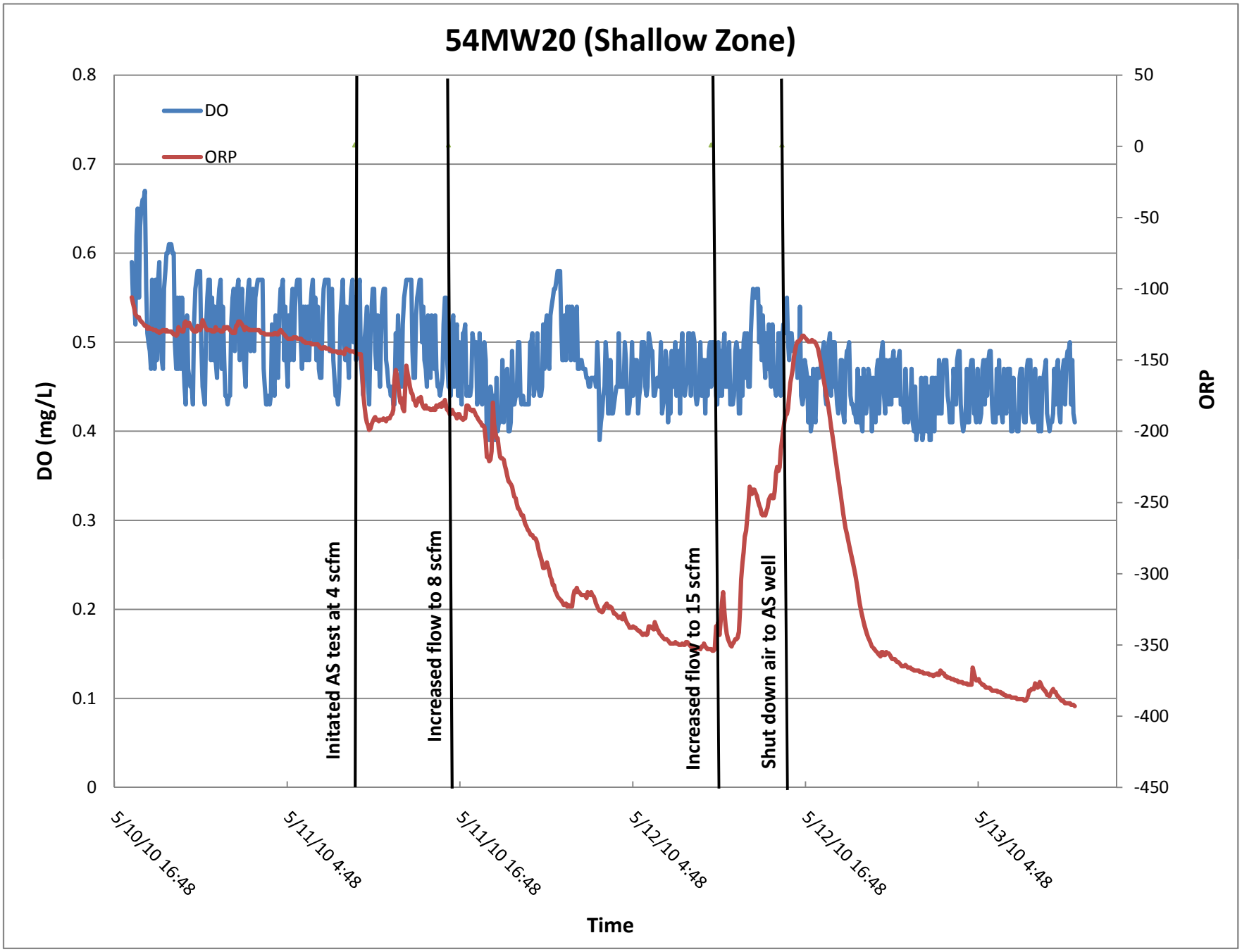
FIGURE G8
Deep Zone Dissolved Oxygen Concentration – 15 scfm
SWMU 54
Naval Activity Puerto Rico

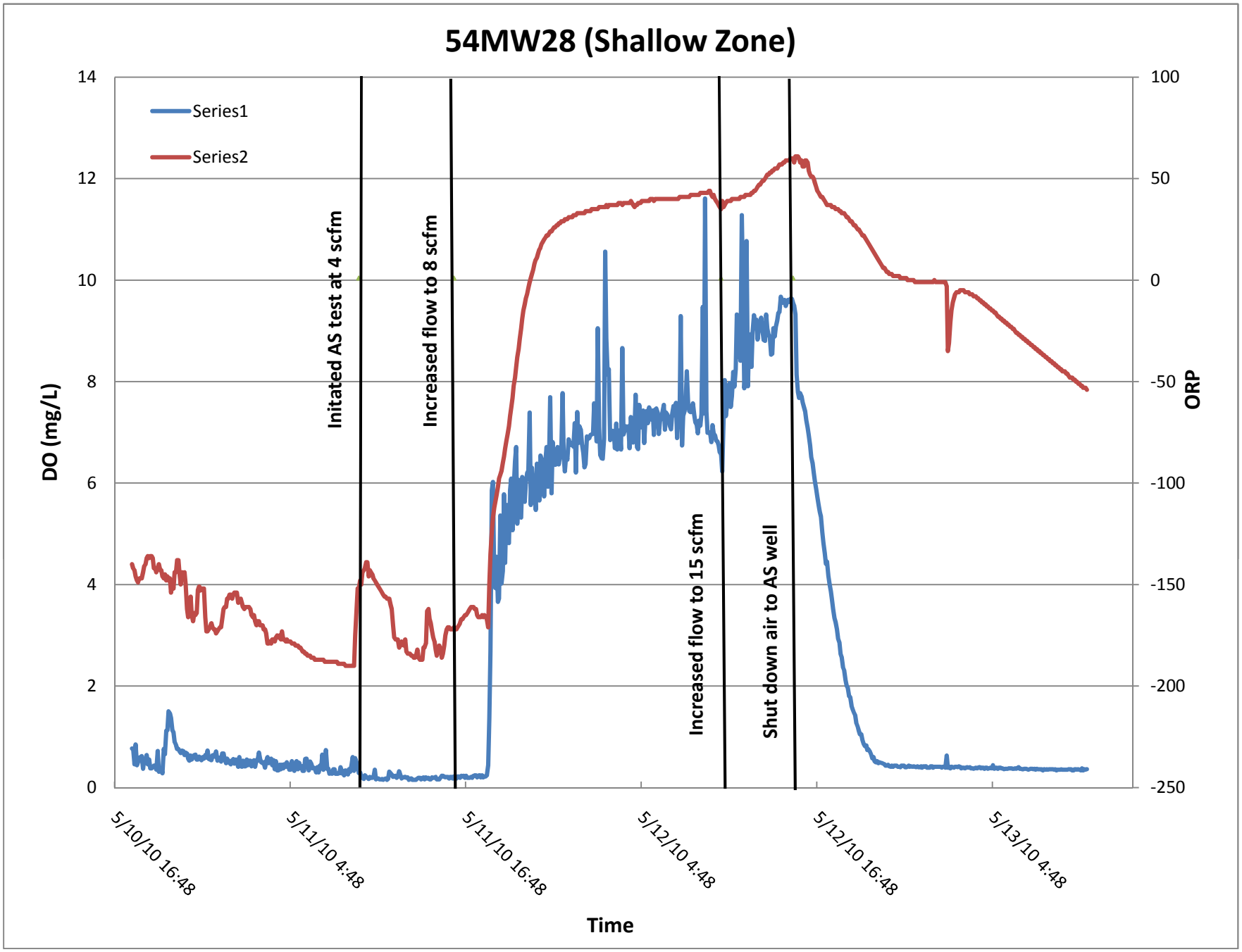
CH2MHILL

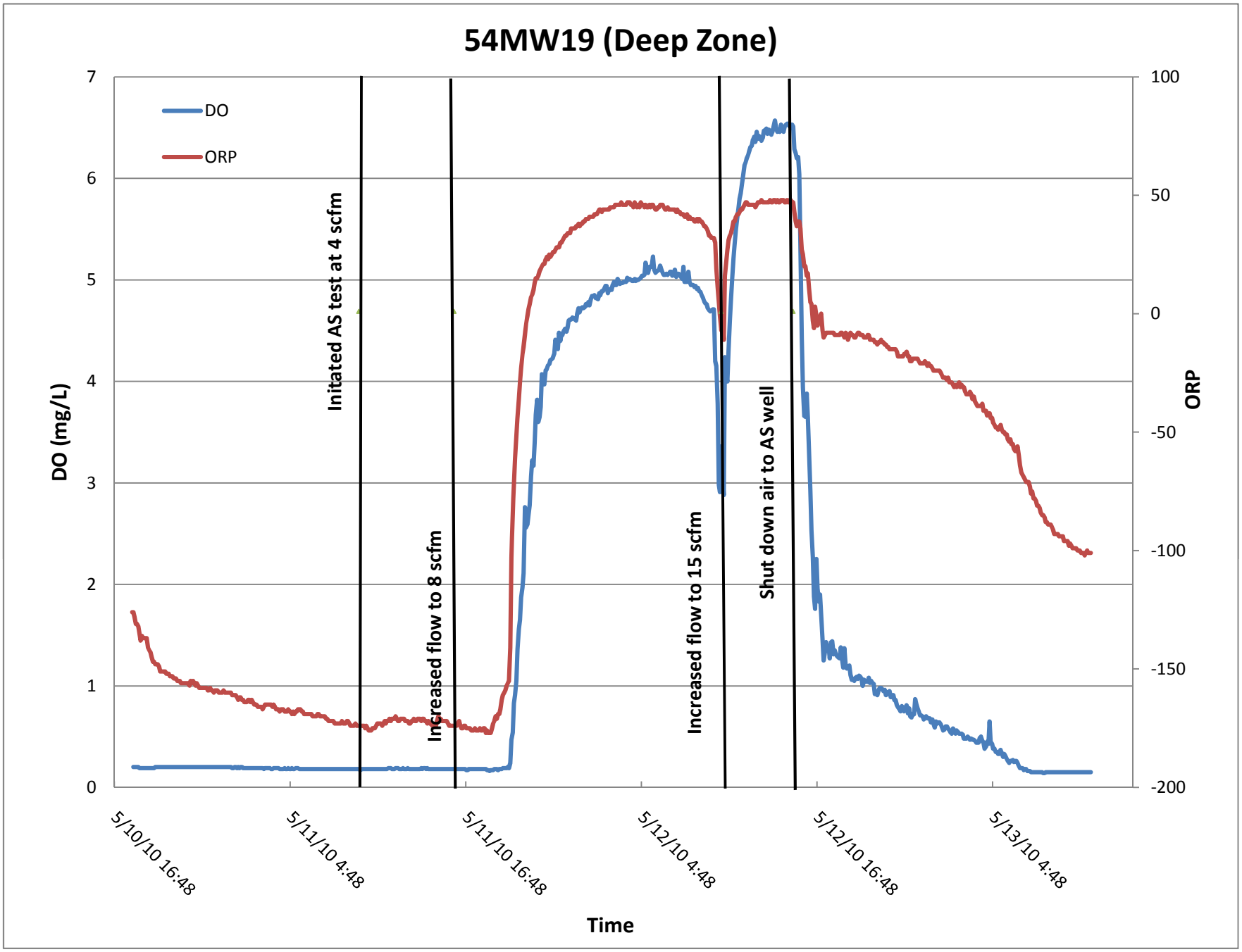
\\GALILEO\PROJ\USNAVY\378718_PUERTORICO\MAPFILES\SWMU54_DO_15SCFM_DEEP-20110121.MXD SSMITH21 1/25/2011 11:45:35

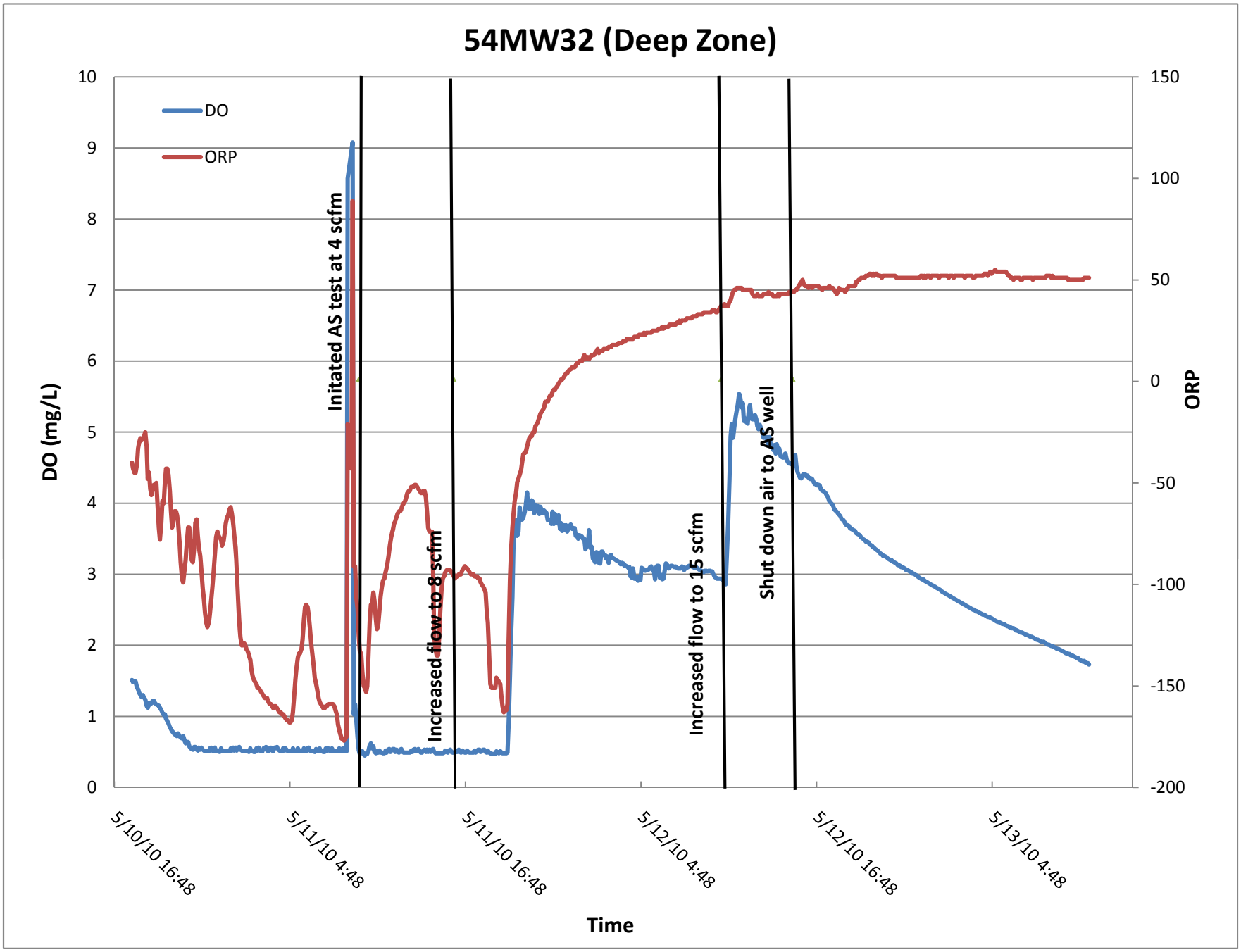

510MW1 (Shallow Zone)
DO
ORP
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
DO (mg/L)
ORP
Time
3
2.5
2
1.5
1
0.5
0
200
150
100
50
0
-50
-100
-150
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

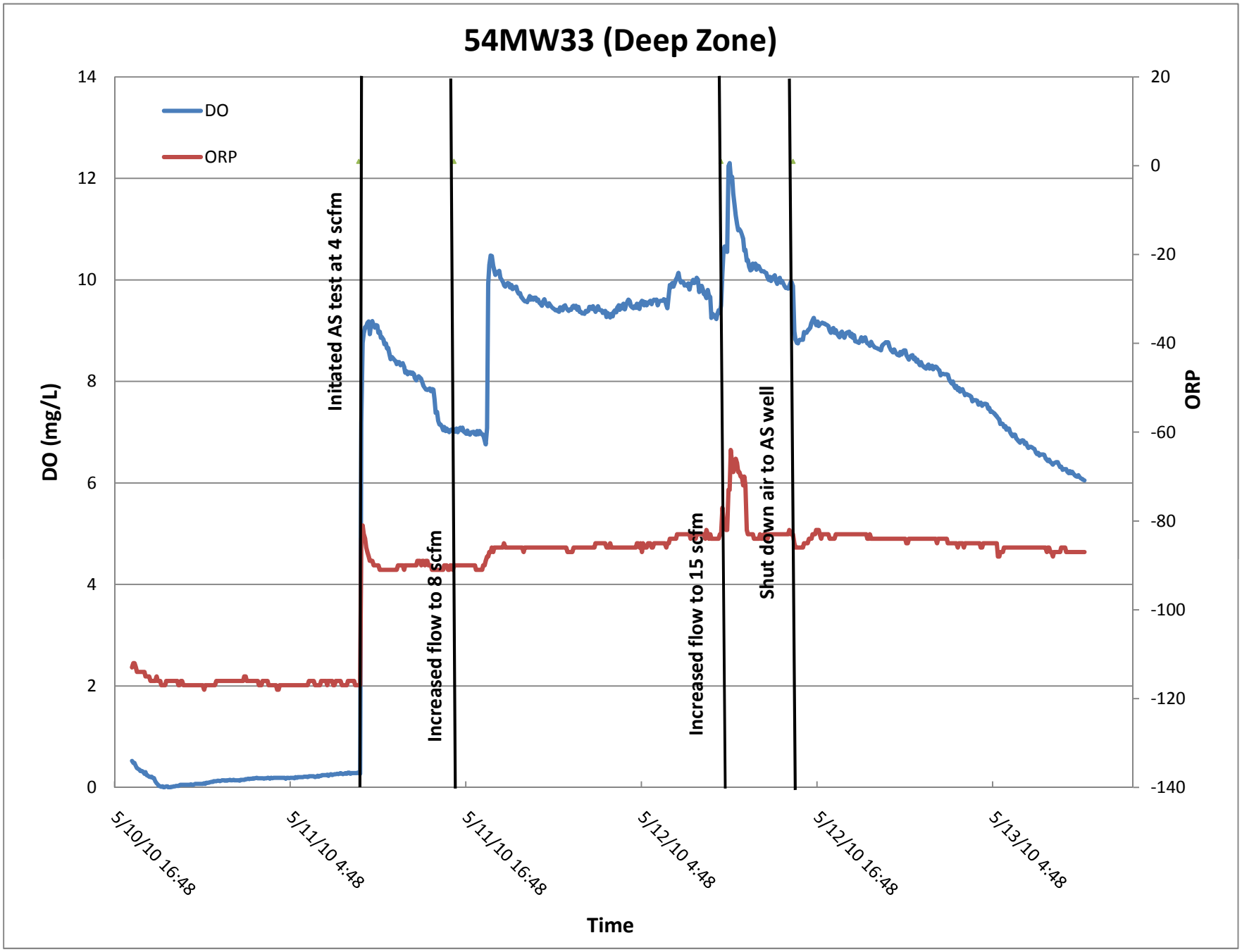

54MW01 (Shallow Zone)
DO
ORP
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
DO (mg/L)
ORP
Time
3
2.5
2
1.5
1
0.5
0
-0.5
50
0
-50
-100
-150
-200
-250
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

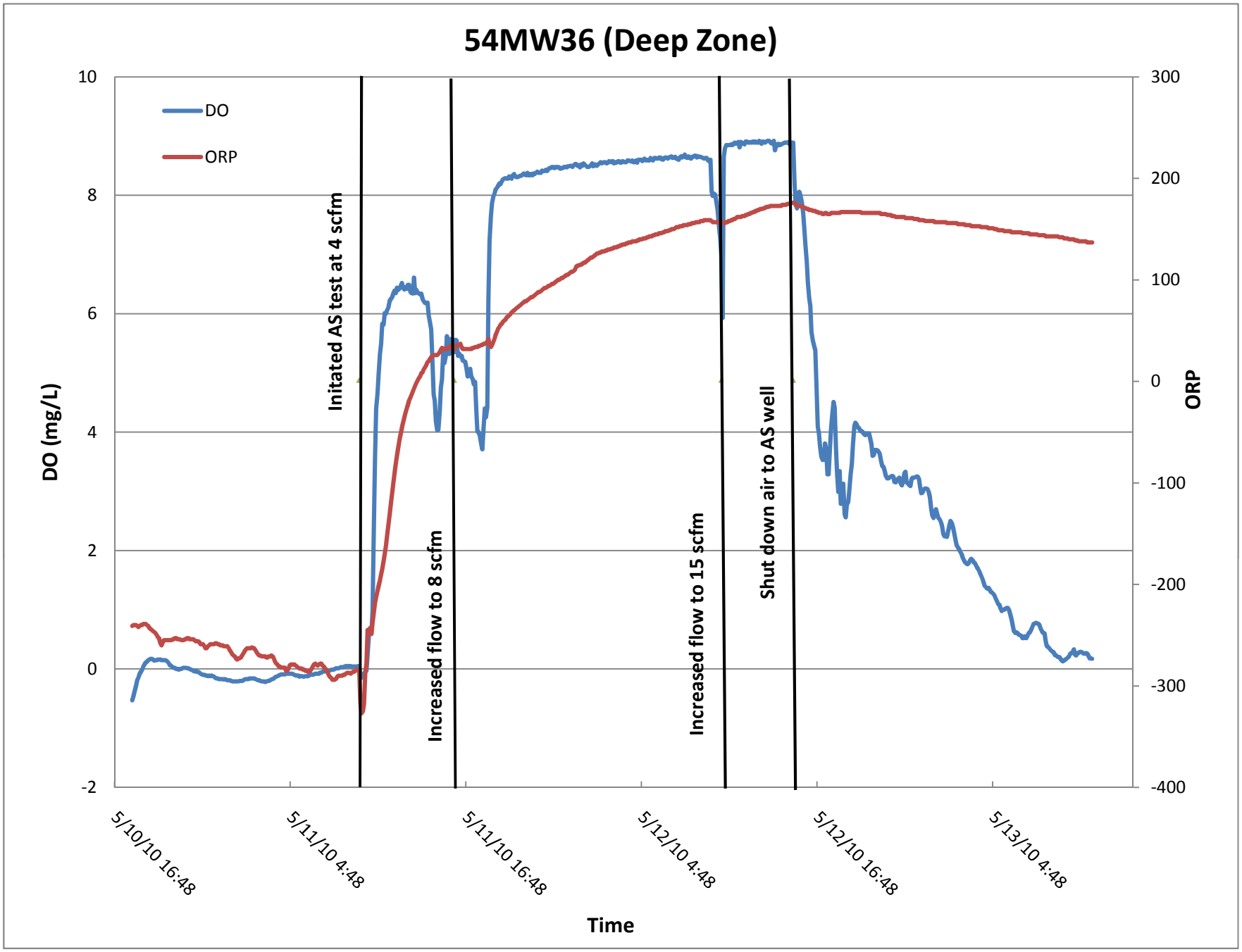

54MW20 (Shallow Zone)
DO
ORP
DO (mg/L)
ORP
Time
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

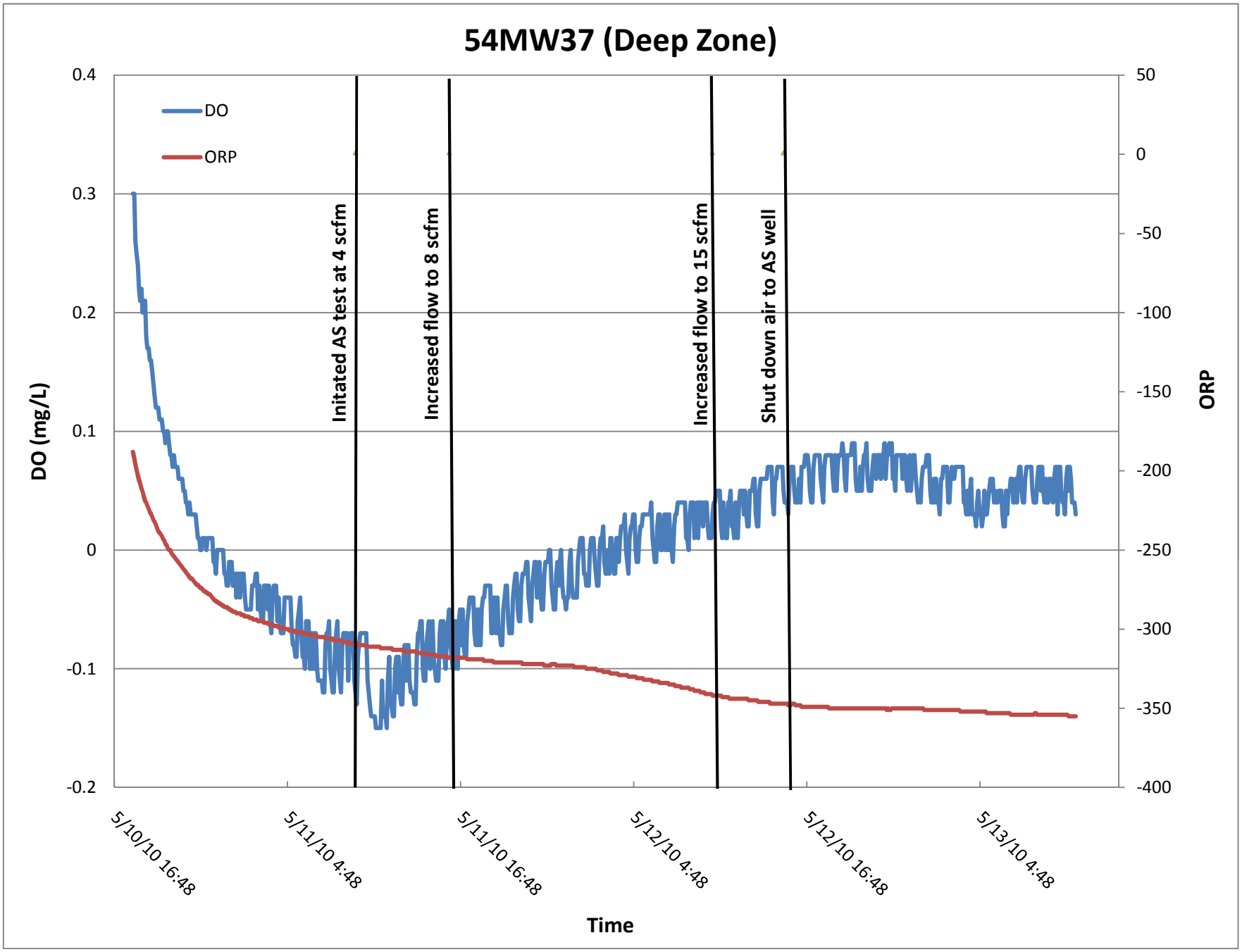

54MW28 (Shallow Zone)
Series1
Series2
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
DO (mg/L)
ORP
Time
14
12
10
8
6
4
2
0
100
50
0
-50
-100
-150
-200
-250
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48


54MW19 (Deep Zone)
DO
ORP
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
DO (mg/L)
ORP
Time
7
6
5
4
3
2
1
0
100
50
0
-50
-100
-150
-200
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48


54MW32 (Deep Zone)
DO
ORP
DO (mg/L)
ORP
Time
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
10
9
8
7
6
5
4
3
2
1
0
150
100
50
0
-50
-100
-150
-200
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

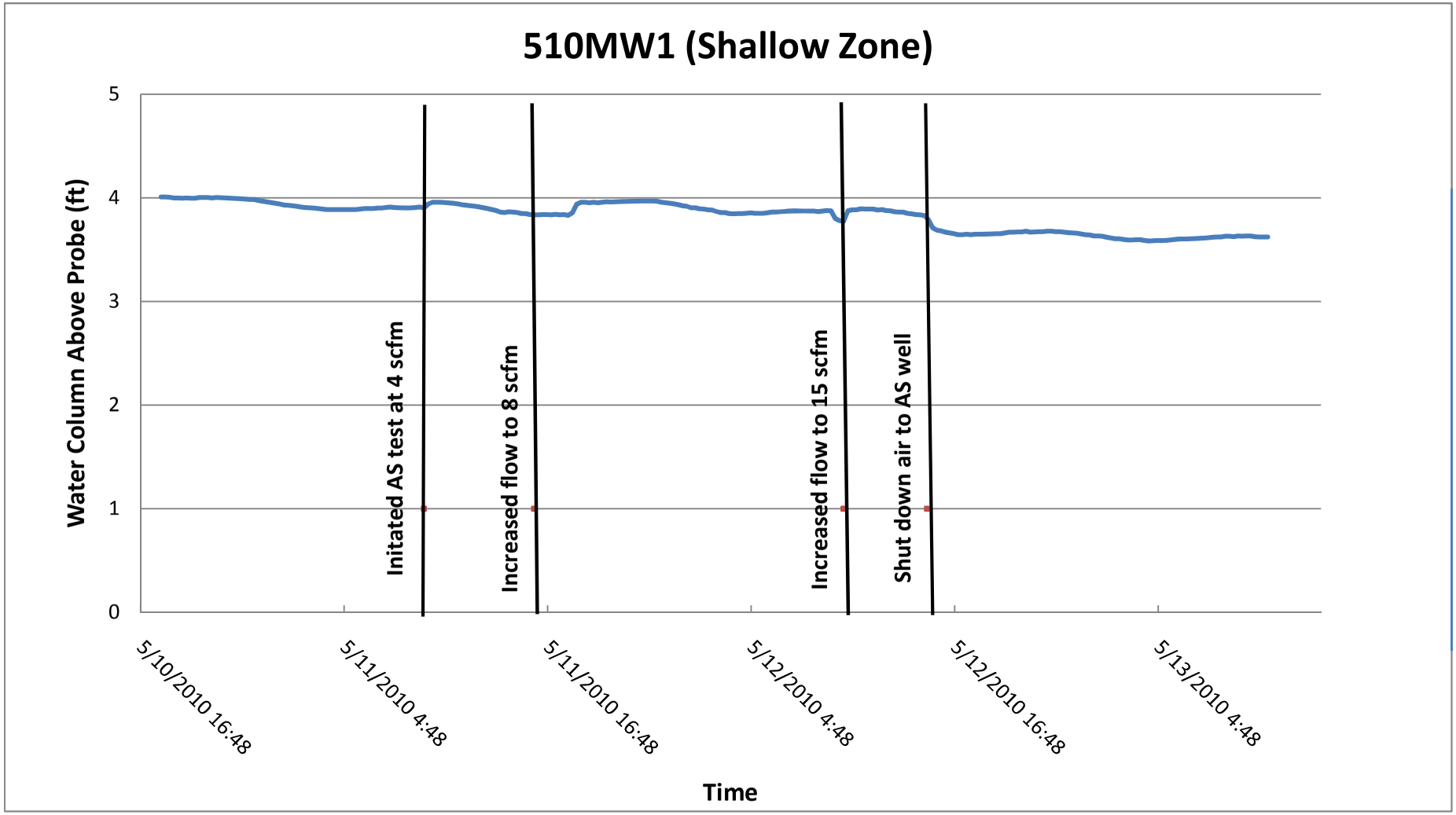

54MW33 (Deep Zone)
DO
ORP
DO (mg/L)
ORP
Time
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
14
12
10
8
6
4
2
0
20
0
-20
-40
-60
-80
-100
-120
-140
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

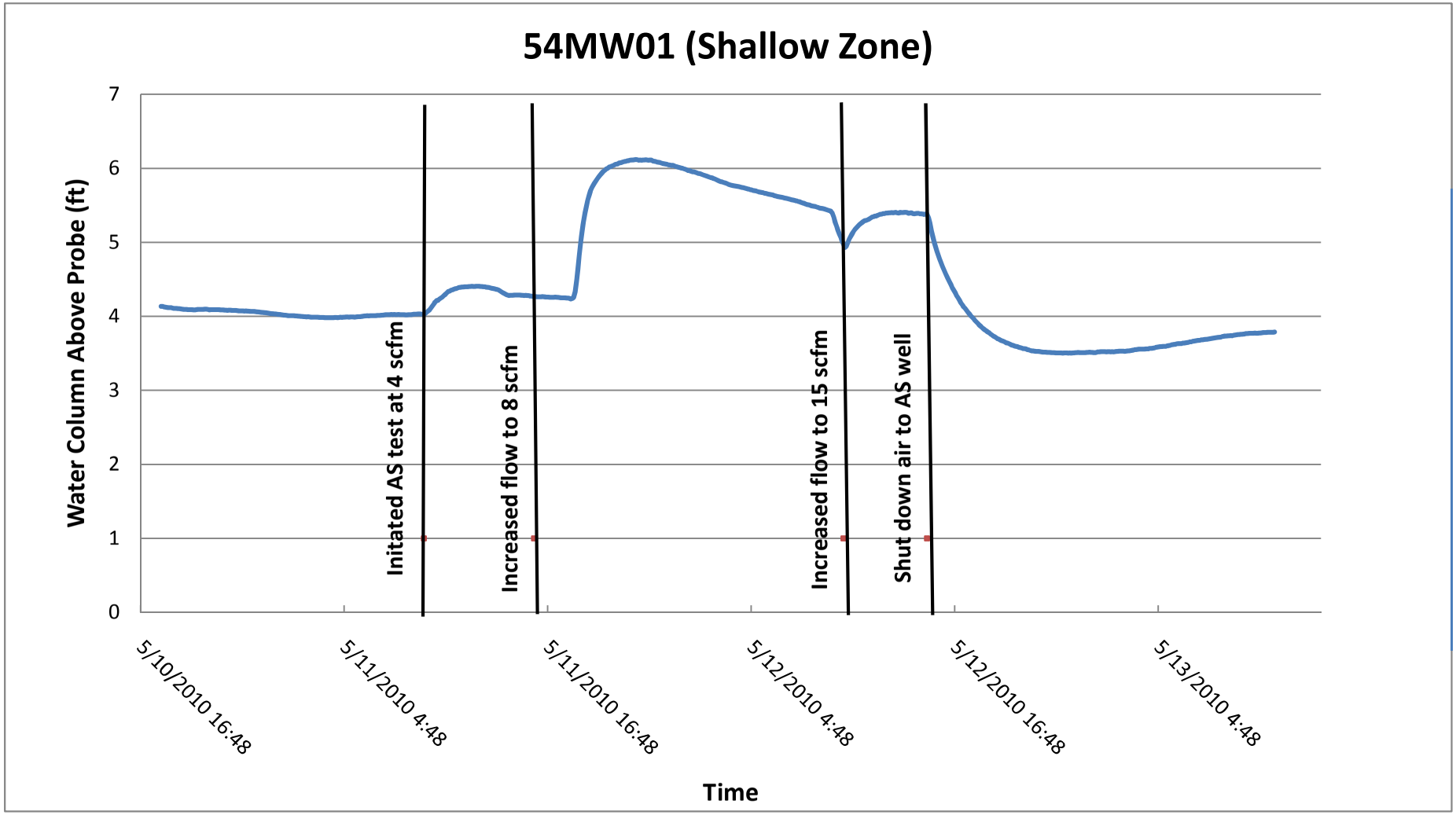

54MW36 (Deep Zone)
DO
ORP
DO (mg/L)
ORP
Time
10
8
6
4
2
0
-2
300
200
100
0
-100
-200
-300
-400
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

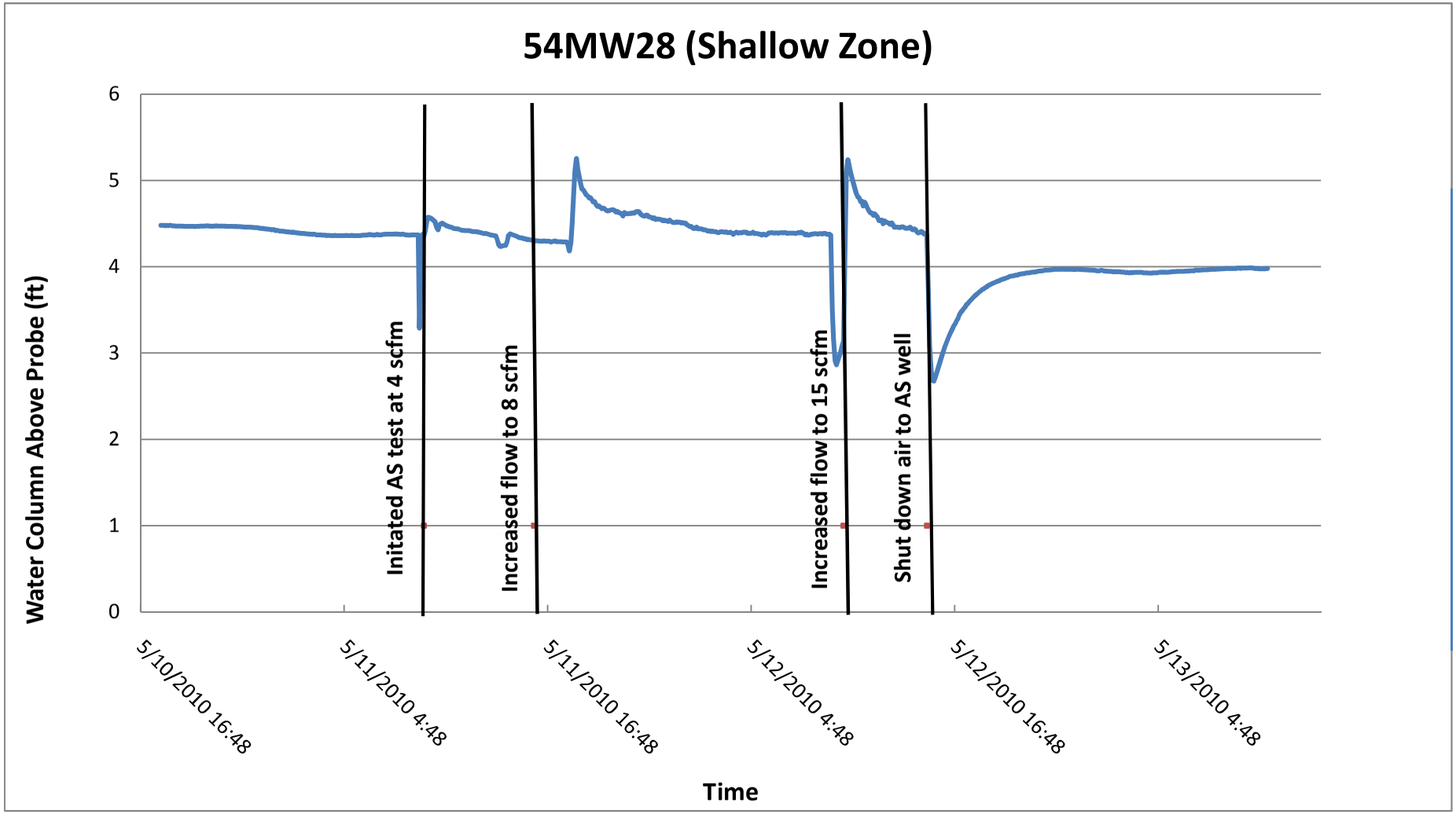

54MW37 (Deep Zone)
DO
ORP
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
DO (mg/L)
ORP
Time
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50
0
-50
-100
-150
-200
-250
-300
-350
-400
5/10/10 16:48
5/11/10 4:48
5/11/10 16:48
5/12/10 4:48
5/12/10 16:48
5/13/10 4:48

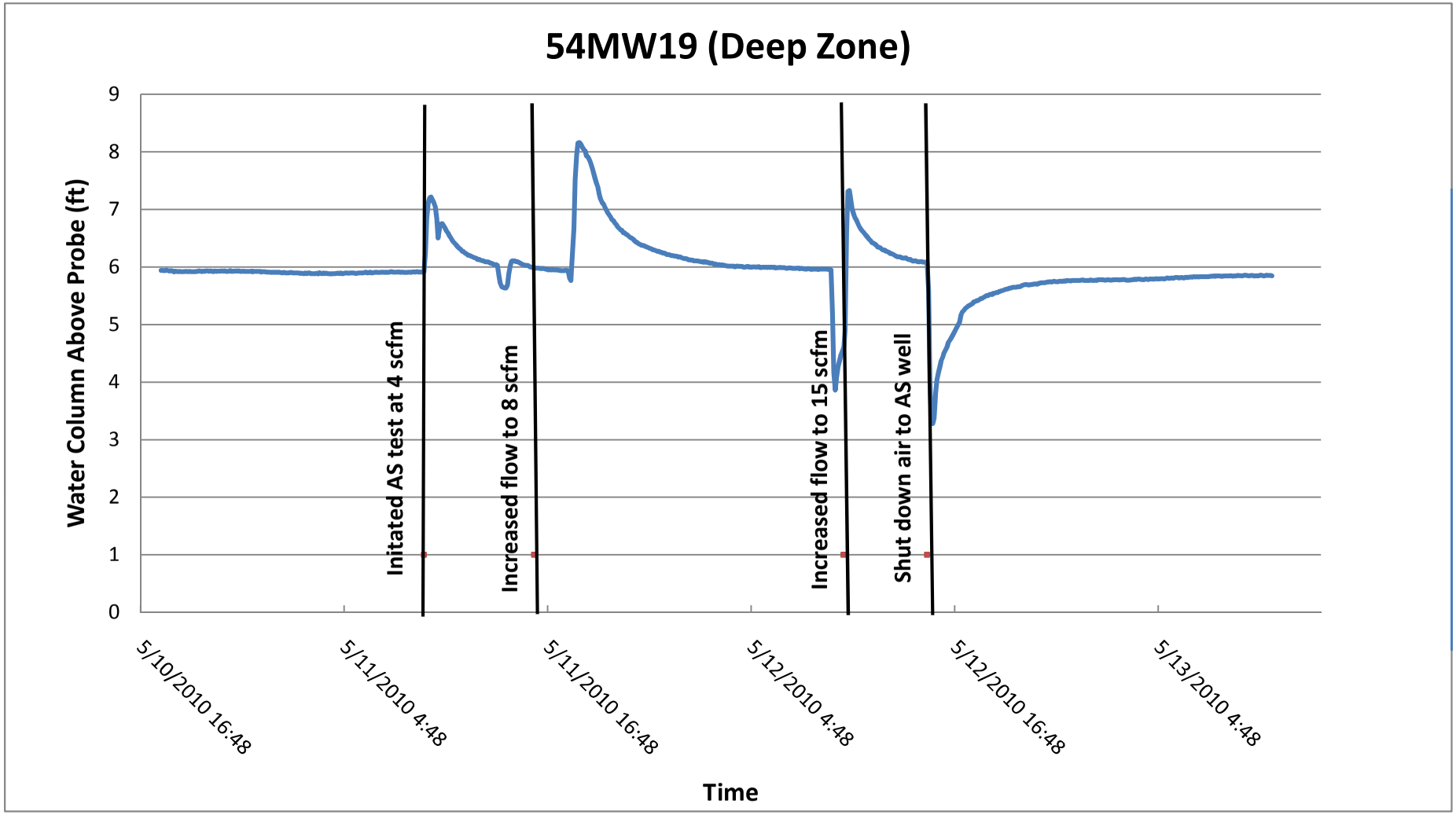
APPENDIX I

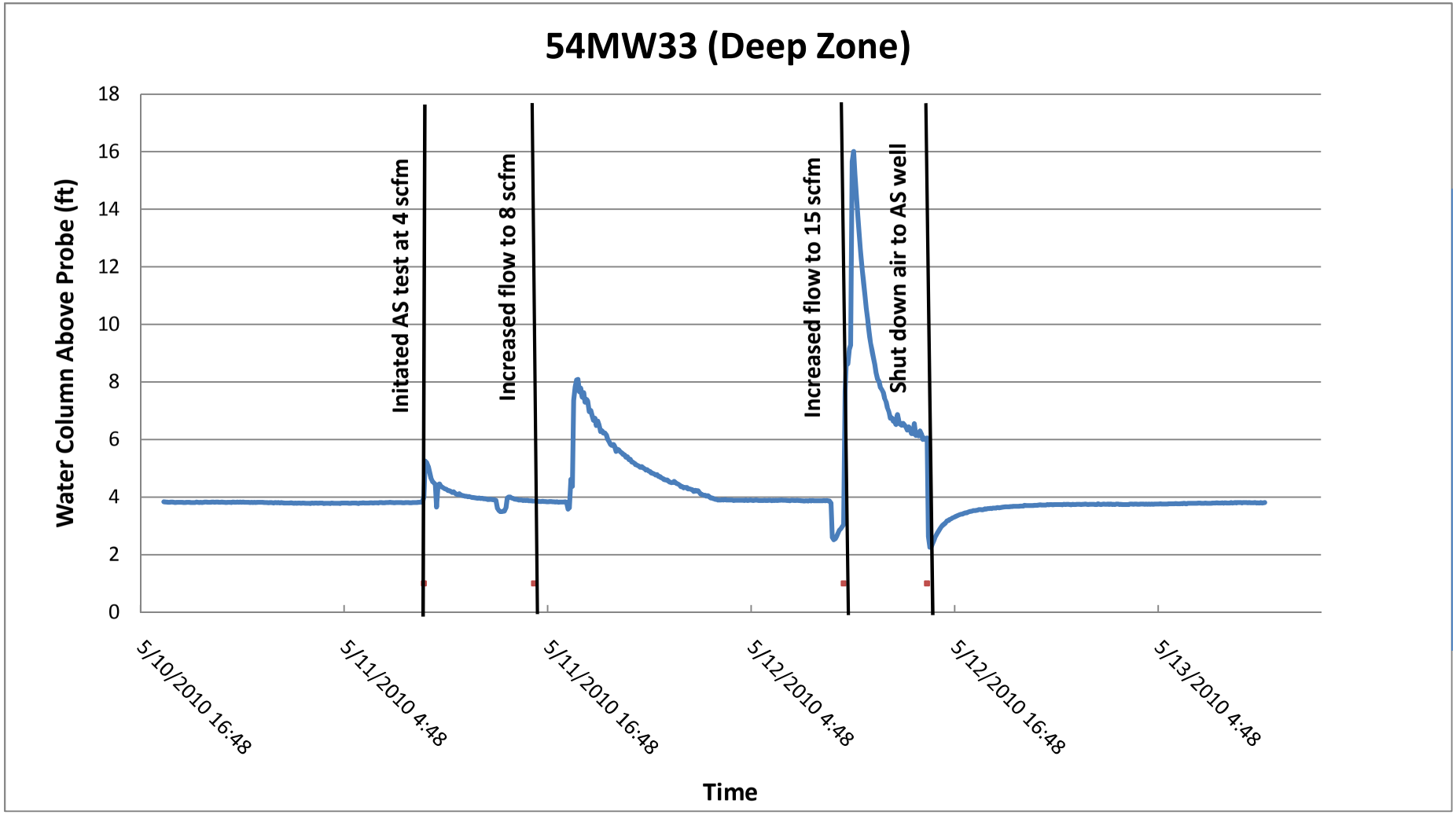
AS Pilot-Scale Test DO Figures

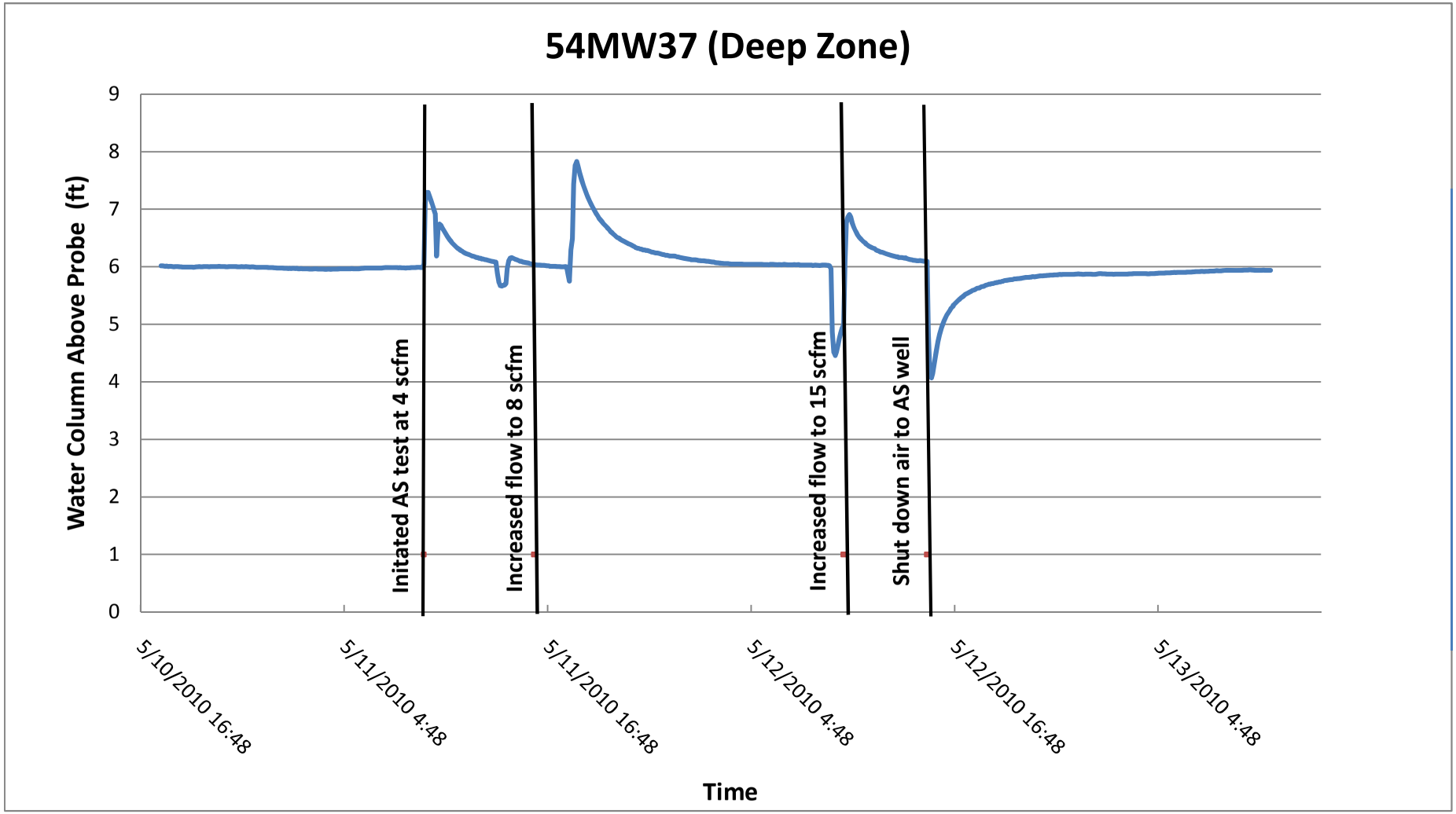

510MW1 (Shallow Zone)
Water Column Above Probe (ft)
5
4
3
2
1
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time


54MW01 (Shallow Zone)
Water Column Above Probe (ft)
7
6
5
4
3
2
1
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time


54MW28 (Shallow Zone)
Water Column Above Probe (ft)
6
5
4
3
2
1
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time


54MW19 (Deep Zone)
Water Column Above Probe (ft)
9
8
7
6
5
4
3
2
1
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time


54MW33 (Deep Zone)
Water Column Above Probe (ft)
18
16
14
12
10
8
6
4
2
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time

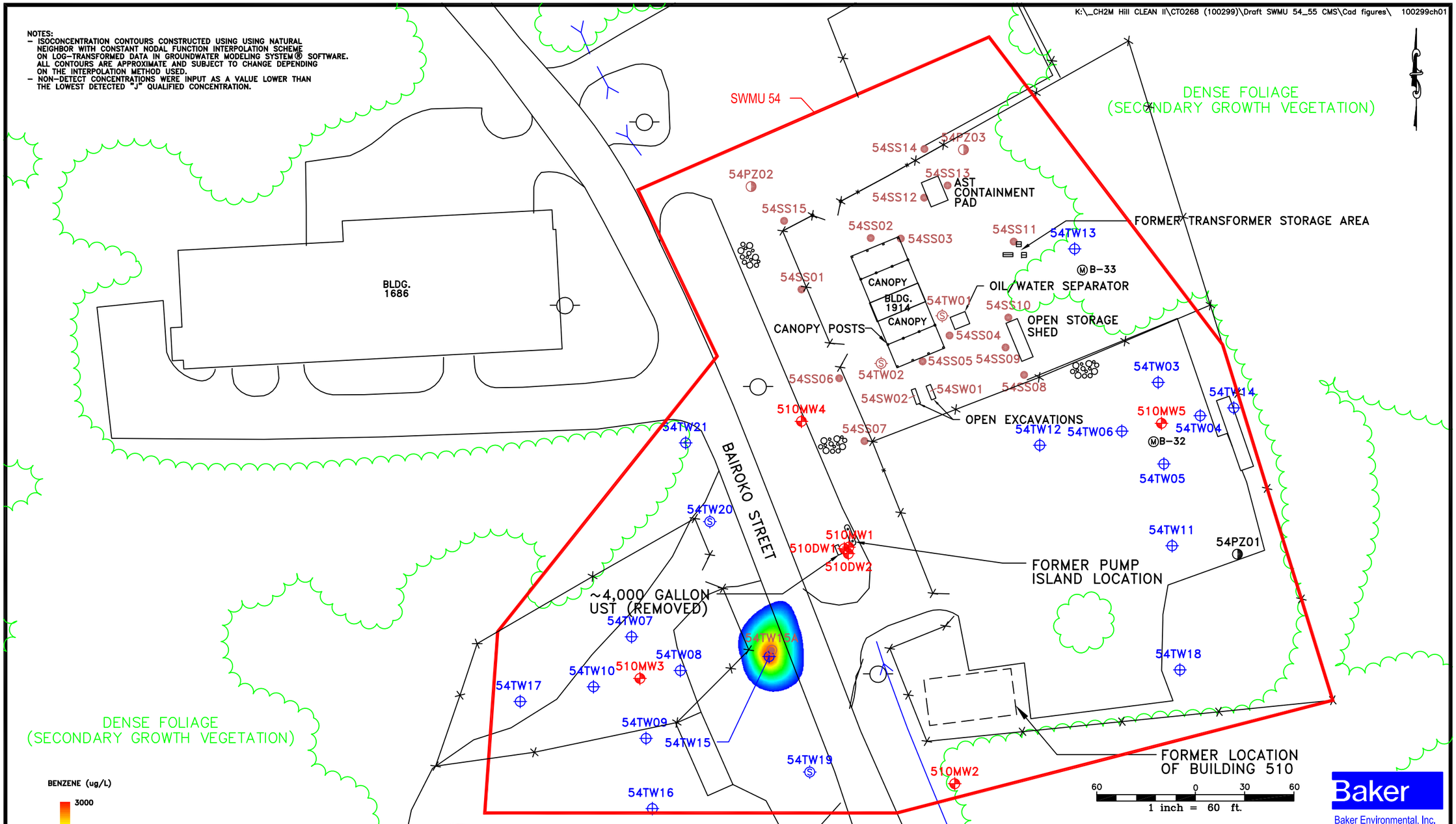

54MW37 (Deep Zone)
Water Column Above Probe (ft)
9
8
7
6
5
4
3
2
1
0
Initated AS test at 4 scfm
Increased flow to 8 scfm
Increased flow to 15 scfm
Shut down air to AS well
5/10/2010 16:48
5/11/2010 4:48
5/11/2010 16:48
5/12/2010 4:48
5/12/2010 16:48
5/13/2010 4:48
Time

APPENDIX B

SWMU 54 Benzene Concentrations, October 2004

K:_CH2M Hill CLEAN II\CTO268 (100299)\Draft SWMU 54_55 CMS\Cad figures\ 100299ch01

NOTES:
- ISOCONCENTRATION CONTOURS CONSTRUCTED USING USING NATURAL NEIGHBOR WITH CONSTANT NODAL FUNCTION INTERPOLATION SCHEME ON LOG-TRANSFORMED DATA IN GROUNDWATER MODELING SYSTEM® SOFTWARE. ALL CONTOURS ARE APPROXIMATE AND SUBJECT TO CHANGE DEPENDING ON THE INTERPOLATION METHOD USED.
- NON-DETECT CONCENTRATIONS WERE INPUT AS A VALUE LOWER THAN THE LOWEST DETECTED "J" QUALIFIED CONCENTRATION.



Baker
Baker Environmental, Inc.

SOURCE: DEPT. OF THE NAVY, SEPTEMBER 1999.

LEGEND

- TEMPORARY PIEZOMETER LOCATION (RFI, 2002)
- SANITARY SEWER MANHOLE
- SURFACE SOIL SAMPLE LOCATION (SAMPLING AND ANALYSIS INVESTIGATION, 2000)
- EXISTING MONITOR WELL LOCATION
- STANDING WATER SAMPLE LOCATION (SAMPLING AND ANALYSIS INVESTIGATION, 2000)
- TEMPORARY SHALLOW MONITOR WELL LOCATION (RFI, 2002)
- TEMPORARY SHALLOW MONITOR WELL LOCATION/ SOIL SAMPLE LOCATION (RFI, 2002)
- TEMPORARY SHALLOW MONITOR WELL LOCATION/ SOIL SAMPLE LOCATION (SAMPLING AND ANALYSIS INVESTIGATION, 2000)
- SOIL BORING LOCATION (RFI, 2002)
- FENCE LINE
- BUILDING
- TREE LINE
- EDGE OF GRAVEL
- FORMER TRANSFORMER STORAGE PALLETS
- GROUND SURFACE CONTOUR LINE

FIGURE 2-20
BENZENE IN GROUNDWATER ABOVE CAO
SWMU 54, BUILDING 1914
(FORMER NEX REPAIR/MAINTENANCE SHOP)
CORRECTIVE MEASURES STUDY, OCTOBER 2004
NAVAL ACTIVITY PUERTO RICO
PUERTO RICO

APPENDIX C

Detailed Cost Estimate

SWMU 54 Benzene Plume NAPR, Ceiba, PR

Biosparge System Construction and Operation - Estimate Summary

January 2011

Estimated costs for SWMU 54 Biosparge System

It is assumed the bioreactor will operate for a minimum of 2 years with quarterly monitoring during the first year and semi-annual the second year.

Phase of Work	Cost
I: Equipment Fab and Pre-Mobilization	$162,500
II: System Installation	$377,100
III: O&M, Monitoring, and Reporting	$400,800
Total	**$940,000**
Cost minus 30%	$658,000
Cost plus 50%	$1,410,000

SWMU 54 Benzene Plume NAPR, Ceiba, PR

Biosparge System Equipment Fabrication and Pre-Mobilization Work

January 2011

Total Cost: $162,500

This cost estimate includes design, fabrication, and factory testing of the biosparge equipment.
Assumptions:
Fabrication will be completed by a subcontractor with CH2M HILL as oversight.

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Pre-Mobilization					
Biosparge Design and Workplanning					
Project Manager	24	HR	$157.80	$3,787	
Engineer/Hydrogeologist	100	HR	$135.00	$13,500	
Project Delivery Engineer	60	HR	$150.65	$9,039	
Jr. Engineer/Hydrogeologist	120	HR	$105.00	$12,600	
Admin	40	HR	$105.33	$4,213	
Project Procurement	20	HR	$105.33	$2,107	
Subtotal				**$45,246**	
Equipment Fabrication					
Equipment Fab	1	EA	$65,000	$65,000	Bisco Env.
Equipment Delivery	1	EA	$15,000	$15,000	
Factory Testing					
Project Manager	4	HR	$157.80	$631	
Project Delivery Engineer	30	HR	$150.65	$4,520	
Jr. Engineer/Hydrogeologist	30	HR	$105.00	$3,150	Sub oversite/training
Travel	2	LS	$700	$1,400	airfare $400; car $300/wk
Per Diem	6	DY	$242	$1,452	
Demonstration and Training	3	DY	$1,250	$3,750	Conducted by Bisco.
Project Manager	12	HR	$157.80	$1,894	
Engineer/Hydrogeologist	64	HR	$135.00	$8,640	
Jr. Engineer/Hydrogeologist	64	HR	$105.00	$6,720	Sub oversite/training
Project Procurement	12	HR	$105.33	$1,264	
Travel	2	LS	$700	$1,400	airfare $400; car $300/wk
Per Diem	10	DY	$242	$2,420	
Subtotal				**$117,240**	
TASK TOTAL				**$162,486**	

SWMU 54 Benzene Plume NAPR, Ceiba, PR
Biosparge System Installation
January 2011

Total Cost: $377,100

This cost estimate assumes includes installation of the biosaprge system equipment.

Assumptions:

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Field Effort					
Utility Locate	1	LS	$4,500	$4,500	Quote from OneVision Services
Site Clearing	1	LS	$4,300	$4,300	R.S. MEANS, 2010
Locate/Clearing Oversite					
Project Manager	4	HR	$157.80	$631	
Engineer/Hydrogeologist	4	HR	$135.00	$540	
Jr. Engineer/Hydrogeologist	40	HR	$105.00	$4,200	Sub oversite/training
Project Procurement	8	HR	$105.33	$843	
Travel	1	LS	$700	$700	airfare $400; car $300/wk
Per Diem	5	DY	$242	$1,210	
AS Well Installation					
Mobilization	1	EA	$4,500	$4,500	Includes constr. Of decon pad etc
AS Well Installation	580	FT	$80	$46,400	Previous drilling work (J&S)
IDW Management	27	HR	$100	$2,700	one hour per well
Well Development	54	HR	$100	$5,400	two hours per well
Well Install Oversite					
Project Manager	12	HR	$157.80	$1,894	
Engineer/Hydrogeologist	36	HR	$135.00	$4,860	
Sr. Engineer/Hydrogeologist	12	HR	$150.65	$1,808	
Jr. Engineer/Hydrogeologist	220	HR	$105.00	$23,100	Sub oversite/training
Project Procurement	12	HR	$105.33	$1,264	
Travel	1	LS	$1,600	$1,600	airfare $400; car $300/wk x 4 weeks
Per Diem	20	DY	$242	$4,840	
Trenching					
Concrete/asphalt cutting	50	LF	$5.10	$255	Cut Bairoko St.
Backhoe Rental	1	MO	$2,195	$2,195	Hertz
Skidsteer Rental	1	MO	$1,525	$1,525	Hertz
FOGM	1	MO	$1,500	$1,500	Fuel, oil, grease, mainten.
Trenching Labor	12	DY	$1,840	$22,080	RS MEANS, 2010
Trenching Oversite					
Project Manager	12	HR	$157.80	$1,894	
Engineer/Hydrogeologist	24	HR	$135.00	$3,240	
Jr. Engineer/Hydrogeologist	176	HR	$105.00	$18,480	Sub oversite/training
Project Procurement	12	HR	$105.33	$1,264	
Travel	1	LS	$1,700	$1,700	airfare $400; car $300/wk x 3 weeks
Per Diem	12	DY	$242	$2,904	
Piping Installation					
Silt Fence	1,000	FT	$4.60	$4,600	EFS
Piping, Vault Install, Connections, Equipment Placement	20	DY	$1,840	$36,800	RS MEANS, 2010
1" SDR13 HDPE	4,500	EA	$1.17	$5,265	includes fittings
Wellhead Completions	27	EA	$250	$6,750	includes HDPE fittings and steel plate for location
1" 200 psi hose	340	LF	$5.19	$1,765	
Barricades/Fencing	520	LF	$6	$3,120	
Generator Rental	1	MO	$870	$870	Hertz
Crane Service	8	HR	$125	$1,000	
Backhoe Rental	1	MO	$2,195	$2,195	
Skidsteer Rental	1	MO	$1,525	$1,525	Hertz
FOGM	1	MO	$1,500	$1,500	Fuel, oil, grease, mainten.
Electrician - Service Installation	1	EA	$7,500	$7,500	Engr Estimate
Electrical Service Provider Charge	1	EA	$5,000	$5,000	Engr Estimate

SWMU 54 Benzene Plume NAPR, Ceiba, PR
Biosparge System Installation
January 2011

Total Cost: $377,100

This cost estimate assumes includes installation of the biosaprge system equipment.

Assumptions:

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Piping Install Oversite					
Project Manager	16	HR	$157.80	$2,525	
Engineer/Hydrogeologist	144	HR	$135.00	$19,440	
Jr. Engineer/Hydrogeologist	288	HR	$105.00	$30,240	Sub oversite/training
Project Procurement	12	HR	$105.33	$1,264	
Travel	1	LS	$2,400	$2,400	airfare $400; car $300/wk x 4 weeks
Per Diem	20	DY	$242	$4,840	
Concrete/Asphalt Replacement					
Concrete	5	CY	$125	$625	4000 psi fibermesh; 12'x30'x4"
Flowable Fill	5	CY	$86.00	$430	75-125 psi backfill Bairoko
Flowable Fill Installation	1	DY	$1,840	$1,840	RS MEANS, 2010
Roller	1	WK	$550.00	$550	Hertz
Clean Sand	40	CY	$25	$1,000	Pipe bedding
Crusher Run	5	CY	$35	$175	RS MEANS, 2010
1" Steel Plates (5' x 8')	2	MO	$450	$900	2 platesx 1 month
Asphalt Replacement (4")	75	SF	$6.40	$480	25'x3'; RS Means 2010
Trench Backfill and Concrete/Asphalt Replacement Labor	4	DY	$1,840	$7,360	RS MEANS, 2010
Concrete/Asphalt Replacement Oversite					
Project Manager	4	HR	$157.80	$631	
Engineer/Hydrogeologist	12	HR	$135.00	$1,620	
Jr. Engineer/Hydrogeologist	108	HR	$105.00	$11,340	Sub oversite/training
Project Procurement	12	HR	$105.33	$1,264	
Travel	1	LS	$700	$700	airfare $400; car $300/wk
Per Diem	5	DY	$242	$1,210	
Waste Handling and Disposal					
Non-Haz disposal	120	TN	$42	$5,040	Historical Pricing/Clean Harbors
Non-Haz Transportation	10	LOAD	$780.00	$7,800	Historical Pricing/Clean Harbors
Roll-off Delivery	10	EA	$495	$4,950	Historical Pricing/Clean Harbors
Liner Purchase	10	EA	$75.00	$750	Historical Pricing/Clean Harbors
Roll-off Rental	240	DAY	$35	$8,400	Historical Pricing/Clean Harbors
PCW Disposal	13500	GAL	$0	$4,050	Historical Pricing/Clean Harbors
Recovery Fee	1	EA	$3,100	$3,100	Historical Pricing/Clean Harbors
Waste Characterization Samples	3	EA	$650	$1,950	Historical Pricing/Clean Harbors
Subtotal				**$377,089**	
TASK TOTAL				**$377,089**	

SWMU 54 Benzene Plume NAPR, Ceiba, PR
Biosparge System O&M, Monitoring, and Reporting
January 2011

Total Cost: $400,800

This cost estimate is for the AS system O&M, associated groundwater performance monitoring, and reporting.
Assumptions:

2 years operation

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Planning and O&M Manual Prepartion					
O&M Manual					WP, UFP-SAPP
Project Manager	12	HR	$157.80	$1,894	
Engineer/Hydrogeologist	60	HR	$135.00	$8,100	
Sr. Engineer/Hydrogeologist	20	HR	$150.65	$3,013	
Project Delivery Engineer	10	HR	$150.65	$1,507	
Jr. Engineer/Hydrogeologist	120	HR	$105.00	$12,600	
Admin	20	HR	$105.33	$2,107	
GIS	10	HR	$90.00	$900	
Subtotal				**$30,120**	
Operation and Maintenance					
O&M	416	HR	$135.00	$56,160	Assume four hours per week 2 year O&M
Miscellaneous Equipment	1	LS	$10,000	$10,000	assume $5k per year
O&M Oversite/Data Eval					
Project Manager	48	HR	$157.80	$7,574	2 hours/month x 2 years
Engineer/Hydrogeologist	96	HR	$135.00	$12,960	4 hours/month + 2 trips @ 40 hours
Sr. Engineer/Hydrogeologist	48	HR	$150.65	$7,231	2 hours/month x 2 years
Jr. Engineer/Hydrogeologist	328	HR	$105.00	$34,440	12 hours/month + 2 trips @ 40 hours
Project Procurement	48	HR	$105.33	$5,056	2 hours/month x 2 years
Travel	4	LS	$1,400	$5,600	airfare $400; car $300/wk x 2 weeks
Per Diem	20	DY	$242	$4,840	4 trips (one week each)
Subtotal				**$143,861**	
Monitoring					Assume 4 quarterly, 2 semi annual events sample 15 wells
Monitoring Equipment	1	LS	$3,000	$3,000	
Lab Costs	6	EA	$8,000	$48,000	
Field Labor					
Project Manager	12	HR	$157.80	$1,894	
Sr. Engineer/Hydrogeologist	24	HR	$150.65	$3,616	
Jr. Engineer/Hydrogeologist	768	HR	$105.00	$80,640	6 events; 2 people @ 64hrs/event
Project Procurement	12	HR	$105.33	$1,264	
Travel	2	LS	$1,100	$2,200	airfare $400 x 2 people; car $300/wk
Per Diem	60	DY	$242	$14,520	6 events; 2 people x 5 days
Subtotal				**$155,133**	

SWMU 54 Benzene Plume NAPR, Ceiba, PR
Biosparge System O&M, Monitoring, and Reporting
January 2011

Total Cost: $400,800

This cost estimate is for the AS system O&M, associated groundwater performance monitoring, and reporting.
Assumptions:

2 years operation

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
Reporting					Assume 2 annual reports
Reporting Labor					
Project Manager	12	HR	$157.80	$1,894	
Engineer/Hydrogeologist	80	HR	$135.00	$10,800	
Sr. Engineer/Hydrogeologist	40	HR	$150.65	$6,026	
Jr. Engineer/Hydrogeologist	120	HR	$105.00	$12,600	
Admin	20	HR	$90.00	$1,800	
GIS	30	HR	$90.00	$2,700	
Subtotal per Report				**$35,820**	
Subtotal all Reports				**$71,639**	
TASK TOTAL				**$400,754**	