
Final

Fort Richardson Operable Unit B Poleline Road Disposal Area Groundwater Monitoring Report June – July, 2007

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Abbreviations

µg/L	micrograms per liter
1,1,1-TCA	1,1,1-Trichloroethane
1,1-DCE	1,1-Dichloroethene
1,1,2-TCA	1,1,2-Trichloroethane
1,1,2,2-PCA	1,1,2,2-Tetrachloroethane
1,2-DCA	1,2-Dichloroethane
AAC	<i>Alaska Administrative Code</i>
ADEC	Alaska Department of Environmental Conservation
amsl	above mean sea level
ARARs	applicable or relevant and appropriate requirements
AS	air sparging
bgs	below ground surface
CAIS	chemical agent identification sets
carbon TET	carbon tetrachloride
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2 DCE	cis-1,2-dichloroethene
COCs	contaminants of concern
CRREL	Cold Regions Research and Engineering Laboratory
DO	dissolved oxygen
DPW	U.S. Army Directorate of Public Works
EPA	U.S. Environmental Protection Agency
FD	field duplicate
FFA	Federal Facility Agreement
FS	feasibility study
HHRA	human health risk assessment
HVE	high-vacuum extraction
mg/L	milligrams per liter

MCL	maximum contaminant level
M-K	Mann-Kendall
MS	matrix spike
MSD	matrix spike duplicate
mS/cm	millisiemens per centimeter
NAPL	non-aqueous-phase liquids
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OUB	Operable Unit B
POL	petroleum, oil, and lubricants
PRDA	Poleline Road Disposal Area
PCE	tetrachloroethene
QAPP	Quality Assurance Program Plan
QC	quality control
RAO	remedial action objective
RBC	risk-based concentration
RI	remedial investigation
ROD	Record of Decision
SVE	soil vapor extraction
TBW	to be watched
TCE	trichloroethene
TOC	top of casing
trans-1,2 DCE	trans-1,2-dichloroethene
USACE	U.S. Army Corps of Engineers
USARAK	U.S. Army Alaska
VOC	volatile organic compound

Executive Summary

Groundwater monitoring activities occurred as part of an ongoing program at Operable Unit B (OUB), Poleline Road Disposal Area (PRDA), during the spring of 2007. These activities included soil boring installation, well installation, and groundwater monitoring. This work was performed by CH2M HILL for the U.S. Army Directorate of Public Works (DPW) under U.S. Army Corps of Engineers (USACE) Contract No. W911KB-05-D-0010, Task Order 0011. Historic data were reviewed in order to assess trends in contaminant concentrations.

In an effort to more fully characterize the PRDA site geology and hydrogeology, two shallow and two deep soil borings were installed at the PRDA site in June. The four borings were intended to be completed as two nested monitoring well pairs; however, only one of the deep borings encountered adequate groundwater for sampling. This boring was completed as deep well AP-5246 and is located downgradient of the hot-spot area.

Spring groundwater monitoring was conducted at PRDA during June 2007 and included collecting samples from 26 monitoring wells and analyzing them for volatile organic compounds (VOCs) and natural attenuation parameters. The most recent VOC results generally fell within range of the historic results and tended to fall into the historic concentration patterns of the individual wells. Mann-Kendall analysis was performed to identify trends for various contaminants of concern (COCs) at individual wells; the results of the analysis indicate significant declining trends exist for many wells within and downgradient of the former disposal area. Several increasing trends were present for two downgradient, shallow wells and one deep well within the former disposal area; these increases appear to be associated with natural attenuation processes.

Additional parameters were analyzed to help evaluate natural attenuation at the site. These included sulfate, chloride, methane, ethane, ethene, total nitrate/nitrite, iron, and manganese, as well as the field parameters dissolved oxygen and pH. Overall, concentrations of natural attenuation parameters were supportive of the presence of active reductive dechlorination. Although a number of wells at the PRDA site have concentrations of contaminants that remain above remedial action objectives (RAOs), overall site contaminant levels appear to be decreasing. The extent of the contamination plume has continued to remain stable and is bounded to the north and northeast by AP-5246 and AP-4350, respectively, in the deep aquifer. The shallow aquifer is bounded by AP-4352 to the northwest and AP-3982 to the northeast; however, the boundary north-northeast of AP-3747 is not defined. The presence of daughter products in almost all wells with contaminant concentrations above the RAOs, and the positive indications seen in the levels of other monitored natural attenuations parameters, indicate that reductive dechlorination is effectively occurring at the site.

SECTION 1

Introduction

This report presents the results of the spring 2007 groundwater monitoring activities conducted at the Operable Unit B (OUB), Poleline Road Disposal Area (PRDA), Fort Richardson, Alaska. This effort was completed by CH2M HILL for the U.S. Army Directorate of Public Works (DPW) and U.S. Army Corps of Engineers (USACE) in accordance with the scope of work for Contract No. W911KB-05-D-0010, Task Order 11.

1.1 Project Overview

The purpose of this reporting effort is to transmit the results of recent activities completed as part of the Fort Richardson Groundwater Monitoring Program at the PRDA. The current program was initiated as part of the Long-Term Monitoring Work Plan in 1997. Activities during the spring of 2007 included a data gap investigation (involving the installation of four soil borings and one groundwater monitoring well) and a groundwater sampling event. Groundwater monitoring is currently scheduled to be conducted twice per year. This report presents historical data collected at PRDA since 1995 and details of the sampling effort conducted by CH2M HILL from May 25 through July 10, 2007.

1.2 Site Location and Description

PRDA lies approximately 10 miles northeast of Anchorage, Alaska, 1 mile south of Eagle River, and 0.6 mile north of the Anchorage Regional Landfill (Figure 1-1). Poleline Road, a gravel road that travels northeast-southwest along a power line route and the Eklutna Water Line, provides access to PRDA.

PRDA is a low-lying, flat area bordered by an 80-foot hill to the west; wetlands to the south and southwest; and low, wooded hills on the remaining borders (Figure 1-2). Areas A-1 through A-4 represent the main disposal area, which comprises approximately 1.5 acres. Vegetation was cleared from the main disposal area in 1994, and much of the area is now populated by sapling birches, poplars, and alders.

The U.S. Army currently uses the land around PRDA for training activities and recreational purposes. The Eklutna Water Line, which supplies Anchorage and part of Eagle River with drinking water, runs directly west of PRDA. No plans currently exist for development at PRDA (URS, 2001).

1.3 Geology and Hydrogeology

Fort Richardson is located within the Cook Inlet-Susitna Lowland Section of the Coastal Trough physiographic province of Alaska. The majority of Fort Richardson lies less than 492 feet above mean sea level (amsl), with local relief varying between 50 and 250 feet. The geology of Fort Richardson occurred primarily as a result of past glacial events and consists

of the Elmendorf moraine, alluvial fans, and glacial outwash deposits. The hydrogeology of Fort Richardson, while extremely variable across the facility, is made up of three primary aquifers – a discontinuous perched unconfined aquifer, a shallow unconfined aquifer, and a deep confined aquifer.

The PRDA site is located within a lowland area with a complex geology resulting from periods of repeated glaciation. Glacial sediments and glacial tills make up the aquifer material beneath the site, which consists of a range of material from clay to boulders (Woodward Clyde, 1998). The unconsolidated material at the site was reworked by prehistoric glacial melt-water rivers, resulting in the complex distribution of laterally and vertically discontinuous layers and lenses observed at the site (Cold Regions Research and Engineering Laboratory [CRREL], 2003). Bedrock was encountered at a depth of approximately 69 feet below ground surface (bgs) in the southern portions of the site and in excess of 161 feet bgs in wells north of the site (Woodward Clyde, 1998).

The cross-section shown in Figure 1-3 presents a conceptual model of the site. (The location of the cross-section is also indicated in Figure 2-1.) The figure was developed based on information presented by Woodward Clyde (1998) and CRREL (2003).

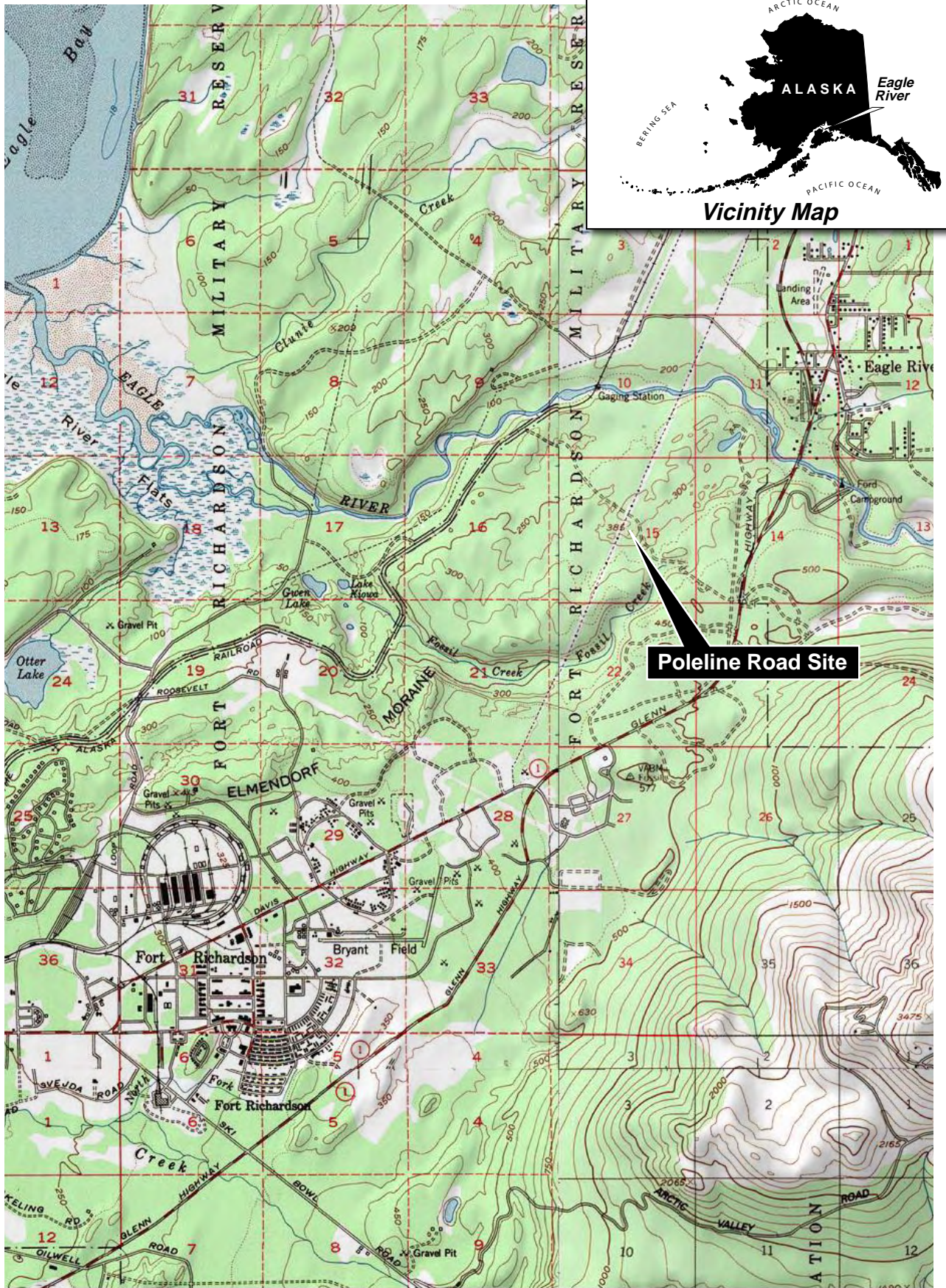
Although the unconsolidated material over the bedrock is considered quite heterogeneous, several geologic units and intervals have been identified.

Shallow interval – The upper interval is present from the ground surface to a depth of approximately 40 feet bgs. This interval consists primarily of silty sands and gravels with frequent, discontinuous silt-rich and clay lenses. The silt and clay lenses act as barriers to vertical flow, creating zones of perched groundwater and non-aqueous-phase liquids (NAPL). The shallow interval is normally saturated from approximately 20 to 40 feet bgs.

Intermediate interval – The intermediate interval is an aquitard consisting of poorly sorted and silt-rich sand and gravel (CRREL, 2003). This material has been previously described as a basal till (Woodward Clyde, 1998) and diamicton (CRREL, 2003). The intermediate interval is lithologically similar to the shallow interval, but is considerably denser (Woodward Clyde, 1998). Although the intermediate interval serves as somewhat of a barrier, groundwater gradients suggest flow is occurring through the intermediate interval from the shallow saturated interval to the deep saturated interval. Perched water zones have been encountered during drilling through the intermediate zone.

Deep interval – The deep interval consists of a sand and gravel unit lying on top of the bedrock. The deep interval is from 10 feet to greater than 59 feet thick, and groundwater is encountered at a depth of approximately 161 feet bgs.

Groundwater is encountered in a shallow (unconfined) aquifer, and a deep (semi-confined aquifer). The aquifer material encountered in these zones has dry bulk densities estimated to be 120 pounds per cubic foot and porosities of about 21 to 27 percent (Woodward Clyde, 1998).



Source: USGS Quadrangle Anchorage (B-7) SW, Alaska

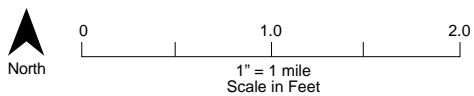


FIGURE 1-1
 Site Location Map
 Operable Unit B, Poleline Road Disposal Area
 Ft. Richardson, Alaska

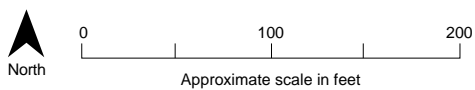
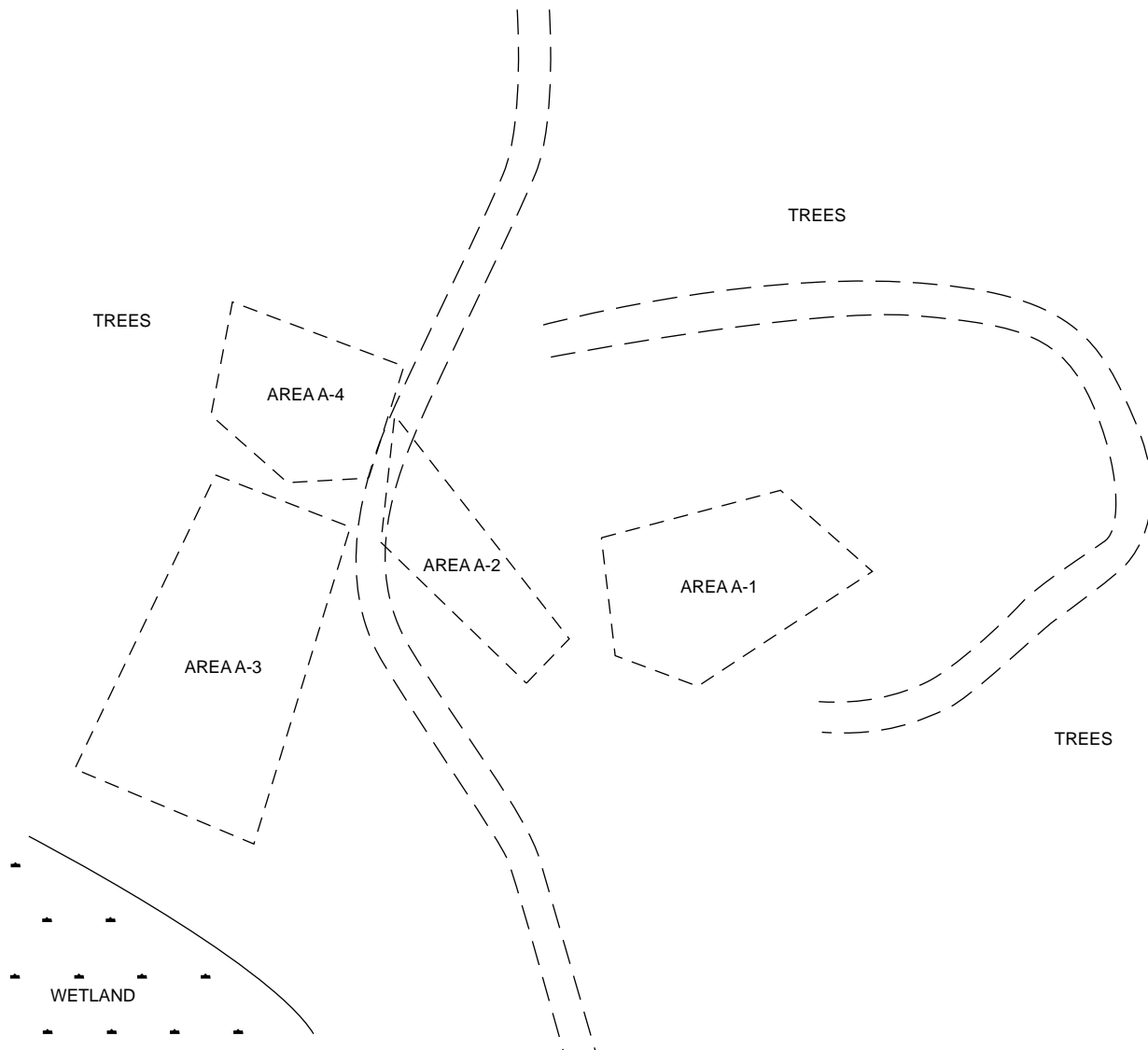
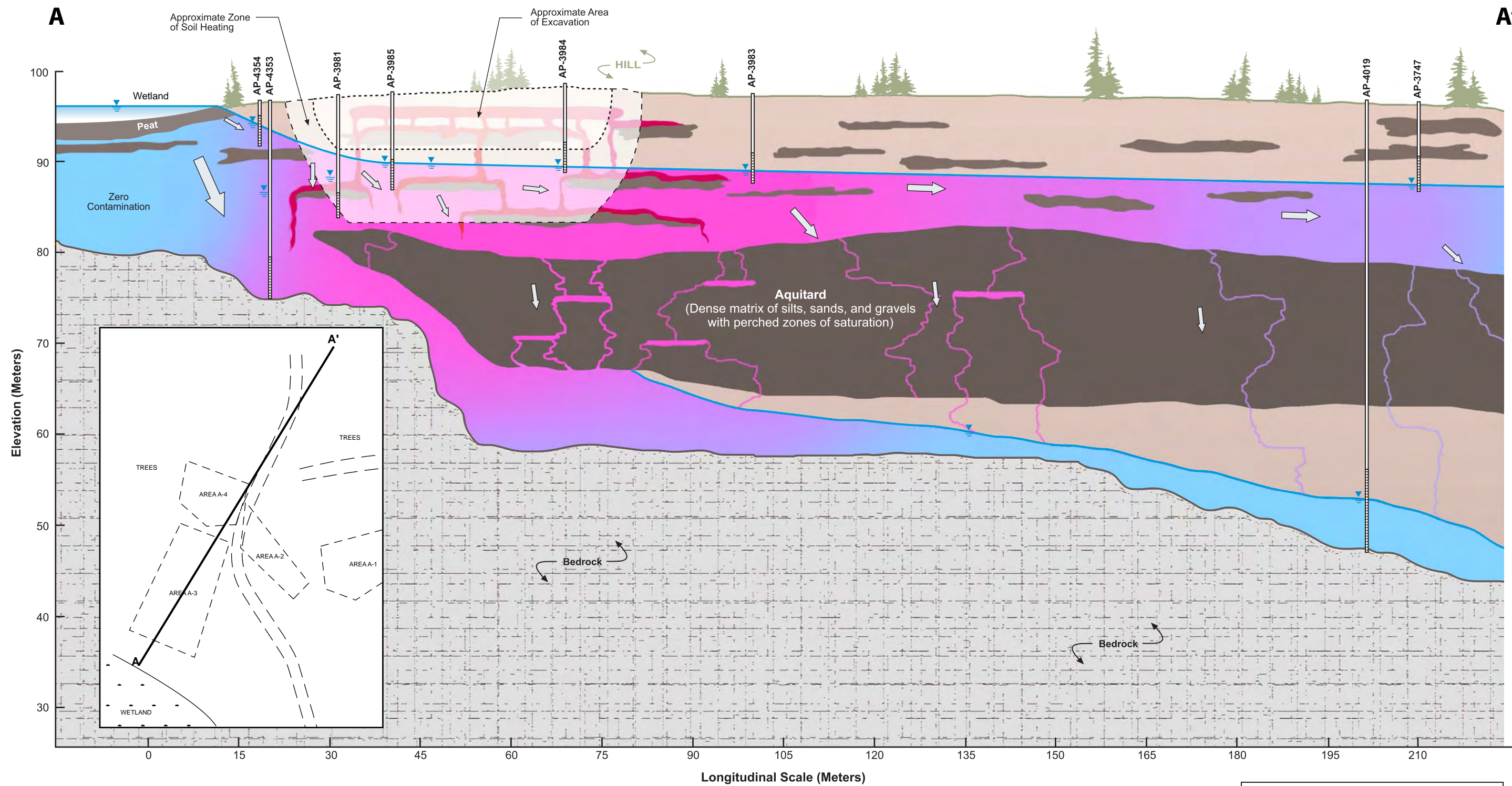


FIGURE 1-2
 Site Map OUB, Poleline Road Disposal Area
 Fort Richardson, Alaska



Note: This site model is conceptual, and based on site data, interpreted data, and professional judgement. Therefore, the contaminated zones and geologic features depicted in this figure should be used only for conceptual purposes.

Legend	
	Interpreted Groundwater Flow Direction
	Low Permeability Lens
	Hydraulic Grade Line

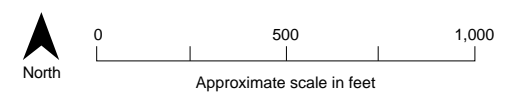


FIGURE 1-3
 Conceptual Site Model
 Fort Richardson, Alaska

Local groundwater flow in and adjacent to the main disposal area has been the ongoing subject of study by CRREL and is fairly well documented in both the shallow and deep groundwater aquifers. The groundwater hydraulics at the site appear to be driven primarily by recharge from the wetlands area, and secondarily from surface infiltration across the site. As shown in Figure 1-3, water infiltrating from the wetlands area recharges both the shallow and deep saturated intervals. In both aquifers, groundwater flows generally to the northeast in this local area, with seasonal variations causing it to flow in more northerly or easterly directions (Figures 4-1 and 4-2 provide examples of recorded flow directions) (CRREL, 2003).

Groundwater flow further away from the main disposal area is the subject of ongoing study by CRREL, but is currently less thoroughly understood. Regional groundwater flow is generally known to flow toward the Eagle River (to the north) and toward Knik Arm (to the west.) Based on contaminant distribution and available elevation data, it appears that regional groundwater flow has a more prominent influence on wells located further to the north of the main disposal area (CRREL, 2003).

In addition, gradient measurements indicated relatively strong flow downward from the shallow to the deep interval. Groundwater gradients measured from 2001 through 2003 were in the range of 0.01 to 0.03 foot/foot for the shallow saturated interval and 0.06 to 0.2 foot/foot in the deep saturated interval. The estimation of groundwater gradients at this site is complicated by the occurrence of perched zones and significant vertical flow. Groundwater velocities at the site are difficult to estimate because of the wide range of material types. It is expected, however, that groundwater moves relatively slowly, at velocities in the range of 10^{-2} to 10^{-3} feet per day (CRREL, 2003).

1.4 Site Background and Current Use

Contamination at PRDA was first suspected after U.S. Army interviews with two former Fort Richardson soldiers in 1990; the soldiers recalled the disposal of chemicals, smoke bombs, and Japanese cluster bombs at the site during the 1950s. The disposal location was corroborated by a 1954 USACE map showing a “Chemical Disposal Area” at PRDA and by aerial photographs from 1954 and 1962 showing trenches and debris piles in the area. Figure 1-2 shows the locations of suspected disposal activities. The disposal area was active from approximately 1950 to 1972. Four separate burial areas were identified at PRDA: areas A-1 and A-2 are suspected to contain buried munitions, and areas A-3 and A-4 were used to dispose of chemical warfare decontamination kits and chemical agent identification sets (CAIS). During this time, standard military practice was to dispose of suspected chemical weapons in a series of four steps:

1. A layer of “bleach/lime” was laid down in the bottom of the trench.
2. The materials contaminated with chemical weapons were placed on a pallet in the trench.
3. Diesel fuel was poured on the agent and then ignited with thermal grenades.
4. After burning was completed, a mixture of either bleach or lime combined with a chlorinated solvent carrier (trichloroethene [TCE]; tetrachloroethene [PCE]; and 1,1,2,2-tetrachloroethane [1,1,2,2-PCA]) was poured over the materials.

In 1990 and 1992, site investigations were conducted that included a geophysical survey, soil borings, a soil gas survey, monitoring well installations, groundwater sampling, water level survey, and aquifer (slug) tests.

On the basis of these early investigations, subsequent remedial investigations have been conducted under agreements with the U.S. Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC). A summary of these remedial investigations from 1990 through 2007 is presented in Table 1-1. Results of these investigations are summarized in subsequent sections of this report.

TABLE 1-1
Poleline Road Disposal Area Activity History

Year	Organization/ Company	Activity
1990, 1992	Environmental Science & Engineering	Geophysical survey, soil borings, soil gas survey, monitoring well installation, groundwater sampling, water level survey, aquifer (slug) tests.
1993, 1994	OHM Remediation Services Corporation	Rapid response removal action within Areas A-3 and A-4. Work was begun in 1993, but halted when CAIS and other chemical warfare-related materials were discovered unexpectedly. Removal was completed in 1994 after provisions were added to deal with the chemical warfare materials.
1994	CRREL	Geophysical surveys
1995	URS	Remedial investigation, including surface and subsurface soil sampling, groundwater sampling, NAPL removal, and installation of several new monitoring wells.
1996	URS	Ecological risk assessment and HHRA, including groundwater sampling and modeling. A feasibility study was also conducted to determine remedial alternatives, including no action, natural attenuation, containment, interception trench/air stripping and SVE, AS/SVE and natural attenuation, NAPL removal, and SVE of the "hot spot."
1997	URS	Remediation study to provide data concerning the effectiveness of AS/SVE that included groundwater sampling and soil borings, NAPL removal.
1997	URS	Remediation study to evaluate effectiveness of SVE and six-phase soil heating that included soil borings, groundwater sampling, surface and subsurface soil sampling, and NAPL removal.
1998	URS	Dual-phased, HVE remediation study that included groundwater sampling, installing additional soil borings and monitoring wells, and subsurface sampling.
1999–2000	URS	Design verification study based on success of prior treatments selected SVE with heating to complete the remedial action, additional soil borings drilled and groundwater samples collected, NAPL removal.
2007	CH2M HILL, CRREL, USARAK, USACE	Two sets of nested well borings (shallow/deep) were installed as a data gap investigation to further evaluate subsurface geology and hydrogeology.
1995–2007	URS, CH2M HILL, USACE, Satori	Groundwater monitoring to collect data on groundwater contaminant trends. NAPL removal from wells where free product is identified.

Source: *Fort Richardson, Alaska, Fort Richardson Groundwater Monitoring Program, Operable Unit B, September 2003 Sampling Event Final Report* (CH2M HILL, January 2004)

AS = air sparging
CAIS = chemical agent identification sets
CRREL= Cold Regions Research and Engineering Laboratory
HHRA = human health risk assessment

HVE = high-vacuum extraction
NAPL = non-aqueous-phase liquids
SVE = soil vapor extraction
USACE = U.S. Army Corps of Engineers
USARAK = U.S. Army Alaska

PRDA is currently a restricted-access site. Current land use near PRDA is not likely to result in the exposure of non-authorized personnel to site contaminants because of the limited amount of ground-disturbing activity in the surrounding area. The U.S. Army currently uses the land around PRDA for training activities and recreational purposes; a utility corridor, including the Eklutna Water Line and Chugach power lines, runs directly west of OUB. No plans exist for development at PRDA (URS, 2001).

1.5 Summary of Contaminants

The primary source of contamination at PRDA consists of residual chlorinated solvents used by the U.S. Army in its past disposal practices for a wide variety of debris (including CAIS in areas A-3 and A-4.) The Record of Decision (ROD) identified the following contaminants in soil and groundwater:

- **Soil** – 1,1,2,2-PCA and PCE were detected in subsurface soils at concentrations that contribute to groundwater contamination and cause exceedances of state and federal regulatory levels.
- **Groundwater** – Benzene, carbon tetrachloride (carbon TET); cis-1,2-Dichloroethene (cis-1,2 DCE); trans-1,2-Dichloroethene (trans-1,2 DCE); PCE; TCE; and 1,1,2,2-PCA were detected in groundwater at concentrations exceeding the federal drinking water maximum contaminant levels (MCLs) – or the risk-based concentration (RBC), in the case of 1,1,2,2-PCA.

SECTION 2

Groundwater Quality Monitoring Program

The objective of the groundwater quality monitoring program is to evaluate groundwater conditions within and around the PRDA.

2.1 Regulatory Framework

The OUB site (which includes PRDA) is listed under the Federal Facility Agreement (FFA) (also known as the “three-party agreement”) among the U.S. Army, EPA, and ADEC. In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, a ROD was developed in 1997 to establish remedial action objectives (RAOs) for OUB.

The ROD identified the following contaminants of concern (COCs) at the PRDA site:

- Benzene
- Carbon TET
- cis-1,2 DCE
- trans-1,2 DCE
- PCE
- TCE
- 1,1,2,2-PCA

As part of the **CLOSES** evaluation (CH2M HILL, 2004), a comparison of available data from the 2002 and 2003 monitoring events to Table C cleanup levels in Title 18, Chapter 75, of the *Alaska Administrative Code* (AAC) (ADEC, 2005) indicated that the following compounds were present at concentrations above the cleanup levels. These compounds are “to be watched” (TBW). The TBW compounds are as follows:

- Vinyl chloride
- 1,1,1-trichloroethane (1,1,1-TCA)
- 1,1,2-trichloroethane (1,1,2-TCA)
- 1,1-Dichloroethene (1,1-DCE)
- 1,2-Dichloroethane (1,2-DCA)

Observations about these contaminants are not intended to suggest that they are new COCs, but are provided for further discussion of contaminants present at the site; these compounds are most likely the result of degradation of the COCs. RAOs were not developed for the TBW chemicals.

The TBWs cis-1,2 DCE and trans-1,2 DCE are potential products of degradation (through various pathways) of the DNAPL components present at the site (1,1,2,2-PCA; TCE; and PCE). TCE is also a degradation product of both 1,1,2,2-PCA and PCE. A detailed evaluation of the degradation pathways is not included in this monitoring report, but observations

about the degradation products are discussed in the following sections, along with the COCs.

2.1.1 Remedial Action Objectives

As a part of the remedial investigation (RI)/feasibility study (FS) process, RAOs were developed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and EPA guidance. The overall objective is to reduce contamination in groundwater at OUB to levels that do not pose a threat to human health or the environment.

RAOs are based on either human health risk estimates that exceed or fall within the 1×10^{-6} to 1×10^{-4} risk range, or on federal and state applicable or relevant and appropriate requirements (ARARs). The objectives of remedial action at PRDA continue to be in accordance with the ROD signed in 1997 and are as follows:

- Reduce contaminant levels in the groundwater to comply with drinking water standards
- Prevent contaminated soil from continuing to act as a source of groundwater contamination
- Prevent the contaminated groundwater from adversely affecting the surface water and sediments of Eagle River
- Minimize degradation of the State of Alaska's groundwater resources at the site as a result of past disposal practices

2.1.2 Remedial Action Cleanup Levels

The following groundwater cleanup levels were established in the ROD:

- Federal and State of Alaska drinking water MCLs were adopted as groundwater cleanup goals for benzene; carbon TET; cis-1,2 DCE; trans-1,2 DCE; PCE; and TCE.
- The concentration corresponding to the EPA Region 3 RBC (10^{-4}) in residential drinking water was adopted as the cleanup goal for 1,1,2,2-PCA.

Numeric values for cleanup goals in groundwater are presented in Table 2-1.

TABLE 2-1
Remedial Cleanup Goals for Groundwater

Contaminant of Concern	RAO ($\mu\text{g/L}$)	Source of RAO
Benzene	5.0	MCL
Carbon tetrachloride	5.0	MCL
cis-1,2-Dichloroethene	70.0	MCL
trans-1,2-Dichloroethene	100.0	MCL
Tetrachloroethene (PCE)	5.0	MCL
Trichloroethene (TCE)	5.0	MCL
1,1,2,2-Tetrachloroethane (1,1,2,2-PCA)	5.2	RBC
Post-ROD To-Be-Watched (TBW) Contaminants	ADEC Maximum Contaminant Levels	Source of MCL
Vinyl Chloride	2	18 AAC 75.345, Table C
1,1,1-Trichloroethane	200	18 AAC 75.345, Table C
1,1,2-Trichloroethane	5	18 AAC 75.345, Table C
1,1-Dichloroethene	7	18 AAC 75.345, Table C
1,2-Dichloroethane	5	18 AAC 75.345, Table C

$\mu\text{g/L}$ = micrograms per liter

MCL = maximum contaminant level (from Title 18, Chapter 75 of the *Alaska Administrative Code*)

RAO = remedial action objective

RBC = risk-based concentration (EPA Region 3 drinking water standards)

ROD = record of decision

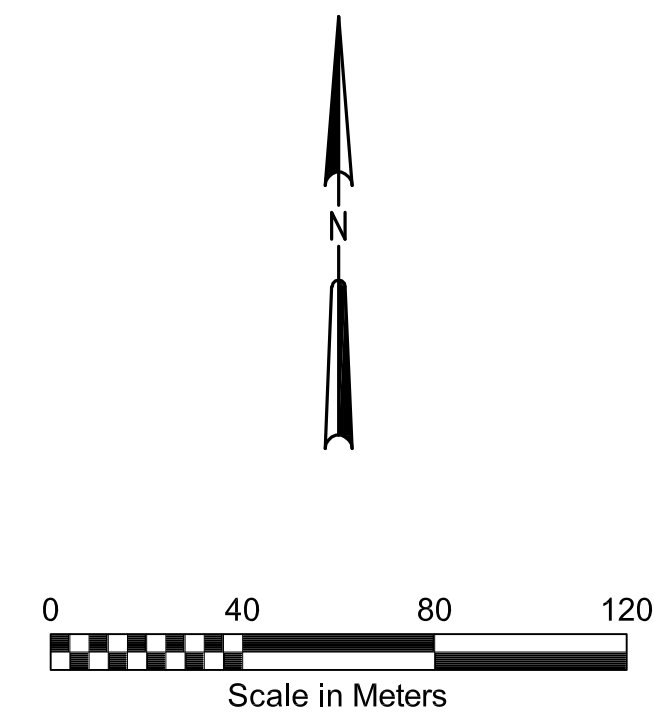
2.2 Monitoring Locations

Table 2-2 lists the groundwater monitoring wells that were sampled as part of the PRDA June 2007 groundwater monitoring event, and Figure 2-1 shows the well locations. In addition to the 25 wells that were monitored during the previous September 2006 monitoring event, one additional well (AP-5246) was sampled during this event. This well was installed in June 2007; details of its drilling and installation are provided in Section 3.1 of this report, as well as the technical memorandum *Poleline Road Disposal Area Nested Well Installation* (CH2M HILL, 2007a). Table 2-2 also provides information on the screened interval of each well and the aquifer in which the well is located.

TABLE 2-2
Operable Unit B Monitoring Wells

Monitoring Well ID	Screened Interval (feet bgs)	Total Depth (feet below TOC)	Aquifer
AP-3744	26.5-36.5	47.0	Shallow
AP-3745	18.0-28.0	30.0	Shallow
AP-3747	20.0-30.0	32.1	Shallow
AP-3748	164.9-169.9	171.6	Deep
AP-3749	12.0-22.0	24.6	Shallow
AP-3981	29.0-39.0	47.0	Shallow
AP-3982	24.0-34.0	37.0	Shallow
AP-3983	18.0-28.0	30.3	Shallow
AP-3984	20.0-30.0	32.5	Shallow
AP-3985	22.0-32.0	32.6	Shallow
AP-3989	24.0-34.0	36.3	Shallow
AP-4011	111.2-137.3	140.0	Deep
AP-4017	76.0-96.0	97.1	Deep
AP-4019	130.0-150.4	153.0	Deep
AP-4344	152.1-162.1	164.0	Deep
AP-4345	149.0-161.0	187.0	Deep
AP-4350	176.3-186.3	188.5	Deep
AP-4352	20.3-30.3	33.1	Shallow
AP-4353	57.0-67.0	70.0	Shallow
AP-4354	7.4-17.4	18.0	Shallow
AP-4518	33.6-43.6	46.8	Shallow
AP-4519	33.9-43.9	47.0	Shallow
AP-4525	113.0-123.0	127.4	Deep
AP-4550	32.0-42.0	43.0	Shallow
AP-4551	87.7-97.7	98.3	Deep
AP-5246	148.0-158.0	161	Deep

bgs = below ground surface
TOC = top of casing



LEGEND

- Monitoring Well Locations (Deep)
- Monitoring Well Locations (Shallow)

Figure 2-1
Monitoring Well Locations
OUB, Poleline Road Disposal Area
Fort Richardson, Alaska

2.3 Monitoring Frequency

According to the PRDA scope of work, well sampling is required twice yearly, with sampling scheduled for March and September. Depending on weather conditions and site accessibility, the actual sampling dates may be adjusted. In 2007, spring sampling was conducted primarily in June (with the exception of new well AP-5246, which was sampled after its installation in July). Fall sampling is scheduled for September or October.

2.4 Groundwater Monitoring Parameters

Groundwater monitoring parameters are listed in Table 2-3.

TABLE 2-3
Groundwater Quality Monitoring Parameters

Purging Parameter^a	Equipment
Water level	Water-Level Indicator
Conductivity	Calibrated field meter
Temperature	Calibrated field meter
Dissolved oxygen	Calibrated field meter
Turbidity	Calibrated field meter
pH	Calibrated field meter
Laboratory Analytical Parameter	Analytical Method
Volatile organic compounds	SW 8260B
Chloride/sulfate	EPA 300.0
Nitrate/nitrite	EPA 353.2
Light gases (methane, ethane, ethene)	RSK 175
Dissolved iron and manganese	SW 6020

^aAnalyzed in the field at the time of sample collection

Field Activities

Groundwater monitoring activities during the spring of 2007 included a data gap investigation and a groundwater monitoring event. The spring 2007 data gap investigation was conducted June 13 through 29, 2007; the PRDA groundwater monitoring event was conducted between May 25 and July 10, 2007.

3.1 Data Gap Investigation

The groundwater monitoring program incorporates data gap investigations to gain information and further refine the understanding of the geology and hydrology at a site. To this end, soil borings were installed at the PRDA site in June 2007 (CH2M HILL, 2007b). The objectives of the investigation were to install two nested monitoring well pairs at the PRDA site to fill data gaps downgradient and northwest of the hot spot, and cross-gradient and west of the hot spot (Figure 2-1). Shallow soil borings extended to a maximum depth of 50 feet bgs, and deep soil borings extended to a maximum depth of 190 feet bgs. Soil boring and well construction logs are presented in Appendix A and are briefly summarized below.

Shallow Borings (< 50 feet bgs)

AP-5244 (same location as groundwater monitoring well AP-5246). The predominant soil type was gravel with varying percentages of silt and sand. Cobbles were present throughout the entire 50 feet of the boring. A perched wet lens of silty sand was encountered at 20 to 20.5 feet. No water-bearing formations were encountered, and the boring was backfilled.

AP-5243. The predominant soil type was gravel with varying percentages of silt and sand. Cobbles were present throughout the entire 50 feet of the boring. Water was encountered at around 15 to 20 feet. When the augers were stopped to retrieve the sample barrel, water would flow down the outside of the auger and the next sample would appear to be wet. For samples that had good recovery, the exterior of the sample was wet; however, the interior of the sample was moist. A well was not installed in this boring because the team concurred that the water encountered was more than likely associated with surface water in the adjacent wetland and that resulting information would not benefit the project.

Deep Soil Borings (<190 feet bgs)

AP-5246 (completed as monitoring well). Soil types encountered below 50 feet included silty sands, boulders/cobbles, gravels, and intermittent silt layers. Groundwater was encountered between 155 to 159 feet in a poorly graded gravel with silt and sand formation. The aquifer was underlain by a silt formation from 159 to 160 feet. No water-bearing formations were encountered below this depth. A monitoring well was installed in this boring, with the well screen between 148 and 158 feet. The monitoring well construction details are included on the AP-5246-MW boring log.

AP-5245. Soil types encountered below 50 feet included silty gravel with sand, silt, silty sand, and coal. Water was encountered at 7 to 8 feet and deemed associated with surface water in the adjacent wetland. The moisture content of the cuttings increased at 44 feet and 95 to 96 feet. Drilling was stopped at these depths to determine whether adequate water would flow into the casing. At both depths, water of sufficient quantity did not flow into the casing, which could be blown back up the casing to the surface. From 121 to 190 feet, the cuttings returned to the surface were dry and created a dust cloud. No water-bearing formations were encountered at depth, and the boring was backfilled. At 76 feet, pebbles coated with moisture were observed in the cuttings, and the driller indicated that the material might be frozen. The casing was drilled and driven to 104 feet, and the remainder of the boring was drilled without advancing the casing. When the field team had completed the boring and attempted to pull the casing, the casing was stuck and would not pull. Casing removal required steam thawing for removal, potentially indicating the ground was frozen and bonded to the casing, in some areas between 67 and 104 feet.

3.1 Groundwater Elevations

Water levels were recorded for the 25 pre-existing wells on May 25, 2007. The water level for new well AP-5246 was documented at the time it was sampled, on July 10. Table 3-1 lists the water level and calculated groundwater elevation for each well monitored during the spring 2007 groundwater monitoring event.

3.2 Groundwater Sample Collection

Groundwater samples were drawn from the existing 25 groundwater monitoring wells between June 1 and June 13, 2007. Groundwater from the new well, AP-5246, was collected on July 10. Sample collection was performed in accordance with procedures outlined in CH2M HILL's *Quality Assurance Project Plan (QAPP)* (CH2M HILL, 2002); *Supplemental Quality Assurance Project Plan for Fort Richardson Groundwater Sampling at Operable Unit B, Operable Unit E, and Building 762* (CH2M HILL 2007b); and *Sampling and Analysis Plan for Groundwater Monitoring at Fort Richardson Operable Unit B, Operable Unit E, and Building 762* (CH2M HILL, 2007c). Wells were purged and sampled using a submersible bladder pump or 0.33-gallon bailer. Well purge and sampling field sheets and a sample record log are provided in Appendix B.

3.3 Quality Assurance/Quality Control

The following four types of quality control (QC) samples were collected to ensure data quality:

- Trip blanks
- Field duplicates
- Matrix spike (MS)/matrix spike duplicate (MSD) samples
- Rinsate blanks

TABLE 3-1
Groundwater Elevations, Spring 2007

Monitoring Well ID	Depth to Water ^a (feet below top of casing)	Groundwater Elevation ^b (feet above mean sea level)
AP-3744	28.17	278.94
AP-3745	22.10	281.36
AP-3747	25.78	277.29
AP-3748	134.10	166.14
AP-3749	20.10	291.87
AP-3981	23.27	282.85
AP-3982	26.96	278.78
AP-3983	25.08	280.09
AP-3984	28.01	282.94
AP-3985	25.26	282.97
AP-3989	28.96	279.04
AP-4011	121.73	179.86
AP-4017	65.54	240.70
AP-4019	136.96	164.49
AP-4344	150.33	163.19
AP-4345	156.34	165.12
AP-4350	148.63	160.48
AP-4352	22.85	289.67
AP-4353	32.99	272.28
AP-4354	7.81	297.56
AP-4518	25.73	281.25
AP-4519	26.75	280.55
AP-4525	126.45	179.84
AP-4550	25.66	281.37
AP-4551	95.55	211.18
AP-5246	150.60	163.05

^aAll water levels recorded on May 25, with the exception of AP-5246 which was installed June 27, 2007. The water level for this well was recorded at the time of sampling on July 10.

^bElevations referenced to U.S. Army, June 2003 and August 2004, Survey of Operable Unit B Datum = NAVD88, meters; NAD83, state plane, Zone 4, meters

For this sampling event, eight trip blanks, three field duplicates, two MS/MSDs, and two rinsate blanks were submitted to the laboratory for analysis. Appendix C provides the Chemical Data Quality Review package for this project and includes C1 - Data Quality Review; C2 - Validated Analytical Results; C3 - ADEC Laboratory Data Review Checklists; C4 - Sample Receipts, COCs, and Raw Data Packages. Because of their volume and file size, two sections are included only in electronic format: C4 - Raw Data Packages and C5 - COELT. The analytical results associated with the samples are evaluated in and tabulated in appendixes C1 and C2, respectively. Laboratory data review checklists are in Appendix C3.

3.4 Investigation-Derived Waste Handling and Disposal

All water generated from well purging and equipment decontamination was collected in 15-gallon drums and transported to the environmental staging facility located at the petroleum, oil, and lubricants (POL)/Dewatering Facility near the corner of Warehouse Street and Loop Road for treatment and disposal. The water was transferred to 55-gallon drums at the facility in coordination with the contracted operator ENSR Alaska. ENSR transferred the contents of full drums to the on-site treatment system for processing and disposal.

Results

This section presents the results of continued groundwater monitoring at the site and evaluates trends or changes in the concentrations of contaminants in groundwater over time.

4.1 Volatile Organic Compound Monitoring

Figure 4-1 shows analytical groundwater results from monitoring wells that are screened within the shallow, unconfined aquifer. Figure 4-2 shows analytical groundwater results for wells screened within the deep, semi-confined aquifer.

Table 4-1 presents the results of Mann-Kendall (M-K) statistical evaluations used to evaluate trends for select wells. M-K analysis is used to identify whether there is a statistically significant increasing or decreasing trend in the concentration of an analyte in an individual monitoring well. The analysis uses the relative magnitudes of the values, and not the measured values, to determine a trend. This method is not adversely affected by gaps in sampling data, and allows the assignment of values to non-detects (in this case, one-half of the method detection unit was used).

Complete analytical results for all samples collected during the spring 2007 monitoring event are tabulated in Appendix C2. The data quality evaluation and laboratory data review checklists for the spring 2007 monitoring event are in appendixes C1 and C3, respectively.

Groundwater at the PRDA site has been split into several subareas for discussion. These areas are discussed in the following sections.

4.1.1 Shallow, Unconfined Aquifer

The following sections provide the results for shallow, unconfined aquifer and discuss the results according to locations of wells within or outside the hot spot.

Shallow Wells Within the Hot Spot

The hot spot has been defined in the ROD as the area of groundwater where 1,1,2,2-PCA concentrations exceed 1,000 micrograms per liter ($\mu\text{g/L}$). Sixteen of the 26 monitoring wells sampled in June 2007 are screened within the shallow aquifer. Based on historical concentrations of 1,1,2,2-PCA, the following 6 of these 16 shallow wells have been identified as hot-spot wells under the ROD criteria:

- AP-3981
- AP-3983
- AP-3984
- AP-3985
- AP-3989
- AP-4550

The historical hot-spot area is identified in Figure 4-1; all wells, including the above six wells, have been below the hot-spot criteria since September 2006. Furthermore, as shown in Table 4-1 and Figure 4-1, M-K analysis indicated that five of the six wells listed above have exhibited declining trends in concentrations of at least three COCs. The final well, AP-4550, was first sampled in October 2005, and does not yet have enough data for trends to be defined by M-K analysis. Declining trends in the concentrations of 1,1,2,2-PCA; cis-1,2-DCE; and TCE in AP-3983, AP-3984, and AP-3985 are further illustrated in Figures 4-3, 4-4, and 4-5, respectively.

A seventh well located in the main disposal area, AP-4353, has never experienced a 1,1,2,2-PCA exceedance greater than 253 µg/L; however, this well was first sampled in June 2003 (after previous remedial actions), and it is likely that the location of this well would have been part of the original hot spot. Concentrations of PCE, TCE, and 1,1,2,2-PCA currently exceed RAOs, with declining concentrations of daughter products (Table 4-1 and Figure 4-1).

Concentrations of benzene and carbon TET in each of the six wells listed above (as well as AP-4353) have been below RAOs for more than 5 years (with the exception of AP-4550, which has been sampled for only 2 years).

Concentrations of benzene and carbon TET in each of the six wells listed above (as well as AP-4353) have been below RAOs for more than 5 years (with the exception of AP-4550, which has been sampled for only 2 years).

Shallow Wells Outside the Hot Spot

The following nine wells represent locations sampled outside the hot spot and screened in the shallow zone of the site:

- AP-3744
- AP-3745
- AP-3747
- AP-3749
- AP-3982
- AP-4352
- AP-4354
- AP-4518
- AP-4519

Three wells (AP-3982, AP-4352, and AP-4518) are below RAOs and COCs have not been detected since October 2004, except for low-level estimated hits of TCE in AP-4518. AP-3982 is located downgradient of the hotspot, and AP-4352 and AP-4518 are located to the northwest and southeast of the hot spot, respectively. AP-3982 has been below RAOs since October 2000. AP-4352 and AP-4518 have never experienced an RAO exceedance. Historical results for these three monitoring wells are included in Figure 4-1.

AP-4352		Jun-03	Aug-04	Oct-04	Jun-05	Oct-05	Jun-06	Jun-07
Total Depth 33.1 ft								
GW Elevation (m)		87.61	87.21	87.85	88.46	87.07	86.05	88.29
Benzene		0.12J	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.4)	ND(1)	ND(1)
Carbon Tetrachloride		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
cis-1,2-Dichloroethane		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
trans-1,2-Dichloroethane		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
Tetrachloroethane		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
Trichloroethane		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
1,1,2,2-Tetrachloroethane		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
Vinyl chloride		ND	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
1,1,1-Trichloroethane		ND (0.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
1,1,2-Trichloroethane		ND (0.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
1,1-Dichloroethane		ND (0.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	ND(1)	ND(1)
1,2-Dichloroethane		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND(1)	ND(1)	ND(1)

HISTORICAL HOT SPOT WELLS

AP-3989		Nov-96	Nov-97	Jun-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Apr-01	Mar-02	Sep-02	Mar-03	Mar-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jun-07
Total Depth 30.3 ft																				
GW Elevation (m)		85.53	86.23	86.58	86.42	85.94	85.58	86.44	84.60	84.76	84.98	85.74	84.98	85.30	85.62	84.97	85.75	85.31	85.01	85.05
Benzene		ND	ND	2	3	2	ND	NS	NS	NS	NS	NS	ND	2J	2.30	2.30	ND (0.4)	1.47	1.64	1.58
Carbon Tetrachloride		ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	ND	ND	ND (0.43)	ND (2.5)	ND (0.6)	0.32J	ND (1.0)	ND (1.0)
cis-1,2-Dichloroethane		78	110	87	260	88	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
trans-1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane		1400	1900	1600	3350	1070	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vinyl chloride		NA	NA	ND(1)	ND(100)	ND(1)	ND(1)	NS	NS	NS	NS	NS	ND (3.1)	ND (0.31)	ND (0.53)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.37)	ND (2.5)	ND (7.4)	ND (0.5)	ND (0.5)	ND (1.0)

AP-3983		Nov-97	Jun-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Apr-01	Mar-02	Sep-02	Mar-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jun-07	
Total Depth 30.3 ft																				
GW Elevation (m)		86.15	86.53	86.24	85.94	85.58	86.22	84.60	84.76	84.98	85.74	84.98	85.30	85.62	84.97	85.75	85.31	85.01	85.05	
Benzene		ND	ND	2	3	2	ND	NS	NS	NS	NS	NS	ND	2J	2.30	2.30	ND (0.4)	1.47	1.64	1.58
Carbon Tetrachloride		ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	ND	ND	ND (0.43)	ND (2.5)	ND (0.6)	0.32J	ND (1.0)	ND (1.0)
cis-1,2-Dichloroethane		78	110	87	260	88	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
trans-1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane		1400	1900	1600	3350	1070	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vinyl chloride		NA	NA	ND(1)	ND(100)	ND(1)	ND(1)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.61)	ND (2.5)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.37)	ND (2.5)	ND (7.4)	ND (0.5)	ND (0.5)	ND (1.0)

AP-3984		Nov-97	Jun-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Apr-01	Mar-02	Sep-02	Mar-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jun-07	
Total Depth 32.5																				
GW Elevation (m)		86.44	86.62	86.34	86.04	85.68	87.36	86.76	86.12	84.59	85.72	86.33	86.72	86.26	86.74	86.22	86.24	85.52	85.02	
Benzene		ND	ND	4	7	2	1.9	0.49J	0.77J	0.15J	ND (1.6)	1.58	1.41	0.70J	1.18	1.18	ND(1)	0.88J	1.2	
Carbon tetrachloride		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (2.1)	1.20	1.16	1.18	ND(1)	0.88J
cis-1,2-Dichloroethane		78	110	87	260	88	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
trans-1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane		1400	1900	1600	3350	1070	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vinyl chloride		NA	NA	ND(1)	ND(10)	ND(1)	ND(1)	ND(0.3)	2.2	ND (0.31)	ND (0.31)	ND (0.11)	ND (2.7)	0.42J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.37)	ND (2.5)	ND (7.4)	ND (0.5)	ND (0.5)	ND (1.0)

AP-4550		Oct-05	Sep-06	Jun-07
Total Depth 43.0 ft				
GW Elevation (m)		84.93	85.91	86.67
Benzene		1.46	0.72	0.72
Carbon Tetrachloride		ND (1.0)	ND(1)	ND(1)
cis-1,2-Dichloroethane		289	323	290
trans-1,2-Dichloroethane		ND	ND	ND
Tetrachloroethane		38.8	42	10
Trichloroethane		2,000	2,000	1,000
1,1,2,2-Tetrachloroethane		1,000	1,000	500
Vinyl chloride		ND(0.04)	ND(1)	ND(1)
1,1,1-Trichloroethane		ND (1.0)	ND(1)	ND(1)
1,1,2-Trichloroethane		ND (1.0)	ND(1)	ND(1)
1,1-Dichloroethane		ND (0.5)	ND (1.0)	ND(1)
1,2-Dichloroethane		ND (0.5)	ND (1.0)	ND(1)

AP-3985		Jun-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Apr-01	Mar-02	Sep-02	Mar-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jun-07		
Total Depth 32.6 ft																				
GW Elevation (m)		87.00	87.43	86.84	86.48	87.36	86.57	86.46	84.59	85.72	86.33	86.72	86.26	86.74	86.22	86.24	85.52	85.02		
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.96)	ND (1.6)	ND (0.4)	0.22J	ND (0.4)	ND(1)
Carbon Tetrachloride		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.86)	ND (2.1)	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)
cis-1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethane		53.00	59.00	54.00	36.00	73.00	29.00	12.00	51.00	12.00	2.10	6.44	15.5	10.7	0.94	8.96	7.90	8.20	31	
Tetrachloroethane		52.0	88.0	72.0	10.0	7.0	15.0	5.2	13.0	8.8	1.4	3.0J	7.84	6.88	5.85	8.86	6.6	6.4	6.4	
Trichloroethane		2,204	3,200	3,000	970	1,700	680	440	370	220	340	380.0	467	230	464	340	250	100	100	
1,1,2,2-Tetrachloroethane		17,000	17,000	17,000	3,500	600	440	81	88	79.4	129.4	73.8	102	55.69	77.0	45	27	10	10	
Vinyl chloride		ND(1)	ND(1)	ND (1.0)	3.00	3.00J	1.70	ND (1)	ND (0.31)	ND (0.31)	ND (0.11)	ND (2.7)	0.42J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND(1)	
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.12)	ND (3)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.37)	ND (2.5)	ND (7.4)	ND (0.5)	ND (0.5)	ND (1.0)

AP-3981		Nov-97	Jun-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Apr-01	Mar-02	Sep-02	Mar-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jun-07
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TABLE 4-1

Mann-Kendall Concentration Trends for Select Wells
Through June 2007 Monitoring Event
OUB, Poleline Road Disposal Area

Well	Carbon									
	Benzene*	Tetrachloride*	1,1,2,2-PCA*	cis-1,2-DCE*	trans-1,2-DCE*	PCE*	TCE*	Vinyl Chloride	1,1-DCE	1,1,2-TCA
Hot Spot -- Shallow										
AP-3981	NA	NA	Declining (96.5)	Declining (99.3)	NA	NA	Declining (98.5)	NA	NA	NA
AP-3983	Declining (100)	NA	Declining (100)	Declining (100)	Declining (100)	Declining (100)	Declining (99.9)	NA	NA	NA
AP-3984	Declining (94.6)	Declining (99.6)	Declining (100)	Declining (99.9)	Declining (100)	Declining (100)	Declining (100)	NA	NA	NA
AP-3985	NA	NA	Declining (100)	Declining (99.9)	Declining (100)	Declining (99.5)	Declining (99.8)	NA	NA	Declining (97.7)
AP-3989	NA	NA	Declining (100)	Declining (95.8)	NA	Declining (99.7)	NA	NA	NA	Declining (98.0)
AP-4353	NA	NA	Declining (93.2)	Declining (99.9)	Declining (99.0)	NA	NA	NA	NA	Declining (99.9)
Downgradient -- Shallow										
AP-3744	NA	NA	Declining (99.9)	Declining (99.8)	NA	NA	Declining (99.9)	NA	NA	NA
AP-3745	NA	Increasing (98.5)	NA	NA	NA	NA	Increasing (100)	NA	NA	NA
AP-3747	NA	NA	Declining (93.0)	NA	NA	NA	NA	NA	NA	NA
AP-4519	NA	NA	Increasing (99.9)	NA	Increasing (99.9)	Increasing (97.2)	Increasing (97.2)	NA	NA	Increasing (99.9)
Hot Spot -- Deep										
AP-4017	NA	NA	Declining (100)	Increasing (99.8)	Increasing (99.9)	NA	Increasing (97.7)	Increasing (99.3)	NA	NA
Downgradient -- Deep										
AP-3748	NA	NA	Declining (93.1)	Declining (99.6)	NA	NA	Declining (98.5)	NA	NA	NA
AP-4011	NA	NA	Declining (100)	Declining (99.7)	NA	NA	Declining (99.9)	NA	NA	NA
AP-4525	NA	Declining (95.8)	Declining (95.8)	NA	Declining (95.8)	NA	Declining (95.8)	NA	NA	Declining (95.8)

Notes:

Declining (96.2) = Declining concentration trend with 96.2 percent confidence.

Increasing (92.4) = Increasing concentration trend with 92.4 percent confidence.

NA = No significant trend.

Trends are considered significant at greater than 90 percent confidence.

1,1,2,2-PCA = 1,1,2,2-tetrachloroethane

cis-1,2-DCE = cis-1,2-dichloroethylene

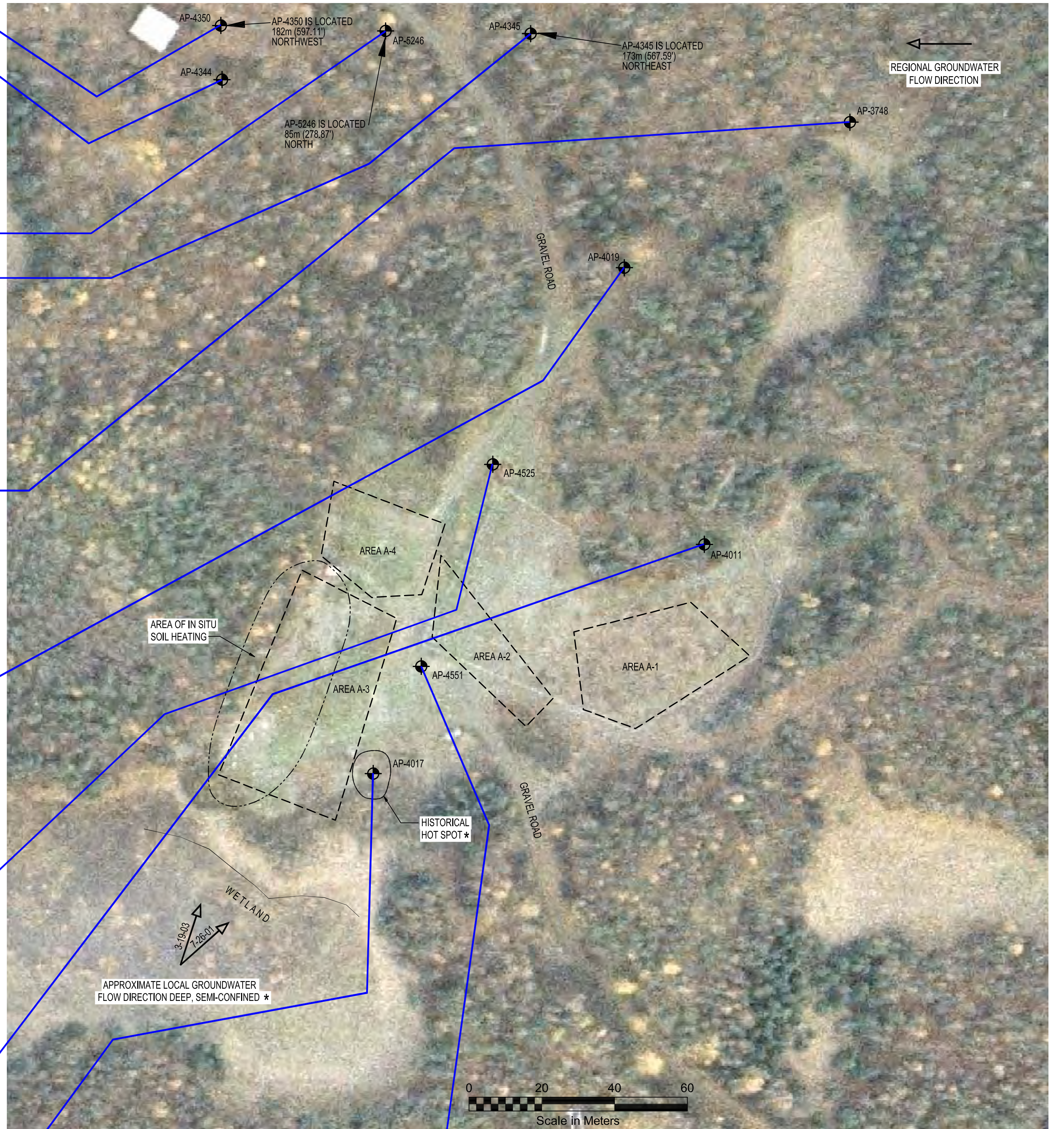
trans-1,2-DCE = trans-1,2-dichloroethylene

PCE = tetrachloroethylene

TCE = trichloroethylene

NA

AP-4350		AP-4344		AP-5246		AP-4345		AP-3748		AP-4019		AP-4525		AP-4011		AP-4017	
Total Depth 188.5 ft		Total Depth 164.0 ft		Total Depth 158.0 ft		Total Depth 187.0 ft		Total Depth 171.8 ft		Total Depth 153.0 ft		Total Depth 127.4 ft		Total Depth 140.0 ft		Total Depth 97.1 ft	
GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):		GW Elevation (m):	
Benzene	ND	49.56	48.00	48.04	48.98	49.29	48.94	48.91	51.50	50.78	50.83	50.53	50.45	51.00	50.72	49.57	50.72
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	0.15J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND



NOTES *
 Groundwater elevation in meters. Previous groundwater elevations taken from archived reports.
 Data from March 1999 to April 2001 collected by URS Corporation (URS, 2001)
 Data from March 2002 to April 2003 collected by CH2M HILL
 All non-detect values before August 2004 are reported as the Method Detection Limit (MDL)
 2004 August and October non-detect values are reported as the Practical Quantitation Limit (POL)
 All concentrations are measured in µg/L
 Exceedances compared against Remedial Action Objectives values
 Regulatory Exceedances of RAOs in **Bold, Blue**
 Historical maximum concentrations/elevations are indicated by a box
 Approximate Groundwater flow directions were obtained from Hydrogeology of the Poleline Road Disposal Area, (CRREL, 2003).
 Hot Spot has been defined in the OUB ROD as the Area of Groundwater where 1,1,2,2-PCA concentrations exceed 1,000 µg/L.

ABBREVIATIONS:
 ADEC = Alaska Department of Environmental Conservation
 J = Estimated Quantity
 J+ = Analyte is present, but value may not be accurate or precise (estimated high)
 J- = Analyte is present, but value may not be accurate or precise (estimated low)
 MCL = Maximum Contaminant Level
 NA = Not Available
 ND = No Analyte Detected
 RAO = Remedial Action Objectives
 ROD = Record of Decision

Cleanup Level Values	
Chemical of Concern (COC)	ROD RAO
Benzene	5 µg/L
Carbon Tetrachloride	5 µg/L
cis-1,2-Dichloroethene	70 µg/L
Tetrachloroethene	5 µg/L
trans-1,2-Dichloroethene	100 µg/L
Trichloroethene	5 µg/L
1,1,2,2-Tetrachloroethane	5.2 µg/L
Post ROD COC	
ADEC MCL	
Vinyl chloride	2 µg/L
1,1,1-Trichloroethane	200 µg/L
1,1,2-Trichloroethane	5 µg/L
1,2-Dichloroethane	7 µg/L
1,2-Dichloroethane	5 µg/L

AP-4551		AP-4011	
Total Depth 98.3 ft		Total Depth 140.0 ft	
GW Elevation (m):		GW Elevation (m):	
Benzene	64.29	54.82	54.82
Carbon Tetrachloride	ND(1)	ND(1)	ND(1)
cis-1,2-Dichloroethene	0.290J	0.67J	0.67J
trans-1,2-Dichloroethene	8.55	1.80	1.80
Tetrachloroethene	9.97	4.2	4.2
Trichloroethene	2.92	12	12
1,1,2,2-Tetrachloroethane	5.97	1.9	1.9
1,1,2-Trichloroethane	1610	2300	1900
1,2-Dichloroethane	90.5	120	120
1,1-Dichloroethene	8.27	12	9.8
1,2-Dichloroethane	7.4	15 J+	11 J+

LEGEND
 Monitoring Well Location
 Maximum Historic Concentrations

Figure 4-2
 Long-Term Groundwater Monitoring Data
 Deep, Semi-Confined Aquifer
 OUB, Poleline Road Disposal Area
 Spring 2007
 Fort Richardson, Alaska

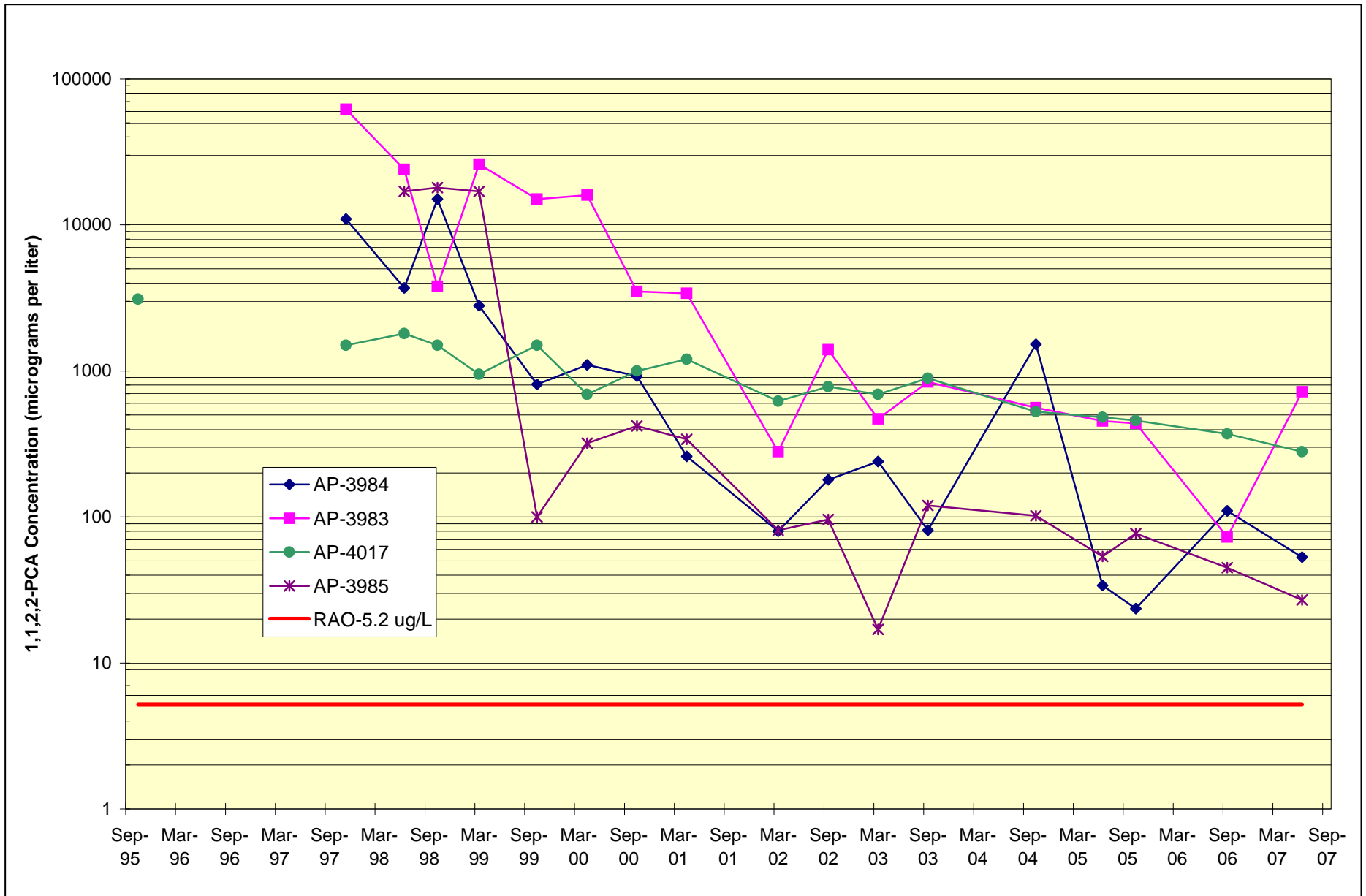


FIGURE 4-3
 1,1,2,2-PCA Concentrations vs. Time
 OUB, Poleline Road Disposal Area
 Fort Richardson, Alaska

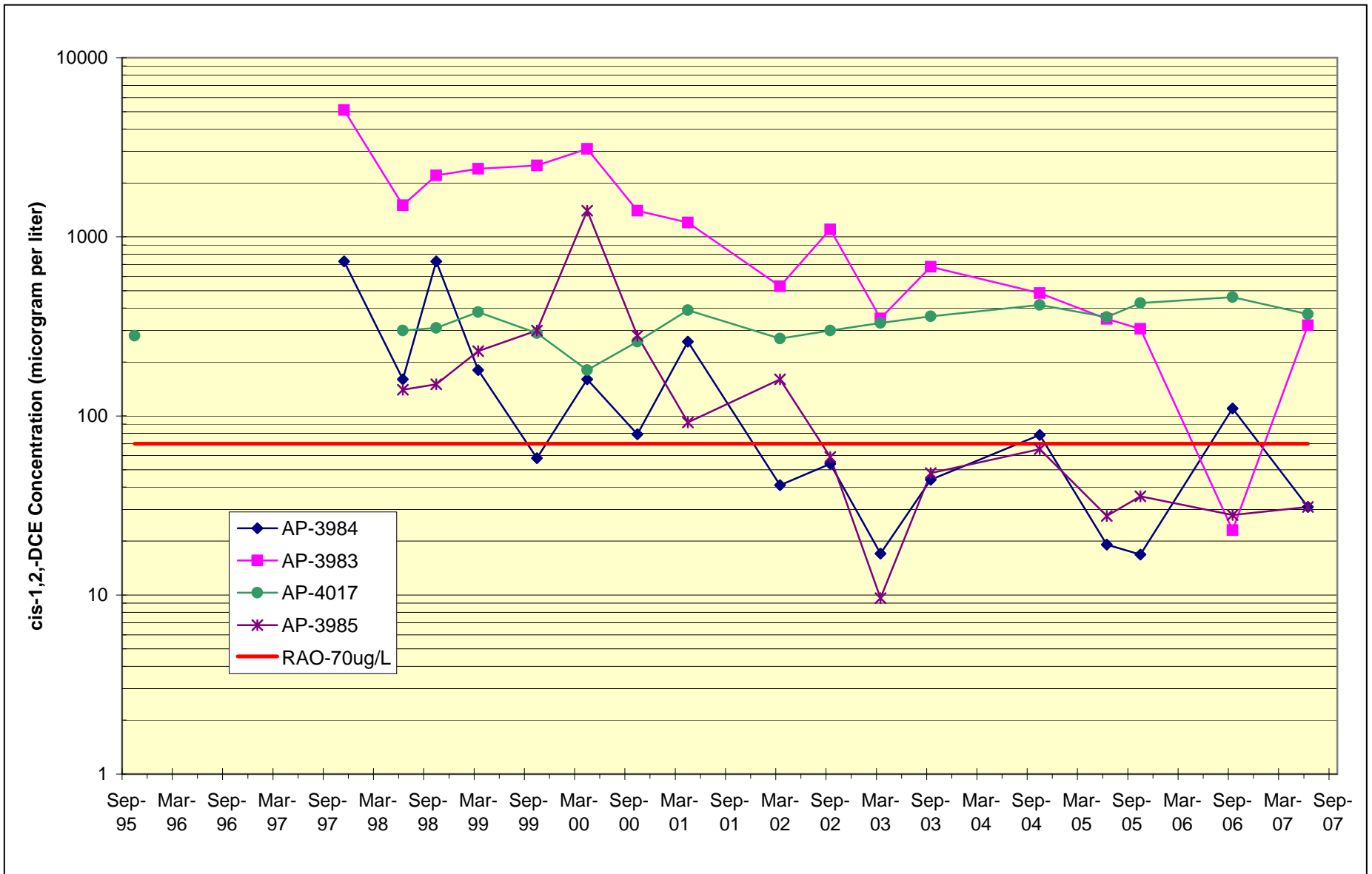


FIGURE 4-4
 cis-1,2 DCE Concentrations vs. Time
 OUB, Poleline Road Disposal Area
 Fort Richardson, Alaska

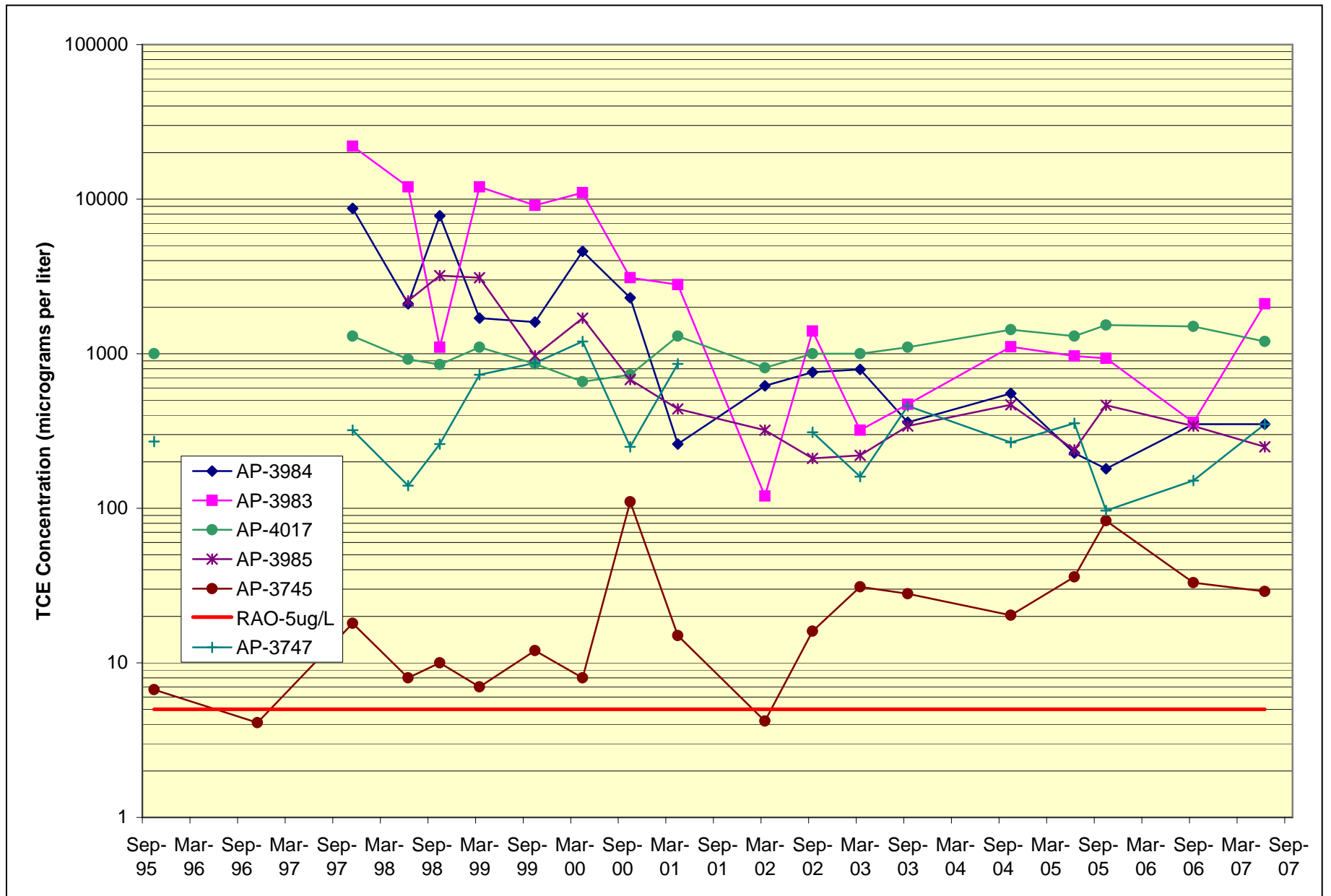


FIGURE 4-5
TCE Concentrations vs. Time
OUB, Poleline Road Disposal Area
Fort Richardson, Alaska

Concentrations of TCE and 1,1,2,2-PCA remain above RAOs at AP-3744 and AP-3745; concentrations of both compounds are declining in AP-3744; but TCE is increasing in AP-3745 (Figure 4-5). AP-3744 is the closest well downgradient of the hot spot, and AP-3745 is located to the southeast. Low levels of other daughter compounds are present within both AP-3744 and AP-3745.

AP-3747 is located to the north-northeast of the hot spot, and TCE remains above the RAO. Although M-K analysis does not identify a clear trend in the TCE concentrations for this well when all historic results are used, concentrations appear to be on a gradual decline since the maximum concentration was detected in April 2000 (Figure 4-5).

Shallow Wells Upgradient of the Hot Spot

Two wells (AP-3749 and AP-4354) considered upgradient of the hot spot were sampled in June 2007.

- AP-3749 is a shallow monitoring well located southwest of the wetland, along Poleline Road. Concentrations of COCs have never been detected at AP-3749.
- AP-4354 is a shallow well between the wetland and adjacent to the hot spot. It is hydraulically upgradient of the hot spot. AP-4354 also continues to be free of contamination.

Shallow Aquifer Summary

Concentrations of COCs within the hot spot area continue to be above RAOs. However, concentrations of 1,1,2,2-PCA decreased slightly, and daughter product concentrations also are declining. These results indicate that natural attenuation is occurring throughout the shallow aquifer hot-spot wells.

Downgradient of the hot spot, the plume appears to be bounded by AP-4352 to the north and AP-3982 to the east northeast, where COCs have not been detected. The concentrations of 1,1,2,2-PCA and TCE are above RAOs in AP-3747, with 1,1,2,2-PCA exhibiting a declining trend and TCE holding within historic limits. The extent of the TCE plume beyond AP-3747 in the shallow aquifer to the northeast is unknown.

4.1.2 Deep Semi-confined Aquifer

This section discusses the results and trends of concentrations of COCs in the deep aquifer within the historical hot spot and in downgradient wells.

Deep Well Within the Hot Spot

One well (AP-4017) at the site is screened in the deep aquifer and meets the criteria for being within the historical hot spot, as historic concentrations of 1,1,2,2-PCA have exceeded 1,000 µg/L in this well (Figure 4-2). Concentrations of 1,1,2,2-PCA have been below 1,000 µg/L as of March 2002. While M-K analysis of AP-4017 does indicate significant declining trends in concentrations of 1,1,2,2-PCA, concentrations of cis-1,2-DCE; trans-1,2-DCE; TCE; and vinyl chloride (daughter compounds) appear to be increasing. These trends suggest that effective reductive dechlorination may be taking place.

Results of the June 2007 sampling of AP-4017 indicate RAO exceedances of cis-1,2-DCE; trans-1,2-DCE; TCE; 1,1,2,2-PCA; vinyl chloride; as well as TBW compounds 1,1,2-TCA and 1,1-DCE.

Deep Wells Downgradient of the Hot Spot

The following nine wells represent locations downgradient of the hot spot. Six of the wells (AP-4011, AP-4344, AP-4525, AP-4551, AP-4019, and AP-3748) appear to be within the area of localized groundwater flow as described by CRREL. Three of the wells (AP-4344, AP-4345, AP-5246) are considered downgradient wells that are influenced by regional and local groundwater flow.

- AP-3748
- AP-4011
- AP-4019
- AP-4344
- AP-4345
- AP-4525
- AP-4350
- AP-4551
- AP-5246

For the six wells located within the area of localized groundwater flow, COCs typically have not been detected in the two wells farthest downgradient (AP-3748, AP-4019), except for some indiscriminate hits of TCE that exceeded the RAO in AP-4019 one time in October 2005 (Figure 4-2).

AP-4011 has significant declining trends associated with its 1,1,2,2-PCA; cis-1,2-DCE; and TCE concentrations. TCE was the only RAO exceeded (Figure 4-2 and Table 4-1).

AP-4344 is north of the hotspot and continues to exhibit stable concentrations of TCE that exceed the RAO, with all other contaminants and daughter products below detection limits. There is no significant trend in the concentration of TCE at AP-4344 (Figure 4-2).

AP-4525 continues to experience RAO exceedances of cis-1,2-DCE; TCE; 1,1,2,2-PCA; and 1,1,2-TCA. AP-4525 shows declining trends for 1,1,2,2-PCA; TCE; 1,1,2-TCA; and 1,1-DCE (Figure 4-2 and Table 4-1).

AP-4551 is the closest downgradient well to the hot spot and was only sampled for the third time in June 2007. In comparing current results with the previous two monitoring events, COC concentrations were fairly similar, with RAO exceedances of cis-1,2-DCE; TCE; 1,1,2,2-PCA; 1,1,2-TCA; and 1,1-DCE continuing to occur (Figure 4-2). Available data are insufficient to evaluate increasing or declining trends.

Three of the wells (AP-4345, AP-4350, and AP-5246) are considered downgradient wells, which are influenced by a combination of the localized groundwater flow to the northeast and regional groundwater flow to the west. These three wells are the farthest downgradient wells and are located to the north and northwest of the hot spot. AP-4345 and AP-4350 have not had any COC detections since they were first sampled in June 2003 (a few analytes were detected at concentrations lower than the reporting limit during that sampling event).

AP-5246 was installed in June 2007 and sampled for the first time in July 2007. All COCs in AP-5246 were non-detect.

Deep Aquifer Summary

Concentrations of 1,1,2,2-PCA in the deep hot-spot well (AP-4017) have decreased significantly. The combination of decreasing 1,1,2,2-PCA as well as PCE, in association with the increasing concentrations of the daughter compounds, appears to be evidence that natural attenuation is occurring. Vinyl chloride has been detected in the hot-spot wells, but has not been detected in wells outside the hot spot. RAOs have not been achieved in the deep hot-spot wells. TCE is the primary COC present in the deep aquifer.

The furthest downgradient RAO exceedance in the deep aquifer exists at AP-4344 (15 µg/L TCE), where neither increasing nor declining trends are evident. The deep plume appears to be bounded by AP-4345 and AP-5246 to the north and by AP-3748 to the northeast, where COCs remain below detection limits.

4.2 Natural Attenuation Parameters

Chlorinated compounds in soil and groundwater are subject to natural attenuation processes that cause reductions in mass, concentrations, or both over time. Natural attenuation processes potentially include volatilization, sorption, diffusion, dilution, and biotic and abiotic degradation. Intrinsic biodegradation – that is, biodegradation by naturally occurring micro-organisms – is usually the principal destructive mechanism for natural attenuation of organic compounds.

Evaluating natural attenuation typically relies on the use of site data to assess one or more of the following lines of evidence (paraphrased from EPA, 1999):

1. Historical groundwater and/or soil chemistry data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentrations over time
2. Hydrogeologic and geochemical data that can be used to demonstrate **indirectly** the type(s) of natural attenuation processes active at the site
3. Data from field or microcosm studies, conducted in or with actual contaminated site media, which **directly** demonstrate the occurrence of a particular natural attenuation process at the site (these studies may be necessary only where item 1 alone or items 1 and 2 together are inadequate or inconclusive.)

Groundwater monitoring results for the PRDA are discussed within the context of the second line of evidence for natural attenuation cited above. The following evaluation is based on a comparison of background versus hot-spot geochemical concentrations in the shallow and deep aquifers. The shallow aquifer evaluation is based on six hot-spot wells in comparison to upgradient well AP-3749. The deep aquifer evaluation is based on one hot-spot well in comparison to three (AP-4345, AP-4350, AP-5246) downgradient wells (no upgradient deep aquifer wells currently exist). Dissolved oxygen, nitrate, and sulfate are expected to be lower, and iron, manganese, and methane are expected to be higher within and adjacent to the hot-spot plume relative to background conditions, if biodegradation of petroleum compounds is occurring. The petroleum compounds can serve as electron donors

for the biodegradation of chlorinated compounds, typically by the reductive dechlorination pathway. The following sections provide an evaluation of the geochemical results.

4.2.1 Dissolved Oxygen and pH

Dissolved oxygen is the most energetically favorable electron acceptor for petroleum hydrocarbon biodegradation and is generally utilized first in the contaminant plume. It is also detrimental to the strictly anaerobic bacteria that are responsible for reductive dechlorination of longer chain chlorinated compounds, so the absence of dissolved oxygen is a required pre-condition for chlorinated compound biodegradation. Dissolved oxygen was near saturation in the upgradient background well for the shallow aquifer, but below 0.5 milligram per liter (mg/L) in two hot-spot wells, indicating anaerobic conditions in the plume.

The optimal range for pH for reductive dechlorination to take place is between 5 and 9. All wells at the PRDA displayed stable pH within this range during the spring 2007 sampling event.

Complete dissolved oxygen and pH results are presented in Table 4-2.

4.2.2 Nitrate

Following dissolved oxygen, nitrate is the second most energetically favorable electron acceptor and can be utilized by facultative anaerobic bacteria. Due to the short holding time for laboratory analysis of nitrate, samples were analyzed for total nitrate/nitrite; however, nitrite concentrations are typically very low or non-detect in groundwater.

Shallow Aquifer

Total nitrate/nitrite concentrations within the hot-spot area ranged from 0.075 to 0.97 mg/L. The concentration in the upgradient well was 0.47 mg/L. Four out of six hot-spot wells exhibited lower total nitrate/nitrate concentrations than the upgradient well, indicating nitrate has been utilized as an electron acceptor for petroleum hydrocarbon biodegradation.

Deep Aquifer

The total nitrate/nitrite concentration within the hot-spot well (AP-4017) was non-detect (0.05). The concentration within the three wells farthest downgradient ranged from 0.91 to 1.1 mg/L, which again indicates that nitrate has been used as an electron acceptor.

Well-specific results for total nitrate/nitrite are in Appendix C2.

4.2.3 Dissolved Iron and Manganese

The dissolved metals iron and manganese were analyzed during the spring 2007 sampling event. Concentrations of both metals tended to be greater within the plume area than outside, which suggests that these metals are acting as electron acceptors during anaerobic degradation of organic carbon.

TABLE 4-2
Groundwater Field Parameters, June 2007

Monitoring Well ID	Temperature (degrees Celsius)	Turbidity (nephelometric turbidity units)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH
AP-3744	3.9	16	0.253	11.77	7.11
AP-3745	4.2	7	0.252	9.35	6.64
AP-3747	3.5	5	0.210	13.36 ^a	7.82
AP-3748	5.7	4	0.424	13.48 ^a	7.96
AP-3749	3.5	11	0.191	12.13	7.41
AP-3981	5.3	6	0.382	2.86	6.91
AP-3982	4.0	25	0.205	5.66	7.63
AP-3983	6.2 ^b	60 ^b	0.294 ^b	1.68 ^b	6.85 ^b
AP-3984	7.2	37	0.293	2.34	6.88
AP-3985	5.4	13	0.347	0.30	7.44
AP-3989	6.2	3	0.392	1.87	7.08
AP-4011	6.3	7	0.278	13.07	7.94
AP-4017	6.2	6	0.459	1.84	7.31
AP-4019	5.7	1	0.245	9.29	7.83
AP-4344	6.4	16	0.269	11.84	7.88
AP-4345	6.4	7	0.347	11.48	7.45
AP-4350	7.1	2	0.272	12.47	7.88
AP-4352	4.3	88	0.209	— ^a	7.92
AP-4353	4.8	6	0.325	5.32	6.63
AP-4354	5.5	3	0.035	2.50	5.48
AP-4518	3.7	20	0.248	11.40	7.94
AP-4519	6.1	>500 ^b	0.370	0.57	7.10
AP-4525	8.9 ^c	24 ^c	0.523 ^c	— ^c	8.30 ^c
AP-4550	7.0	22	0.465	1.71	7.05
AP-4551	10.9	13	0.495	10.21	7.44
AP-5246	4.6	18	0.341	8.22	8.14

^aDO probe malfunction

^bFinal parameter not stabilized. See field notes for explanation.

^cBailer used, parameters not taken or not stabilized

mg/L = milligrams per liter

mS/cm = millisiemens per centimeter

Shallow Aquifer

Dissolved iron concentrations within the hot spot ranged from 1,880 to 26,700 µg/L. Dissolved iron in the upgradient well AP-3749 was 90.3 µg/L.

Dissolved manganese within the hot spot ranged from 263 to 1060 µg/L. Dissolved manganese in the upgradient well was non-detect (5 µg/L).

Deep Aquifer

The dissolved iron concentration in the hot-spot well was 2,700 µg/L. Dissolved iron in the farthest downgradient wells ranged from 127 to 152 µg/L.

The dissolved manganese concentration in the hot-spot well was 1,470 µg/L. Dissolved manganese in the wells farthest downgradient were non-detect (5 µg/L).

Dissolved metals results for individual wells can be found in Appendix C2.

4.2.4 Sulfate

After dissolved oxygen, nitrate, and biologically available manganese and iron have been depleted, sulfate may be utilized as an electron acceptor for anaerobic degradation by the sulfate reduction pathway. Sulfate concentrations with the plume below background concentrations provide evidence of sulfate reduction. Concentrations of sulfate greater than about 20 mg/L may cause competitive exclusion of dechlorinating bacteria, so measurements of sulfate concentrations is important when trying to determine whether the prevailing groundwater geochemistry is conducive to reductive dechlorination (Wiedemeier et al., 1999).

Shallow Aquifer

Sulfate was detected in all 6 hot-spot wells at concentrations ranging from 1 to 66 mg/L. Upgradient well AP-3749 had sulfate at 9.7 mg/L. When sulfate concentrations were compared within the hot spot and the upgradient well, one well (AP-3981) exhibited a lower concentration (1 mg/L). This result suggests that sulfate reduction may not be a predominant pathway for petroleum hydrocarbon biodegradation in the shallow aquifer, but the high concentrations of sulfate in the plume may be causing competitive exclusion of the dechlorinating bacteria.

Deep Aquifer

Sulfate was detected in the hot-spot well (AP-4017) at 11 mg/L. Although there is not an upgradient well, the three wells farthest downgradient (AP-4345, AP-4350, AP-5246) outside the plume area had sulfate concentrations from 23 to 25 mg/L. Based on this comparison, sulfate does appear to be a key electron acceptor in the deep aquifer, and the lower sulfate concentration is below the range where competitive exclusion is a concern.

Well-specific results for sulfate are in Appendix C2.

4.2.5 Methane

Methane is a byproduct from methanogenesis during the biodegradation of petroleum hydrocarbons. The presence of methane indicates strongly reducing conditions that are also generally favorable for reductive dechlorination.

Shallow Aquifer

Out of 16 shallow wells sampled, 6 wells are within the hot spot. Methane was highest within the hot spot, with concentrations up to 630 µg/L. Two wells (AP-4519, AP-4353) adjacent to the hot spot had methane concentrations of 74 and 320 µg/L, respectively. Methane was not detected in wells outside the plume area.

Deep Aquifer

Out of ten deep wells sampled, one well is within the hot spot and had a methane concentration of 210 µg/L. Methane was estimated at 0.47 µg/L adjacent to the hot spot. Methane was not detected in wells outside the plume area.

Overall, the concentrations and locations of methane detected during the spring 2007 event appear to support the conclusion that methanogenesis of petroleum hydrocarbons is occurring, and the strongly reducing aquifer conditions would be favorable for reductive dechlorination within the hot-spot plume. Well-specific results for methane are in Appendix C2.

4.2.6 Ethene, Ethane, and Chloride

An increase in concentrations of breakdown products ethene, ethane, and chloride in the plume gives a direct indication of microbial degradation of chlorinated hydrocarbons.

Shallow Aquifer

- Ethene was detected in two hot-spot well at 1.4 and 2.5 µg/L . Ethene was not detected in any other wells.
- Ethane was detected in one hot-spot well at 3.6 µg/L. Ethane was not detected in any other wells.
- Chloride was detected at all six shallow aquifer hot-spot wells at concentrations ranging from 1.1 to 13 mg/L. The upgradient well concentration was 1.6 mg/L. Five of the hot-spot wells exhibit higher chloride concentrations compared to the upgradient well.

Deep Aquifer

- Ethene and ethane were not detected in any of the deep aquifer wells.
- Chloride was detected in the deep aquifer hot-spot well at 3 mg/L. The three wells farthest downgradient had concentrations between 26 and 27 mg/L.

The breakdown products were observed at higher concentrations than background in several wells in the shallow aquifer plume, but not in the single well of the deep aquifer plume.

4.3 Field Parameters

Table 4-2 summarizes temperature, turbidity, conductivity, pH, and dissolved oxygen measured during the spring 2007 collection of groundwater samples.

SECTION 5

Conclusions

Twenty-six groundwater monitoring wells were successfully monitored and sampled at PRDA during June and July 2007. The conclusions below are based on the results of the spring 2007 monitoring event and the review of past monitoring results:

- Historical data review suggests overall contaminant concentrations at the PRDA site are generally decreasing; however, current concentrations of some COCs within and near the hot-spot area remain in excess of RAOs.
- 1,1,2,2-PCA and TCE continue to be the most prevalent COCs within the hot spot and downgradient plume.
- The most significant declining trends in concentrations of COCs are apparent at monitoring wells located within the hot spot, with the most effective reductive dechlorination taking place near AP-4017 (the lone deep well within the hot spot).
- Natural attenuation parameters continue to provide supporting evidence that reductive dechlorination is occurring at the site, especially within the hot-spot area.
- None of the wells monitored in June 2007 meet the definition of a hot-spot well identified in the ROD as exceeding 1,000 µg/L 1,1,2,2-PCA.
- The deep plume appears to be bounded by AP-4350 to the northwest, AP-5246 to the north, and AP-3748 to the northeast.
- The shallow plume appears to be bounded by AP-4352 to the northwest and by AP-3982 to the northeast; however, the extent of the plume beyond AP-3747 (to the north-northeast) is not currently understood.
- Borings installed at AP-5243, AP-5244, AP-5245, and the well installed at AP-5246 provided valuable information for the ongoing investigation of the geology and hydrogeology at the PRDA. Results of the investigation will be incorporated into the geologic model and will help to refine trends in bedrock, the definition of the geology to the east of the site, and identification of the basal silt unit. The geologic model will be presented by CRREL in a separate report.

SECTION 6

References

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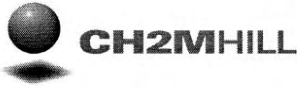
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Appendix A
Soil Boring and Well Construction Logs



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5243 [PRDA2007-2 (SHALLOW)]
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 300.1 NORTHING (FT): 813451 EASTING (FT): 520707.9
 DRILLING METHOD AND EQUIPMENT USED : CME75 with 4-1/4" ID HSA, 2.5' long CME, Continuous Sampler 3.5" I.D.
 WATER LEVELS : 15-20 ft START : 6/14/07 14:07 END : 6/15/07 11:33 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)	#/TYPE			
0				Silty Gravel with Sand (GM) Subangular to angular gravel, organic roots, brown, moist	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV). PID at breathing zone (BZ) = 0.0 ppm
5				Silty Gravel with Sand (GM) Subangular to angular gravel, cobbles to 3", brown, moist Cobbles to 3.5"	 PID on sample = 0.0 ppm
10				Gravel to 2.5", trace of iron stain speckles Cobbles to 3.5", increase in coarse sand, wet between 14.7' to 15'	 PID BZ = 0.0 ppm and sample = 0.0 ppm
15				Cobbles greater than 3.5", wet Angular to subrounded gravel, fine to coarse sand, cobbles to 3.5", wet	 water observed between 15 and 20' bgs, poor recovery due to cobbles about 5' water on rods and water from above following auger down. Poor recovery due to cobbles
20				Cobbles to 4", moist Angular to subangular gravel, cobbles to 3", increase in silt content and decrease in sand content	 bottom 3-4" moist upper part sample is wet from water above. Poor recovery due to cobbles large cobbles slow drilling
25				Cobbles to 3.5"	end of day, 6/14/07 17:07 start of the day, 6/15/07 08:27 PID BZ = 0.0 ppm and cuttings = 0.0 ppm
30				Cobbles to 3.5"	water from above is coating sample - core sample is moist inside

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5243 [PRDA2007-2 (SHALLOW)]
Page 2 of 2	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Allocation : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 300.1 NORTHING (FT): 813451 EASTING (FT): 520707.9
 DRILLING METHOD AND EQUIPMENT USED : CME75 with 4-1/4" ID HSA, 2.5' long CME, Continuous Sampler 3.5" I.D.
 WATER LEVELS : 15-20 ft START : 6/14/07 14:07 END : 6/15/07 11:33 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	6"-6"-6"-6" (N)		
	RECOVERY (IN)	#/TYPE		
30			<p>Silty Gravel with Sand (GM) Subangular to angular gravel, cobbles to 3", brown, moist</p>	<p>DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).</p> <p>continue cobbles 3.5" and greater</p>
35			<p>Cobbles to 3.5" and greater</p>	<p>augers pulling slurry out of boring</p> <p>PID BZ = 0.0 ppm and sample = 0.0 ppm</p>
40			<p>Well Graded Gravel with Sand (GW) angular to subangular gravel, medium coarse sand, cobbles 3.5" and greater, brown, moist</p>	<p>augers continue pulling slurry out of boring</p> <p>PID BZ = 0.0 ppm and cuttings = 0.0 ppm</p>
45			<p>Trace iron staining speckles</p>	<p>easier drilling, poor recovery</p>
50			<p>Bottom of boring at 50' bgs. Boring caves in and backfill open hole: 10-6' hydrated bentonite chips, 10-0' gravel.</p>	<p>stop drilling at 11:33</p>
55				
60				

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC_GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5244 [PRDA2007-1 (SHALLOW)]
Page 1 of 2	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 310.5 NORTHING (FT): 813590.1 EASTING (FT): 520847.4
 DRILLING METHOD AND EQUIPMENT USED : CME75 with 4-1/4" ID HSA, 2.5' long CME, Continuous Sampler 3.5" I.D.
 WATER LEVELS : 20 ft. START : 6/13/07 11:40 END : 6/14/07 12:21 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)	#/TYPE			
0	2.5			Organic Silt (OH) roots, dark brown, moist Silt (ML) with cobbles to 3.5" subrounded, light brown, moist	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV). PID Breathing Zone (BZ) = 0.0 ppm
	2.2			Well Graded Gravel with Sand (GW) subrounded cobbles to 3", brown transition to tan at 4.5' bgs, moist	
5	2.3			Silty Gravel (GM) subrounded cobbles to 3" angular to subangular gravel, brown, moist Cobbles to 3.5" and greater, trace of iron speckles	Increase in large, cobbles. Stop using plastic liner sleeves due to cobbles wedging inside and having to break the plastic sleeve to obtain sample.
10				Cobbles to 3.5" and greater, angular to subangular gravel	Drilling through large cobbles
15				Poorly Graded Gravel with Silt and Sand (GP-GM) cobbles to 3.5" and larger, brown, moist	PID BZ = 0.0 ppm and cuttings = 0.0 ppm; drilling in cobbles
20				Silty Gravel (GM) angular to subangular gravel cobbles to 3.5" and greater, brown, moist Cobbles to 3.5" and greater	Continue drilling in cobbles
25				Silty Sand (SM) subrounded gravel to 1/4", brown, wet	Perched wet lens
				Silty Gravel (GM) cobbles to 3.5", angular to subangular gravel, fine sand, brown, moist	PID BZ = 0.0 ppm, cuttings = 0.0 ppm
30				Cobbles to 3" fine sand, gravel to 1"	Continue drilling through cobbles Easier drilling - minimal cobbles






SOIL BORING LOG FRP_VA.GPJ CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5244 [PRDA2007-1 (SHALLOW)]
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 310.5 NORTHING (FT): 813590.1 EASTING (FT): 520847.4
 DRILLING METHOD AND EQUIPMENT USED : CME75 with 4-1/4" ID HSA, 2.5' long CME, Continuous Sampler 3.5" I.D.
 WATER LEVELS : 20 ft. START : 6/13/07 11:40 END : 6/14/07 12:21 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION		
		TEST RESULTS		
30	RECOVERY (IN)	6"-6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
	#/TYPE			
30-35			 angular to subangular gravel, cobbles to 3.5" and greater	PID BZ = 0.0 ppm cuttings = 0.0 ppm; drilling through cobbles Drilling through cobbles
35-40			 Silty Gravel with Sand (GM) medium to coarse sand, angular to subangular gravel, cobbles to 3.5" and greater	Drilling through cobbles
40-45			 Silty Gravel with Sand (GM) medium coarse sand, angular to subangular gravel, cobbles to 3.5" and greater, increasing number of cobbles, brown, moist	Drilling through cobbles Cobbles - slower drilling
45-50			 Silty Gravel with Sand (GM) medium coarse sand, angular to subangular gravel, cobbles to 3.5" and greater, increasing number of cobbles, brown, wet	Small lens 1-2" with coarse sand and wet. Stop drilling 06/13/07 16:35. Drill rig transmission breaks, pull off of boring and leave
50-55			 Silty Gravel with Sand (GM) medium coarse sand, angular to subangular gravel, cobbles to 3.5" and greater, increasing number of cobbles, brown, moist	Resume drilling 06/14/07. Water from above running into bottom of boring Cobbles Cobbles
55-60			Bottom of boring at 50' bgs. Backfill boring: 43-18' gravel, 18-13' hydrated bentonite chips, 13-4' gravel, 4-2' hydrated bentonite chips, 2-0' gravel.	2" water in hole, water draining into boring from above. Note: bottom of boring with HSA continue boring and sampling with air rotary and driven split spoons

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)]
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Sheet 1 of 7

SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
	RECOVERY (IN)	#/TYPE			
0				Silty Gravel with Sand (GM) with chipped cobbles, brown moist	Soil descriptions are logged from cuttings blown out of casing at surface or from split spoon samples.
5					
10					From 7 to 8' bgs water, wet - surface water influence
15				Silt (ML) brown, moist	
20				Silty Gravel with Sand (GM) some cobbles between 19 and 20' bgs, brown, moist	Blow water out after adding rod, water is trickling down casing from above.
25				Silty Gravel with Sand (GM) angular to subangular gravel and cobbles, brown, moist	
30					

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)]
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Sheet 2 of 7

SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (IN) #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)					
	#/TYPE					
30					Silty Gravel with Sand (GM) angular to subangular gravel and cobbles, brown, moist	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
35					cobbles	PID at breathing zone (BZ) = 0.0 ppm and cuttings = 0.0 ppm
40					increasing moisture content	stop drilling to see if water develops - NO water
48.0	48.5	6	6	200	Silty Gravel with Sand (GM) angular to subrounded gravel to 2" very dense, brown, moist	
52.5	52.8	3	3	181		
55.5	55.8	3	3	180		consolidated hard material with cobbles
60						

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)]
Sheet 3 of 7	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (IN) #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)					
	#/TYPE					
60					Silty Gravel with Sand (GM) angular to subangular gravel to 1/2", brown, moist	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
65					color change to darker brown	
67.5 67.8	3	SS	67		Silty Gravel with Sand (GM) angular to subrounded gravel to 1.5", brown, moist	End of the day 06/18/07
70					consolidated material from drill observation	
75					Increase fines/silt	
77.0 77.5	1	SS	73		Silty Gravel with Sand (GM) angular to subrounded gravel to 1/2", brown, moist	observed pebbles with moisture - driller thinks frozen
80					increase in silt	driller indicates larger cobbles
87.0 87.2	2	SS	77		Silty Gravel with Sand (GM) angular to subrounded gravel to 1-1/4", fine to coarse sand, brown, moist	continue drilling through cobbles
90						

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)] sheet 4 of 7
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (IN) #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)					
	#/TYPE					
90						
95						
	97.0 97.3	3	SS	64	<p>Silty Gravel with Sand (GM) angular to subrounded gravel to 1-1/4", fine to coarse sand, brown, moist</p> <p>moisture increases in cuttings</p> <p>color change to orange/red</p>	<p>DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).</p> <p>moisture increase in cutting. Shut down and wait 15 min to see if water develops, some water. End of day 06/19/07</p> <p>start of the day 06/20/07</p>
100	101.0 101.8	9	SS	50-71	<p>Silty Gravel with Sand (GM) silt with weathered rock about 1" thick, orange, moist</p> <p>Silt (ML) pea size pebbles, grey, dry, hard, crumbly pieces in layers and can scrape with fingernail</p> <p>trace gravel, grey, dry, hard</p>	<p>casing was frozen in and required steam thaw to extract</p> <p>casing to 104 ft. Drill ahead of casing without advancing casing</p>
105	104.0 104.3	4	SS	100	<p>cuttings become moist/wet</p> <p>thin layers oxidized iron, orange color</p>	<p>Water; change to tricone bit</p>
	106.0 106.8	3	SS	70-100	<p>Silt with Sand (ML) fine sand, grey, wet</p>	<p>slight amount water blew back the casing producing poor cutting return (sticking to inside of casing)</p>
110						
	114.0 115.0	8	SS	50-100	<p>Silty Sand (SM) fine sand, grey, moist</p>	<p>driller indicates hard material</p> <p>interbedded consolidated (hard) layers 1/8-1/4" thick with soft layers in between</p>
115						
120						

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)] sheet 5 of 7
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (IN) #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
	RECOVERY (IN)					
	#/TYPE					
120					 Silty Sand (SM) fine sand, grey, moist Silt (ML) grey, dry	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV). powder cuttings creating dust cloud
125	124.0 124.3 124.3 124.7	2 SS 3 SS	100 134			
130					 Coal black, dry	
135					 Silt (ML) grey, dry	hard drilling, cuttings continue to create dust cloud
140						
145						
150						

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)]
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Sheet 6 of 7

SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	6"-6"-6" (N)		
	RECOVERY (IN)			
150			Silt (ML) grey, dry	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
155			color change to brown mudstone with coal	
160				
165			color change to to dark brown	
170				
175			color change to grey	
180				

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5245 [PRDA2007-2 (DEEP)]
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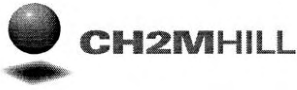
Sheet 7 of 7

SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (FT): 298.4 NORTHING (FT): 813448.1 EASTING (FT): 520713.6
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 104 ft. START : 6/18/07 11:55 END : 6/20/07 15:30 LOGGER : R. HORN

DEPTH BELOW SURFACE (FT)	STANDARD		SOIL DESCRIPTION	COMMENTS
	INTERVAL (FT)	PENETRATION		
		TEST RESULTS		
180	RECOVERY (IN)	6"-6"-6"-6" (N)	Silt (ML) grey, dry	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, INSTRUMENTATION, AND OTHER OBSERVATIONS, INCLUDING HEADSPACE IN PARTS PER MILLION BY VOLUME (ppmV).
	#/TYPE			181'-182' drilling rate is 55sec per foot, cuttings continue to create dust cloud
185				
190			Bottom of boring at 190' bgs. Backfill boring: 190-170' gravel, 170-151' hydrated bentonite chips, 151-70' gravel, 64-70' hydrated bentonite, 32-64' gravel, 25-32' hydrated bentonite, 25-13' gravel, 13-7' hydrated bentonite, 0-7' gravel	End drilling at 15:30 on 06/20/07
195				
200				
205				
210				

SOIL BORING LOG FRP_VA.GPJ_CH2M_ANC.GDT_8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	WELL	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. PID (ppmV): Soil descriptions are logged from cuttings blown out of casing at surface or from split spoon samples.
	RECOVERY (IN)	#/TYPE				
5				Silty Sand with Cobbles (SM) brown, moist		
10						
15						
20						
25						
30						

WELL COMPLETION INFORMATION

CASING	SURFACE CASING	SEAL
Top elevation (meters): 95.60	Dia. :	Type : Bentonite chips
Vent hole? : Yes	Type :	Quantity used : 1 bag
WELLHEAD PROTECTION COVER	SCREEN	GROUT
Type : 6" Steel Pipe with Flat cover plate	Type : 2" stainless	Mix used :
Weep hole? : NA	Slot size : 0.02	Method of placement :
Concrete pad dimensions : 2' diam X 2.0' deep	SCREEN FILTER	Vol. in surface casing :
WELL CASING	Type : 8/12 silica sand	Vol. in well casing :
Dia. : 2"	Quantity used : 2-3/4 bags	DEVELOPMENT
Type : Schedule 80 PVC		Method : air
		Time : 1.5 hrs
		Estimated purge volume : 100 gal

Comments : drilled to 190' backfill with pea gravel tp 165'. Bentonite plug from 160-165. Pea gravel 158-160.

WELL-STICKUP METRIC FRP VA.GPJ CH2M ANC.GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION	WELL	COMMENTS
	INTERVAL (FT)	6"-6"-6" (N)			
	RECOVERY (IN)	#/TYPE			
35			Silty Sand with Cobbles (SM) brown, moist		
40					
45					
50			Silty Sand (SM) trace gravel to 1/4" rounded and angular cobbles, brown, moist		
52			Angular Rock (boulder) very few fines and sand, grey		
54			Well Graded Sand with Silt and Gravel (SW-SM) rounded gravel, less cobbles, brown, moist		11:00 - drillers trip out for SS, replace cathead rope
56.5 - 57.0	4	SS	Silty Sand (SM) trace gravel, brown, moist		
58		160	Rock (large boulder) angular fragments very few silty sand particles, grey, dry		
60					The sandy material is likely rock flour.
65			Silty Sand with Gravel (SM) brown, dry		
70			Rock 90% rock greywacke		

WELL STICKUP METRIC FRP VA.GPJ CH2M_ANC.GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
Page 3 of 6	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		RECOVERY (IN) #/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	WELL	COMMENTS
	RECOVERY (IN)						
	#/TYPE						
75	76.5	77.0	3	SS	100		
					Rock 90% rock greywacke		
					Well Graded Sand With Gravel (SW) with rounded gravel to 1/2", brown sand, grey gravel, dry		
					Well Graded Gravel with Sand (GW) brown, dry		
					Silt (ML) brown, wet from condensate during drilling		
					Boulder/Cobble		
					Silt Lense (ML) brown, dry		Very hard drilling
					Well Graded Gravel with Sand (GW) increasing gravel content with depth, brown, dry		
					wet cuttings		
					cutting become dry		
					Rock 90% rock, grey, dry		The material is rock flour
					increasing content of rounded gravel		
					Rock and/or Gravel grey, dry		

WELL-STICKUP METRIC FRP VA.GPJ CH2M_ANG.GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
Sheet 4 of 6	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)		STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION	WELL	COMMENTS
	RECOVERY (IN)	#/TYPE				
115	116.5 117.0	2	SS	Silty Gravel (GM) rounded grey gravel, brown silt, moist Rock grey, dry Silty Gravel (GM) grey gravel with brown silt, dry Well Graded Gravel with Sand (GW) wet from condensate Silty Gravel (GM) grey, with brown silt and sand, dry		trip out rods for SS, last 30' of rods very cold 06/25/07 17:00 stop drilling Resume drilling 6/26/07 09:30
120				Rock 98% angular rock fragments, grey, dry		
130						
135	136.5 137.0	2	SS	Poorly Graded Gravel with Silt and Sand (GP-GM) gravel to 1/2" rounded, grey, brown silt and sand, wet from drill rod condensation		
140						
145						
150				Rock 90% angular rock, grey, dry, moist for 0.5 feet at 150' bgs and again at 155' bgs		very hard drilling 147-150'

WELL STICKUP METRIC FRP VA.GPJ CH2M ANC.GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
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SOIL BORING LOG

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS (N)		SOIL DESCRIPTION	WELL	COMMENTS	
	INTERVAL (FT)	RECOVERY (IN)				
	#/TYPE	6"-6"-6"-6"				
155	156.0	14	SS	46-62-55 (117)	<p>Rock 90% angular rock, grey, dry, moist for 0.5 feet at 150' bgs and again at 155' bgs</p> <p>Poorly Graded Gravel with Silt and Sand (GP-GM) grey gravel subrounded to 1" brown silt with iron oxide staining plus some carbonaceous material (black, white), wet</p> <p>Silt (ML) brown, wet</p> <p>Poorly Graded Gravel with Silt and Sand (GP-GM) most gravel angular rock fragments, brown, moist</p>	<p>DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.</p> <p>PID (ppmV):</p> <p>groundwater on rods as tripping out for SS</p> <p>Sieve Analysis: 56.8% Gravel, 34.2% Sand, 9.0% Silt. Natural Moisture Content = 8.0%</p>
160	166.5	2	SS	50	<p>angular to subrounded gravel to 1/2", silt on gravel, brown, moist</p> <p>Poorly Graded Gravel with Sand (GP) angular to subrounded gravel to 1/2", silt on gravel, moist</p> <p>Silt (ML) pea size pebbles, penetrated with thumbnail, dark grey, moist</p>	<p>when air rotary stops for sampling or adding casing, water flow-down from above may saturate soils below the bit leading to questionable observations of what in-situ moisture content may be.</p> <p>6/26/07 16:45 stop drilling; 13' water measured downhole. 6/27/07 start drilling</p> <p>hard drilling at 170', starting to dry up</p> <p>blow out casing less water, driller indicates starting to seal off water from above</p>
165	167.0					
170						
175						
180						
185						
190	190.0					

WELL STICKUP METRIC FRP VA.GPJ CH2M ANC.GDT 8/23/07



PROJECT NUMBER 358826.A1.08	BORING NUMBER AP-5246-MW [PRDA2007-1 (DEEP)]
Page 6 of 6	
SOIL BORING LOG	

PROJECT : Fort Richardson Poleline Road Disposal Area LOCATION : Fort Richardson, AK DRILLING CONTRACTOR : DISCOVERY DRILLING
 GROUND ELEVATION (M) : 310.5 NORTHING (M) : 813590.1 EASTING (M) : 520847.4
 DRILLING METHOD AND EQUIPMENT USED : MOBIL B53 AIR ROTARY, Mitsubishi diabit, 4" threaded steel casing
 WATER LEVELS : 155 ft. START : 6/25/07 09:00 END : 6/27/07 16:45 LOGGER : J. BLEI

DEPTH BELOW SURFACE (FT)	STANDARD PENETRATION TEST RESULTS			SOIL DESCRIPTION	WELL	COMMENTS
	INTERVAL (FT)	RECOVERY (IN)	#/TYPE			
	6"-6"-6"-6" (N)					
190.5	6	SS	138	Poorly Graded Sand with Silt (SP-SM) fragments to 1/2" penetrated with thumbnail, trace coal lens about 1/8" thick, grey, moist		Bottom of hole at 190.3' bgs. Driller indicates there is no water at depth due to the hole staying open when the casing is pulled.
195						
200						
205						
210						
215						
220						
225						
230						

WELL STICKUP METRIC FRP VA.GPJ CH2M ANC.GDT 8/23/07

Appendix B
Field Logs and Data Collection Forms

Appendix B1
Monitoring Well Static Water Level Form

Monitoring Well Static Water Level Measurement Form

Project Name Fort Richardson OUB Date 5/25/07 Page 1 of 2

Water Level Indicator ID # OUB/PRDA Location 10632 (RTT)

Monitoring Well #	Time	Depth to Static Water Level (ft btoc)	Total Well Depth (ft btoc)	Comments
AP-3744	1048	28.17	37.55	
AP-3745	1105	22.10	29.75	Soft bottom
AP-3747	1010	32.15 25.78	32.15	
AP-3748	1027	134.10	171.60	Datalogger
AP-3749	0917	20.10	24.55	4", no cap
AP-3981	1149	23.27	40.7	silt/clay bottom - sticky
AP-3982	1053	26.96	31.95	hard bottom, datalogger
AP-3983	1219	25.08	30.45	hard bottom
AP-3984	1211	28.01	32.50	clay in bottom
AP-3985	1202	25.26	37.3	soft bottom/datalogger
AP-3989	1040	28.96	36.3	Soft bottom
AP-4011	1116	121.73	138.8	TD prev. recorded 146
AP-4017	1128	65.54	98.15	stopped beeping at 82.13 (descending). Bentonite on probe when removed
AP-4019	1020	138.96	153.1	Soft bottom
AP-4344	0939	150.33	163.5	Datalogger
AP-4345	0954	156.34	186.5	bentonite in well bottom Datalogger
AP-4350	0922	148.63	188.6	Datalogger

Appendix B2
Well Condition Inspection Form

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-3744

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?			X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs fill

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson AFB Well/Piezometer Name: AP-3745

Evaluator: Stacey Re'c Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?		X	
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

Flag

no obsvns

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-3747

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs fill

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-3748

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?			X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

Sp. dots
needs sand

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-3749

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?	X		
Is the well adequately flagged if hard to find?		X	
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?			X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson A/B Well/Piezometer Name: AP-3981

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs sand

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-3982

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			<
Is the well elevation information inscribed at or on the well correct?			x
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	x		
Is the well labeled on the inside?	x		
Is the well labeled on the outside?	x		
Does the well have protective posts, if necessary?		x	
Do above ground wells have weep holes at the base of the protective casing?		x	
Does the area around the well appear clean?		x	
Is the casing secure (attempt to move along two perpendicular axes)?	x		
Is the surface seal void of differential erosion around and under the base?			x
Is the surface seal free of cracks that might affect the integrity of the seal?			x
Is the surface seal sloped to prevent ponding around the well?			x
Is the well free from standing or ponded water?	x		
Is the well locked to prevent unauthorized access?	x		
Is the protective casing cap void of large gaps which would breach security?	x		
Is the locking cap free of rust?	x		
Is there a survey mark on the riser/wellhead assembly cap?			x
Is the riser cap vented?			x
Is the annular space free of animal/insect nests?		x	
Is the annular space appropriately filled with filtering material?		x	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			x
Is the well free of kinks or bends?	x		

Spiders
needs fill

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Rich DUB Well/Piezometer Name: AP-3983

Evaluator: Stacey Re' Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			Y
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

Spiders
needs sand

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson AUB Well/Piezometer Name: AP-3984

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?		X	
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

bend in casing

casing staples

needs sand

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OUV Well/Piezometer Name: AP-3985

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?		X	
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?		X	
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?		X	
Is the protective casing cap void of large gaps which would breach security?		X	no cap
Is the locking cap free of rust?			X
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?			X
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

benzene setting

no cap

no annulus

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVP Well/Piezometer Name: AP-3984

Evaluator: Stace Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		X

needs fill

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OUB Well/Piezometer Name: AP-4011

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?		X	
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X	X	
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?		X	X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?		X	
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

locking gone

broken

ring missing

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-4017

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			V
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs send

COMMENTS: water level meter stopped indicating at 82.13 descending. WLO 65.54

Well Condition Inspection Form

Facility: Fort Richardson OUB Well/Piezometer Name: AP-4019

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?			X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X	X	
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs new lock

needs sand

COMMENTS: _____

Well Condition Inspection Form

Facility: Ft. Rich OUB Well/Piezometer Name: AP-4344

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?	X		
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?	X		
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?	X		
Is the surface seal free of cracks that might affect the integrity of the seal?	X		
Is the surface seal sloped to prevent ponding around the well?	X		
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?	X		
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson

Well/Piezometer Name: AP-4345

Evaluator: Stacey Re

Evaluation Date: 5/25

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?	X		
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?			X
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?			X
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: Bentonite in bottom of well

Well Condition Inspection Form

Facility: Fort Richardson OUB Well/Piezometer Name: AP-4350

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?	X		
Is the well adequately flagged if hard to find?		X	
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OUB Well/Piezometer Name: AP-4352

Evaluator: Stacy Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?	X		
Is the well adequately flagged if hard to find?		X	
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?		X	
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?			
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?		X	
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

needs more

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-4353

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?	X		X
Is the surface seal free of cracks that might affect the integrity of the seal?	X		X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?	X		X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OUB Well/Piezometer Name: AP-4354

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?		X	
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

Bend in
tip at tech
point

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OWS Well/Piezometer Name: AP-4518

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?		X	
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

spiders

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-4519

Evaluator: Stacey Ré Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			
Is the surface seal free of cracks that might affect the integrity of the seal?		X	cracked
Is the surface seal sloped to prevent ponding around the well?	X		
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: Surface seal mostly covered in sand

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-4525

Evaluator: Stacy Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

overfilled

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson O&B Well/Piezometer Name: AP-4550

Evaluator: Stacey Re' Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Fort Richardson OVB Well/Piezometer Name: AP-4551

Evaluator: Stacey Re Evaluation Date: 5/25/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?			X
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground?			
Is the well free of physical damage?	X		
Is the well labeled on the inside?	X		
Is the well labeled on the outside?	X		
Does the well have protective posts, if necessary?			X
Do above ground wells have weep holes at the base of the protective casing?		X	
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?			X
Is the surface seal free of cracks that might affect the integrity of the seal?			X
Is the surface seal sloped to prevent ponding around the well?			X
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access?	X		
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?			X
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

COMMENTS: _____

Well Condition Inspection Form

Facility: Ft. Richardson OUB Well/Piezometer Name: AP-524G

Evaluator: Stacey Re Evaluation Date: 7/10/07

	Y	N	N / A
Is the well's location appropriately shown on a facility map?			
Is the well adequately flagged if hard to find?	X		
Is the well elevation information inscribed at or on the well correct?			X
Is the well: <input type="checkbox"/> flush with surface? <input checked="" type="checkbox"/> above ground? <u>35.5" stickup</u>			
Is the well free of physical damage?	X		
Is the well labeled on the inside?		X	
Is the well labeled on the outside?		X	
Does the well have protective posts, if necessary?	X		
Do above ground wells have weep holes at the base of the protective casing?			
Does the area around the well appear clean?	X		
Is the casing secure (attempt to move along two perpendicular axes)?	X		
Is the surface seal void of differential erosion around and under the base?	X		
Is the surface seal free of cracks that might affect the integrity of the seal?	X		
Is the surface seal sloped to prevent ponding around the well?	X		
Is the well free from standing or ponded water?	X		
Is the well locked to prevent unauthorized access? <u>New well needs lock</u>		X	
Is the protective casing cap void of large gaps which would breach security?	X		
Is the locking cap free of rust?	X		
Is there a survey mark on the riser/wellhead assembly cap?		X	
Is the riser cap vented?			X
Is the annular space free of animal/insect nests?	X		
Is the annular space appropriately filled with filtering material?	X		
If a pump, can it be lifted a few inches? (do not test prior to sampling)			X
Is the well free of kinks or bends?	X		

New

COMMENTS: New well Installed June 07 - No AP # at time of inspection.

Appendix B3
Well Purge and Sampling Field Sheet



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3744

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/7/07

Project #: 358826

Start Time: 1413

Field Team: Stacey Ré and Bob Trebble

End Time: 1447

Sample ID: 07aFROBWATO1

Time: 1450 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 27.68

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 47.0

Casing diameter: 2 in. 4 in.

Water Column (Ft): 19.32

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 12.6

Pump Intake Depth: 31.5

Screen Interval: 26.5 - 36.5

Stable DTW (FTOC): 27.71

Measured Stickup: 17"

Method of Purging (circle one)

Pump: SUB BLDR PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Sample Pro Flow Rate (gpm): .06

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 34 min Vol. Purged (gals): 1.5

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1420	27.71	.5	7.11	.252	13.3	11.50	4.50	79.2
2	1425	27.71	.8	7.10	.251	20.4	11.55	4.06	68.8
3	1430	27.71	1.1	7.10	.251	17.0	11.69	3.94	64.8
4	1435	27.71	1.5	7.11	.253	15.6	11.77	3.91	62.2
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3745

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/8/07

Project #: 358826

Start Time: 1020

Field Team: Stacey Ré and Bob Trebble

End Time: 1125

Sample ID: 07aFROBWAT02

Time: 1100 primary dup other: _____

Sample ID: 07aFROBWAT02MS

Time: 1100 primary dup other: MS

Sample ID: 07aFROBWAT02SD

Time: 1100 primary dup other: MSD

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 21.44

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 29.75

Casing diameter: 2 in. 4 in.

Water Column (Ft): 8.31

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 5.4

Pump Intake Depth: 25

Screen Interval: 18-28

Stable DTW (FTOC): 21.47-49

Measured Stickup: 21.5"

Method of Purging (circle one)

Pump: SUB BLDB PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: SamplePro Flow Rate (gpm): 0.06gpm

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 65min Vol. Purged (gals): 2.1

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1030	21.49	0.7	6.54	0.249	12.5	9.56	4.51	54.4
2	1035	21.47	1.0	6.57	0.249	10.6	9.43	4.38	52.6
3	1040	21.47	1.2	6.61	0.251	9.95	9.33	4.31	53.0
4	1045	21.49	1.5	6.63	0.253	8.81	9.39	4.24	53.1
5	1050	21.48	1.8	6.65	0.252	7.62	9.28	4.22	53.3
6	1055	21.49	2.1	6.64	0.252	7.44	9.35	4.18	53.4
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3747

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/7/07

Project #: 358826

Start Time: 1240

Field Team: Stacey Ré and Bob Trebble

End Time: 1342

Sample ID: 07aFROBWAT03

Time: 1345 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 24.74

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 32.15

Casing diameter: 2 in. 4 in.

Water Column (Ft): 7.41

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 4.8

Pump Intake Depth: 28

Screen Interval: 20-30

Stable DTW (FTOC): none

Measured Stickup: 21"

Method of Purging (circle one)

Pump: SUB BLDR PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Simple Pro Flow Rate (gpm): 106

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 62 min Vol. Purged (gals): 2.5

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1300	25.10	1.1	7.83	0.211	6.8	13.30	3.58	41.8
2	1305	25.29	1.7	7.62	0.210	6.21	13.47	3.76	81.3
3	1320	25.35	2.0	7.78	0.211	5.36	13.37	3.49	59.7
4	1325	25.40	2.3	7.81	0.211	5.16	13.35	3.43	51.8
5	1330	25.45	2.5	7.82	0.210	4.51	13.36	3.46	49.6
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: Datalogger present, left in place during sampling
* recalibrated DO 98.4% @ 84° DO High (12.4+12.5 mg/L) full 06



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3748

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring Date: 6/1/07

Project #: 358826 Start Time: 1302

Field Team: Stacey Ré and Bob Trebble End Time: 1413

Sample ID: 07a FROBwAT04 Time: 1400 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC):	<u>—</u>	Depth to Water (FTOC):	<u>134.27</u>
Depth to Oil/Water Interface (FTOC):	<u>—</u>	Total Depth (FTOC):	<u>171.6</u>
Casing diameter:	<u>2 in.</u> 4 in.	Water Column (Ft):	<u>37.33</u>
gal/Ft of casing:	<u>0.163</u> 0.653	Casing Volume (gal)	<u>6.1</u>
Pump Intake Depth	<u>167.6</u>	Screen Interval	<u>164.6-169.6</u>
Stable DTW (FTOC):	_____	Measured Stickup	<u>1.9'</u>

Method of Purging (circle one)

Pump: SUB <u>BLDR</u> PERIST OTHER: _____	Bailer: TEFLON SS OTHER: _____
Pump Type: <u>Sample Pro</u> Flow Rate (gpm): <u>0.02-0.05</u>	Required Pulls: _____ Bailer Vol. (gals): <u>0.25/ 0.33</u>
Pump Time: <u>71 min</u> Vol. Purged (gals): _____	Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1321	134.13	0.25	8.04	0.424	10.6	9.62	6.31	92.7
2	1326	134.07	0.5	8.00	0.431	9.6	10.91	5.88	91.9
3	1336	Clean DO	probe / replace	—	—	—	—	—	—
4	1339	134.12	1	8.00	0.434	6.7	13.87	5.59	101.2
5	1345	134.10	1.1	7.98	0.432	4.9	13.59	5.60	99.9
6	1350	134.15	1.2	7.96	0.430	3.9	13.48	5.65	99.1
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear Amber, Tan, Brown, Grey, Milky White, Other: _____
 Odor: None Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None Low, Medium, High, Very Turbid, Heavy Silts

Comments: Recalibrated DO meter after AP-4345, before AP-3748. Still reading too high - no bubbles apparent in flow-through cell. May need new probe. Previous DO ~6mg/L



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3749

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/4/07

Project #: 358826

Start Time: 0952

Field Team: Stacey Ré and Bob Trebble

End Time: 1057

Sample ID: 07aFR0BVAT05

Time: 1045 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Filtered? Y N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 19.66

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 24.6

Casing diameter: 2 in. 4 in.

Water Column (Ft): 4.94

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 3.2

Pump Intake Depth: 21.3

Screen Interval: 12-22

Stable DTW (FTOC): 19.85

Measured Stickup: 20"

Method of Purging (circle one)

Pump: SUB BLDR PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Sample Pro Flow Rate (gpm): 0.025

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 65 min Vol. Purged (gals): 4.1

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1015	19.87	1.9	7.25	0.157	24.4	12.14	3.55	31.0
2	1026	19.87	2.3	7.26	0.164	18.7	12.61	3.50	32.4
3	1025	19.85	2.5	7.31	0.170	17.8	12.08	3.48	33.6
4	1030	19.86	2.9	7.35	0.176	15.3	12.15	3.50	35.4
5	1035	19.87	3.3	7.37	0.184	13.0	12.11	3.49	37.1
6	1040	19.85	3.7	7.38	0.187	11.4	12.17	3.47	39.1
7	1045	19.84	4.1	7.41	0.191	10.9	12.13	3.49	40.1
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: DO high last time as well @ 11.4



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3981

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring Date: 6/6/07

Project #: 358826 Start Time: 1303

Field Team: Stacey Ré and Bob Trebble End Time: 1409

Sample ID: 07aFROBWAT06 Time: 1400 primary dup other: _____

Sample ID: 07aFROBWAT27 Time: 1410 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC):	_____	Depth to Water (FTOC):	<u>22.61</u>
Depth to Oil/Water Interface (FTOC):	_____	Total Depth (FTOC):	<u>47.0</u>
Casing diameter: 2 in.	<u>4 in.</u>	Water Column (Ft):	<u>24.39</u>
gal/Ft of casing: 0.163	<u>0.653</u>	Casing Volume (gal):	<u>15.9</u>
Pump Intake Depth	<u>34</u>	Screen Interval	<u>29-39</u>
Stable DTW (FTOC):	<u>22.72</u>	Measured Stickup	<u>31"</u>

Method of Purging (circle one)

Pump: SUB <u>BLDR</u> PERIST OTHER: _____	Bailer: TEFLON SS OTHER: _____
Pump Type: <u>Simple Pro</u> Flow Rate (gpm): <u>.06</u>	Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33
Pump Time: <u>66 min</u> Vol. Purged (gals): <u>3.2</u>	Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1315	22.70	0.9	6.87	.386	5.0	1.12	5.59	-152.9
2	1320	22.71	1.1	6.87	.385	4.8	1.44	5.47	-143.0
3	1325	22.70	1.4	6.88	.384	5.5	1.53	5.44	-132.4
4	1330	22.70	2.2	6.89	.382	6.6	2.14	5.45	-116.4
5	1335	22.71	2.5	6.90	.382	5.9	2.30	5.28	-110.6
6	1340	22.71	2.7	6.91	.383	6.3	2.39	5.36	-102.5
7	1345	22.72	3.0	6.90	.382	6.4	2.81	5.29	-94.5
8	1347	22.73	3.1	6.91	.382	5.5	2.82	5.31	-93.8
9	1349	22.72	3.2	6.91	.382	6.0	2.86	5.29	-91.0

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____
Odor: None, Low, Medium, High, Very Strong, H₂S, Fuel Like, Chemical ?, Unknown
Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

Well ID: AP-3982

Project: Fort Richardson OUB GW Monitoring Date: 01/16/07

Project #: 358826 Start Time: 1056

Field Team: Stacey Ré and Bob Trebble End Time: 1150

Sample ID: 07aFROBLWAT07 Time: 1145 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____ Depth to Water (FTOC): 26.59

Depth to Oil/Water Interface (FTOC): _____ Total Depth (FTOC): 37.0

Casing diameter: 2 in. 4 in. Water Column (Ft): 10.41

gal/Ft of casing: 0.163 0.653 Casing Volume (gal): 6.79

Pump Intake Depth: 31' Screen Interval: 24-34

Stable DTW (FTOC): 26.62-.65 Measured Stickup: 31"

Method of Purging (circle one)

Pump: SUB GENT PERIST OTHER: _____ Bailer: TEFLON SS OTHER: _____

Pump Type: bladder Flow Rate (gpm): _____ Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 54 min Vol. Purged (gals): _____ Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1110	26.65	0.7	7.98	.204	39.2	3.16	4.08	-132.2
2	1115	26.63	1.1	7.92	.204	36.4	3.80	3.87	-128.0
3	1120	26.65	1.64	7.86	.204	40.6	4.28	3.87	-124.7
4	1125	26.65	2.0	7.78	.206	29.4	4.68	3.91	-116.5
5	1130	26.66	2.0	7.71	.204	29.3	5.21	3.91	-109.0
6	1135	26.65	2.3	7.46	.205	26.7	5.39	3.95	-106.6
7	1140	26.62	2.5	7.63	.205	24.7	5.66	3.95	-104.1
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: Datalogger in well varies 26.61-26.67 Do creeping up | Well appears to have high iron content precipitating in flow through cell



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3183

Project: Fort Richardson OUB GW Monitoring

Date: 6/12/07

Project #: 358826

Start Time: 1405

Field Team: Stacey Ré and Bob Trebble

End Time: 1522

Sample ID: 07a FROBWA108 (9/12) Time: 0910 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 24.39 23.99

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 30.45 30.45

Casing diameter: 2 in. 4 in.

Water Column (Ft): 6.06 6.56

gal/Ft of casing: 0.163 0.653

Casing Volume (gal) 3.9

Pump Intake Depth 28

Screen Interval 20-30 20-30

Stable DTW (FTOC): _____

Measured Stickup 28"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER

Bailer: TEFLON SS OTHER:

Pump Type: bladder Flow Rate (gpm): .04

Required Pulls: Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 28 min Vol. Purged (gals): 0.5 before sample

Vol Purged (gals):

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1 12	14:50 <u>14:50</u>	<u>26.75</u>	<u>2.3</u>	<u>7.59</u>	<u>.396</u>	<u>28</u>	<u>0.69</u>	<u>6.60</u>	<u>-166.5</u>
2 13	9:09 <u>9:09</u>	<u>24.75</u>	<u>.5</u>	<u>6.85</u>	<u>.294</u>	<u>60</u>	<u>1.68</u>	<u>6.24</u>	<u>-60.4</u>
3									
4									
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: Steady drawdown. Would not be able to collect full sample if we tried to purge one volume, decided to purge dry after 40 min / 2.3 gal. (Sped up pump rate). Purged to 28.8 - estimated just above bladder pump intake.



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3184

Project: Fort Richardson OUB GW Monitoring Date: 6/13

Project #: 358826 Start Time: 0951

Field Team: Stacey Ré and Bob Trebble End Time: 1135

Sample ID: 07a FROBJAT09 Time: 1145 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: Cloudy Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____	Depth to Water (FTOC): <u>27.33</u>
Depth to Oil/Water Interface (FTOC): _____	Total Depth (FTOC): <u>32.5</u>
Casing diameter: 2 in. <u>4 in.</u>	Water Column (Ft): <u>5.17</u>
gal/Ft of casing: 0.163 <u>0.653</u>	Casing Volume (gal): <u>3.4</u>
Pump Intake Depth _____	Screen Interval: <u>20-30</u>
Stable DTW (FTOC): <u>27.77-27.81</u>	Measured Stickup: <u>22"</u>

Method of Purging (circle one)

Pump: SUB CENT PERIST <u>OTHER:</u>	Bailer: TEFLON SS OTHER:
Pump Type: <u>Bladder</u> Flow Rate (gpm): <u>.04</u>	Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33
Pump Time: _____ Vol. Purged (gals): <u>2.8</u>	Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1035	27.80	1.4	6.91	.326	74.1	1.17	6.89	-102.5
2	1040	27.79	1.6	6.88	.320	60.2	1.44	6.92	-105.2
3	1045	27.80	1.8	6.87	.314	43.9	1.53	6.99	-97.8
4	1050	27.79	2.0	6.87	.309	39.9	1.58	6.87	-93.8
5	1055 1110	27.77	2.4	6.88	.295	40.0	2.41	7.35	-73.2
6	1115	27.79	2.6	6.88	.294	37.8	2.34	7.34	-70.9
7	1120	27.80	2.8	6.88	.293	37.2	2.34	7.24	-69.0
8									
9									

flow through ready

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: Slight sheen on budget



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3985

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring Date: 6/13/07

Project #: 358826 Start Time: 1200

Field Team: Stacey Ré and Bob Trebble End Time: 1230

Sample ID: 076FROBWATIO Time: 1230 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC):	<u>—</u>	Depth to Water (FTOC):	<u>24.42</u>
Depth to Oil/Water Interface (FTOC):	<u>—</u>	Total Depth (FTOC):	<u>32.3</u>
Casing diameter: 2 in.	<u>4 in.</u>	Water Column (Ft):	<u>7.88</u>
gal/Ft of casing: 0.163	<u>0.653</u>	Casing Volume (gal)	<u>5.2</u>
Pump Intake Depth	<u>28.5</u>	Screen Interval	<u>22-32</u>
Stable DTW (FTOC):	<u>24.50-.52</u>	Measured Stickup	<u>41"</u>

Method of Purging (circle one)

Pump: SUB <u>BLDR</u> PERIST OTHER:	Bailer: TEFLON SS OTHER:
Pump Type: <u>Sample Pro</u> Flow Rate (gpm): <u>.08</u>	Required Pulls: Bailer Vol. (gals): 0.25/ 0.33
Pump Time: <u>30"</u> Vol. Purged (gals): <u>1.4</u>	Vol Purged (gals):

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1210	24.50	.6	7.50	0.342	18.8	0.32	5.83	-181.6
2	1215	24.52	1.0	7.49	0.345	15.9	0.32	5.52	-173.2
3	1220	24.51	1.4	7.44	0.347	13.3	0.30	5.43	-160.7
4									
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical?, Unknown
Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-3989

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/11/07

Project #: 358826

Start Time: 0920

Field Team: Stacey Ré and Bob Trebble

End Time: 1105

Sample ID: 07a FROBWAT11

Time: 1100 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Filtered? Y N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 28.18

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 36.3

Casing diameter: 2 in. 4 in.

Water Column (Ft): 8.12

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 1.4

Pump Intake Depth: 32

Screen Interval: 24-34

Stable DTW (FTOC): 29.39 - .52

Measured Stickup: 29.25"

Method of Purging (circle one)

Pump: SUB BLDR PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Sample Pro Flow Rate (gpm): .08

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 75 min Vol. Purged (gals): 3.9

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1040	29.52	3.1	7.03	.392	5.09	2.02	6.06	-3.8
2	1043	29.44	3.5	7.04	.391	5.36	1.96	6.17	-4.7
3	1046	29.47	3.9	7.08	.392	3.41	1.87	6.22	-7.5
4									
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: Initial purge water tankful, cleared gradually. DTW crept down steadily for first hour (.02-.04 ft/min) adjusted bladder pump to 18psi; recharge 16sec, purge 9sec. to stabilize



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4011

Project: Fort Richardson OUB GW Monitoring

Date: 6/8/07

Project #: 358826

Start Time: 1203

Field Team: Stacey Ré and Bob Trebble

End Time: 1305

Sample ID: 07-FROBWAT02

Time: 1255 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____

Filtered? Y N 0.45um 1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 121.80

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 138.8

Casing diameter: 2 in. 4 in.

Water Column (Ft): 17

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 211.1

Pump Intake Depth: 129

Screen Interval: 111-137

Stable DTW (FTOC): 121.82 - .89

Measured Stickup: 18"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Badger Flow Rate (gpm): .035

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 62 Vol. Purged (gals): .8

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1225	121.82	.4	7.87	.277	8.00	12.70	6.58	9.1
2	1230	121.87	.5	7.90	.279	8.47	12.86	6.27	8.1
3	1235	121.84	.6	7.91	.278	8.90	12.91	6.33	7.4
4	1240	121.88	.8	7.94	.278	7.21	13.07	6.26	6.8
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4017

Project: Fort Richardson OUB GW Monitoring

Date: 6/12/07

Project #: 358826

Start Time: 1213

Field Team: Stacey Ré and Bob Trebble

End Time: 1340

Sample ID: 07aFROBWAT13

Time: 1330 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 65.65

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 98.15

Casing diameter: 2 in. 4 in.

Water Column (Ft): 32.5

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 21.2

Pump Intake Depth _____

Screen Interval 76-96

Stable DTW (FTOC): 66.16-66.21

Measured Stickup 2ft

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER

Bailer: TEFLON SS OTHER:

Pump Type: Grubber Flow Rate (gpm): 0.04

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 87min Vol. Purged (gals): 2.9

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1310	66.16	2.5	7.30	0.460	6.51	1.81	6.27	-105.4
2	1315	66.18	2.7	7.30	0.459	6.70	1.76	6.23	-104.6
3	1320	66.18	2.9	7.31	0.459	6.32	1.84	6.15	-103.7
4									
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: slight

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4019

Project: Fort Richardson OUB GW Monitoring

Date: 6/15/07

Project #: 358826

Start Time: 0922

Field Team: Stacey Ré and Bob Trebble

End Time: 1019

Sample ID: 07aFROBWA14

Time: 1005 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um 1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 137.08

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 153

Casing diameter: 2 in. 4 in.

Water Column (Ft): 15.92

gal/Ft of casing: 0.163 0.653

Casing Volume (gal) 130-150

Pump Intake Depth 146

Screen Interval 5 10.4

Stable DTW (FTOC): 137.08

Measured Stickup 1'11"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER:

Bailer: TEFLON SS OTHER:

Pump Type: Bladder Flow Rate (gpm): .04

Required Pulls: Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 57min Vol. Purged (gals): 1.1

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	<u>0945</u>	<u>137.08</u>	<u>.5</u>	<u>7.76</u>	<u>.243</u>	<u>1.8</u>	<u>9.46</u>	<u>6.22</u>	<u>70.3</u>
2	<u>0950</u>	<u>137.08</u>	<u>.7</u>	<u>7.80</u>	<u>.244</u>	<u>1.8</u>	<u>9.42</u>	<u>5.90</u>	<u>62.6</u>
3	<u>0955</u>	<u>137.09</u>	<u>.9</u>	<u>7.82</u>	<u>.245</u>	<u>0.9</u>	<u>9.37</u>	<u>5.80</u>	<u>59.8</u>
4	<u>1000</u>	<u>13.10</u>	<u>1.1</u>	<u>7.83</u>	<u>.245</u>	<u>0.9</u>	<u>9.29</u>	<u>5.73</u>	<u>59.6</u>
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4344

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring

Date: 6/7/07

Project #: 358826

Start Time: 1006

Field Team: Stacey Ré and Bob Trebble

End Time: 1203

Sample ID: 07a FROBWAT 15

Time: 1145 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Filtered? Y N 0.45um/1.0um

Depth to Top of Product (FTOC): —

Depth to Water (FTOC): 150.45

Depth to Oil/Water Interface (FTOC): —

Total Depth (FTOC): 164

Casing diameter: 2 in. 4 in.

Water Column (Ft): 13.55

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 2.2

Pump Intake Depth: 157

Screen Interval: 152.1-162.1

Stable DTW (FTOC): 150.45-.51

Measured Stickup: 29"

Method of Purging (circle one)

Pump: SUB (BLDR) PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Sample Pro Flow Rate (gpm): .03

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 117min Vol. Purged (gals): 2.2

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1030	150.50	.2	7.67	.270	120	10.29	7.85	65.4
2	1040	150.47	.5	7.78	.271	93	10.89	6.71	45.5
3	1050	150.47	.8	7.80	.270	66	11.72	6.53	56.5
4	1100	150.50	1.1	7.85	.270	47	11.82	6.81	41.1
5	1110	150.50	1.4	7.85	.269	36	11.81	6.66	39.6
6	1120	150.45	1.7	7.86	.270	29	11.86	6.58	40.3
7	1130	150.50	2.0	7.87	.269	23	11.85	6.51	40.2
8	1135	150.49	2.3	7.87	.270	18	11.88	6.44	39.7
9	1140	150.50	2.2	7.88	.269	16	11.84	6.39	39.7

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: Milky gray

Odor: None Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4345

Project: Fort Richardson OUB GW Monitoring

Date: 6/1/07

Project #: 358826

Start Time: 1020 Restart 1053

Field Team: Stacey Ré and Bob Trebble

End Time: 1150 1205

Sample ID: 07a FROBWATIG

Time: 1150 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 156.50

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 186.5

Casing diameter: 2 in. 4 in.

Water Column (Ft): 30

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 4.9

Pump Intake Depth: 182

Screen Interval: 177-187

Stable DTW (FTOC): 156.53 156.60

Measured Stickup: 3ft 2.15'

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER

Bailer: TEFLON SS OTHER:

Pump Type: Bladder Flow Rate (gpm): 0.02

Required Pulls: Bailer Vol. (gals): 0.25/0.33

Pump Time: 72ms Vol. Purged (gals): 1.4

Vol Purged (gals):

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1120	156.55	1.8	7.47	349	7.7	12.58	6.84	126.5
2	1130	156.53	1.0	7.43	348	8.0	11.37	6.70	126.8
3	1140	156.54	1.2	7.43	346	8.2	11.32	6.60	126.0
4	1150	156.55	1.4	7.45	347	7.2	11.48	6.43	124.8
5	1235	156.55	1.8	7.54	296	1.98	12.68	7.00	41.9
6	1240								
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:

Water at 1032 Pressure 120 cycle 16/13 sec. DO High despite. Removing pump, cleaning, + replacing bladder - air in tube w/ each cycle. Air eventually purges out but fine bubbles remain in well, affecting DO conc. Air in tube, DO high bias

SAR 6/14 wrong page!



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4 350

Project: Fort Richardson OUB GW Monitoring

Date: 6/14/07

Project #: 358826

Start Time: 1130

Field Team: Stacey Ré and Bob Trebble

End Time: 1315

Sample ID: 07aFROBWAT17

Time: 1300 (primary) dup other: _____

Sample ID: 07aFROBWAT26

Time: 1345 (primary) dup (other): EB

Sample ID: _____

Time: _____ (primary) dup other: _____

Weather Conditions: NY, peaks of sun, scattered showers, slight breeze

Filtered? Y N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 148.60

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 188.6

Casing diameter: 2 in. 4 in.

Water Column (Ft): 40

gal/Ft of casing: 0.163 0.653

Casing Volume (gal) 2,176.6 - 186.6

Pump Intake Depth 181.5

Screen Interval 6.5

Stable DTW (FTOC): 148.38 - 148.58

Measured Stickup 31.5"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: Bladder Flow Rate (gpm): 0.04

Required Pulls: _____ Bailer Vol. (gals): 0.25/0.33

Pump Time: 105 min Vol. Purged (gals): 2.4

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1155	148.57	0.4	7.61	0.321	2.88	10.84	8.23	28.4
2	1200	148.50	0.8	7.67	0.316	2.07	11.66	7.61	24.8
3	1235	148.55	1.8	7.70	0.296	1.33	12.68	6.43	41.9
4	1240	148.55	2.0	7.74	0.295	1.33	12.58	6.89	47.8
5	1245	148.52	2.2	7.73	0.278	0.94	12.48	7.17	49.4
6	1250	148.55	2.4	7.88	0.272	1.67	12.47	7.13	57.8
7	1255								
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:

Water @ 1134
Stable DTW range 148.38 - 148.58
 1203 - recalibrate YSI, conductivity bouncing first, then DO, ORP, all else
 Maybe oxygen bubbles - up to 1/8" ORP readings 3-7 from settled time between spurts of water in flow - through b/c jumping readings associated w/ spurts



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4352

Project: Fort Richardson OUB GW Monitoring Date: 6/9/07

Project #: 358826 Start Time: 1225

Field Team: Stacey Ré and Bob Trebble End Time: 1330

Sample ID: 07a FROBWAT14 Time: 1320 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: PC, 60's, slight breeze Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____ Depth to Water (FTOC): 23.05'

Depth to Oil/Water Interface (FTOC): _____ Total Depth (FTOC): 33.1'

Casing diameter: 2 in. 4 in. Water Column (Ft): 10.05'

gal/Ft of casing: 0.163 0.653 Casing Volume (gal): 1.638

Pump Intake Depth 31' Screen Interval 20.3-30.3'

Stable DTW (FTOC): _____ Measured Stickup 28"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: _____ Bailer: TEFLON SS OTHER: _____

Pump Type: bladder Flow Rate (gpm): .06 Required Pulls: _____ Bailer Vol. (gals): 0.25/0.33

Pump Time: 05 Vol. Purged (gals): 3.2 Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1305	25.70	2.5	7.91	.206	74.9	—	4.22	7.9
2	1310	25.95	2.8	7.91	.208	81.1	—	4.26	9.1
3	1315	26.41	3.2	7.92	.209	87.9	—	4.26	7.8
4									
5									
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: DO probe malfunction. Cleaned, re-inserted, reading @ 200% + High iron at last location. Turbidity increasing. Well not recovering - Purged 2 well volumes, temp, ORP, pH, Conductivity stable.



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4353

Project: Fort Richardson OUB GW Monitoring Date: 6/12/07

Project #: 358826 Start Time: 1041

Field Team: Stacey Ré and Bob Trebble End Time: 1135

Sample ID: 07a FROBWAT19 Time: 1130 (primary) dup other: _____

Sample ID: 07a FROBWAT29 Time: 1015 primary dup (other) EB

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC):	<u>—</u>	Depth to Water (FTOC):	<u>32.50</u>
Depth to Oil/Water Interface (FTOC):	<u>—</u>	Total Depth (FTOC):	<u>70</u>
Casing diameter:	<u>2 in.</u> 4 in.	Water Column (Ft):	<u>37.5</u>
gal/Ft of casing:	<u>0.163</u> 0.653	Casing Volume (gal):	<u>6.1</u>
Pump Intake Depth	<u>62</u>	Screen Interval	<u>57-67</u>
Stable DTW (FTOC):	<u>32.68-32.81</u>	Measured Stickup	<u>28.5"</u>

Method of Purging (circle one)

Pump: SUB CENT PERIST <u>(OTHER)</u>	Bailer: TEFLON SS OTHER:
Pump Type: <u>bladder</u> Flow Rate (gpm): <u>0.06</u>	Required Pulls: Bailer Vol. (gals): 0.25/ 0.33
Pump Time: <u>54 min</u> Vol. Purged (gals): <u>2.5</u>	Vol Purged (gals):

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1055	32.70	1.0	6.52	0.319	14.9	4.57	5.19	-21.8
2	1100	32.71	1.3	6.55	0.322	8.58	5.01	5.01	-29.5
3	1105	32.73	1.6	6.60	0.324	7.13	4.96 4.93	4.96	-34.8
4	1110	32.81	1.9	6.62	0.324	6.40	5.30	4.92	-33.0
5	1115	32.80	2.2	6.63	0.325	6.23	5.32	4.83	-31.4
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown Paint Turner
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4354

Project: Fort Richardson OUB GW Monitoring Date: 6/6/07

Project #: 358826 Start Time: 1146

Field Team: Stacey Ré and Bob Trebble End Time: 1240

Sample ID: 07aFROBWAT20 Time: 1230 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: Sunny ≈ 70°F, breeze 0-10 Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____	Depth to Water (FTOC): <u>8.12</u>
Depth to Oil/Water Interface (FTOC): _____	Total Depth (FTOC): <u>14.00</u>
Casing diameter: <u>2 in.</u> 4 in.	Water Column (Ft): <u>5.88</u>
gal/Ft of casing: <u>0.163</u> 0.653	Casing Volume (gal): <u>0.96</u>
Pump Intake Depth: <u>11.0</u>	Screen Interval: <u>7.4-17.4</u>
Stable DTW (FTOC): <u>8.12-8.25</u> →	Measured Stickup: <u>35.5"</u>

Method of Purging (circle one)

Pump: <u>SUB</u> <u>CENT</u> <u>PERIST</u> <u>OTHER</u>	Bailer: <u>TEFLON SS</u> <u>OTHER</u>
Pump Type: <u>bladder</u> Flow Rate (gpm): <u>0.06</u>	Required Pulls: _____ Bailer Vol. (gals): <u>0.25/0.33</u>
Pump Time: <u>5 min</u> Vol. Purged (gals): <u>3.3</u>	Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1205	8.15	1.5	5.48	0.035	5.6	3.17	5.96	105.9
2	1210	8.17	2.1	5.46	0.035	4.3	3.00	5.46	101.7
3	1215	8.19	2.4	5.50	0.035	4.4	2.90	5.49	97.5
4	1220	8.17	2.7	5.48	0.035	3.7	2.63	5.49	92.8
5	1225	8.20	2.9	5.50	0.035	4.9	2.57	5.49	91.7
6	1230	8.22	3.2	5.48	0.035	3.1	2.50	5.48	90.1
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4518

Project: Fort Richardson OUB GW Monitoring Date: 6/6/07

Project #: 358826 Start Time: 0957

Field Team: Stacey Ré and Bob Trebble End Time: 1110

Sample ID: 07aFROBWAT21 Time: 1100 primary dup other: _____

Sample ID: 07aFROBWAT21MS Time: 1100 primary dup other: MS

Sample ID: 07aFROBWAT21SD Time: 1100 primary dup other: MSP

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____ Depth to Water (FTOC): 25.16
 Depth to Oil/Water Interface (FTOC): _____ Total Depth (FTOC): 46.8
 Casing diameter: 2 in. 4 in. Water Column (Ft): 21.64
 gal/Ft of casing: 0.163 0.653 Casing Volume (gal): 3.53
 Pump Intake Depth 38.5 Screen Interval 33.6-43.6
 Stable DTW (FTOC): 25.20-25.41 Measured Stickup _____

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER Bailer: TEFLON SS OTHER: _____
 Pump Type: Bladder Flow Rate (gpm): .04 Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33
 Pump Time: 73min Vol. Purged (gals): 3.3 Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1015	25.40	1.7	7.87	.247	40.6	11.41	3.69	61.3
2	1020	25.35	2.0	7.88	.248	36.7	11.30	3.69	60.9
3	1030	25.40	2.4	7.93	.249	28.9	11.45	3.64	62.7
4	1040	25.30	2.8	7.94	.249	23.5	11.48	3.69	62.8
5	1050	25.31	3.2	7.94	.248	19.5	11.40	3.68	62.9
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4519

Project: Fort Richardson OUB GW Monitoring

Date: 6/8/07

Project #: 358826

Start Time: 1331

Field Team: Stacey Ré and Bob Trebble

End Time: 1433

Sample ID: 07aFROBWAT22

Time: 1430 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 26.11 (24.86 after installing pump)

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 46.8

Casing diameter: 2 in. 4 in.

Water Column (Ft): 20.69

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 3.37

Pump Intake Depth: 40

Screen Interval: 33.9-43.9

Stable DTW (FTOC): _____

Measured Stickup: 26"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: _____

Bailer: TEFLON SS OTHER: _____

Pump Type: biadder Flow Rate (gpm): .05-.08

Required Pulls: _____ Bailer Vol. (gals): 0.25/0.33

Pump Time: 62min Vol. Purged (gals): 3

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1335	27.02	<u>0.3</u>	7.21	.356	37.1	2.10	8.83	-168
2	1340	28.98	<u>0.6</u>	7.22	.368	55.0	1.24	6.76	-183.2
3	1345	30.82	<u>1.3</u>	7.22	.364	165	1.65	6.40	-170.2
4	1350	31.40	<u>1.7</u>	7.21	.366	280	1.55	6.35	-162.2
5	1355	31.72	<u>2.1</u>	7.19	.369	>500	1.10	6.29	-154.9
6	1357	31.87	<u>2.3</u>	7.19	.371	>500	0.88	6.32	-152.3
7	1359	32.00	<u>2.4</u>	7.18	.372	>500	0.75	6.30	-157.4
8	<u>1409</u>	<u>32.45</u>	<u>2.7</u>	<u>7.13</u>	<u>.373</u>	<u>>500</u>	<u>0.54</u>	<u>6.16</u>	<u>-149.2</u>
	<u>1411</u>	<u>32.58</u>	<u>2.8</u>	<u>7.11</u>	<u>.371</u>	<u>>500</u>	<u>0.56</u>	<u>6.12</u>	<u>-144.9</u>
9	<u>1413</u>	<u>32.65</u>	<u>2.9</u>	<u>7.10</u>	<u>.370</u>	<u>>500</u>	<u>0.57</u>	<u>6.13</u>	<u>-143.7</u>

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: May have carbon pn well - water gray.
Turbidity increased
Constant drawdown



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4525

Project: Fort Richardson OUB/Poleline Rd. GW Monitoring Date: 6/11-6/13

Project #: 358826 Start Time: _____

Field Team: Stacey Ré and Bob Trebble End Time: _____

Sample ID: 07aFROBLWAT23 (1VOC) Time: 6/12 0945 primary dup other: _____

Sample ID: 07aFROBLWAT23a (1VOC) Time: 6/12 1445 primary dup other: _____

Sample ID: 07aFROBLWAT23b (2RSK175) Time: 6/13 1255 primary dup other: _____

Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC):	_____	Depth to Water (FTOC):	<u>126.58</u>
Depth to Oil/Water Interface (FTOC):	_____	Total Depth (FTOC):	<u>127.2</u>
Casing diameter:	<u>2 in.</u> 4 in.	Water Column (Ft):	<u>0.62</u>
gal/Ft of casing:	<u>0.163</u> 0.653	Casing Volume (gal)	<u>.1</u>
Pump Intake Depth	_____	Screen Interval	<u>113-123 (63)</u>
Stable DTW (FTOC):	_____	Measured Stickup	_____

Method of Purging (circle one)

Pump: SUB BLDR PERIST OTHER: _____

Pump Type: Simple Push Flow Rate (gpm): _____ Bailer: TEFLON SS OTHER: _____

Pump Time: _____ Vol. Purged (gals): _____ Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria
Temperature	>0.00 °C	± 1.0 °C
pH	0-14	± 0.2
Conductivity	0-9.99 S/m	± 3%
Dissolved Oxygen	0-19.99 mg/L	± 10%
Turbidity	0-800 NTU	± 10%

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)	
6/11	1	1121	126.58	.03	7.78	.558	31.0	11.58	8.35	40.3
	2	1123		.01						
6/13	3	1127	Dry	.01	8.28	.513	7100	—	6.57	46.9
	4	1300		.02	8.30	.523	24.2	—	8.99	
	5									
	6									
	7									
	8									
	9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater. Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP-4550

Project: Fort Richardson OUB GW Monitoring Date: 6/11/07

Project #: 358826 Start Time: 1330

Field Team: Stacey Ré and Bob Trebble End Time: 1437

Sample ID: 07α FROBWAT24 Time: 1420 primary dup other: _____

Sample ID: 07α FROBWAT28 Time: 1430 primary dup other: _____

Sample ID: _____ Time: _____ primary dup other: _____

Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____ Depth to Water (FTOC): 24.92
 Depth to Oil/Water Interface (FTOC): _____ Total Depth (FTOC): 43
 Casing diameter: 2 in. 4 in. Water Column (Ft): 18.08
 gal/Ft of casing: 0.163 0.653 Casing Volume (gal): 232-42
 Pump Intake Depth: 37 Screen Interval: 2.9
 Stable DTW (FTOC): 25.05-25.25 Measured Stickup: 29.5"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER Bailer: TEFLON SS OTHER: _____
 Pump Type: bladder Flow Rate (gpm): 0.09 gpm Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33
 Pump Time: 67 Vol. Purged (gals): 3.5 Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1345	25.13	1.3	7.14	.467	123	1.46	7.28	-87.8
2	1355	25.22	2.0	7.08	.467	49.6	1.06	7.06	-80.2
3	1400	25.22	2.3	7.06	.465	39.3	1.29	7.03	-75.9
4	1405	25.16	2.5	6.97	.468	35.0	1.45	7.16	-71.5
5	1410	25.17	2.7	7.03	.465	35.3	1.69	7.41	-64.3
6	1412	25.17	2.9	7.04	.464	30.8	1.69	7.34	-61.3
7	1414	25.18	3.1	7.05	.465	27.8	1.71	7.26	-62.4
8	1419	25.17	3.5	7.05	.465	22.1	1.71	7.02	-60.1
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey Milky White, Other: _____
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown Slight
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

CH2MHILL

Well ID: AP 4551

Project: Fort Richardson OUB GW Monitoring Date: 6/11/07
 Project #: 358826 Start Time: 1146
 Field Team: Stacey Ré and Bob Trebble End Time: 1306
 Sample ID: OTaFROBWAT25 Time: 1300 primary dup other: _____
 Sample ID: _____ Time: _____ primary dup other: _____
 Sample ID: _____ Time: _____ primary dup other: _____
 Weather Conditions: _____ Filtered? Y/N 0.45um/1.0um

Depth to Top of Product (FTOC): _____ Depth to Water (FTOC): 95.65
 Depth to Oil/Water Interface (FTOC): _____ Total Depth (FTOC): 98
 Casing diameter: 2 in. 4 in. Water Column (Ft): 2.35
 gal/Ft of casing: 0.163 0.653 Casing Volume (gal) 87-97
 Pump Intake Depth 96.75 Screen Interval 0.4
 Stable DTW (FTOC): 95.66 - 95.74 Measured Stickup 30"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: OTHER
 Pump Type: Bladder Flow Rate (gpm): 0.06 Bailer: TEFLON SS OTHER:
 Pump Time: 80 Vol. Purged (gals): 2.0 Required Pulls: Bailer Vol. (gals): 0.25/ 0.33
 Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	1200	95.70	.35	6.99	.531	131	7.56	11.70	1.1
2	1220	95.68	.8	7.20	.506	514	8.89	11.13	5.3
3	1230	95.67	1.2	7.39	.496	21	10.11	10.94	5.3
4	1237	95.66	1.6	7.42	.496	17	10.18	10.76	4.6
5	1243	95.68	2.0	7.44	.495	13	10.21	10.86	4.0
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.
 Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
 Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
 Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments:



WELL PURGE AND SAMPLING FIELD SHEET

New Well

CH2MHILL

Well ID: AP-5246

Project: Fort Richardson OUB GW Monitoring

Date: 7/10/07

Project #: 358826

Start Time: 0909

Field Team: Stacey Ré and Bob Trebble

End Time: 1045

Sample ID: 07aFROBWAT30

Time: 1020 primary dup other: _____

Sample ID: 07aFROBWAT31

Time: 1030 primary dup other: _____

Sample ID: _____

Time: _____ primary dup other: _____

Weather Conditions: _____

Filtered? Y N 0.45um/1.0um

Depth to Top of Product (FTOC): _____

Depth to Water (FTOC): 150.60

Depth to Oil/Water Interface (FTOC): _____

Total Depth (FTOC): 161

Casing diameter: 2 in. 4 in.

Water Column (Ft): 10.40

gal/Ft of casing: 0.163 0.653

Casing Volume (gal): 1.7

Pump Intake Depth 155

Screen Interval 148-154

Stable DTW (FTOC): 150.62-.63

Measured Stickup 35.5"

Method of Purging (circle one)

Pump: SUB CENT PERIST OTHER: Bladder

Bailer: TEFLON SS OTHER: _____

Pump Type: Sample Flow Rate (gpm): 0.06

Required Pulls: _____ Bailer Vol. (gals): 0.25/ 0.33

Pump Time: 96 min Vol. Purged (gals): 2.8

Vol Purged (gals): _____

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 0.5 °C	ideally < 6 °C
pH	0-14	± 0.1	
Conductivity	0-9.99 S/m	± 5%	
Dissolved Oxygen	0-19.99 mg/L	± 10%	
Turbidity	0-800 NTU	Less than 20 NTU	± 10% or ± 10 NTU

Instrument Observations

Round	Time	Water Level (ft BTOC)	Volume Purged (gallons)	pH	Cond (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	ORP (mV)
1	0940	150.63	1.1	7.93	0.342	274	8.38	4.96	-4.9
2	0950	150.62	2.0	8.10	0.342	48	8.40	4.81	-16.9
3	0955	150.63	2.3	8.12	0.342	39	8.25	4.79	-19.3
4	1000	150.62	2.6	8.14	0.342	23.6	8.28	4.64	-20.4
5	1005	150.62	2.8	8.14	0.341	17.7	8.22	4.63	-19.9
6									
7									
8									
9									

Notes: Draw-down should ideally be less than 0.3 feet from the original depth to groundwater.

Minimal draw-down achieved and measured by: 1) pumping at a low rate (approximately 1 liter/ 3 minutes or .1 gal/min) and 2) continually measuring water levels in the well.

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other: _____

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Comments: New well, first sampling event. Initial water very turbid 0930 = 576 NTU

Appendix B4
Daily Sampling Log

DAILY SAMPLING LOG

Date 6/1/07	Sampling start 0930	Sampling stop 1445
Weather conditions 50's, mostly cloudy, calm		
Personnel present Stacey Ke' + Bob Trebble		
Level of personal protection Nitrile gloves		
Field observations		
Site identification Fort Richardson OUB Poleline Rd.		
Location of sampling points AP-3748 AP-4345		
Description of samples - SEE SAMPLE LOG		
Type of field instrumentation Honda Generator, YSI 556, Bladder pump/controller/air compressor, Hach turb. meter		
Name of persons collecting samples Stacey Ke' + Bob Trebble		
Decontamination procedures Alconox wash, rinse, DI Final rinse		
Any visitors to site and their level of protection		
All calibrations done YSI 556, Hach turbidity		
Any other field instruments		
Any general observations or notes 07aFROBWAT16-1150 @ AP-4345 07aFROBWAT04-1400 @ AP-3748 07aFROBWAT06-1335 @ AP-3781 SKR + 07aFROBWAT27-1340		
Any deviations from the sampling plan Sampled AP-4350 without conductivity stabilizing; readings bouncing from ~2x to ~.4x especially bad as water flows in to cell. Tom of TTT suspect air bubbles we are observing coming into cell (~15-30 up to 1/8" diam) with each water spurt causing prob. However, we have had some small bubbles before w/out this problem. Will switch probes again today.		

DAILY SAMPLING LOG

Date 6/14/07	Sampling start 0900	Sampling stop 1430
Weather conditions Cloudy, 55-65, scattered sprinkles, light breeze		
Personnel present Stacey Ré + Bob Trebble		
Level of personal protection Nitrile gloves		
Field observations		
Site identification Fort Richardson OVB		
Location of sampling points AP-3749		
Description of samples - SEE SAMPLE LOG		
Type of field instrumentation Honda Generator, YSI 556, Hach Turb. meter, Air compressor, controller, bladder pump, w/L meter		
Name of persons collecting samples Stacey Ré + Bob Trebble		
Decontamination procedures Alconox wash, rinse, DI rinse		
Any visitors to site and their level of protection		
All calibrations done YSI 556, checked turbidity meter		
Any other field instruments		
Any general observations or notes 07a FROBWAT05 taken 1045 @ AP-3749 07a FROBWAT17 taken 1300 @ AP-4350 07a FROBWAT26 (EB) 1345 @ AP-4350		
Any deviations from the sampling plan		

DAILY SAMPLING LOG

Date 6/5/07	Sampling start 0830	Sampling stop 1410									
Weather conditions 55-65°F, Calm, PC											
Personnel present Stacey Re + Bob Trebble											
Level of personal protection Nitrile gloves											
Field observations											
Site identification Fort Richardson OUB											
Location of sampling points AP-4019 AP-3982											
Description of samples - SEE SAMPLE LOG											
Type of field instrumentation Hach turbidity meter, YSI 556, Honda generator, bladder pump/air compressor/controller											
Name of persons collecting samples Stacey Re + Bob Trebble											
Decontamination procedures Alconox wash, rinse, DI rinse											
Any visitors to site and their level of protection Gate open on arrival - CRREL may be present on site, Rich Horn stopped by CCH2M											
All calibrations done YSI 556, verified turb meter											
Any other field instruments											
Any general observations or notes <table style="width: 100%; border: none;"> <tr> <td>sample 07a FROBWAT14</td> <td>taken at 1005</td> <td>at AP-4019</td> </tr> <tr> <td>07a FROBWAT07</td> <td>" 1145</td> <td>at AP-3982</td> </tr> <tr> <td>07a FROBWAT18</td> <td>" 1320</td> <td>at AP-4352</td> </tr> </table>			sample 07a FROBWAT14	taken at 1005	at AP-4019	07a FROBWAT07	" 1145	at AP-3982	07a FROBWAT18	" 1320	at AP-4352
sample 07a FROBWAT14	taken at 1005	at AP-4019									
07a FROBWAT07	" 1145	at AP-3982									
07a FROBWAT18	" 1320	at AP-4352									
Any deviations from the sampling plan DO probe malfunctioned at AP-4352. Sampled w/out knowing DO conc.											

DAILY SAMPLING LOG

Date 6/6/07 **Sampling start** 0900 **Sampling stop** 1430

Weather conditions
PC, upper 50's - 70, slight intermittent breeze

Personnel present
Stacey Re' + Bob Trebble

Level of personal protection Nitrile Gloves

Field observations

Site identification
Fort Richardson OUB

Location of sampling points AP-4518, AP-4354

Description of samples - SEE SAMPLE LOG

Type of field instrumentation
generator, w/ meter YSI 556, Hach turbidimeter, bladder pump/controller, air compressor

Name of persons collecting samples
Stacey Re' + Bob Trebble

Decontamination procedures
Alconox wash, rinse, DI rinse

Any visitors to site and their level of protection
Rich Horn (CHM Hill PM)

All calibrations done
YSI 556, verified turbidity meter readings w/ standards

Any other field instruments

Any general observations or notes
 07a FROBWAT21 " MS } Taken at AP-4518 at 1100
 " SD }
 07a FROBWAT20 " AP-4354 at 1230
 07a FROBWAT06 " } AP-3981 at 1335
 07a FROBWAT27 " }

Any deviations from the sampling plan

DAILY SAMPLING LOG

Date 6/7/07 Sampling start 0845 Sampling stop 1530

Weather conditions

10-15 mph intermittent breeze, partly cloudy, upper 50's to 70's

Personnel present

Stacey Re' + Bob Trebble

Level of personal protection N. Lisle gloves

Field observations**Site identification**

Fort Richardson OUB

Location of sampling points AP-4344

Description of samples - SEE SAMPLE LOG

Type of field instrumentation

Honda generator, bladder pump/controller/air compressor/O₂/water interface probe, YSI 556, Hach turbidity meter

Name of persons collecting samples

Stacey Re' + Bob Trebble

Decontamination procedures

Alconox wash, rinse, DI rinse

Any visitors to site and their level of protection**All calibrations done**

YSI 556, verified Hach turbidity reading

Any other field instruments**Any general observations or notes**

OTa FROBWAT15 taken at 1145 at AP-4344
OTa FROBWAT03 taken at 1345 at AP-3747
OTa FROBWAT01 taken at at AP-3744

Any deviations from the sampling plan

DAILY SAMPLING LOG

Date 6/8/07 Sampling start 0930 Sampling stop 1530

Weather conditions

PC-MC, 60's

Personnel present

Stacey Re' + Bob Trebble

Level of personal protection Nitrile gloves**Field observations****Site identification**

Fort Richardson OUB

Location of sampling points AP-3745**Description of samples - SEE SAMPLE LOG****Type of field instrumentation**

Honda generator, Hach pump, controller, air compressor, w/meter, YSI 556, Hach turbidimeter

Name of persons collecting samples

Stacey Re' + Bob Trebble

Decontamination procedures

Alconox wash, rinse, DE rinse

Any visitors to site and their level of protection**All calibrations done**

YSI 556, verified Hach turbidity meter readings

Any other field instruments**Any general observations or notes**

OTaFROBWAT02 (+MS/MSD) taken @ 1100 at AP-3745
OTaFROBWAT12 taken @ 1255 at AP-4011
OTaFROBWAT22 " @ 1430 at AP-4519

Any deviations from the sampling plan

DAILY SAMPLING LOG

Date 6/11/07 **Sampling start** 0830 **Sampling stop** 1500

Weather conditions
Overcast → PC 60's + 70's

Personnel present
Bob Frobble + Stacey Re'

Level of personal protection Nitrile Gloves

Field observations

Site identification
Fort Richardson OUB

Location of sampling points AP-3989, AP-4551, AP-4550

Description of samples - SEE SAMPLE LOG

Type of field instrumentation
YSI 556/Hach turbidity meter, Honda generator, bladder pump/controlled compressor, w/ meter

Name of persons collecting samples
Stacey Re' + Bob Frobble

Decontamination procedures
Alconox wash, Rinse, DErinse

Any visitors to site and their level of protection
Two lady joggers came through site

All calibrations done
YSI 556, verified Hach turbidity meter readings

Any other field instruments

Any general observations or notes
Sample 07aFROBWAT11 taken @ 1100 at AP-3989
Purged AP-4525 dry w/ bailer. Will return tomorrow to collect sample
Sample 07aFROBWAT25 taken @ 1300 at AP-4551
Sample 07aFROBWAT24 " 1420 at AP-4550
07aFROBWAT28 " 1430 at AP-4550 (Duplicate)

Any deviations from the sampling plan

DAILY SAMPLING LOG

Date 6/12/07 | **Sampling start** 0845 | **Sampling stop** 1600

Weather conditions
50's-60's, light breeze, cloudy-partly cloudy

Personnel present
Stacey Re + Bob Trebble

Level of personal protection Nitrile gloves

Field observations

Site identification
Fort Richardson OVB

Location of sampling points AP-4353, AP-4

Description of samples - SEE SAMPLE LOG

Type of field instrumentation
Honda Generator, bladder pump/controller, air compressor, w/indicator, YSI 556, Hach turbidimeter

Name of persons collecting samples
Stacey Re + Bob Trebble

Decontamination procedures
Alconox wash, rinse, final rinse

Any visitors to site and their level of protection

All calibrations done
YSI 556, verified Hach turbidimeter readings

Any other field instruments

Any general observations or notes

Sample	Time	Location	
07aFROBWAT29	1015	(AP-4353)	Equipment Blank
07aFROBWAT19	1100	AP-4353	
07aFROBWAT23	0945	AP-4525	- no VOC bottle
07aFROBWAT13	1330	AP-4017	

Any deviations from the sampling plan

DAILY SAMPLING LOG

Date 6/13/07 **Sampling start** 0800 **Sampling stop** 1400

Weather conditions
Overcast, 9-10mph intermittent breezy 50's-60's

Personnel present
Stacey Re + Bob Trebble

Level of personal protection Nitrile gloves

Field observations

Site identification
Fort Richardson OVB

Location of sampling points AP-3984, AP-3985, AP-3983

Description of samples - SEE SAMPLE LOG

Type of field instrumentation
Hach turbidimeter, YSI 556MP, bladder pump/controller/compressor, Honda generator, W/ meter

Name of persons collecting samples
Stacey Re + Bob Trebble

Decontamination procedures
Alconox wash, rinse, di rinse

Any visitors to site and their level of protection

All calibrations done

YSI 556, verified Hach turbidimeter readings

Any other field instruments

Any general observations or notes

Sample	Time	Location	Type
07a FROBWAT09	1145	AP-3984	Primary
07a FROBWAT10	1230	AP-3985	"
07a FROBWAT08	0910	AP-3983	"
07a FROBWAT236			Primary - Methane/Ethane/Ethanol only

Any deviations from the sampling plan

Appendix B5
Sample Tracking Log



SAMPLE TRACKING LOG

Project # Fort Rich OUB 35882G

Page 1 of

Sample						Shipment				
Date	ID	Location	Depth	Matrix	Type	COC # / Cooler ID	Ship Date	Method	Shipped To	Date Received
6/11/07	07aFROBWAT16	AP-4345	182	Water	Primary	43303/A1	6/14/07	AK Air Cargo	Loach's Lab	6/15/07
6/11/07	07aFROBWAT04	AP-3748	167.6							
6/14/07	07aFROBWAT05	AP-3749	21.3							
6/14/07	07aFROBWAT17	AP-4350	182.6							
6/11/07	07aFROBWAT01TB	TB	—		TB					
6/14/07	07aFROBWAT26	AP-4350	—		FB					
6/5/07	07aFROBWAT14	AP-4019	146		Primary	43304	6/6/07			6/4/07
6/5/07	07aFROBWAT01TB	TB	—		TB					
6/5/07	07aFROBWAT07	AP-3982	51		Primary					
6/6/07	07aFROBWAT20	AP-4518	38.5		Primary					
6/6/07	07aFROBWAT21MS	AP-4518			MS					
6/6/07	07aFROBWAT21SD	AP-4518			MSD					
6/6/07	07aFROBWAT20	AP-4354	11.0		Primary					
6/6/07	07aFROBWAT06	AP-3981	34.0		Primary					
6/6/07	07aFROBWAT07	AP-3981	34.0		Duplicate					
6/5/07	07aFROBWAT18	AP-4352	31		Primary					
6/7/07	07aFROBWAT15	AP-4344	157		Primary	43360	6/8/07			6/11/07
6/7/07	07aFROBWAT03	AP-3747	28		Primary	43360				
6/7/07	07aFROBWAT01	AP-3744	31.5		Primary					
6/7/07	07aFROBWAT03TB	—	—		TB					



SAMPLE TRACKING LOG

Project #

Page of

Sample						Shipment				
Date	ID	Location	Depth	Matrix	Type	Cooler ID	Ship Date	Method	Shipped To	Date Received
6/8/07	07aFROBWAT02	AP-3745	25	Water	Primary	43360-VOCs 43355-Others	6/8/07	AK Air Cargo	Lauchus Lab	6/11/07
6/8/07	07aFROBWAT02MS	AP-3745	25	Water	MS	43360-VOCs 43355-Others				
6/8/07	07aFROBWAT02SD	AP-3745	25		MSD	"				
6/8/07	07aFROBWAT22	AP-4519	40		Primary	"				
6/8/07	07aFROBWAT12	AP-4011	129			"				
6/11/07	07aFROBWAT11	AP-3789	32		Primary	43359	6/13/07			6/14/07
6/11/07	07aFROBWAT25	AP-4551	96.75		Primary					
6/11/07	07aFROBWAT24	AP-4550	37		Primary					
6/11/07	07aFROBWAT28	AP-4550	37		Rep.					
6/12/07	07aFROBWAT27	AP-4353	-		Equip Bl	43359-VOCs 43358-Others				
6/12/07	07aFROBWAT19	AP-4353	62		Primary	"				
6/12/07	07aFROBWAT13	AP-4017	86		Primary	"				
6/13/07	07aFROBWAT08	AP-3783	28		Primary	"				
6/13/07	07aFROBWAT09	AP-3784	29.75		Primary	"				
6/13/07	07aFROBWAT10	AP-3785	28.5		Primary	"				
6/12/07	07aFROBWAT23	AP-4525	bailed 0145	1 VOC	Primary	43359				
6/12/07	07aFROBWAT23a		" 1130	1 VOC		43359				
6/13/07	07aFROBWAT23b		" 1255	2 RBK 175		43358				
6/11/07	07aFROBWAT04TE	-	-		TB	43359				

Appendix B6
Field Log

Book 1



"Rite in the Rain"

ALL-WEATHER

FIELD

No. 350N

Fort Richardson 2007

- Landfill
- Bldg 789
- OUB
- Bldg 59000
- OUE
- Bldg 2800
- Bldg 762
- Seward Rec. Camp

Task
~~Work~~ Orders # 10, 11, and 12 under
Contract W911KB-05-D-0010

CH2M Hill

5/14/07 -

Book I

Fort Richardson Landfill / OUB 5/25/07

Author: Stacy Re'

Co-sampler Bob Trebble

Safety Tip On DOP installations, make sure areas where working do not require special procedures like checking in or escorts.

Weather cool, 50's partly-mostly cloudy
sporadic light breeze

0830 onsite, go to OUB.

Take Water Level measurements at all 25 wells on sampling schedule.

1230 Wk completed, head to Landfill to seal shallow methane probes (3, 6, 8)

Probes 6 and 8 seemed to have been sealed by recent rain settling surrounding soil. Added bentonite to 3 and also to 8 since it is very shallow.

13:15 Drop off IDW

13:30 off site

On-site - 5 hours

Stacy Re'

Fort Richardson OUB

5/1/07

© Author: Stacy Re'

Co-Sampler - Bob Trebble

Safety Tip - Don't forget the bug dope during Alaska Summers!

Weather: 50's, mostly cloudy, calm

0930 Depart Sheppette for poleline Rd.

0950 Set up at AP-4345

1001 Transducer removed

1023 Pump On

1032 Water in flow through

1044 - Re Air in tube w/ each cycle - remove pump, replace bladder, clean pump.

1053 - Restart pump

1150 - Take sample O7AFROBWAT16. ^{Calibrate} YSIF-DO

1227 - Replace transducer

1245 - Set up at AP-3748

1249 - Remove transducer

1400 Take sample O7AFROBWAT04

1423 Replace transducer

1445 Off site, Bob to office to take care of weekend sample storage + to TTT for new DO probe.

Fort Richardson OVB 6/11/07

Author: Stacey Re

Co-sampler: Bob Trebble

Safety Tip of the day: Safe Housekeeping practices: Arrange site materials logically for best efficient use and avoidance of clutter/trip hazards.

Weather 50s-60s, cloudy, ^{MS}slight breeze

0900: Meet at Shoppette on Ft. Rich

0925: Set up at AP-3749

1045 Take sample OtaFROBWAT05

1110 Set up at AP-4350

1120 Remove datalogger

1300 Take sample OtaFROBWAT17

Problems with conductivity readings at this location, bouncing between .1 - .4 ^{ms/cm}. Worst bouncing associate with spurts of water into flow through cell. Tom of TIT thinks oxygen bubbles may be to blame. We have seen tiny \rightarrow $\frac{1}{8}$ " diam bubbles w/ each influx of water, but have not had cond. problems before. Sometimes seemed to settle between spurts - at those times readings were w/in \approx .02 msl/cm of last October readings.

1336 Datalogger replaced

1345 Equipment blank OtaFROBWAT26 taken at AP-4350

1410 Drop off IDW/Trash

1430 Offsite

Stacey Re

Fort Richardson OUB

6/5/07

Author: Stacey Re

Co-Sampler: Bob Trebble

Safety Tip of the Day

Team lift heavy objects

Weather 50-60's, partly cloudy, calm

0830 Meet at Ft. Richardson Shoppette.

0900 Set up at AP-4019.

1005 Take sample 07aFROBWAT14

1045 Set up at AP-3982

1145 Take Sample 07aFROBWAT07

1210 Set up at AP-4352

1320 Take Sample 07aFROBWAT18

1345 Drop off IDW

1410 Off Site - Bob to TTT to exchange probe

Hours on-site 5 ²/₃~~Stacey Re~~

6/6/07 Fort Richardson OUB

Author: Stacey Re

Co-Sampler: Bob Trebble

Safety Tip of the DayBlood-borne pathogens - avoid contacting bodily fluids w/out barrier such as gloves, clean spills w/ 10% bleach. Flush any open wounds orifices thoroughly w/ cool ^{lubricated} water

0900 Meet at Shoppette.

0930 Set up at AP-4518

0945 Datalogger out of well

1100 Take sample 07aFROBWAT21/MS/MSD

1123 Datalogger replaced

1130 Set up at AP-435-4

1139 Datalogger removed

1230 Take sample 07aFROBWAT20

1245 Datalogger replaced

1250 Set up at AP-3981

1400 Take sample 07aFROBWAT06

duplicate 07aFROBWAT27 @ 1410

1410 Dump IDW

1430 Off site

Hours on-site 5 ¹/₂

Fort Richardson OUB

6/7/07

Author: Stacey Re'

Co-Sampler Bob Trebble

Safety Tip of the Day: Bug Dope safety -
avoid getting it in eyes/nose/mouth

Weather upper 50's to 70's

0845 Meet at Shoppette, calibrate
instruments.0920 Funeral procession goes by. Since they will
be taking our route (slowly) we wait 10 min before
leaving shoppette.

0945 Set up at AP-4344

0951 Removed datalogger

1145 Take Sample 07aFROBWAT15

1213 Replace datalogger

1220 Set up at AP-3747

1345 Take Sample 07aFROBWAT03

1400 Set up at AP-3744

1450 Take Sample 07aFROBWAT01

1510 Drop off trash / IDW

1530 Off-Site

Time on-site

6:45

Fort Richardson OUB

6/9/07

Author: Stacey Re'

Co-Sampler: Bob Trebble

Safety Tip of the Day - Watch for wild life, esp.
bear/moose and esp. in densely vegetated
areas.

Weather: 60's - 70's, slight breeze pc-mc.

0930 Meet at Shoppette

0950 Set up at AP-3745

1100 Sample 07aFROBWAT02

1140 Set up at AP-4011

1255 Sample 07aFROBWAT12

1320 Set up at AP-4519

1430 Sample 07aFROBWAT22

1500 Pack Samples + drop off IDW

1530 Off-site

On Site 6 hours

Stacey Re'

Fort Rich OVB

6/11/07

Author: Stacey Ré

Co-Sampler Bob Trebble

Safety Tip of the Day

Dress for Conditions. Bring layers to prepare for temperature changes, + prepare for precipitation.

- 0800 Go to range control for safety briefing for Compliance Monitoring
- 0830 Stop at Shoppette to calibrate instruments
- 0900 Set up at AP-3989
- 1100 Take sample O7aFROBWAT11
- 1120 Bail AP-4525 Dry
- 1130 Set up at AP-4551
- 1300 Take sample O7aFROBWAT25
- 1310 Set up at AP-4550
- 1420 Take Sample O7aFROBWAT24
and Duplicate O7aFROBWAT28 (1430)
- 1500 Off site
On-site 7 hours

Stacey Ré

Fort Rich OVB

6/12/07

Author: Stacey Ré

Co-Sampler, Bob Trebble

Safety Tip of the Day - change gloves frequently to avoid transferring contamination to yourself or samples

- 0845-meet at Fort Rich gas station
Calibrate instruments.
- 0925 Check AP-4525
First bailer empty - lost on way up
Second pull, ~4" water, able to collect one
VOC bottle @ 0945 O7aFROBWAT23
- 1015 Collect equipment bank
O7aFROBWAT~~28~~29 location on
bottle AP-4353
- 1025 Set up at AP-4353
- 1031 Datalogger removed
- 1130 Take sample O7aFROBWAT19
- 1150 Datalogger replaced
- 1200 Set up at AP-4017
- 1330 Take sample O7aFROBWAT13
- 1400 Set up at AP-3983
Not stabilizing. Purge "dry" - just above
pump intake at 28.8 ft.

1440 Revisit AP-11525, collect 1 VOC O7aFROBWAT^{230c}
 1522 - Finished purge - ~~30~~ 32 gal - no
 recovery during purge.

Stacey Re

Fort Richardson OUB 6/13/07

Author: Stacey Re

CO-sampler - Bob Trebble

Safety Tip of the Day: Use caution
 when handling preserved bottles to
 avoid getting leaked preservative on
 skin or clothing.

0800 Meet at Sheppette, Ice samples

0845 Set up to sample AP-3983 which
 was purged yesterday

0910 Take sample O7aFROBWAT08

0935 Set up at AP-3984

1145 Take Sample O7aFROBWAT09

1155 Set up at AP-3985

1230 Collect Sample O7aFROBWAT10

1255 Return to AP-11525

Collect Sample for RSK 175 (two 15ml
 bottles) O7aFROBWAT236

1315 Pack samples for shipment at IDW

1400 off site

On site 6 hours

Stacey Re

Fort Richardson OUE

6/14/07

Author: Stacey Re

Co-Sampler - Bob Trebble

Safety Tip of the Day - Beware of odd odors - if volatile contamination suspected, stop work + get a PID.

0800 Bob leaves to get oil/water interface probe, tubing, gloves, @ di water for OUE.

1000 Arrive at OUE to take water levels and inspect wells

Appendix C

Chemical Data Quality Review

Appendix C1
Data Quality Review

Fort Richardson Operable Unit B Groundwater Monitoring June 2007 Data Quality Evaluation Report

Introduction

The objective of this Data Quality Evaluation (DQE) report is to assess the data quality of analytical results for water samples collected for groundwater monitoring at Fort Richardson Operable Unit B. Samples were collected and analyzed in the effort to continue providing a framework for long-term monitoring of the groundwater. The data may also be used to support future activities such as feasibility studies, risk assessments, fate and transport modeling and remedial actions. Individual method requirements; guidelines from the Quality Assurance Program Plan Alaska, November 2002, (QAPP); and the U.S. Army Corps of Engineers (USACE) Requirements for the Preparation of Sampling and Analysis Plans, Appendix I, Shell for Analytical Chemistry Requirements, February 2001, were used in this assessment.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 28 normal groundwater samples and three field duplicate (FD) samples. These samples were reported under five sample delivery groups. Samples were collected between June 1, 2007 and July 10, 2007. Five methods were used to analyze the environmental samples. The analyses were performed by Laucks Testing Laboratory in Seattle, Washington (LTL). Samples were collected and shipped by overnight carrier to the laboratory for analysis. Selected samples were analyzed for one or more of the following analytes/methods:

Table 1
Analytical Parameter

<u>Parameter</u>	<u>Method</u>	<u>Laboratory</u>
Volatile Organic Compounds (VOC)	SW8260B	LTL
Dissolved Iron and Manganese	SW6020	LTL
Dissolved Gases (methane, ethane, ethane)	RSK-175	LTL
Nitrate+Nitrite	E353.2	LTL
Sulfate and Chloride	E300	LTL

The assessment of data includes a review of (1) the chain-of-custody documentation; (2) holding-time compliance; (3) the required quality control (QC) samples at the specified frequencies; (4) method blanks; (5) laboratory control sample/laboratory control sample duplicates (LCS/LCSD); (6) surrogate spike recoveries for organic analyses; (7) matrix spike/matrix spike duplicate (MS/MSD) samples; and (8) initial and continuing calibration information and other method-specific criteria as defined by the Alaska QAPP.

Field samples were also reviewed to ascertain field compliance and data quality issues. This included a review of trip blanks (TB), equipment blanks (EB) and FDs.

Data flags were assigned according to the Alaska QAPP. These flags, as well as the reason for each flag, are entered into the electronic database and can be found in Table 2. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the Alaska QAPP and are defined below:

- J = Analyte was present but the reported value may not be accurate or precise (estimated).
- J+ = Analyte was present but the reported value may not be accurate or precise (estimated high).
- J- = Analyte was present but the reported value may not be accurate or precise (estimated low).
- R = The data were unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.
- U = Analyte was not detected at the specified detection limit.
- UJ = Analyte was not detected and the specified detection limit may not be accurate or precise (estimated).

Findings

The overall summaries of the data validation findings are contained in the following sections and Table 2.

Holding Times

All holding-time criteria were met with the following exceptions:

Samples 07aFROBWAT30 and 07aFROBWAT31 were analyzed outside of holding time by 13 days for method RSK-175 due to an instrument malfunction in the laboratory. Six associated non-detected results were qualified as estimated and flagged "UJ."

Calibration

All initial and continuing calibration criteria were met with the following exceptions:

The recovery of 1,1-dichloroethene was above Alaska QAPP criteria in an initial calibration verification standard (ICVS) for method SW8260B, indicating the associated sample results are possibly biased high. Eleven associated detected results were qualified as estimated and flagged "J+."

The recovery of 1,2-dichloroethane was above Alaska QAPP criteria in a continuing calibration verification (CCV) standard for method SW8260B, indicating the associated sample results are

possibly biased high. One associated detected result was qualified as estimated and flagged "J+."

The recoveries of chloromethane and dichlorodifluoromethane were below Alaska QAPP criteria in the CCV standards for method SW8260B, indicating the associated sample results are possibly biased low. Fourteen associated non-detected results were qualified as estimated and flagged "UJ."

The recoveries of chloride and sulfate were above Alaska QAPP criteria in the CCV standards for method E300, indicating the associated sample results are possibly biased high. Four associated detected results were qualified as estimated and flagged "J+."

Sample Quantitation

Two trichloroethene results were reported over the initial calibration range for method SW8260B. There was insufficient sample volume to perform further dilutions on samples 07aFROBWAT23 and 07aFROBWAT23a. The results were qualified as estimated and flagged "J".

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination with one exception.

Dissolved iron was detected at a concentration less than the RL in a method blank for method SW6020. Five associated sample results detected less than five times the blank concentration were qualified as not detected. The results were detected above the RL and were flagged "U" at the detected concentrations.

Field Blanks

TBs were collected and analyzed at the required frequency and were free of contamination.

EBs were collected and analyzed at the required frequency and were free of contamination with the following exceptions:

Manganese was detected at a concentration less than the RL in an EB for method SW6020. Thirteen associated sample results detected less than five times the blank concentration were qualified as not detected. Results detected below the RL were flagged "U" at the associated RL and result detected above the RL were flagged "U" at the detected concentrations.

Toluene was detected at a concentration less than the RL in an EB for method SW8260B. Three associated sample results detected less than five times the blank concentration were qualified as not detected. Results detected below the RL were flagged "U" at the associated RL and result detected above the RL were flagged "U" at the detected concentrations.

Field Duplicates

Two FD sets were collected as required. Precision was acceptable.

Matrix Spike Samples

Samples for MS/MSD analysis were designated by the field crew. Accuracy and precision were acceptable with the following exceptions:

The recovery of sulfate in the MSD of sample 07aFROBWAT31 was below Alaska QAPP criteria for method E300, indicating the associated parent sample result is possibly biased low. The detected result in the parent sample was qualified as estimated and flagged "J-." Additionally, the RPD of sulfate in the MS/MSD of this sample was above Alaska QAPP criteria.

Surrogates

All surrogate recoveries met criteria with one exception.

The surrogate recovery was above Alaska QAPP criteria in sample 07aFROBWAT28 for method RSK-175, indicating associated sample results are possibly biased high. One associated detected result was qualified as estimated and flagged "J+."

Laboratory Control Samples

LCS/LCSDs were analyzed for method SW6020. LCSs were analyzed for methods SW8260B, E300, RSK-175 and E353.2. Accuracy and precision were acceptable with one exception.

The recovery of dichlorodifluoromethane was below Alaska QAPP criteria in a LCS for method SW8260B, indicating the associated sample results are possibly biased low. One associated non-detected result was qualified as estimated and flagged "UJ."

Retention Time

Due to an instrument malfunction in the laboratory, samples 07aFROBWAT30 and 07aFROBWAT31 were analyzed by manual injection instead of by autosampler for method RSK-175. The manual injection process introduced some error into the analytical process and the retention times shifted during the analytical run. The retention times for ethane, ethane, and methane were outside of the established window for these two samples. Six non-detected results were qualified as estimated and flagged "UJ."

Chain of Custody

No discrepancies were noted.

Overall Assessment

The final activity in the DQE is an assessment of whether the data meet the data quality objectives. The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision-making process. The precision, accuracy, representativeness, completeness and comparability are addressed in the Alaska QAPP. The following summary highlights the data evaluation findings for the above-defined events:

1. No data were rejected and the completeness objectives were met for all method/analyte combinations.

2. Approximately one percent of the data were qualified because of low-level blank contamination. The degree to which blank contamination was observed is within reasonable method expectations.
3. Analytical holding time was exceeded for samples 07aFROBWAT30 and 07aFROBWAT31 for method RSK-175 due to an instrument malfunction at the laboratory.
4. Due to an instrument malfunction, manual injection of samples 07aFROBWAT30 and 07aFROBWAT31 caused retention time shifts during analysis. The results were reported outside of the established retention time window.
5. Two results were reported over the initial calibration range for method SW8260B. Insufficient sample volume was available for sample dilution.
6. ICVS and/or CCV recovery exceedances were observed for methods SW8260B and E300.
7. One surrogate recovery exceedance was observed for method RSK-175.
8. One result was qualified as estimated due to MSD recovery and MS/MSD RPD exceedances for method E300.
9. One LCS recovery exceedance was observed for method RSK-175.
10. The precision and accuracy of the data, as measured by field and laboratory QC indicators, suggests that the Alaska QAPP goals were met.

Table 2 – Validation Flags

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
07aFROBWAT01	SW6020	Iron, dissolved	116	ug/L	U	LB<RL
07aFROBWAT01	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT01	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT02	SW6020	Iron, dissolved	141	ug/L	U	LB<RL
07aFROBWAT02	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT02	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT02	SW8260B	Trichlorofluoromethane	1	ug/L	U	MSRPD
07aFROBWAT03	SW6020	Iron, dissolved	95.1	ug/L	U	LB<RL
07aFROBWAT03	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT03	SW8260B	1,1-Dichloroethene	0.89	ug/L	J+	ICVS>UCL
07aFROBWAT03	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT04	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT04	SW8260B	Naphthalene	1	ug/L	U	CCV>UCL
07aFROBWAT05	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT05	SW8260B	Naphthalene	1	ug/L	U	CCV>UCL
07aFROBWAT06	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT07	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT08	SW8260B	1,1-Dichloroethene	7.3	ug/L	J+	ICVS>UCL
07aFROBWAT08	SW8260B	1,2-Dichloroethane	1.2	ug/L	J+	CCV>UCL
07aFROBWAT09	SW8260B	1,1-Dichloroethene	0.81	ug/L	J+	ICVS>UCL
07aFROBWAT09	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT10	SW8260B	1,1-Dichloroethene	2.3	ug/L	J+	ICVS>UCL
07aFROBWAT10	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT11	SW8260B	1,1-Dichloroethene	2	ug/L	J+	ICVS>UCL
07aFROBWAT11	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT12	SW6020	Iron, dissolved	194	ug/L	U	LB<RL
07aFROBWAT12	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT12	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT13	SW8260B	1,1-Dichloroethene	11	ug/L	J+	ICVS>UCL
07aFROBWAT13	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT13	SW8260B	Toluene	1	ug/L	U	EB<RL
07aFROBWAT14	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT14	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT15	SW6020	Iron, dissolved	123	ug/L	U	LB<RL
07aFROBWAT15	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT16	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT16	SW8260B	Naphthalene	1	ug/L	U	CCV>UCL
07aFROBWAT17	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT17	SW8260B	Naphthalene	1	ug/L	U	CCV>UCL
07aFROBWAT18	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT18	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT19	SW8260B	1,1-Dichloroethene	2.2	ug/L	J+	ICVS>UCL
07aFROBWAT19	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT20	SW6020	Manganese, dissolved	38.1	ug/L	U	EB<RL

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
07aFROBWAT20	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT21	SW6020	Manganese, dissolved	5	ug/L	U	EB<RL
07aFROBWAT21	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT22	SW8260B	1,1-Dichloroethene	6.6	ug/L	J+	ICVS>UCL
07aFROBWAT22	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT23	SW8260B	1,1-Dichloroethene	1	ug/L	U	ICVS>UCL
07aFROBWAT23	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT23	SW8260B	Trichloroethene	600	ug/L	J	>ICLinearRange
07aFROBWAT23a	SW8260B	1,1-Dichloroethene	1	ug/L	U	ICVS>UCL
07aFROBWAT23a	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT23a	SW8260B	Toluene	2.7	ug/L	U	EB<RL
07aFROBWAT23a	SW8260B	Trichloroethene	500	ug/L	J	>ICLinearRange
07aFROBWAT24	SW8260B	1,1-Dichloroethene	11	ug/L	J+	ICVS>UCL
07aFROBWAT24	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT25	SW8260B	1,1-Dichloroethene	11	ug/L	J+	ICVS>UCL
07aFROBWAT25	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT25	SW8260B	Toluene	1.1	ug/L	U	EB<RL
07aFROBWAT27	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT28	RSK-175	Ethane	3.5	ug/L	U	Sur>UCL
07aFROBWAT28	RSK-175	Ethene	1.8	ug/L	U	Sur>UCL
07aFROBWAT28	RSK-175	Methane	21	ug/L	J+	Sur>UCL
07aFROBWAT28	SW8260B	1,1-Dichloroethene	9.6	ug/L	J+	ICVS>UCL
07aFROBWAT28	SW8260B	1,2-Dichloroethane	1	ug/L	U	CCV>UCL
07aFROBWAT30	E300	Chloride	26	mg/L	J+	CCV>UCL
07aFROBWAT30	E300	Chloride	26	mg/L	J+	CCV>UCL
07aFROBWAT30	E300	Sulfate	25	mg/L	J+	CCV>UCL
07aFROBWAT30	E300	Sulfate	25	mg/L	J+	CCV>UCL
07aFROBWAT30	RSK-175	Ethane	3.5	ug/L	UJ	HTa>UCL
07aFROBWAT30	RSK-175	Ethane	3.5	ug/L	UJ	RT_OUT
07aFROBWAT30	RSK-175	Ethene	1.8	ug/L	UJ	HTa>UCL
07aFROBWAT30	RSK-175	Ethene	1.8	ug/L	UJ	RT_OUT
07aFROBWAT30	RSK-175	Methane	0.87	ug/L	UJ	HTa>UCL
07aFROBWAT30	RSK-175	Methane	0.87	ug/L	UJ	RT_OUT
07aFROBWAT30	SW8260B	Carbon tetrachloride	1	ug/L	U	ICVS>UCL
07aFROBWAT30	SW8260B	Chloromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT30	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	CCV<LCL
07aFROBWAT30	SW8260B	Dichlorodifluoromethane	1	ug/L	UJ	LCS<LCL
07aFROBWAT31	E300	Chloride	26	mg/L	J+	CCV>UCL
07aFROBWAT31	E300	Chloride	26	mg/L	J+	CCV>UCL
07aFROBWAT31	E300	Sulfate	25	mg/L	J+	CCV>UCL
07aFROBWAT31	E300	Sulfate	25	mg/L	J+	CCV>UCL
07aFROBWAT31	E300	Sulfate	25	mg/L	J	MSRPD
07aFROBWAT31	E300	Sulfate	25	mg/L	J-	SD<LCL
07aFROBWAT31	RSK-175	Ethane	3.5	ug/L	UJ	HTa>UCL
07aFROBWAT31	RSK-175	Ethane	3.5	ug/L	UJ	RT_OUT
07aFROBWAT31	RSK-175	Ethene	1.8	ug/L	UJ	HTa>UCL

Field ID	Method	Analyte	Final Result	Units	Final Flag	Reason
07aFROBWAT31	RSK-175	Ethene	1.8	ug/L	UJ	RT_OUT
07aFROBWAT31	RSK-175	Methane	0.87	ug/L	UJ	HTa>UCL
07aFROBWAT31	RSK-175	Methane	0.87	ug/L	UJ	RT_OUT
07aFROBWAT31	SW8260B	1,2,3-Trichlorobenzene	1	ug/L	U	LB<RL
07aFROBWAT31	SW8260B	Carbon tetrachloride	1	ug/L	U	CCV>UCL
07aFROBWAT31	SW8260B	Carbon tetrachloride	1	ug/L	U	ICVS>UCL
07aFROBWAT31	SW8260B	Hexachlorobutadiene	1	ug/L	U	LB<RL

>ICLinearRange = Result greater than linear calibration range

CCV<LCL = Continuing calibration recovery less than lower control limit

CCV>UCL = Continuing calibration recovery greater than upper control limit

EB<RL = Equipment blank contamination less than the reporting limit

HTa>UCL = Analytical holding time exceeded

ICVS>UCL = Initial calibration verification standard recovery greater than upper control limit

LB<RL = Laboratory blank contamination less than the reporting limit

LCS<LCL = Laboratory control sample recovery less than lower limit

MSRPD = Matrix spike RPD criteria exceedance

RT_OUT = Result is outside the established retention time window

SD<LCL = Matrix spike duplicate recovery criteria less than lower limit

Sur>UCL = Surrogate recovery greater than upper limit

Appendix C2
Validated Analytical Results

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3744	N	7-Jun-07	07aFROBWAT01	E300	Chloride	1.5		1	0.076	mg/L
AP-3744	N	7-Jun-07	07aFROBWAT01	E300	Sulfate	19		1	0.17	mg/L
AP-3744	N	7-Jun-07	07aFROBWAT01	E353.2	Total Nitrate / Nitrite	0.74		0.05	0.016	mg/L
AP-3744	N	7-Jun-07	07aFROBWAT01	RSK-175	Ethane	3.5 U		3.5	0.36	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	RSK-175	Ethene	1.8 U		1.8	0.31	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	RSK-175	Methane	0.87 U		0.87	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW6020	Iron, dissolved	116 U		50	20	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW6020	Manganese, dissolved	5 U		5	0.44	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1,1,2-Tetrachloroethane	1 U		1	0.15	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1,1-Trichloroethane	1 U		1	0.2	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1,2,2-Tetrachloroethane	8.7		1	0.22	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1,2-Trichloroethane	1 U		1	0.19	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1-Dichloroethane	1 U		1	0.23	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1-Dichloroethene	1 U		1	0.12	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,1-Dichloropropene	1 U		1	0.094	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2,3-Trichlorobenzene	1 U		1	0.11	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2,3-Trichloropropane	1 U		1	0.37	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2,4-Trichlorobenzene	1 U		1	0.15	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2,4-Trimethylbenzene	1 U		1	0.086	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2-Dibromo-3-chloropropane	1 U		1	0.38	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2-Dibromoethane	1 U		1	0.2	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2-Dichlorobenzene	1 U		1	0.25	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2-Dichloroethane	1 U		1	0.074	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,2-Dichloropropane	1 U		1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,3,5-Trimethylbenzene	1 U		1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,3-Dichlorobenzene	1 U		1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,3-Dichloropropane	1 U		1	0.22	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	1,4-Dichlorobenzene	1 U		1	0.2	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	2,2-Dichloropropane	1 U		1	0.27	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	2-Butanone	2 U		2	0.52	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	2-Chlorotoluene	1 U		1	0.098	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	4-Chlorotoluene	1 U		1	0.13	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	4-Isopropyltoluene	1 U		1	0.074	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Acetone	2 U		2	0.75	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Benzene	1 U		1	0.12	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Bromobenzene	1 U		1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Bromochloromethane	1 U		1	0.34	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Bromodichloromethane	1 U		1	0.11	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Bromoform	1 U		1	0.23	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Bromomethane	1 U		1	0.072	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Carbon tetrachloride	1 U		1	0.25	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Chlorobenzene	1 U		1	0.12	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Chloroethane	1 U		1	0.27	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Chloroform	0.53 J		1	0.15	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Chloromethane	1 U		1	0.2	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	cis-1,2-Dichloroethene	3.3		1	0.32	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	cis-1,3-Dichloropropene	1 U		1	0.086	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Dibromochloromethane	1 U		1	0.12	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Dibromomethane	1 U		1	0.18	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Dichlorodifluoromethane	1 UJ		1	0.19	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Ethylbenzene	1 U		1	0.2	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Hexachlorobutadiene	1 U		1	0.27	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Isopropylbenzene	1 U		1	0.11	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	m,p-Xylene	2 U		2	0.27	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Methylene chloride	1 U		1	1	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Naphthalene	1 U		1	0.1	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	n-Butylbenzene	1 U		1	0.1	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	n-Propylbenzene	1 U		1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	o-Xylene	1 U		1	0.15	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	sec-Butylbenzene	1 U		1	0.1	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Styrene	1 U		1	0.074	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	tert-Butylbenzene	1 U		1	0.11	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Tetrachloroethene	1 U		1	0.1	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Toluene	1 U		1	0.21	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	trans-1,2-Dichloroethene	0.89	J	1	0.22	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Trichloroethene	56		1	0.22	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3744	N	7-Jun-07	07aFROBWAT01	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	E300	Chloride	1.5		1	0.076	mg/L
AP-3745	N	8-Jun-07	07aFROBWAT02	E300	Sulfate	17		1	0.17	mg/L
AP-3745	N	8-Jun-07	07aFROBWAT02	E353.2	Total Nitrate / Nitrite	0.88		0.05	0.016	mg/L
AP-3745	N	8-Jun-07	07aFROBWAT02	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW6020	Iron, dissolved	141	U	50	20	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1,2,2-Tetrachloroethane	25		1	0.22	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	cis-1,2-Dichloroethene	3.7		1	0.32	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	o-Xylene	1	U	1	0.15	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Trichloroethene	29		1	0.22	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3745	N	8-Jun-07	07aFROBWAT02	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	E300	Chloride	2.2		1	0.076	mg/L
AP-3747	N	7-Jun-07	07aFROBWAT03	E300	Sulfate	9.1		1	0.17	mg/L
AP-3747	N	7-Jun-07	07aFROBWAT03	E353.2	Total Nitrate / Nitrite	0.27		0.05	0.016	mg/L
AP-3747	N	7-Jun-07	07aFROBWAT03	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW6020	Iron, dissolved	95.1	U	50	20	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1,2,2-Tetrachloroethane	2.5		1	0.22	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1,2-Trichloroethane	1.4		1	0.19	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1-Dichloroethene	0.89	J+	1	0.12	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Carbon tetrachloride	0.82	J	1	0.25	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Chloroform	1.3		1	0.15	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	cis-1,2-Dichloroethene	16		1	0.32	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Tetrachloroethene	2.2		1	0.1	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	trans-1,2-Dichloroethene	4.9		1	0.22	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Trichloroethene	250		10	2.2	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3747	N	7-Jun-07	07aFROBWAT03	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	E300	Chloride	62		10	0.76	mg/L
AP-3748	N	1-Jun-07	07aFROBWAT04	E300	Sulfate	17		1	0.17	mg/L
AP-3748	N	1-Jun-07	07aFROBWAT04	E353.2	Total Nitrate / Nitrite	1.1		0.05	0.016	mg/L
AP-3748	N	1-Jun-07	07aFROBWAT04	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW6020	Iron, dissolved	151		50	20	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Dibromomethane	1	U	1	0.18	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3748	N	1-Jun-07	07aFROBWAT04	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	E300	Chloride	1.6		1	0.076	mg/L
AP-3749	N	4-Jun-07	07aFROBWAT05	E300	Sulfate	9.7		1	0.17	mg/L
AP-3749	N	4-Jun-07	07aFROBWAT05	E353.2	Total Nitrate / Nitrite	0.47		0.05	0.016	mg/L
AP-3749	N	4-Jun-07	07aFROBWAT05	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW6020	Iron, dissolved	90.3		50	20	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Chloroform	1	U	1	0.15	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3749	N	4-Jun-07	07aFROBWAT05	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	E300	Chloride	1.1		1	0.076	mg/L
AP-3981	N	6-Jun-07	07aFROBWAT06	E300	Chloride	1.1		1	0.076	mg/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	E300	Sulfate	1	U	1	0.17	mg/L
AP-3981	N	6-Jun-07	07aFROBWAT06	E300	Sulfate	1	U	1	0.17	mg/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	E353.2	Total Nitrate / Nitrite	0.083		0.05	0.016	mg/L
AP-3981	N	6-Jun-07	07aFROBWAT06	E353.2	Total Nitrate / Nitrite	0.075		0.05	0.016	mg/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	RSK-175	Methane	630		0.87	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	RSK-175	Methane	610		0.87	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW6020	Iron, dissolved	16300		500	200	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW6020	Iron, dissolved	16100		500	200	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW6020	Manganese, dissolved	1010		50	4.4	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW6020	Manganese, dissolved	1010		50	4.4	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1,2,2-Tetrachloroethane	2.5		1	0.22	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1,2,2-Tetrachloroethane	2.1		1	0.22	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Acetone	1.1	J	2	0.75	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	cis-1,2-Dichloroethene	1.3		1	0.32	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	cis-1,2-Dichloroethene	1.2		1	0.32	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Trichloroethene	9.8		1	0.22	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Trichloroethene	8.9		1	0.22	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3981	FD	6-Jun-07	07aFROBWAT27	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3981	N	6-Jun-07	07aFROBWAT06	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	E300	Chloride	1.4		1	0.076	mg/L
AP-3982	N	5-Jun-07	07aFROBWAT07	E300	Sulfate	7.6		1	0.17	mg/L
AP-3982	N	5-Jun-07	07aFROBWAT07	E353.2	Total Nitrate / Nitrite	0.18		0.05	0.016	mg/L
AP-3982	N	5-Jun-07	07aFROBWAT07	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW6020	Iron, dissolved	1310		50	20	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW6020	Manganese, dissolved	51.5		5	0.44	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3982	N	5-Jun-07	07aFROBWAT07	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	E300	Chloride	13		10	0.76	mg/L
AP-3983	N	13-Jun-07	07aFROBWAT08	E300	Sulfate	66		10	1.7	mg/L
AP-3983	N	13-Jun-07	07aFROBWAT08	E353.2	Total Nitrate / Nitrite	0.97		0.05	0.016	mg/L
AP-3983	N	13-Jun-07	07aFROBWAT08	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	RSK-175	Ethene	1.4	J	1.8	0.31	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW6020	Iron, dissolved	7130		50	20	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW6020	Manganese, dissolved	410		25	2.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1,2,2-Tetrachloroethane	720		50	11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1,2-Trichloroethane	19		1	0.19	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1-Dichloroethene	7.3	J+	1	0.12	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2-Dichloroethane	1.2	J+	1	0.074	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Acetone	4.5		2	0.75	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Benzene	1.2		1	0.12	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Chloroform	5		1	0.15	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	cis-1,2-Dichloroethene	320		50	16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Tetrachloroethene	33		1	0.1	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	trans-1,2-Dichloroethene	100		1	0.22	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Trichloroethene	2100		50	11	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3983	N	13-Jun-07	07aFROBWAT08	SW8260B	Vinyl chloride	0.54	J	1	0.27	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	E300	Chloride	3.1		1	0.076	mg/L
AP-3984	N	13-Jun-07	07aFROBWAT09	E300	Sulfate	5.8		1	0.17	mg/L
AP-3984	N	13-Jun-07	07aFROBWAT09	E353.2	Total Nitrate / Nitrite	0.52		0.05	0.016	mg/L
AP-3984	N	13-Jun-07	07aFROBWAT09	RSK-175	Ethane	3.6		3.5	0.36	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	RSK-175	Ethene	2.5		1.8	0.31	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	RSK-175	Methane	140		0.87	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW6020	Iron, dissolved	19700		250	100	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW6020	Manganese, dissolved	414		25	2.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1,2,2-Tetrachloroethane	53		1	0.22	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1,2-Trichloroethane	1		1	0.19	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1-Dichloroethene	0.81	J+	1	0.12	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Carbon tetrachloride	0.89	J	1	0.25	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Chloroform	0.61	J	1	0.15	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	cis-1,2-Dichloroethene	29		1	0.32	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Tetrachloroethene	6.9		1	0.1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	trans-1,2-Dichloroethene	7.2		1	0.22	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Trichloroethene	350		5	1.1	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3984	N	13-Jun-07	07aFROBWAT09	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	E300	Chloride	2		1	0.076	mg/L
AP-3985	N	13-Jun-07	07aFROBWAT10	E300	Sulfate	12		1	0.17	mg/L
AP-3985	N	13-Jun-07	07aFROBWAT10	E353.2	Total Nitrate / Nitrite	0.12		0.05	0.016	mg/L
AP-3985	N	13-Jun-07	07aFROBWAT10	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	RSK-175	Methane	250		0.87	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW6020	Iron, dissolved	26700		500	200	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW6020	Manganese, dissolved	1030		50	4.4	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1,2,2-Tetrachloroethane	27		1	0.22	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1,2-Trichloroethane	1.5		1	0.19	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1-Dichloroethene	2.3	J+	1	0.12	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	cis-1,2-Dichloroethene	31		1	0.32	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Tetrachloroethene	6.4		1	0.1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	trans-1,2-Dichloroethene	8.2		1	0.22	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Trichloroethene	250		5	1.1	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3985	N	13-Jun-07	07aFROBWAT10	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	E300	Chloride	2.7		1	0.076	mg/L
AP-3989	N	11-Jun-07	07aFROBWAT11	E300	Sulfate	29		10	1.7	mg/L
AP-3989	N	11-Jun-07	07aFROBWAT11	E353.2	Total Nitrate / Nitrite	0.19		0.05	0.016	mg/L
AP-3989	N	11-Jun-07	07aFROBWAT11	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	RSK-175	Methane	4.4		0.87	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW6020	Iron, dissolved	1880		50	20	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW6020	Manganese, dissolved	263		25	2.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1,2,2-Tetrachloroethane	200		1	0.22	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1,2-Trichloroethane	6.8		1	0.19	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1-Dichloroethene	2	J+	1	0.12	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Benzene	1.6		1	0.12	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Chloroform	0.89	J	1	0.15	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	cis-1,2-Dichloroethene	140		1	0.32	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Tetrachloroethene	5		1	0.1	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	trans-1,2-Dichloroethene	45		1	0.22	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Trichloroethene	920		10	2.2	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-3989	N	11-Jun-07	07aFROBWAT11	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	E300	Chloride	1.5		1	0.076	mg/L
AP-4011	N	8-Jun-07	07aFROBWAT12	E300	Sulfate	12		1	0.17	mg/L
AP-4011	N	8-Jun-07	07aFROBWAT12	E353.2	Total Nitrate / Nitrite	0.44		0.05	0.016	mg/L
AP-4011	N	8-Jun-07	07aFROBWAT12	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4011	N	8-Jun-07	07aFROBWAT12	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW6020	Iron, dissolved	194	U	50	20	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1,2,2-Tetrachloroethane	1.3		1	0.22	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	cis-1,2-Dichloroethene	3.1		1	0.32	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Trichloroethene	17		1	0.22	ug/L
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4011	N	8-Jun-07	07aFROBWAT12	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	E300	Chloride	3		1	0.076	mg/L
AP-4017	N	12-Jun-07	07aFROBWAT13	E300	Sulfate	11		1	0.17	mg/L
AP-4017	N	12-Jun-07	07aFROBWAT13	E353.2	Total Nitrate / Nitrite	0.05	U	0.05	0.016	mg/L
AP-4017	N	12-Jun-07	07aFROBWAT13	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	RSK-175	Methane	210		0.87	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW6020	Iron, dissolved	2700		50	20	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW6020	Manganese, dissolved	1470		50	4.4	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1,2,2-Tetrachloroethane	280		20	4.4	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1,2-Trichloroethane	16		1	0.19	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1-Dichloroethene	11	J+	1	0.12	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Acetone	1.8	J	2	0.75	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Benzene	0.54	J	1	0.12	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Chloroform	0.9	J	1	0.15	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	cis-1,2-Dichloroethene	370		20	6.4	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Methylene chloride	1	U	1	0.1	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Tetrachloroethene	1.2		1	0.1	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	trans-1,2-Dichloroethene	120		1	0.22	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Trichloroethene	1200		20	4.4	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4017	N	12-Jun-07	07aFROBWAT13	SW8260B	Vinyl chloride	2.5		1	0.27	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	E300	Chloride	6.1		1	0.076	mg/L
AP-4019	N	5-Jun-07	07aFROBWAT14	E300	Sulfate	12		1	0.17	mg/L
AP-4019	N	5-Jun-07	07aFROBWAT14	E353.2	Total Nitrate / Nitrite	0.35		0.05	0.016	mg/L
AP-4019	N	5-Jun-07	07aFROBWAT14	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW6020	Iron, dissolved	105		50	20	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4019	N	5-Jun-07	07aFROBWAT14	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	E300	Chloride	12		10	0.76	mg/L
AP-4344	N	7-Jun-07	07aFROBWAT15	E300	Sulfate	13		1	0.17	mg/L
AP-4344	N	7-Jun-07	07aFROBWAT15	E353.2	Total Nitrate / Nitrite	0.43		0.05	0.016	mg/L
AP-4344	N	7-Jun-07	07aFROBWAT15	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW6020	Iron, dissolved	123	U	50	20	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Tetrachloroethene	1	U	1	0.21	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Toluene	0.51	J	1	0.1	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Trichloroethene	15		1	0.22	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4344	N	7-Jun-07	07aFROBWAT15	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	E300	Chloride	26		10	0.76	mg/L
AP-4345	N	1-Jun-07	07aFROBWAT16	E300	Sulfate	23		10	1.7	mg/L
AP-4345	N	1-Jun-07	07aFROBWAT16	E353.2	Total Nitrate / Nitrite	0.91		0.05	0.016	mg/L
AP-4345	N	1-Jun-07	07aFROBWAT16	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW6020	Iron, dissolved	152		50	20	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Toluene	0.5	J	1	0.21	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4345	N	1-Jun-07	07aFROBWAT16	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	E300	Chloride	27		10	0.76	mg/L
AP-4350	N	4-Jun-07	07aFROBWAT17	E300	Sulfate	24		10	1.7	mg/L
AP-4350	N	4-Jun-07	07aFROBWAT17	E353.2	Total Nitrate / Nitrite	1.1		0.05	0.016	mg/L
AP-4350	N	4-Jun-07	07aFROBWAT17	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW6020	Iron, dissolved	127		50	20	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Chloroethane	1	U	1	0.27	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Toluene	0.51	J	1	0.21	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4350	N	4-Jun-07	07aFROBWAT17	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	E300	Chloride	1.3		1	0.076	mg/L
AP-4352	N	5-Jun-07	07aFROBWAT18	E300	Sulfate	7.8		1	0.17	mg/L
AP-4352	N	5-Jun-07	07aFROBWAT18	E353.2	Total Nitrate / Nitrite	0.17		0.05	0.016	mg/L
AP-4352	N	5-Jun-07	07aFROBWAT18	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW6020	Iron, dissolved	125		50	20	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Bromoform	1 U		1	0.23	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Bromomethane	1 U		1	0.072	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Carbon tetrachloride	1 U		1	0.25	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Chlorobenzene	1 U		1	0.12	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Chloroethane	1 U		1	0.27	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Chloroform	1 U		1	0.15	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Chloromethane	1 U		1	0.2	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	cis-1,2-Dichloroethene	1 U		1	0.32	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	cis-1,3-Dichloropropene	1 U		1	0.086	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Dibromochloromethane	1 U		1	0.12	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Dibromomethane	1 U		1	0.18	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Dichlorodifluoromethane	1 UJ		1	0.19	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Ethylbenzene	1 U		1	0.2	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Hexachlorobutadiene	1 U		1	0.27	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Isopropylbenzene	1 U		1	0.11	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	m,p-Xylene	2 U		2	0.27	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Methylene chloride	1 U		1	1	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Naphthalene	1 U		1	0.1	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	n-Butylbenzene	1 U		1	0.1	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	n-Propylbenzene	1 U		1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	o-Xylene	1 U		1	0.15	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	sec-Butylbenzene	1 U		1	0.1	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Styrene	1 U		1	0.074	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	tert-Butylbenzene	1 U		1	0.11	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Tetrachloroethene	1 U		1	0.1	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Toluene	1 U		1	0.21	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	trans-1,2-Dichloroethene	1 U		1	0.22	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	trans-1,3-Dichloropropene	1 U		1	0.16	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Trichloroethene	1 U		1	0.22	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Trichlorofluoromethane	1 U		1	0.24	ug/L
AP-4352	N	5-Jun-07	07aFROBWAT18	SW8260B	Vinyl chloride	1 U		1	0.27	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	E300	Chloride	1.7		1	0.076	mg/L
AP-4353	N	12-Jun-07	07aFROBWAT19	E300	Sulfate	8.4		1	0.17	mg/L
AP-4353	N	12-Jun-07	07aFROBWAT19	E353.2	Total Nitrate / Nitrite	0.088		0.05	0.016	mg/L
AP-4353	N	12-Jun-07	07aFROBWAT19	RSK-175	Ethane	3.5 U		3.5	0.36	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	RSK-175	Ethene	1.8 U		1.8	0.31	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	RSK-175	Methane	320		0.87	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW6020	Iron, dissolved	12200		500	200	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW6020	Manganese, dissolved	797		50	4.4	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1,1,2-Tetrachloroethane	1 U		1	0.15	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1,1-Trichloroethane	1 U		1	0.2	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1,2,2-Tetrachloroethane	62		1	0.22	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1,2-Trichloroethane	1.8		1	0.19	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1-Dichloroethane	1 U		1	0.23	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1-Dichloroethene	2.2 J+		1	0.12	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,1-Dichloropropene	1 U		1	0.094	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2,3-Trichlorobenzene	1 U		1	0.11	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2,3-Trichloropropane	1 U		1	0.37	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2,4-Trichlorobenzene	1 U		1	0.15	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2,4-Trimethylbenzene	1 U		1	0.086	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2-Dibromo-3-chloropropane	1 U		1	0.38	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2-Dibromoethane	1 U		1	0.2	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2-Dichlorobenzene	1 U		1	0.25	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2-Dichloroethane	1 U		1	0.074	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,2-Dichloropropane	1 U		1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,3,5-Trimethylbenzene	1 U		1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,3-Dichlorobenzene	1 U		1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,3-Dichloropropane	1 U		1	0.22	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	1,4-Dichlorobenzene	1 U		1	0.2	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	2,2-Dichloropropane	1 U		1	0.27	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	2-Butanone	2 U		2	0.52	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	2-Chlorotoluene	1 U		1	0.098	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	4-Chlorotoluene	1 U		1	0.13	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	4-Isopropyltoluene	1 U		1	0.074	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	cis-1,2-Dichloroethene	51		1	0.32	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Tetrachloroethene	4		1	0.1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	trans-1,2-Dichloroethene	13		1	0.22	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Trichloroethene	210		5	1.1	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4353	N	12-Jun-07	07aFROBWAT19	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	E300	Chloride	1	U	1	0.076	mg/L
AP-4354	N	6-Jun-07	07aFROBWAT20	E300	Sulfate	1	U	1	0.17	mg/L
AP-4354	N	6-Jun-07	07aFROBWAT20	E353.2	Total Nitrate / Nitrite	0.05	U	0.05	0.016	mg/L
AP-4354	N	6-Jun-07	07aFROBWAT20	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW6020	Iron, dissolved	95		50	20	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW6020	Manganese, dissolved	38.1	U	5	0.44	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4354	N	6-Jun-07	07aFROBWAT20	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	E300	Chloride	1.6		1	0.076	mg/L
AP-4518	N	6-Jun-07	07aFROBWAT21	E300	Sulfate	12		1	0.17	mg/L
AP-4518	N	6-Jun-07	07aFROBWAT21	E353.2	Total Nitrate / Nitrite	0.37		0.05	0.016	mg/L
AP-4518	N	6-Jun-07	07aFROBWAT21	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW6020	Iron, dissolved	111		50	20	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW6020	Manganese, dissolved	5	U	5	0.44	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Trichloroethene	0.67	J	1	0.22	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4518	N	6-Jun-07	07aFROBWAT21	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	E300	Chloride	3.3		1	0.076	mg/L
AP-4519	N	8-Jun-07	07aFROBWAT22	E300	Sulfate	18		1	0.17	mg/L
AP-4519	N	8-Jun-07	07aFROBWAT22	E353.2	Total Nitrate / Nitrite	0.07		0.05	0.016	mg/L
AP-4519	N	8-Jun-07	07aFROBWAT22	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	RSK-175	Methane	74		0.87	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW6020	Iron, dissolved	5340		50	20	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW6020	Manganese, dissolved	659		50	4.4	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1,2,2-Tetrachloroethane	330		20	4.4	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1,2-Trichloroethane	13		1	0.19	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1-Dichloroethene	6.6	J+	1	0.12	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Acetone	69		2	0.75	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Benzene	0.7	J	1	0.12	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Chloroform	0.75	J	1	0.15	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	cis-1,2-Dichloroethene	210		20	6.4	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Tetrachloroethene	10		1	0.1	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	trans-1,2-Dichloroethene	51		1	0.22	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Trichloroethene	1000		20	4.4	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4519	N	8-Jun-07	07aFROBWAT22	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4525	N	13-Jun-07	07aFROBWAT23b	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4525	N	13-Jun-07	07aFROBWAT23b	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4525	N	13-Jun-07	07aFROBWAT23b	RSK-175	Methane	0.87	U	0.87	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1,2,2-Tetrachloroethane	120		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1,2,2-Tetrachloroethane	110		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1,2-Trichloroethane	12		1	0.19	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1,2-Trichloroethane	11		1	0.19	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Acetone	1.4	J	2	0.75	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Benzene	0.58	J	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Chloroform	1.6		1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Chloroform	1.5		1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Chloromethane	1	U	1	0.2	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	cis-1,2-Dichloroethene	81		1	0.32	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	cis-1,2-Dichloroethene	77		1	0.32	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	cis-1,3-Dichloropropene	1 U		1	0.086	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	cis-1,3-Dichloropropene	1 U		1	0.086	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Dibromochloromethane	1 U		1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Dibromochloromethane	1 U		1	0.12	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Dibromomethane	1 U		1	0.18	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Dibromomethane	1 U		1	0.18	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Dichlorodifluoromethane	1 U		1	0.19	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Dichlorodifluoromethane	1 U		1	0.19	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Ethylbenzene	1 U		1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Ethylbenzene	1 U		1	0.2	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Hexachlorobutadiene	1 U		1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Hexachlorobutadiene	1 U		1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Isopropylbenzene	1 U		1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Isopropylbenzene	1 U		1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	m,p-Xylene	2 U		2	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	m,p-Xylene	1.3 J		2	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Methylene chloride	1 U		1	1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Methylene chloride	1 U		1	1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Naphthalene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Naphthalene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	n-Butylbenzene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	n-Butylbenzene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	n-Propylbenzene	1 U		1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	n-Propylbenzene	1 U		1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	o-Xylene	1 U		1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	o-Xylene	1 U		1	0.15	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	sec-Butylbenzene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	sec-Butylbenzene	1 U		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Styrene	1 U		1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Styrene	1 U		1	0.074	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	tert-Butylbenzene	1 U		1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	tert-Butylbenzene	1 U		1	0.11	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Tetrachloroethene	2.7		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Tetrachloroethene	1.7		1	0.1	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Toluene	1 U		1	0.21	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Toluene	2.7 U		1	0.21	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	trans-1,2-Dichloroethene	9		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	trans-1,2-Dichloroethene	8.1		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	trans-1,3-Dichloropropene	1 U		1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	trans-1,3-Dichloropropene	1 U		1	0.16	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Trichloroethene	600 J		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Trichloroethene	500 J		1	0.22	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Trichlorofluoromethane	1 U		1	0.24	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Trichlorofluoromethane	1 U		1	0.24	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23	SW8260B	Vinyl chloride	1 U		1	0.27	ug/L
AP-4525	N	12-Jun-07	07aFROBWAT23a	SW8260B	Vinyl chloride	1 U		1	0.27	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	E300	Chloride	8.5		1	0.076	mg/L
AP-4550	N	11-Jun-07	07aFROBWAT24	E300	Chloride	8.5		1	0.076	mg/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	E300	Sulfate	65		10	1.7	mg/L
AP-4550	N	11-Jun-07	07aFROBWAT24	E300	Sulfate	66		10	1.7	mg/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	E353.2	Total Nitrate / Nitrite	0.076		0.05	0.016	mg/L
AP-4550	N	11-Jun-07	07aFROBWAT24	E353.2	Total Nitrate / Nitrite	0.078		0.05	0.016	mg/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	RSK-175	Ethane	3.5 U		3.5	0.36	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	RSK-175	Ethane	3.5 U		3.5	0.36	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	RSK-175	Ethene	1.8 U		1.8	0.31	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	RSK-175	Ethene	1.8 U		1.8	0.31	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	RSK-175	Methane	21 J+		0.87	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	RSK-175	Methane	17		0.87	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW6020	Iron, dissolved	10000		500	200	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW6020	Iron, dissolved	9130		50	20	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW6020	Manganese, dissolved	1060		50	4.4	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW6020	Manganese, dissolved	1090		50	4.4	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1,2,2-Tetrachloroethane	810		50	11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1,2,2-Tetrachloroethane	850		50	11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1,2-Trichloroethane	19		1	0.19	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1,2-Trichloroethane	19		1	0.19	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1-Dichloroethane	9.6	J+	1	0.12	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1-Dichloroethane	11	J+	1	0.12	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Benzene	1.8		1	0.12	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Benzene	1.9		1	0.12	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Bromomethane	1	U	1	0.072	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Chloroform	2.5		1	0.15	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Chloroform	2.6		1	0.15	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	cis-1,2-Dichloroethene	330		50	16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	cis-1,2-Dichloroethene	350		50	16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Tetrachloroethene	38		1	0.1	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Tetrachloroethene	38		1	0.1	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Toluene	1	U	1	0.21	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	trans-1,2-Dichloroethene	130		1	0.22	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	trans-1,2-Dichloroethene	140		1	0.22	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Trichloroethene	2100		50	11	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Trichloroethene	2200		50	11	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4550	FD	11-Jun-07	07aFROBWAT28	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4550	N	11-Jun-07	07aFROBWAT24	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	E300	Chloride	5.6		1	0.076	mg/L
AP-4551	N	11-Jun-07	07aFROBWAT25	E300	Sulfate	12		1	0.17	mg/L
AP-4551	N	11-Jun-07	07aFROBWAT25	E353.2	Total Nitrate / Nitrite	0.27		0.05	0.016	mg/L
AP-4551	N	11-Jun-07	07aFROBWAT25	RSK-175	Ethane	3.5	U	3.5	0.36	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	RSK-175	Ethene	1.8	U	1.8	0.31	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	RSK-175	Methane	0.47	J	0.87	0.16	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-4551	N	11-Jun-07	07aFROBWAT25	SW6020	Iron, dissolved	328		50	20	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW6020	Manganese, dissolved	49.5		5	0.44	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1,2,2-Tetrachloroethane	120		1	0.22	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1,2-Trichloroethane	9.8		1	0.19	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1-Dichloroethene	11	J+	1	0.12	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Benzene	0.67	J	1	0.12	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Chloroform	2		1	0.15	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	cis-1,2-Dichloroethene	180		50	16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	m,p-Xylene	2	U	2	0.27	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Tetrachloroethene	1.9		1	0.1	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Toluene	1.1	U	1	0.21	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	trans-1,2-Dichloroethene	12		1	0.22	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Trichloroethene	1900		50	11	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-4551	N	11-Jun-07	07aFROBWAT25	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	E300	Chloride	26	J+	10	0.76	mg/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-5246	N	10-Jul-07	07aFROBWAT30	E300	Chloride	26	J+	10	0.76	mg/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	E300	Sulfate	25	J	10	1.7	mg/L
AP-5246	N	10-Jul-07	07aFROBWAT30	E300	Sulfate	25	J+	10	1.7	mg/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	E353.2	Total Nitrate / Nitrite	1.2		0.05	0.016	mg/L
AP-5246	N	10-Jul-07	07aFROBWAT30	E353.2	Total Nitrate / Nitrite	1.1		0.05	0.016	mg/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	RSK-175	Ethane	3.5	UJ	3.5	0.36	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	RSK-175	Ethane	3.5	UJ	3.5	0.36	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	RSK-175	Ethene	1.8	UJ	1.8	0.31	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	RSK-175	Ethene	1.8	UJ	1.8	0.31	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	RSK-175	Methane	0.87	UJ	0.87	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	RSK-175	Methane	0.87	UJ	0.87	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW6020	Iron	50	U	50	20	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW6020	Iron	50	U	50	20	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW6020	Manganese	1.6	J	5	0.44	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW6020	Manganese	1.4	J	5	0.44	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1,1,2-Tetrachloroethane	1	U	1	0.15	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1,1-Trichloroethane	1	U	1	0.2	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1,2,2-Tetrachloroethane	1	U	1	0.22	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1,2-Trichloroethane	1	U	1	0.19	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1-Dichloroethane	1	U	1	0.23	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1-Dichloroethene	1	U	1	0.12	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,1-Dichloropropene	1	U	1	0.094	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2,3-Trichlorobenzene	1	U	1	0.11	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2,3-Trichloropropane	1	U	1	0.37	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2,4-Trichlorobenzene	1	U	1	0.15	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2,4-Trimethylbenzene	1	U	1	0.086	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2-Dibromo-3-chloropropane	1	U	1	0.38	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2-Dibromoethane	1	U	1	0.2	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2-Dichlorobenzene	1	U	1	0.25	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2-Dichloroethane	1	U	1	0.074	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,2-Dichloropropane	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,3,5-Trimethylbenzene	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,3-Dichlorobenzene	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,3-Dichloropropane	1	U	1	0.22	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	1,4-Dichlorobenzene	1	U	1	0.2	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	2,2-Dichloropropane	1	U	1	0.27	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	2-Butanone	2	U	2	0.52	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	2-Chlorotoluene	1	U	1	0.098	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	4-Chlorotoluene	1	U	1	0.13	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	4-Isopropyltoluene	1	U	1	0.074	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Acetone	2	U	2	0.75	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Benzene	1	U	1	0.12	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Bromobenzene	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Bromochloromethane	1	U	1	0.34	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Bromodichloromethane	1	U	1	0.11	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Bromoform	1	U	1	0.23	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Bromomethane	1	U	1	0.072	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Carbon tetrachloride	1	U	1	0.25	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Chlorobenzene	1	U	1	0.12	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Chloroethane	1	U	1	0.27	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Chloroform	1	U	1	0.15	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Chloromethane	1	U	1	0.2	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Chloromethane	1	UJ	1	0.2	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	cis-1,2-Dichloroethene	1	U	1	0.32	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	cis-1,3-Dichloropropene	1	U	1	0.086	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Dibromochloromethane	1	U	1	0.12	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Dibromomethane	1	U	1	0.18	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Dichlorodifluoromethane	1	U	1	0.19	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Dichlorodifluoromethane	1	UJ	1	0.19	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Ethylbenzene	1	U	1	0.2	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Hexachlorobutadiene	1	U	1	0.27	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Isopropylbenzene	1	U	1	0.11	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	m,p-Xylene	0.81	J	2	0.27	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	m,p-Xylene	0.87	J	2	0.27	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Methylene chloride	1	U	1	1	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Naphthalene	1	U	1	0.1	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	n-Butylbenzene	1	U	1	0.1	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	n-Propylbenzene	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	o-Xylene	1	U	1	0.15	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	sec-Butylbenzene	1	U	1	0.1	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Styrene	1	U	1	0.074	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	tert-Butylbenzene	1	U	1	0.11	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Tetrachloroethene	1	U	1	0.1	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Toluene	2.7		1	0.21	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Toluene	2.8		1	0.21	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L

Appendix C-2
Validated Analytical Results

Location	QAQC Type	Sample Date	NativeID	Method	Analyte	Final Result	Final Validation Flag	RL	MDL	Units
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	trans-1,2-Dichloroethene	1	U	1	0.22	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	trans-1,3-Dichloropropene	1	U	1	0.16	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Trichloroethene	1	U	1	0.22	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Trichlorofluoromethane	1	U	1	0.24	ug/L
AP-5246	FD	10-Jul-07	07aFROBWAT31	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L
AP-5246	N	10-Jul-07	07aFROBWAT30	SW8260B	Vinyl chloride	1	U	1	0.27	ug/L

Appendix C3
ADEC Laboratory Data Review Checklists

Laboratory Data Review Checklist

Completed by:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC RecKey Number:

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No Comments:

b. Correct analyses requested?

Yes No

Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes No

Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No

Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No

Comments:

Air bubbles <1/4 inch in TB vials.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

None

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

c. Were all corrective actions documented?

Yes No

Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Some results qualified as estimated due to CCV, ICV, and serial dilution exceedances.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

c. All soils reported on a dry weight basis?

Yes No

Comments:

NA

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

NA

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

v. Data quality or usability affected? Explain.

Comments:

NA

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vii. Data quality or usability affected? Explain.

Comments:

NA

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Explain.

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

Yes No

Comments:

ii. All results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Data quality or usability affected? Explain.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Explain.

Comments:

f. Decontamination or Equipment Blank (if applicable)

Yes No Not Applicable

i. All results less than PQL?

Yes No Comments:

Mn detected in EB.

ii. If above PQL, what samples are affected?

Comments:

07aFROBWAT16, 07aFROBWAT17, 07aFROBWAT05, 07aFROBWAT04

iii. Data quality or usability affected? Explain.

Comments:

Associated samples detected less than five times the blank concentrations were flagged "U"..

7. Other Data Flags/Qualifiers (ACOE, AFC EE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No Comments:

Laboratory Data Review Checklist

Completed by:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC RecKey Number:

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No Comments:

b. Correct analyses requested?

Yes No

Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes No

Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No

Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No

Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

c. Were all corrective actions documented?

Yes No

Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

c. All soils reported on a dry weight basis?

Yes No

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

v. Data quality or usability affected? Explain.

Comments:

NA

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No

Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vii. Data quality or usability affected? Explain.

Comments:

NA

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Explain.

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

Yes No

Comments:

ii. All results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Data quality or usability affected? Explain.

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Explain.

Comments:

f. Decontamination or Equipment Blank (if applicable)

Yes No Not Applicable

i. All results less than PQL?

Yes No Comments:

EB in SDG FRGW01. Dissolved manganese detected in EB for SW6020.

ii. If above PQL, what samples are affected?

Comments:

07aFROBWAT14, 07aFROBWAT07, 07aFROBWAT18, 07aFROBWAT21, 07aFROBWAT20, 07aFROBWAT06, 07aFROBWAT27

iii. Data quality or usability affected? Explain.

Comments:

Associated samples detected less than five times the blank concentrations were flagged "U"..

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No Comments:

Samples 07aFROBWAT02TB, 07aFROBWAT06, 07aFROBWAT07, 07aFROBWAT14, 07aFROBWAT18, 07aFROBWAT20, 07aFROBWAT21, 07aFROBWAT27, Dichlorodifluoromethane %D -23.1 vs. 20, exceeded criteria. Instrument: 5973B Cal Date: 6/13/2007. All sample results that were non-detect were flagged "UJ".

Laboratory Data Review Checklist

Completed by:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC RecKey Number:

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No Comments:

b. Correct analyses requested?

Yes No

Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes No

Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No

Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No

Comments:

Bubbles less than 1/4" were observed in two VOA vials for 07aFROBWAT06TB.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

None, air bubbles <1/4 inch.

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

c. Were all corrective actions documented?

Yes No

Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Some results qualified as estimated due to ICV and CCV exceedances.
Holding time exceedance documented for RSK-175.
Method blank detections had no impact on data.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

These NativeIDs exceeded holding time: 07aFROBWAT30, 07aFROBWAT31. Associated sample non-detects were flagged "UJ".

c. All soils reported on a dry weight basis?

Yes No

Comments:

NA

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

e. Data quality or usability affected? Explain.

Comments:

Data qualified as estimated.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No Comments:

ii. All method blank results less than PQL?

Yes No Comments:

For SW8260B, these analytes had Method Blank detects: 1,2,3-Trichlorobenzene, Hexachlorobutadiene.
For RSK-175, these analytes had Method Blank detects: Ethane. Associated sample non-detects were flagged "none".

iii. If above PQL, what samples are affected?

Comments:

07aFROBWAT30 and 07aFROBWAT31

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No Comments:

Associated samples were nondetect and results were flagged "none".

v. Data quality or usability affected? Explain.

Comments:

No affect.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples?

Yes No Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No Comments:

For SW8260B, these LCS analytes were out of control: Dichlorodifluoromethane (BS).

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

07aFROBWAT30 and 07aFROBWAT31

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No Comments:

Associated sample non-detects were flagged "UJ"

vii. Data quality or usability affected? Explain.

Comments:

Data qualified as estimated.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No Comments:

NA

iv. Data quality or usability affected? Explain.

Comments:

NA

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

Yes No Comments:

ii. All results less than PQL?

Yes No Comments:

For SW8260B, these analytes had Blank detects: Acetone (TB).

iii. If above PQL, what samples are affected?

Comments:

07aFROBWAT30 and 07aFROBWAT31

iv. Data quality or usability affected? Explain.

Comments:

No affect, associated samples were not detected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No Comments:

ii. Submitted blind to lab?

Yes No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No Comments:

iv. Data quality or usability affected? Explain.

Comments:

NA

f. Decontamination or Equipment Blank (if applicable)

Yes No Not Applicable

i. All results less than PQL?

Yes No Comments:

EB not applied to samples in this SDG, one new well installed and sampled one month after EB was collected. No specific EB applies to these samples.

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? Explain.

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No

Comments:

Samples 07aFROBWAT30, Chloromethane %D -37.42 vs. 20, Dichlorodifluoromethane %D - 25.41 vs. 20, exceeded criteria. Instrument: 5973Y Cal Date: 7/23/2007. Associated sample non-detects were flagged "UJ".

Samples 07aFROBWAT30, 07aFROBWAT31, Chloride %D +9.5 vs. 5, Sulfate %D +9.7 vs. 5, exceeded criteria. Instrument: Ion Chromatograph (1) Cal Date: 7/26/2007 Samples 07aFROBWAT30, 07aFROBWAT31, Chloride %D +9.3 vs. 5, Sulfate %D +9.5 vs. 5, exceeded criteria. Instrument: Ion Chromatograph (1) Cal Date: 7/26/2007. Associated sample detects were flagged "J+".

Appendix C4
Sample Receipts and COCs
(Raw Data Packages electronic only)

LAUCKS TESTING LABORATORIES, INC.
SDG Closure for FRGW01

Client: CH2M Hill, Inc.
Office Due: 6/19/2007
Client Due: 6/26/2007

PM: Elaine Walker
Fax Due:

Required SDG Attributes

Attribute	Value
Bound or Unbound Package	Bound
Data Package Recipients	Rich Horn, CH2M Hill-Anchorage (CD only); Bernice Kidd, CH2M Hill-Redding (HC + CD)
Data Package Type	Level IV + forms summary
EDD Recipients	Bernice Kidd at edata@ch2m.com
EDD TAT	21-days
EDD Type	CH2M Hill Spec 7
Forms Summary	Yes
Hard Copy Data Package	Yes
Invoice Recipient	CH2M Hill, Denver
Number of Data Packages	2 CD's, 1 HC
PDF	Yes
Penalties	Yes
Preliminary Data Recipients	N/A
ProjectID	Fort Richardson GW
ProjNumber	07-069
Sample Receipt Confirmation	Bernice.kidd@ch2m.com; rich.horn@ch2m.com; edata@ch2m.com; receipt.cooler@poa02.usace.army.mil
Ship Package w/o EDD	No

* = Attribute is not present or not defined.

Defined Addresses

Address Type	Address
<i>Required Addresses</i>	
Report Address	2525 Airpark Drive Redding, CA 96001
Invoice Address	PO Box 241329 Denver, CO 80224
EDD Address	2525 Airpark Drive Redding, CA 96001
Validator Address	Not Defined
<i>Additional Addresses</i>	
Bottle Shipping	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691
CC Report	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691

Defined Contacts

Contact Type	Contact	Phone
<i>Required Contacts</i>		
Report Contact	Bernice Kidd	(530) 229-3203 (Office)
Invoice Contact	Accounts Payable	
EDD (Technical) Contact	Bernice Kidd	(530) 229-3203 (Office)
Validator Contact	Not defined	
<i>Additional Contacts</i>		
Project Manager	Rich Horn	907-278-2551 (Office)
Site Supervisor	Stacey Re	907-278-2551 (Office)

Assigned Tests

--	--	--

Method Number	# of Samples	Matrix	SDG Packet
300.0	5	Water	Conventionals
353.2	5	Water	Conventionals
6020	5	Water	Metals
8260B	6	Water	GC/MS volatiles
RSK-175	5	Water	RSK

! = Packet has not been imported.

FORM LTL-PM-52.0

LAUCKS TESTING LABORATORIES, INC. - SAMPLE CONFIRMATION LOG								
Sample ID (SDG-#)	VTSR	Collected On	Client ID	300 Anions (Cl & SO4), Water	353.2 Nitrate + Nitrite (as N), Water	6020 Dissolved Fe, Mn, Water (DOD-QSM) 3010A	8260 VOAs Water (2-butanone, acetone RL = 2)	RSK 175 - Methane, Ethane, Ethene Water
FRGW01-001	06/05/2007 01:00 AM	06/01/2007 11:50 AM	07aFROBWAT16	IN	IN		IN	IN
FRGW01-002	06/05/2007 01:00 AM	06/01/2007 02:00 PM	07aFROBWAT04	IN	IN		IN	IN
FRGW01-003	06/05/2007 01:00 AM	06/04/2007 10:45 AM	07aFROBWAT05	IN	IN		IN	IN
FRGW01-004	06/05/2007 01:00 AM	06/04/2007 01:00 PM	07aFROBWAT17	IN	IN		IN	IN
FRGW01-005	06/05/2007 01:00 AM	06/01/2007 08:00 AM	07aFROBWAT01TB				IN	
FRGW01-006	06/05/2007 01:00 AM	06/04/2007 01:45 PM	07aFROBWAT26	IN	IN		IN	IN
FRGW01-007	06/05/2007 01:00 AM	06/01/2007 01:45 PM	07aFROBWAT16-F			IN		
FRGW01-008	06/05/2007 01:00 AM	06/01/2007 01:45 PM	07aFROBWAT04-F			IN		
FRGW01-009	06/05/2007 01:00 AM	06/04/2007 01:45 PM	07aFROBWAT05-F			IN		
FRGW01-010	06/05/2007 01:00 AM	06/04/2007 01:45 PM	07aFROBWAT17-F			IN		
FRGW01-011	06/05/2007 01:00 AM	06/04/2007 01:45 PM	07aFROBWAT26-F			IN		
Approved By:				On:				
Notes:								
Samples identified with a '*' client has requested QC for								
LEGEND: -:Started , +:Completed , IN:Logged In , P:Preparation , A:Analysis , X:Cancelled, PL:Pre-logged								
FORM LTL-PM-8.0								

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW01

Taken By: CLIENT

Cooler: AAD507

Transferred: GOLDSTREAK

COC #: 43303

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/5/2007

Date cooler was opened: 6/5/2007 10:00AM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: 02761618933 *Alaska Air Cargo* ^{*EW 6/5/07*}
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: Custody Seals Description: ONE IN FRONT AND BACK
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: *SH*

B. LOG-IN PHASE:

Date samples were logged in: 6/5/2007 10:05AM

Logged-in by Stephen Hadley (sign) *S. Hadley*

9. Describe type of packing in cooler:

BUBBLE WRAP

10. Were all bottles sealed in separate plastic bags? YES
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID,date,time signature,preservative,etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? NO
18. Temperatures: 3.6

DISCREPANCIES:

SEVERAL VIALS CAME IN W/ BUBBLES < 1/4". SEE SUPPLEMENTAL LOG FOR SPECIFICS.
15ML H2SO4 BOTTLES ARE LABELED HAVING H₂PO₄ INSTEAD OF H2SO4 FOR THE RSK 175 TEST.

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW01

Cooler: AAD507

Temperatures: 3.6

COC #: 43303

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW01-001	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	< 1/4
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW01-002	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	< 1/4
	0004	40 ml OTWS, clear glass, HCl	N/C	< 1/4
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW01-003	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW01-004	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW01-005	0001	40 ml OTWS, clear glass, HCl	N/C	None
FRGW01-006	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW01
Cooler: AAD507
Temperatures: 3.6
COC #: 43303

Sample	Bottle #	Bottle Description	pH	Bubbles
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW01-007	0001	500 ml cylinder, poly, HNO3, Filtered	<2	N/A
FRGW01-008	0001	500 ml cylinder, poly, HNO3, Filtered	<2	N/A
FRGW01-009	0001	500 ml cylinder, poly, HNO3, Filtered	<2	N/A
FRGW01-010	0001	500 ml cylinder, poly, HNO3, Filtered	<2	N/A
FRGW01-011	0001	500 ml cylinder, poly, HNO3, Filtered	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH



ALASKA AIRLINES & HORIZON AIR

P.O. BOX 68900 SEATTLE, WA 98168
800-225-2752 ALASKACARGO.COM

DELIVERY NOTIFICATION

Receiving Agent:

LAUCKS LAB
940 S HARNEY ST
SEATTLE, WA 99108

Customer No.:

HAWB:

Delivery Date: 05-Jun-2007 0959

Our Reference: AS84481 150256

Receipt No: 16628

Storage: SEA (1)
AWB3 (1)

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-61618933	1	50.0 Lb	ANC-SEA	ENVIR WATER SA	AS 164 05-Jun-2007	

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

RECEIPT STATEMENT

The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 05-Jun-2007

Time: 09:59

Driver: Stephen

Registration: _____

Signature: _____

LAUCKS TESTING LABORATORIES, INC.
SDG Closure for FRGW02

Client: CH2M Hill, Inc.
Office Due: 6/22/2007
Client Due: 6/29/2007

PM: Elaine Walker
Fax Due:

Required SDG Attributes

Attribute	Value
Bound or Unbound Package	Bound
Data Package Recipients	Rich Horn, CH2M Hill-Anchorage (CD only); Bernice Kidd, CH2M Hill-Redding (HC + CD)
Data Package Type	Level IV + forms summary
EDD Recipients	Bernice Kidd at edata@ch2m.com
EDD TAT	21 days
EDD Type	CH2M Hill Spec 7
Forms Summary	Yes
Hard Copy Data Package	Yes
Invoice Recipient	CH2M Hill, Denver
Number of Data Packages	2 CD's, 1 HC
PDF	Yes
Penalties	Yes
Preliminary Data Recipients	N/A
ProjectID	Fort Richardson GW
ProjNumber	07-069
Sample Receipt Confirmation	bernice.kidd@ch2m.com; rich.horn@ch2m.com; edata@ch2m.com; receipt.cooler@poa02.usace.army.mil
Ship Package w/o EDD	No

* = Attribute is not present or not defined.

Defined Addresses

Address Type	Address
<i>Required Addresses</i>	
Report Address	2525 Airpark Drive Redding, CA 96001
Invoice Address	PO Box 241329 Denver, CO 80224
EDD Address	2525 Airpark Drive Redding, CA 96001
Validator Address	Not Defined
<i>Additional Addresses</i>	
Bottle Shipping	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691
CC Report	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691

Defined Contacts

Contact Type	Contact	Phone
<i>Required Contacts</i>		
Report Contact	Bernice Kidd	(530) 229-3203 (Office)
Invoice Contact	Accounts Payable	
EDD (Technical) Contact	Bernice Kidd	(530) 229-3203 (Office)
Validator Contact	Not defined	
<i>Additional Contacts</i>		
Project Manager	Rich Horn	907-278-2551 (Office)
Site Supervisor	Stacey Re	907-278-2551 (Office)

Assigned Tests

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Method Number	# of Samples	Matrix	SDG Packet
300.0	7	Water	Conventionals
353.2	7	Water	Conventionals
6020	7	Water	Metals
8260B	8	Water	GC/MS volatiles
RSK-175	7	Water	RSK

! = Packet has not been imported.

FORM LTL-PM-52.0

LAUCKS TESTING LABORATORIES, INC. - SAMPLE CONFIRMATION LOG								
Sample ID (SDG-#)	VTSR	Collected On	Client ID	300 Anions (Cl & SO4), Water	353.2 Nitrate + Nitrite (as N), Water	6020 Dissolved Fe, Mn, Water (DOD-QSM) 3010A	8260 VOAs Water (2-butanone, acetone RL = 2)	RSK 175 - Methane, Ethane, Ethene Water
FRGW02-001	06/08/2007 10:00 AM	06/05/2007 10:05 AM	07aFROBWAT14	IN	IN	IN	IN	IN
FRGW02-002	06/08/2007 10:00 AM	06/05/2007 11:45 AM	07aFROBWAT07	IN	IN	IN	IN	IN
FRGW02-003	06/08/2007 10:00 AM	06/05/2007 01:20 PM	07aFROBWAT18	IN	IN	IN	IN	IN
FRGW02-004	06/08/2007 10:00 AM	06/05/2007 08:00 AM	07aFROBWAT02TB				IN	
*FRGW02-005	06/08/2007 10:00 AM	06/06/2007 11:00 AM	07aFROBWAT21	IN	IN	IN	IN	IN
FRGW02-006	06/08/2007 10:00 AM	06/06/2007 12:30 PM	07aFROBWAT20	IN	IN	IN	IN	IN
FRGW02-007	06/08/2007 10:00 AM	06/06/2007 02:00 PM	07aFROBWAT06	IN	IN	IN	IN	IN
FRGW02-008	06/08/2007 10:00 AM	06/06/2007 02:10 PM	07aFROBWAT27	IN	IN	IN	IN	IN

Approved By:
Notes:

On:

Samples identified with a '*' client has requested QC for

LEGEND: -:Started , +:Completed , IN:Logged In , P:Preparation , A:Analysis , X:Cancelled, PL:Pre-logged

FORM LTL-PM-8.0

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW02

Taken By: CLIENT

Cooler: AAD534

Transferred: AIR ALASKA

COC #: 43304

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/8/2007

Date cooler was opened: 6/8/2007 10:00AM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: **027 61618944**
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: _____ Custody Seals Description: **ONE IN FRONT AND BACK**
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: SH

B. LOG-IN PHASE:

Date samples were logged-in: 6/8/2007 10:05AM

Logged-in by Stephen Hadley (sign) SH

9. Describe type of packing in cooler:

BUBBLE WRAP

10. Were all bottles sealed in separate plastic bags? YES
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID, date, time signature, preservative, etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? YES
18. Temperatures: **2.0**

DISCREPANCIES:

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW02
Cooler: AAD534
Temperatures: 2.0
COC #: 43304

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW02-001	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-002	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-003	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-004	0001	40 ml OTWS, clear glass, HCl	N/C	None
FRGW02-005	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW02

Cooler: AAD534

Temperatures: 2.0

COC #: 43304

Sample	Bottle #	Bottle Description	pH	Bubbles
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
	0009	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0010	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0011	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0012	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0013	40 ml OTWS, clear glass, HCl	N/C	None
	0014	40 ml OTWS, clear glass, HCl	N/C	None
	0015	40 ml OTWS, clear glass, HCl	N/C	None
	0016	40 ml OTWS, clear glass, HCl	N/C	None
	0017	40 ml OTWS, clear glass, HCl	N/C	None
	0018	40 ml OTWS, clear glass, HCl	N/C	None
	0019	500 ml cylinder, poly	7	N/A
	0020	500 ml cylinder, poly	7	N/A
	0021	500 ml cylinder, poly, H2SO4	<2	N/A
	0022	500 ml cylinder, poly, H2SO4	<2	N/A
	0023	500 ml cylinder, poly, HNO3	<2	N/A
	0024	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-006	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-007	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature

Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH

pH must be less than 2

Base Preserved pH

pH must be greater than 12

NC

Not Checked for pH

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW02

Cooler: AAD534

Temperatures: 2.0

COC #: 43304

Sample	Bottle #	Bottle Description	pH	Bubbles
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW02-008	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH



ALASKA AIRLINES & HORIZON AIR
 P.O. BOX 68900 SEATTLE, WA 98168
 800-225-2752 ALASKACARGO.COM

DELIVERY NOTIFICATION

Receiving Agent:

LAUCKS LAB
 940 S HARNEY ST
 SEATTLE, WA 98108

Customer No.:

HAWB:
 Delivery Date: 08-Jun-2007 1020
 Our Reference: AS35901 154022
 Receipt No: 17302
 Storage: COOLER (1)

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-61618944	1	82.0 Lb	ANC-SEA	ENVIR WATER SA	AS 142 08-Jun-2007	

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

RECEIPT STATEMENT

The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 08-Jun-2007

Time: 10:20

Driver: Stephen

Registration: _____

Signature: _____

LAUCKS TESTING LABORATORIES, INC.
SDG Closure for FRGW03

Client: CH2M Hill, Inc.
Office Due: 6/25/2007
Client Due: 7/2/2007

PM: Elaine Walker
Fax Due:

Required SDG Attributes

Attribute	Value
Bound or Unbound Package	Bound
Data Package Recipients	Rich Horn, CH2M Hill-Anchorage (CD only); Bernice Kidd, CH2M Hill-Redding (HC + CD)
Data Package Type	Level IV + forms summary
EDD Recipients	Bernice Kidd at edata@ch2m.com
EDD TAT	21 days
EDD Type	CH2M Hill Spec 7
Forms Summary	Yes
Hard Copy Data Package	Yes
Invoice Recipient	CH2M Hill, Denver
Number of Data Packages	2 CD's, 1 HC
PDF	Yes
Penalties	Yes
Preliminary Data Recipients	N/A
ProjectID	Fort Richardson GW
ProjNumber	07-069
Sample Receipt Confirmation	Bernice Kidd at edata@ch2m.com, rich.horn@ch2m.com; edata@ch2m.com, receipt.cooler@poa02.usace.army.mil
Ship Package w/o EDD	No

* = Attribute is not present or not defined.

Defined Addresses

Address Type	Address
<i>Required Addresses</i>	
Report Address	2525 Airpark Drive Redding, CA 96001
Invoice Address	PO Box 241329 Denver, CO 80224
EDD Address	2525 Airpark Drive Redding, CA 96001
Validator Address	Not Defined
<i>Additional Addresses</i>	
Bottle Shipping	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691
CC Report	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691

Defined Contacts

Contact Type	Contact	Phone
<i>Required Contacts</i>		
Report Contact	Bernice Kidd	(530) 229-3203 (Office)
Invoice Contact	Accounts Payable	
EDD (Technical) Contact	Bernice Kidd	(530) 229-3203 (Office)
Validator Contact	Not defined	
<i>Additional Contacts</i>		
Project Manager	Rich Horn	907-278-2551 (Office)
Site Supervisor	Stacey Re	907-278-2551 (Office)

Assigned Tests

--	--	--

Method Number	# of Samples	Matrix	SDG Packet
300.0	6	Water	Conventionals
353.2	6	Water	Conventionals
6020	6	Water	Metals
8260B	7	Water	GC/MS volatiles
RSK-175	6	Water	RSK

¹ = Packet has not been imported.

FORM LTL-PM-52.0

LAUCKS TESTING LABORATORIES, INC. - SAMPLE CONFIRMATION LOG

Sample ID (SDG-#)	VTSR	Collected On	Client ID	300 Anions (Cl & SO4), Water	353.2 Nitrate + Nitrite (as N), Water	6020 Dissolved Fe, Mn, Water (DOD-QSM) 3010A	8260 VOAs Water (2-butanone, acetone RL = 2)	RSK 175 - Methane, Ethane, Ethene Water
*FRGW03-001	06/11/2007 10:30 AM	06/08/2007 11:00 AM	07aFROBWAT02	IN	IN	IN	IN	IN
FRGW03-002	06/11/2007 10:30 AM	06/08/2007 12:55 PM	07aFROBWAT12	IN	IN	IN	IN	IN
FRGW03-003	06/11/2007 10:30 AM	06/08/2007 02:30 PM	07aFROBWAT22	IN	IN	IN	IN	IN
FRGW03-004	06/11/2007 10:30 AM	06/07/2007 08:00 AM	07aFROBWAT03TB				IN	
FRGW03-005	06/11/2007 10:30 AM	06/07/2007 11:45 AM	07aFROBWAT15	IN	IN	IN	IN	IN
FRGW03-006	06/11/2007 10:30 AM	06/07/2007 01:45 PM	07aFROBWAT03	IN	IN	IN	IN	IN
FRGW03-007	06/11/2007 10:30 AM	06/07/2007 02:50 PM	07aFROBWAT01	IN	IN	IN	IN	IN

Approved By: _____ On: _____
 Notes: _____

Samples identified with a '*' client has requested QC for

LEGEND: -:Started , +:Completed , IN:Logged In , P:Preparation , A:Analysis , X:Cancelled, PL:Pre-logged

FORM LTL-PM-8.0

THIS INFORMATION WILL BE USED FOR REPORTING/BILLING (SEE BELOW)

COMPANY: CH2M Hill
 ADDRESS: 301 W Northern Lts Blvd Ste 601
Anchorage, AK 99503
 ATTENTION: Rich Horn
 PROJECT NAME: Fort Richardson Operable Unit B
 PROJECT CONTACT: Rich Horn
 TELEPHONE: 907-278-2851 FAX: 907-251-2000
 JOB/P.O. NO.: 07-069
Cooler C2

CHAIN OF CUSTODY RECORD

SDG # _____

43355
FRGW03

PAGE 1 OF 1

WORK ORDER ID# _____

SUBMITTED AT: _____

Laucks

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-3060 FAX 767-5063
 1106 Ledwich Ave., Yakima, WA 98902 (509) 248-4095 FAX 452-1265

TESTS TO PERFORM

MATRIX: WATER, SOIL OR SPECIFY

NO. OF CONTAINERS

Sulfate Chloride
 Nitrate Nitrite
 Methan. Ethanol. Ethen.
 RSK 175 Ethen.
 Diss Fe Mn Sr Pb Zn

2

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

LAB SA#	SAMPLE ID / LOCATION	DATE	TIME	MATRIX	Sulfate	Chloride	Nitrate	Nitrite	Methan. Ethanol. Ethen.	RSK 175 Ethen.	Diss Fe	Mn	Sr	Pb	Zn	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1	07aFROBWAT02	6/8/07	1100	Water	5	1	1	2	1							
	07aFROBWAT02MS	6/8/07	1100													
	07aFROBWAT02SD	6/8/07	1100													
2	07aFROBWAT12	6/8/07	1255													
3	07aFROBWAT22	6/8/07	1430													

A. A standard turnaround time is assumed unless otherwise marked.

B. The laboratory may not be responsible for missed holding time for samples received with less than 50% of the analytical hold time remaining. Please contact the laboratory for further information.

INSTRUCTIONS		* BILLING INFORMATION, IF DIFFERENT THAN ABOVE		* RUSH TURNAROUND IS SUBJECT TO PRIOR LABORATORY APPROVAL		TOTAL NO. OF CONTAINERS	
1. USE ONE LINE PER SAMPLE. 2. BE SPECIFIC IN TEST REQUESTS. 3. CHECK OFF TESTS TO BE PERFORMED FOR EACH SAMPLE.		NAME	ADDRESS			TURNAROUND REQUEST	
		ATTN.	CITY, STATE, ZIP			<input type="checkbox"/> STD. 10-14 WORKING DAYS <input type="checkbox"/> 24-48 HRS. (100% SUR) <input type="checkbox"/> 72 HRS. (75% SUR) <input type="checkbox"/> 5 DAYS (50% SUR) <input type="checkbox"/> OTHER: _____ <input type="checkbox"/> TEMP: _____	
RELINQUISHED BY (SIGN AND PRINT)		DATE	TIME	RECEIVED BY (SIGN AND PRINT)		DATE	TIME
Stacey Re		6/8/07	1600	Stacey Re		11 JUN/07	1030

Finance Charges and/or Collection Fees may be applied to delinquent accounts.

FINAL REPORT COPY

THIS INFORMATION WILL BE USED FOR REPORTING/BILLING* (SEE BELOW)

COMPANY: CH2MHill
 ADDRESS: 301 W. Northern Lights Blvd. Ste 601
Anchorage, AK 99503
 ATTENTION: Rich Horn
 PROJECT NAME: Fort Richardson OUB
 PROJECT CONTACT: Rich Horn
 TELEPHONE: 907-278-2551 FAX: 907-257-2000
 JOB/PO. NO.: 07-069
Cooler-C1

CHAIN OF CUSTODY RECORD

SDG # _____

43360
FR6W03

PAGE 1 OF 1

WORK ORDER ID# _____

SUBMITTED AT:

Laucks
Testing Laboratories, Inc.

940 South Hamer St, Seattle, WA 98108 (206) 767-5060 FAX 767-5063
 1106 Ledwith Ave, Yakima, WA 98902 (509) 248-4695 FAX 452-1265

LAB SA#	SAMPLE ID / LOCATION	DATE	TIME
4	07a FROBWAT03TB	6/7/07	0800
5	07a FROBWAT15	6/7/07	1145
6	07a FROBWAT03	6/7/07	1345
7	07a FROBWAT01	6/7/07	1450
8	07a FROBWAT02	6/8/07	1100
	07a FROBWAT02MS	6/8/07	1100
	07a FROBWAT02SD	6/8/07	1100
9	07a FROBWAT12	6/8/07	1255
10	07a FROBWAT22	6/8/07	1430

MATRIX: WATER, SOIL OR SPECIFY	NO. OF CONTAINERS	TESTS TO PERFORM										OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS								
Water	1	1																		
	8	3	1	1	2	1														
	1	1	1	1	1	1														
	3	3																		
	3	3																		
	3	3																		
	3	3																		

VOCs SW200
 Sulfate/Chloride 300
 Nitrate/Nitrite
 Methane Phos. 300
 RSK 175
 Diss. Fe/Mn SW200

3

A. A standard turnaround time is assumed unless otherwise marked.

B. The laboratory may not be responsible for missed holding time for samples received with less than 50% of the analytical hold time remaining. Please contact the laboratory for further information.

INSTRUCTIONS
 1. USE ONE LINE PER SAMPLE.
 2. BE SPECIFIC IN TEST REQUESTS.
 3. CHECK OFF TESTS TO BE PERFORMED FOR EACH SAMPLE.

***BILLING INFORMATION, IF DIFFERENT THAN ABOVE**
 NAME: _____ ADDRESS: _____
 ATTN: _____ CITY, STATE, ZIP: _____

*** RUSH TURNAROUND IS SUBJECT TO PRIOR LABORATORY APPROVAL**

TOTAL NO. OF CONTAINERS
 TURNAROUND REQUEST
 STD. 10-14 WORKING DAYS
 24-48 HRS. (100% SUR)
 72 HRS. (75% SUR)
 5 DAYS (50% SUR)
 OTHER: _____
 TEMP: _____
 CUSTODY SEAL: Y N N/A

RELINQUISHED BY (SIGN AND PRINT)
 Stacey Re / Stacey Re
 DATE TIME: 6/8/07 1600

RECEIVED BY (SIGN AND PRINT)
 S. Arnold

DATE TIME: 11/JUN/07 1030

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW03

Taken By: CLIENT

Cooler: AAD509

Transferred: GOLDSTREAK

COC #: 43360

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/11/2007

Date cooler was opened: 6/11/2007 10:30AM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: 02761618771 *Alaska Air Cargo SW 6/13/07*
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: _____ Custody Seals Description: ONE IN FRONT AND BACK

3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: *SH*

B. LOG-IN PHASE:

Date samples were logged-in: 6/11/2007 10:35AM

Logged-in by Stephen Hadley (sign) *S Hadley*

9. Describe type of packing in cooler:

BUBBLE WRAP

10. Were all bottles sealed in separate plastic bags? YES
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID,date,time signature,preservative,etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? YES
18. Temperatures: 1.8

DISCREPANCIES:

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW03

Taken By: CLIENT

Cooler: AAD361

Transferred: GOLDSTREAK

COC #: 43355

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/11/2007

Date cooler was opened: 6/11/2007 10:30AM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: 02761618771 *Masica Air Cargo SW 6/13/07*
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: _____ Custody Seals Description: **ONE IN FRONT AND BACK**
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: *SH* _____

B. LOG-IN PHASE:

Date samples were logged-in: 6/11/2007 10:35AM

Logged-in by Stephen Hadley (sign) *SH*

9. Describe type of packing in cooler:

BUBBLE WRAP

10. Were all bottles sealed in separate plastic bags? YES
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID,date,time signature,preservative,etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? YES
18. Temperatures: 2.3

DISCREPANCIES:

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW03

Cooler: AAD509

Temperatures: 1.8

COC #: 43360

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW03-001	0016	40 ml OTWS, clear glass, HCl	<2	None
	0017	40 ml OTWS, clear glass, HCl	<2	None
	0018	40 ml OTWS, clear glass, HCl	<2	None
	0019	40 ml OTWS, clear glass, HCl	<2	None
	0020	40 ml OTWS, clear glass, HCl	<2	None
	0021	40 ml OTWS, clear glass, HCl	<2	None
	0022	40 ml OTWS, clear glass, HCl	<2	None
	0023	40 ml OTWS, clear glass, HCl	<2	None
FRGW03-002	0006	40 ml OTWS, clear glass, HCl	<2	None
	0007	40 ml OTWS, clear glass, HCl	<2	None
	0008	40 ml OTWS, clear glass, HCl	<2	None
FRGW03-003	0006	40 ml OTWS, clear glass, HCl	<2	None
	0007	40 ml OTWS, clear glass, HCl	<2	None
	0008	40 ml OTWS, clear glass, HCl	<2	None
FRGW03-004	0001	40 ml OTWS, clear glass, HCl	N/C	None
FRGW03-005	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW03-006	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2
 Base Preserved pH pH must be greater than 12
 NC Not Checked for pH

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW03

Cooler: AAD509

Temperatures: 1.8

COC #: 43360

Sample	Bottle #	Bottle Description	pH	Bubbles
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW03-007	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW03

Cooler: AAD361

Temperatures: 2.3

COC #: 43355

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW03-001	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	500 ml cylinder, poly	7	N/A
	0004	500 ml cylinder, poly, H2SO4	<2	N/A
	0005	500 ml cylinder, poly, HNO3	<2	N/A
	0006	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0007	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0008	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0009	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0010	500 ml cylinder, poly	7	N/A
	0011	500 ml cylinder, poly	7	N/A
	0012	500 ml cylinder, poly, H2SO4	<2	N/A
	0013	500 ml cylinder, poly, H2SO4	<2	N/A
	0014	500 ml cylinder, poly, HNO3	<2	N/A
	0015	500 ml cylinder, poly, HNO3	<2	N/A
FRGW03-002	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	500 ml cylinder, poly	7	N/A
	0004	500 ml cylinder, poly, H2SO4	<2	N/A
	0005	500 ml cylinder, poly, HNO3	<2	N/A
FRGW03-003	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	500 ml cylinder, poly	7	N/A
	0004	500 ml cylinder, poly, H2SO4	<2	N/A
	0005	500 ml cylinder, poly, HNO3	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH



ALASKA AIRLINES & HORIZON AIR
 P.O. BOX 68900 SEATTLE, WA 98168
 800-225-2752 ALASKACARGO.COM

DELIVERY NOTIFICATION

Receiving Agent:

LAUCKS TESTING LABS INC
 940 SOUTH HARNEY ST
 SEATTLE, WA 98108
 Account# 27442066405

Customer No.: 27442066405
 HAWB:
 Delivery Date: 11-Jun-2007 1025
 Our Reference: AS78031 159414
 Receipt No: 17665
 Storage: COOLER (2)
 AWB1 (2)

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-61618771	2	92.0 Lb	ANC-SEA	EIVOR WATER SA	AS 082 10-Jun-2007	

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

RECEIPT STATEMENT

The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 11-Jun-2007

Time: 10:25

Driver: Stephen

Registration: _____

Signature: _____

LAUCKS TESTING LABORATORIES, INC.
SDG Closure for FRGW04

Client: CH2M Hill, Inc.
Office Due: 6/28/2007
Client Due: 7/5/2007

PM: Elaine Walker
Fax Due:

Required SDG Attributes

Attribute	Value
Bound or Unbound Package	Bound
Data Package Recipients	Rich Horn, CH2M Hill-Anchorage (CD only); Bernice Kidd, CH2M Hill-Redding (HC + CD)
Data Package Type	Level IV + forms summary
EDD Recipients	Bernice Kidd at edata@ch2m.com
EDD TAT	21-days
EDD Type	CH2M Hill Spec 7
Forms Summary	Yes
Hard Copy Data Package	Yes
Invoice Recipient	CH2M Hill, Denver
Number of Data Packages	2 CD's, 1 HC
PDF	Yes
Penalties	Yes
Preliminary Data Recipients	N/A
ProjectID	Fort Richardson GW
ProjNumber	07-069
Sample Receipt Confirmation	bernice.kidd@ch2m.com; rich.horn@ch2m.com; edata@ch2m.com; receipt.cooler@poa02.usace.army.mil
Ship Package w/o EDD	No

* = Attribute is not present or not defined.

Defined Addresses

Address Type	Address
<i>Required Addresses</i>	
Report Address	2525 Airpark Drive Redding, CA 96001
Invoice Address	PO Box 241329 Denver, CO 80224
EDD Address	2525 Airpark Drive Redding, CA 96001
Validator Address	Not Defined
<i>Additional Addresses</i>	
Bottle Shipping	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691
CC Report	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691

Defined Contacts

Contact Type	Contact	Phone
<i>Required Contacts</i>		
Report Contact	Bernice Kidd	(530) 229-3203 (Office)
Invoice Contact	Accounts Payable	
EDD (Technical) Contact	Bernice Kidd	(530) 229-3203 (Office)
Validator Contact	Not defined	
<i>Additional Contacts</i>		
Project Manager	Rich Horn	907-278-2551 (Office)
Site Supervisor	Stacey Re	907-278-2551 (Office)

Assigned Tests

--	--	--

Method Number	# of Samples	Matrix	SDG Packet
300.0	10	Water	Conventionals
353.2	10	Water	Conventionals
6020	10	Water	Metals
8260B	13	Water	GC/MS volatiles
RSK-175	11	Water	RSK

¹ = Packet has not been imported.

FORM LTL-PM-52.0

LAUCKS TESTING LABORATORIES, INC. - SAMPLE CONFIRMATION LOG

Sample ID (SDG-#)	VTSR	Collected On	Client ID	300 Anions (Cl & SO4), Water	353.2 Nitrate + Nitrite (as N), Water	6020 Dissolved Fe, Mn, Water (DOD-QSM) 3010A	8260 VOAs Water (2-butanone, acetone RL = 2)	RSK 175 - Methane, Ethane, Ethene Water
FRGW04-001	06/14/2007 12:29 PM	06/11/2007 11:00 AM	07aFROBWAT11	IN	IN	IN	IN	IN
FRGW04-002	06/14/2007 12:29 PM	06/11/2007 01:00 PM	07aFROBWAT25	IN	IN	IN	IN	IN
FRGW04-003	06/14/2007 12:29 PM	06/11/2007 02:20 PM	07aFROBWAT24	IN	IN	IN	IN	IN
FRGW04-004	06/14/2007 12:29 PM	06/11/2007 02:30 PM	07aFROBWAT28	IN	IN	IN	IN	IN
FRGW04-005	06/14/2007 12:29 PM	06/12/2007 10:15 AM	07aFROBWAT29	IN	IN	IN	IN	IN
FRGW04-006	06/14/2007 12:29 PM	06/12/2007 11:30 AM	07aFROBWAT19	IN	IN	IN	IN	IN
FRGW04-007	06/14/2007 12:29 PM	06/12/2007 01:30 PM	07aFROBWAT13	IN	IN	IN	IN	IN
FRGW04-008	06/14/2007 12:29 PM	06/13/2007 09:10 AM	07aFROBWAT08	IN	IN	IN	IN	IN
FRGW04-009	06/14/2007 12:29 PM	06/13/2007 11:45 AM	07aFROBWAT09	IN	IN	IN	IN	IN
FRGW04-010	06/14/2007 12:29 PM	06/13/2007 12:30 PM	07aFROBWAT10	IN	IN	IN	IN	IN
FRGW04-011	06/14/2007 12:29 PM	06/12/2007 09:45 AM	07aFROBWAT23				IN	
FRGW04-012	06/14/2007 12:29 PM	06/12/2007 02:40 PM	07aFROBWAT23a				IN	
FRGW04-013	06/14/2007 12:29 PM	06/11/2007 08:00 AM	07aFROBWAT04TB				IN	
FRGW04-014	06/14/2007 12:29 PM	06/13/2007 12:55 PM	07aFROBWAT23b					IN

Approved By:
Notes:

On:

Samples identified with a '*' client has requested QC for

LEGEND: -:Started , +:Completed , IN:Logged In , P:Preparation , A:Analysis , X:Cancelled, PL:Pre-logged

FORM LTL-PM-8.0

THIS INFORMATION WILL BE USED FOR REPORTING/BILLING* (SEE BELOW)

COMPANY: CH2M Hill
 ADDRESS: 301 W Northern Lights Blvd Site 601
Anchorage, AK 99503
 ATTENTION: Rich Horn
 PROJECT NAME: Fort Rich OUB
 PROJECT CONTACT: Rich Horn
 TELEPHONE: 907-278-2657 FAX: 907-257-2000
 JOB/P.O. NO.: 07-069
Cooler D2

CHAIN OF CUSTODY RECORD

2481 43358

SDG # FR6W0A

PAGE 1 OF 1

WORK ORDER ID# FR6W0A

SUBMITTED AT:

Laucks
 Testing Laboratories, Inc.
 940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063
 1106 Ledwith Ave., Yakima, WA 98902 (509) 248-4695 FAX 452-1265

TESTS TO PERFORM

MATRIX: WATER, SOIL OR SPECIFY	NO. OF CONTAINERS	Nitrate/Nitrite/Ammonia	Sulfate/Chloride/Fluoride	Diss. FE	MNH	ASBESTOS	OTHER	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
Water	5	1	1	1	2			
Water	5	1	1	1	2			
	5	1	1	1	2			
	5	1	1	1	2			
	5	1	1	1	2			
	5	1	1	1	2			
	2				2			

LAB SA#	SAMPLE ID / LOCATION	DATE	TIME
5	07a FROBWAT29	6/12/07	1015
6	07a FROBWAT19	6/12/07	1130
7	07a FROBWAT13	6/12/07	1230
8	07a FROBWAT08	6/13/07	0910
9	07a FROBWAT09	6/13/07	1145
10	07a FROBWAT10	6/13/07	1230
1A	07a FROBWAT23b	6/13/07	1255

A. A standard turnaround time is assumed unless otherwise marked. B. The laboratory may not be responsible for missed holding time for samples received with less than 50% of the analytical hold time remaining. Please contact the laboratory for further information.

INSTRUCTIONS
 1. USE ONE LINE PER SAMPLE.
 2. BE SPECIFIC IN TEST REQUESTS.
 3. CHECK OFF TESTS TO BE PERFORMED FOR EACH SAMPLE.

BILLING INFORMATION, IF DIFFERENT THAN ABOVE
 NAME: _____ ADDRESS: _____
 ATTN: _____ CITY, STATE, ZIP: _____

*** RUSH TURNAROUND IS SUBJECT TO PRIOR LABORATORY APPROVAL**

TOTAL NO. OF CONTAINERS
 TURNAROUND REQUEST
 STD. 10-14 WORKING DAYS
 24-48 HRS. (100% SUR)
 72 HRS. (75% SUR)
 5 DAYS (50% SUR)
 OTHER: _____
 TEMP: _____
 CUSTODY SEAL: Y N N/A

RELINQUISHED BY (SIGN AND PRINT)
Stacey Re / Stacey Re

DATE TIME: 6/13/07 1430
 RECEIVED BY (SIGN AND PRINT): Helen Huizenga / [Signature]

DATE TIME: 6/14/07 12:29

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW04

Taken By: CLIENT

Cooler: AAD414

Transferred: GOLDSTREAK

COC #: 43359

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/14/2007

Date cooler was opened: 6/14/2007 12:29PM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: 92761618966 *Alaska Air Cargo* *6/14/07*
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: _____ Custody Seals Description: ONE FRONT AND BACK
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: *SH*

B. LOG-IN PHASE:

Date samples were logged-in: 6/14/2007 12:35PM

Logged-in by Helen Huizenga (sign) *[Signature]*

9. Describe type of packing in cooler:
10. Were all bottles sealed in separate plastic bags? NO
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID, date, time signature, preservative, etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? YES
18. Temperatures: 3.4 4.6 4.8

DISCREPANCIES:

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW04

Taken By: CLIENT

Cooler: AAK016

Transferred: GOLDSTREAK

COC #: 43358

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 6/14/2007

Date cooler was opened: 6/14/2007 12:29PM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: 02761618966 Prasica Air Cargo 6/14/07
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: _____ Custody Seals Description: **ONE FRONT AND BACK**
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? YES
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: JK

B. LOG-IN PHASE:

Date samples were logged-in: 6/14/2007 12:35PM

Logged-in by Helen Huizenga (sign) [Signature]

9. Describe type of packing in cooler:
10. Were all bottles sealed in separate plastic bags? NO
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID, date, time signature, preservative, etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? NO
18. Temperatures: 4.5

DISCREPANCIES:

SEVERAL VIALS HAVE BUBBLES <1/4" SEE SUPPLEMENTAL LOG. ONE OF THREE TRIP BLANKS RECEIVED.

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW04

Cooler: AAD414

Temperatures: 3.4 4.6 4.8

COC #: 43359

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW04-001	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-002	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-003	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-004	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW04
Cooler: AAD414
Temperatures: 3.4 4.6 4.8
COC #: 43359

Sample	Bottle #	Bottle Description	pH	Bubbles
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-005	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-006	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-007	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-008	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2
Base Preserved pH pH must be greater than 12
NC Not Checked for pH

Supplemental Sample Receipt Log
Laucks Testing Laboratories

SDG: FRGW04

Cooler: AAD414

Temperatures: 3.4 4.6 4.8

COC #: 43359

Sample	Bottle #	Bottle Description	pH	Bubbles
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW04
Cooler: AAK016
Temperatures: 4.5
COC #: 43358

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW04-009	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-010	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	40 ml OTWS, clear glass, HCl	N/C	None
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	500 ml cylinder, poly	7	N/A
	0007	500 ml cylinder, poly, H2SO4	<2	N/A
	0008	500 ml cylinder, poly, HNO3	<2	N/A
FRGW04-011	0001	40 ml OTWS, clear glass, HCl	N/C	< 1/4
FRGW04-012	0001	40 ml OTWS, clear glass, HCl	N/C	None
FRGW04-013	0001	40 ml OTWS, clear glass, HCl	N/C	< 1/4
FRGW04-014	0001	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A


Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2

Base Preserved pH pH must be greater than 12

NC Not Checked for pH

Shipper's Name and Address CH2M HILL 200 Hawthorne Ave SE PO BOX 428CORVALLIS OR 97339 Salem, OR 97301 USA Tel:		Shipper's Account Number 27440052415 Customer's ID Number 5331		Not Negotiable Air Waybill Issued By  ALASKA AIRLINES & HORIZON AIR P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM					
Consignee's Name and Address LAUCKS TESTING LABS 940 SOUTH HARNEY ST SEATTLE, WA 98108 USA Tel:		Consignee's Account Number 27442066405		Also notify Cooler Tel:					
Issuing Carrier's Agent and City		Accounting Information Priority Cargo							
Agent's IATA Code		Account No.							
Airport of Departure (Addr. of First Carrier) and Requested Routing Anchorage									
To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs	
SEA	Alaska Airlines			USD PX	X	X	NVD	NCV	
Airport of Destination Seattle		Flight/Date AS 108/13		Amount of Insurance XXX					
Handling Information 206-767-5060						SCI			
No of Pieces	Gross Weight	kg / lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)		
2	102.0	L C		102.0		AS AGREED	ENV WATER SAMPLES		
2	102.0					AS AGREED	PER PRI Volume: 0.464		
Prepaid		Weight Charge		Collect		Other Charges			
AS AGREED						MYC 8.16			
Valuation Charge		Tax		Total Other Charges Due Agent		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo. For: CH2M HILL Signature of Shipper or his Agent			
				Total Other Charges Due Carrier					
Total Prepaid		Total Collect				<input type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS			
AS AGREED						Executed On (Date) 13 Jun 2007 15:34 at (Place) Anchorage Signature of Issuing Carrier or its Agent Alaska Airlines			



ALASKA AIRLINES & HORIZON AIR

P.O. BOX 68900 SEATTLE, WA 98168
800-225-2752 ALASKACARGO.COM

DELIVERY NOTIFICATION

Receiving Agent:

LAUCKS TESTING LABS INC
940 SOUTH HARNEY ST
SEATTLE, WA 98108
Account# 27442066405

Customer No.: 27442066405

HAWB:

Delivery Date: 14-Jun-2007 0857

Our Reference: AS56524 165101

Receipt No: 18294

Storage: COOLER (2)

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-61618966	2	102.0 Lb	ANC-SEA	ENV WATER SAMP	AS 162 14-Jun-2007	

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

RECEIPT STATEMENT

The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 14-Jun-2007

Time: 08:57

Driver: Stephen

Registration: _____

Signature: _____

LAUCKS TESTING LABORATORIES, INC.
SDG Closure for FRGW09

Client: CH2M Hill, Inc.
Office Due: 7/26/2007
Client Due: 8/2/2007

PM: Elaine Walker
Fax Due:

Required SDG Attributes

Attribute	Value
Bound or Unbound Package	Bound
Data Package Recipients	Rich Horn, CH2M Hill-Anchorage (CD only); Bernice Kidd, CH2M Hill-Redding (HC + CD)
Data Package Type	Level IV + forms summary
EDD Recipients	Bernice Kidd at edata@ch2m.com
EDD TAT	21-days
EDD Type	CH2M Hill Spec 7
Forms Summary	Yes
Hard Copy Data Package	Yes
Invoice Recipient	CH2M Hill, Denver
Number of Data Packages	2 CD's, 1 HC
PDF	Yes
Penalties	Yes
Preliminary Data Recipients	N/A
ProjectID	Ft. Richardson GW OUB
ProjNumber	07-069
Sample Receipt Confirmation	bernice.kidd@ch2m.com; rich.horn@ch2m.com; edata@ch2m.com; receipt.cooler@poa02.usace.army.mil
Ship Package w/o EDD	No

* = Attribute is not present or not defined.

Defined Addresses

Address Type	Address
<i>Required Addresses</i>	
Report Address	2525 Airpark Drive Redding, CA 96001
Invoice Address	PO Box 241329 Denver, CO 80224
EDD Address	2525 Airpark Drive Redding, CA 96001
Validator Address	Not Defined
<i>Additional Addresses</i>	
Bottle Shipping	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691
CC Report	301 West Northern Lights Blvd. Suite 601 Anchorage, AK 99503-2691

Defined Contacts

Contact Type	Contact	Phone
<i>Required Contacts</i>		
Report Contact	Bernice Kidd	(530) 229-3203 (Office)
Invoice Contact	Accounts Payable	
EDD (Technical) Contact	Bernice Kidd	(530) 229-3203 (Office)
Validator Contact	Not defined	
<i>Additional Contacts</i>		
Project Manager	Rich Horn	907-278-2551 (Office)
Site Supervisor	Stacey Re	907-278-2551 (Office) 907-440-7662 (Cellular)

Assigned Tests

Method Number	# of Samples	Matrix	SDG Packet
300.0	2	Water	Conventionals
353.2	2	Water	Conventionals
6020	2	Water	Metals
8260B	3	Water	GC/MS volatiles
RSK-175	2	Water	RSK

! = Packet has not been imported.

FORM LTL-PM-52.0

LAUCKS TESTING LABORATORIES, INC. - SAMPLE CONFIRMATION LOG

Sample ID (SDG-#)	VTSR	Collected On	Client ID	300 Anions (Cl & SO4), Water	353.2 Nitrate + Nitrite (as N), Water	6020 Dissolved Fe, Mn, Water (DOD-QSM) 3010A	8260 VOAs Water (2-butanone, acetone RL = 2)	RSK 175 - Methane, Ethane, Ethene Water
FRGW09-001	07/12/2007 01:30 PM	07/10/2007 10:20 AM	07aFROBWAT30	IN	IN	IN	IN	IN
FRGW09-002	07/12/2007 01:30 PM	07/10/2007 10:30 AM	07aFROBWAT31	IN	IN	IN	IN	IN
FRGW09-003	07/12/2007 01:30 PM	07/10/2007 08:00 AM	07aFROBWAT06TB				IN	

Approved By: _____ On: _____
 Notes: _____

Samples identified with a '*' client has requested QC for

LEGEND: -:Started , +:Completed , IN:Logged In , P:Preparation , A:Analysis , X:Cancelled, PL:Pre-logged

FORM LTL-PM-8.0

Cooler Receipt Form
Laucks Testing Laboratories, Inc.

SDG: FRGW09

Taken By: CLIENT

Cooler: aad612

Transferred: ALASKA AIRLINES

COC #: 41927

Project: 2007 Ft. Richardson GW (CH2M Hill, Inc.)

Date samples were received at the laboratory: 7/12/2007

Date cooler was opened: 7/12/2007 1:30PM

A. PRELIMINARY EXAMINATION PHASE:

1. Did cooler come with a shipping slip (airbill, etc.)? YES
if YES, record carrier name and airbill number: ALASKA AIRLINES 027-6161-8782
2. Were custody seals unbroken and intact at the date and time of arrival? INTACT
Date On Custody Seal: 7/10/2007 Custody Seals Description: 1 FRONT, 1 BACK
3. Were custody papers sealed in a plastic bag and taped inside to the lid? YES
4. Did you screen samples for radioactivity using the Geiger Counter? NO
5. Were custody papers filled out properly (ink, signed, etc.)? YES
6. Did you sign custody papers in the appropriate place? YES
7. If required, was enough cooling material present? YES
8. Have designated person initial here to acknowledge receipt of cooler: JP

B. LOG-IN PHASE:

Date samples were logged-in: 7/12/2007 1:30PM

Logged-in by Jennifer Penner (sign) [Signature]

9. Describe type of packing in cooler:

BUBBLE WRAP

10. Were all bottles sealed in separate plastic bags? NO
11. Were labels in good condition? YES
12. Were all bottle labels complete (ID,date,time signature,preservative,etc.)? YES
13. Did all bottle labels agree with custody papers? YES
14. Were correct containers used for the tests indicated? YES
15. Were the correct pHs observed? YES
16. Was a sufficient amount of sample sent for tests indicated? YES
17. Were bubbles absent in VOA samples? NO
18. Temperatures: 5.6

DISCREPANCIES:

**Supplemental Sample Receipt Log
Laucks Testing Laboratories**

SDG: FRGW09
Cooler: aad612
Temperatures: 5.6
COC #: 41927

Sample	Bottle #	Bottle Description	pH	Bubbles
FRGW09-001	0001	1000 mL cylinder, poly, HNO3	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	40 ml OTWS, clear glass, HCl	N/C	None
	0007	500 ml cylinder, poly	7	N/A
	0008	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW09-002	0001	1000 mL cylinder, poly, HNO3	<2	N/A
	0002	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0003	15 mL OTWS Clear Glass vial, H2SO4	<2	N/A
	0004	40 ml OTWS, clear glass, HCl	N/C	None
	0005	40 ml OTWS, clear glass, HCl	N/C	None
	0006	40 ml OTWS, clear glass, HCl	N/C	None
	0007	500 ml cylinder, poly	7	N/A
	0008	500 ml cylinder, poly, H2SO4	<2	N/A
FRGW09-003	0001	40 ml OTWS, clear glass, HCl	N/C	< 1/4
	0002	40 ml OTWS, clear glass, HCl	N/C	None

Allowable temperature and pH ranges (neutral pH defined as a value between 5 and 9)

Temperature Allowable temperature range is 4+/- 2 degrees Celsius

Acid Preserved pH pH must be less than 2
Base Preserved pH pH must be greater than 12
NC Not Checked for pH



ALASKA AIRLINES & HORIZON AIR
 P.O. BOX 68900 SEATTLE, WA 98168
 800-225-2752 ALASKACARGO.COM

DELIVERY NOTIFICATION

Receiving Agent:

Laacks lab
 940 s harvey st
 0
 Seattle, WA 0

Customer No.:

HAWB:
 Delivery Date: 12-Jul-2007 1311
 Our Reference: AS84110 206721
 Receipt No: 23164
 Storage: SEA (2)
 AWB2 (2)

AWB Number	Pieces	Weight	Origin / Dest	Nature of Goods	Arriving Flight Details	Customs
027-61618782	2	76.0 Lb	ANC-SEA	WATER SAMPLES	AS 098 11-Jul-2007	

LOCAL CHARGES :

Bonded Warehouse

Total Local Charges:	USD	0.00
VAT 0.70%:	USD	0.00
Grand Total:	USD	0.00

RECEIPT STATEMENT


The undersigned acknowledge the receipt of above mentioned consignment complete and in good condition.

Date: 12-Jul-2007
 Time: 13:11
 Driver: DANIEL

Registration: _____
 Signature: _____

027 ANC 6161 8782

027-6161 8782

Shipper's Name and Address CH2M HILL 200 Hawthorne Ave SE PO BOX 428CORVALLIS OR 97339 Salem, OR 97301 USA Tel:	Shipper's Account Number 27440052415 Customer's ID Number 5331	Not Negotiable Air Waybill issued By  ALASKA AIRLINES & HORIZON AIR P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
---	---	--

Consignee's Name and Address Laacks lab 940 s harvey st 0 Seattle, WA 0 USA Tel: 206-767-5060	Consignee's Account Number	Also notify Tel:
---	----------------------------	---------------------

Issuing Carrier's Agent and City Anchorage	Accounting Information Priority Cargo
Agent's IATA Code Account No.	
Airport of Departure (Addr. of First Carrier) and Requested Routing Anchorage	

To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs
SEA	Alaska Airlines			USD	PX	X	NVD	NCV
Airport of Destination Seattle		Flight/Date AS 098/11	Flight/Date	Amount of Insurance XXX				

Handling Information								SCI
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No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
2	76.0	L	Q		100.0		AS AGREED	WATER SAMPLES
								COOLER
2	76.0						AS AGREED	PRI Volume: 0.345

Prepaid AS AGREED	Weight Charge Collect MYC 7.60	Other Charges
Valuation Charge		
Tax		
Total Other Charges Due Agent		Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo. For: CH2M HILL Signature of Shipper or his Agent
Total Other Charges Due Carrier		
Total Prepaid AS AGREED		Total Collect
		Executed On (Date) 11 Jul 2007 09:15 at (Place) Anchorage Signature of Issuing Carrier or its Agent Alaska Airlines

027-6161 8782

Appendix C5
COELT (electronic only)

Responses to Comments
