Final

Fort Richardson Operable Unit E Armored Vehicle Maintenance Area Groundwater Monitoring Report May and September 2009

Prepared for

United States Army, Alaska, Directorate of Public Works

Under Contract to

U.S. Army Corps of Engineers
Contract No. W911KB-08-D-0005, Task Order 001

December 2010

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Abbreviations

AAC	*Alaska Administrative Code*
ADEC	Alaska Department of Environmental Conservation
ARAR	applicable or relevant and appropriate requirement
AVMA	Armored Vehicle Maintenance Area
^{o}C	degrees Celsius
CFR	*Code of Federal Regulations*
COC	chemical of concern
CRREL	Cold Regions Research and Engineering Laboratory
DCE	dichloroethene
DPW	U.S. Army Directorate of Public Works
EPA	U.S. Environmental Protection Agency
J	estimated quantity
MCL	maximum contaminant level
mg/L	milligrams per liter
M-K	Mann-Kendall
MS	matrix spike
MSD	matrix spike duplicate
MSL	mean sea level
µg/L	micrograms per liter
OUE	Operable Unit E
PCE	tetrachloroethene
POL	petroleum, oil, and lubricant
RI	remedial investigation
ROD	Record of Decision
TCE	trichloroethene
USACE	U.S. Army Corps of Engineers
VC	vinyl chloride
VOC	volatile organic compound

Executive Summary

This report presents the results of the May and September 2009 groundwater monitoring events conducted at the Armored Vehicle Maintenance Area (AVMA) of Operable Unit E (OUE), Fort Richardson, Alaska, and a brief summary of historical data trends. The May and September 2009 monitoring tasks were completed by Shannon & Wilson, Inc. for the U.S. Army Directorate of Public Works (DPW) under contract to the U.S. Army Corps of Engineers (USACE) in accordance with the scope of work for Contract W911KB-08-D-0005, Task Order 001.

Ten wells were sampled during each of the two sampling events at the AVMA, including six wells within the extent of contamination, three downgradient wells, and one cross-gradient background well. Samples were analyzed for volatile organic compounds (VOCs), aluminum, arsenic, and several natural attenuation parameters including iron, manganese, sulfate, methane, and total nitrate/nitrite.

Based on historical and current data, through the 2009 monitoring events, the following conclusions can be made:

- Tetrachloroethene (PCE) is the chemical of concern (COC) at the AVMA and was detected in each of the six wells within the known extent of contamination at concentrations above the maximum contaminant level (MCL) documented in the OUE Record of Decision (ROD). No other trends are apparent from the historical monitoring data except for the increasing PCE concentration trend interpreted at wells AP-3468 and AP-4342.
- The results of biodegradation parameters and the absence of PCE breakdown products continue to suggest that biodegradation of PCE may be limited at the AVMA and that the primary mechanism of natural attenuation at the site continues to be dilution. Monitoring of natural attenuation parameters is required by the ROD. However, for sites where biodegradation is not playing a key role in the attenuation process, monitoring and evaluation of biodegradation parameters provide little value toward the understanding of the site contaminant conditions.

SECTION 1

Introduction

1.1 Project Overview

This report presents the results of the May and September 2009 groundwater monitoring events conducted at the Armored Vehicle Maintenance Area (AVMA) of Operable Unit E (OUE), Fort Richardson, Alaska (Figure 1-1) and a brief summary of historical data. The purpose of this report is to present the results of groundwater monitoring at the AVMA, completed under the Fort Richardson Groundwater Monitoring Program. The Groundwater Monitoring Program is part of the selected remedy required by the OUE Record of Decision (ROD), which was signed in September 2005. These 2009 monitoring tasks were completed by Shannon & Wilson, Inc. (Shannon & Wilson) for the U.S. Army Directorate of Public Works (DPW) under contract to the U.S. Army Corps of Engineers (USACE) in accordance with the scope of work for Contract W911KB-08-D-0005, Task Order 001.

This report contains historical data collected at OUE since 2002 for wells included in the 2009 monitoring events and describes the sampling effort conducted by Shannon & Wilson in May and September 2009. Although some groundwater sampling occurred before 2002, the data were not readily available for inclusion in this report. Older data are included in the Fort Richardson Administrative Record and are available from the information repositories at the UAA/APU Consortium Library and the DPW Environmental Resource Department on Fort Richardson. The data presented are compared to cleanup level goals established by the ROD.

1.2 Site Location and Description

Fort Richardson occupies approximately 61,500 acres of land slightly northeast of Anchorage, Alaska (Figure 1-1). This report focuses on the AVMA of OUE, which is located in the western region of the cantonment area of Fort Richardson where an area with soil and groundwater affected by tetrachloroethene (PCE) exists (Figures 1-2 and 1-3). The AVMA was originally identified as a potential source area from historical aerial photographs, which indicated areas of buried debris, drainage ditches near the former vehicle wash area, and other identified ditches; however, data collected during the 2002 remedial investigation (RI) (CH2M HILL, 2004) indicated that these areas were not the source area for the contaminated groundwater in the vicinity of the site. A single main source of groundwater contamination has not been identified. Data collected during the OUE RI strongly suggests that PCE contamination in groundwater at the AVMA likely resulted from vehicle maintenance and laundry operations conducted at Buildings 732 and 726, respectively. Historical data show that PCE was used at the laundry facility and low levels of PCE were detected in soils at the Building 726 site during the Operable Unit E remedial investigation (RI) (ENSR, 1998).

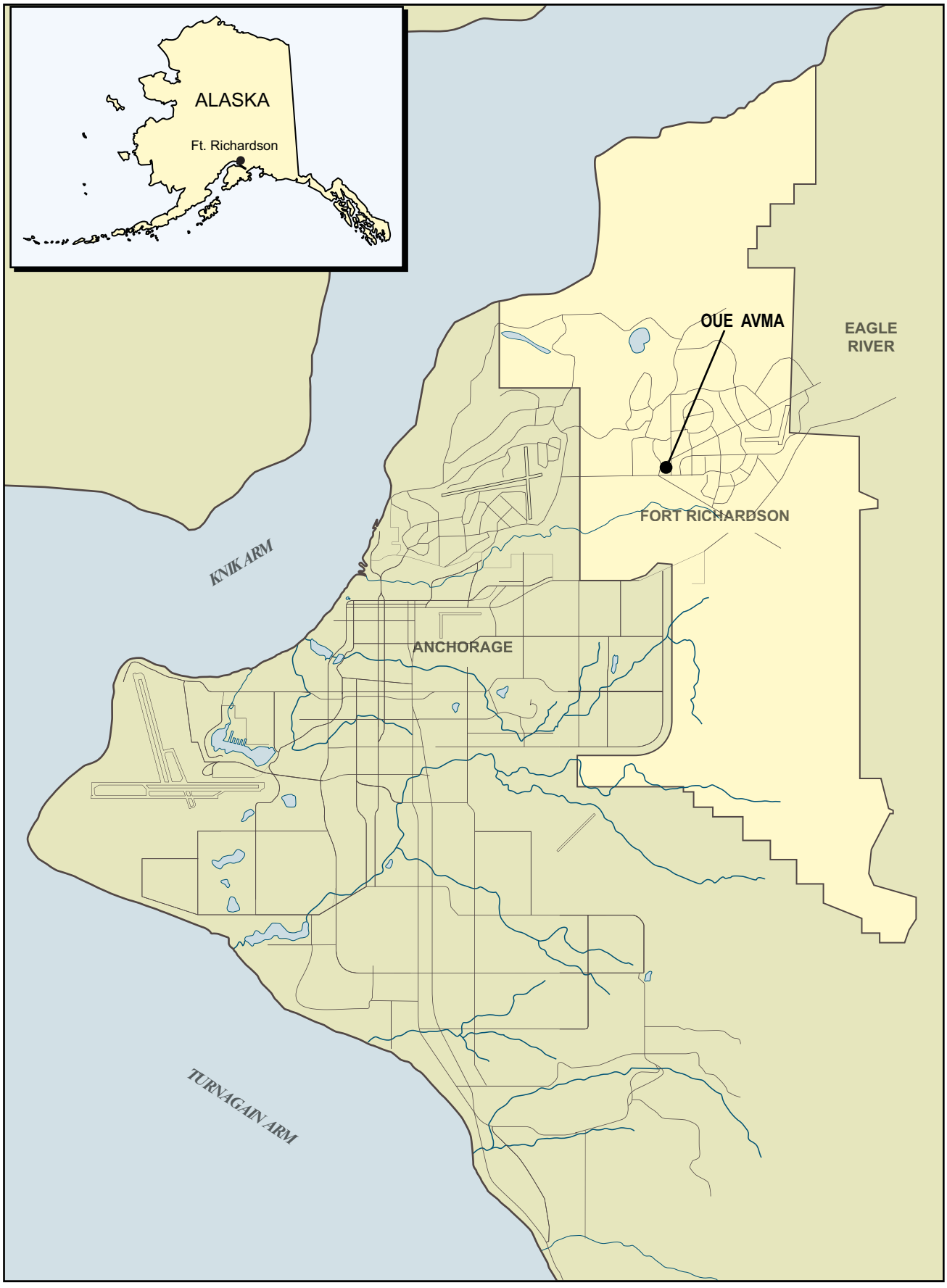
1.3 Geology and Hydrogeology

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 500 feet above mean sea level (MSL), with local relief varying between 50 feet MSL and 250 feet MSL. The geology of Fort Richardson is primarily the result of past glacial events and consists of the Elmendorf moraine, alluvial fans, and glacial outwash deposits. The hydrogeology of Fort Richardson, although extremely variable across the installation, is composed of three primary aquifer systems–a shallow perched (unconfined) system, a locally semi-confined system, and a deeper confined system. The upper confining unit tapers out near the Davis Highway where the shallow perched and locally semi-confined aquifers merge (Figure 1-3). Shallow perched groundwater of limited volume and extent exists in localized areas beneath the AVMA site.

The 10 wells monitored during the 2009 events are screened within either the shallow perched system or downgradient of the confluence of the perched and locally semi-confined systems, where the locally semi-confined system becomes unconfined.

1.4 Previous Site Investigations and Site History

Since the 1950s, many investigations and activities have been conducted at the OUE AVMA. These events are summarized in Table 1-1.

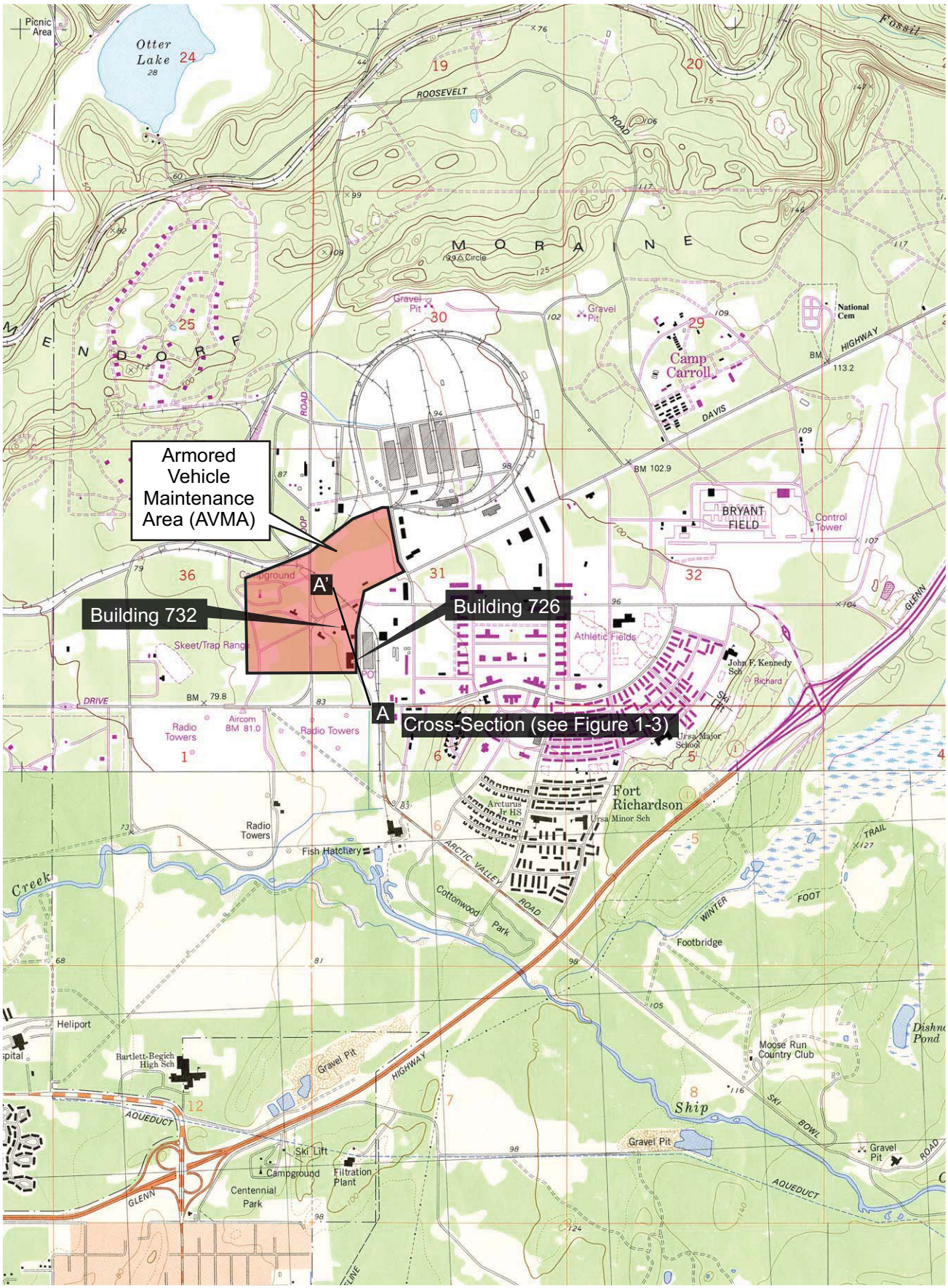


North

Not to Scale

Figure 1-1
Location Map, OUE AVMA
Fort Richardson, Alaska

FIGURE 1-1 (BACK)



North

Figure 1-2
Site Locations Map, OUE AVMA
Fort Richardson, Alaska

FIGURE 1-2 (BACK)

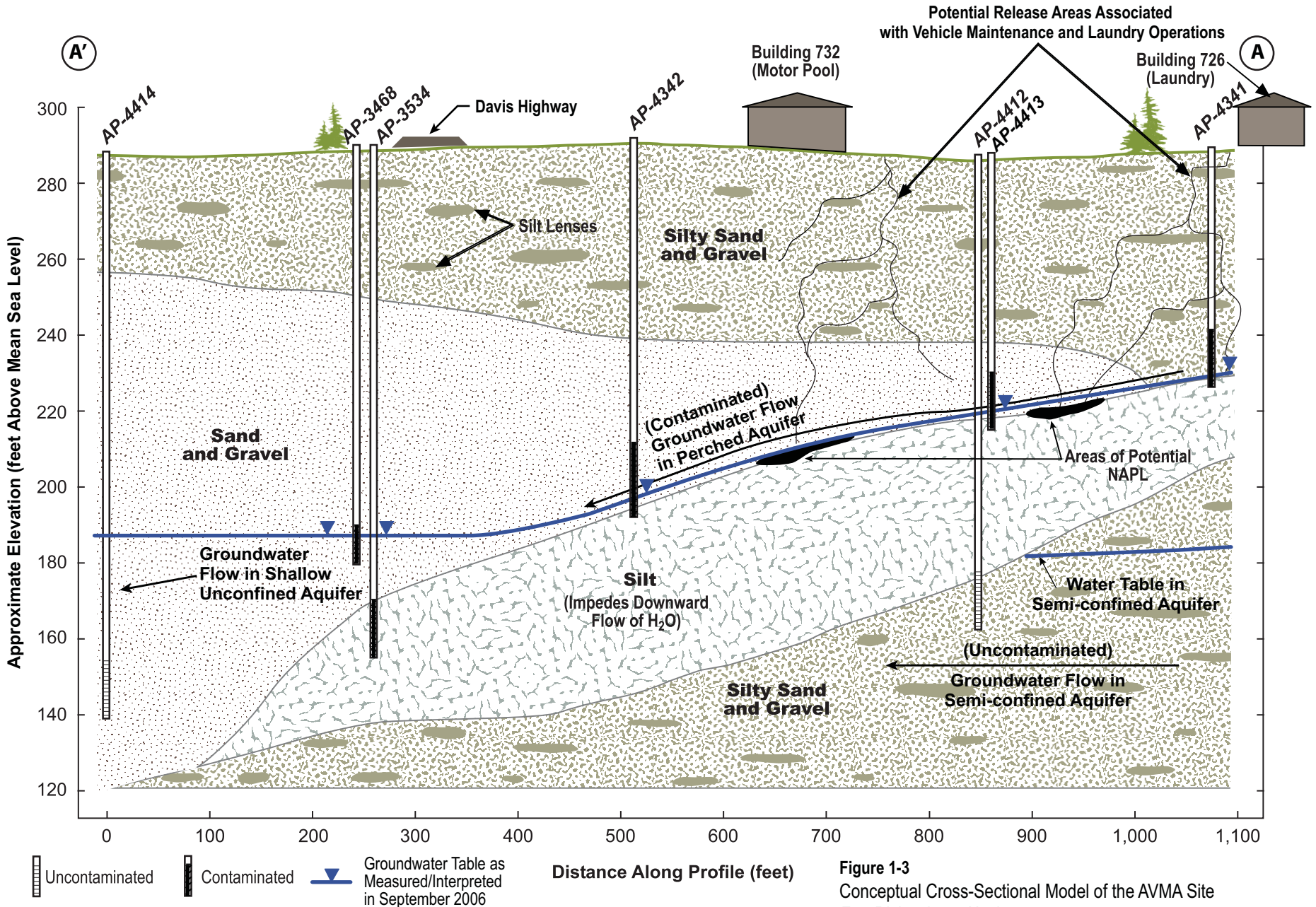


Figure 1-3
Conceptual Cross-Sectional Model of the AVMA Site
Fort Richardson, Alaska

Figure prepared by CH2MHill Consultants. Used with permission of US Army Corps of Engineers.

FIGURE 1-3 (BACK)

TABLE 1-1
Timeline of Past Activities at OUE AVMA

Year	Organization/Company	Activity
1950-1966[a]	Fort Richardson Army Post	Low-level armored vehicle maintenance, oil and other waste material disposal
1990	USACE	Underground storage tank remediation sampling program
1993	Harding Lawson Assoc.	Site assessment at UST location
1994	ENSR	Field investigation
1996	Ecology and Environment Inc.	Background data analysis, soil borings, and groundwater sampling
2000	CRREL	Geophysical investigation
2001	CRREL	Historic aerial photography analysis and geophysical investigation
2001	USACE	Monitoring well installation, soil borings, groundwater sampling
2002-2003	CH2M HILL	Remedial Investigation and Risk Assessment
2003	CH2M HILL	Annual Groundwater Monitoring
2004	CH2M HILL	Feasibility Study
2004-2005	Satori Group Inc.	Annual Groundwater Monitoring
2005	CH2M HILL, Army, ADEC, EPA	Record of Decision signed
2006-2007	CH2M Hill	Semiannual Groundwater Monitoring
2008-2009	Shannon & Wilson, Inc.	Annual Groundwater Monitoring
2009-2010	Shannon & Wilson, Inc.	Semiannual Groundwater Monitoring

[a]It is undetermined when the facility was no longer used as a maintenance area
Source: *Preliminary Site Characterization Report* (CH2M HILL, 2003)

ADEC = Alaska Department of Environmental Conservation
CRREL = Cold Regions Research and Engineering Laboratory
EPA = U.S. Environmental Protection Agency
USACE = U.S. Army Corps of Engineers

SECTION 2

Groundwater Quality Monitoring Program

According to the selected remedy presented in the ROD for the AVMA of OUE (CH2M HILL, 2005), natural attenuation, institutional controls, and groundwater monitoring are the most appropriate and feasible actions for addressing the PCE-affected groundwater at the site. The role of groundwater monitoring is to evaluate the effectiveness of natural attenuation as the appropriate method for reducing contaminant concentrations to levels less than cleanup goals. The current groundwater monitoring schedule, established by the ROD, includes annual monitoring for 4 years (through 2009), with a subsequent reduction in frequency if contaminant levels are declining. Regular monitoring allows detection of trends that could trigger changes to the remediation process for the site or support site closure. Two specific trend benchmarks were established by the ROD:

- Monitoring will be discontinued when at least three subsequent sampling events indicate that chemical of concern (COC) concentrations have consistently dropped below maximum contaminant levels (MCLs).
- If monitoring results for any two consecutive sampling events indicate that contaminant levels are increasing, the U.S. Environmental Protection Agency (EPA), Alaska Department of Environmental Conservation (ADEC) , and U.S. Army will reevaluate the remedy.

2.1 Regulatory Requirements

The ROD established Federal Safe Drinking Water Act (Title 40, Parts 141 and 143, of the *Code of Federal Regulations* [CFR]) and Alaska Drinking Water Regulations ([Title 18, Chapter 80, of the *Alaska Administrative Code* [AAC]) as the sources for applicable or relevant and appropriate requirements (ARARs) for MCLs at OUE. In addition, the ROD identified one COC, PCE, which was detected in OUE groundwater at levels that pose a potential excessive lifetime cancer risk. Table 2-1 includes the COC and other analytes that have been historically detected in samples from one or more wells at concentrations greater than their MCLs. Complete analytical results are available in Appendix B.

2.2 Monitoring Locations

Ten wells were sampled in or near the AVMA during the May and September 2009 monitoring events. Well locations are provided in Figure 2-1 and include six wells within the area of PCE contamination, three downgradient wells, and one cross-gradient well for background.

TABLE 2-1
OUE Maximum Contaminant Levels

Analyte	Cleanup Levels (µg/L)	
	EPA 40 CFR 141/143	ADEC 18 AAC 80
Chemical of Concern		
Tetrachloroethene (PCE)	5	5
Other Detected Analytes		
Aluminum	50-200	NA
Arsenic	10	10

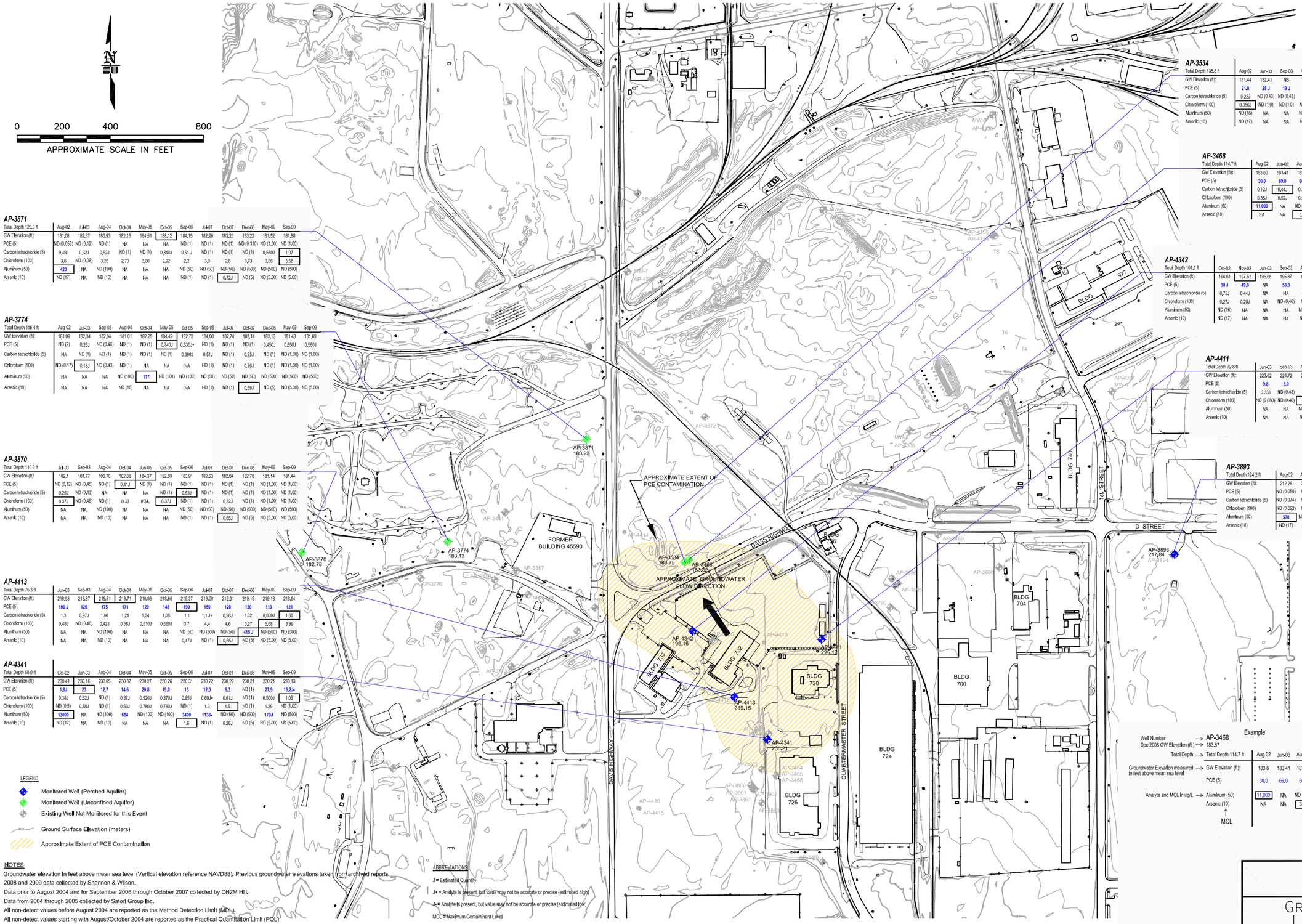
AAC = *Alaska Administrative Code*
ADEC = Alaska Department of Environmental Conservation
CFR = *Code of Federal Regulations*
EPA = U.S. Environmental Protection Agency
µg/L = micrograms per liter
NA = not applicable

2.3 Monitoring Frequency

Well sampling is required annually by the ROD, but is currently being conducted twice per year per Contract W911KB-08-D-0005, Task Order 001, typically in the spring and fall. Depending on weather conditions, site accessibility, and other site activities, sampling dates may differ from year to year.

2.4 Groundwater Monitoring Parameters

Currently, volatile organic compound (VOC) concentrations in groundwater are being monitored for comparison to the ARAR MCLs listed in Table 2-1. In addition, under the current scope of work, groundwater also was evaluated for arsenic, aluminum, and a number of parameters that are indicators of biodegradation, which is a component of the natural attenuation process. The OUE monitoring parameters are identified in Table 2-2. May and September 2009 groundwater sampling forms and analytical data tables are included in Appendices A and B, respectively.



AP-3871

Total Depth 120,3 ft	Aug-02	Jul-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	181,08	182,37	180,93	182,15	184,51	188,12	184,15	182,96	183,23	183,22	181,52	181,80
PCE (5)	ND (0,0559)	ND (0,12)	ND (1)	NA	NA	NA	ND (1)	ND (1)	ND (1)	ND (0,310)	ND (1,00)	ND (1,00)
Carbon tetrachloride (5)	0,49J	0,32J	0,52J	ND (1)	ND (1)	0,840J	0,51 J	ND (1)	ND (1)	ND (1)	0,550J	1,07
Chloroform (100)	3,6	ND (0,08)	3,26	2,70	3,00	2,92	2,2	3,0	2,8	3,73	3,86	5,56
Aluminum (50)	420	NA	ND (100)	NA	NA	NA	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	ND (500)
Arsenic (10)	ND (17)	NA	ND (10)	NA	NA	NA	ND (1)	ND (1)	0,72J	ND (5)	ND (5,00)	ND (5,00)

AP-3774

Total Depth 116,4 ft	Aug-02	Jul-03	Sep-03	Aug-04	Oct-04	May-05	Oct 05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	181,09	182,34	182,04	181,01	182,25	184,49	182,72	184,00	182,74	183,14	183,13	181,43	181,69
PCE (5)	ND (2)	0,26J	ND (0,46)	ND (1)	ND (1)	0,740J	0,330J+	ND (1)	ND (1)	ND (1)	0,450J	0,650J	0,560J
Carbon tetrachloride (5)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	0,390J	0,51J	ND (1)	0,25J	ND (1)	ND (1,00)	ND (1,00)
Chloroform (100)	ND (0,17)	0,18J	ND (0,43)	ND (1)	NA	NA	NA	ND (1)	ND (1)	0,26J	ND (1)	ND (1,00)	ND (1,00)
Aluminum (50)	NA	NA	NA	ND (100)	117	ND (100)	ND (100)	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	ND (500)
Arsenic (10)	NA	NA	NA	ND (10)	NA	NA	NA	ND (1)	ND (1)	0,59J	ND (5)	ND (5,00)	ND (5,00)

AP-3870

Total Depth 110,3 ft	Jul-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	182,1	181,77	180,76	182,08	184,37	182,69	183,91	182,63	182,84	182,78	181,14	181,44
PCE (5)	ND (0,12)	ND (0,45)	ND (1)	0,41J	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Carbon tetrachloride (5)	0,25J	ND (0,43)	NA	NA	NA	ND (1)	0,53J	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Chloroform (100)	0,37J	ND (0,46)	ND (1)	0,3J	0,34J	0,37J	ND (1)	ND (1)	0,32J	ND (1)	ND (1,00)	ND (1,00)
Aluminum (50)	NA	NA	ND (100)	NA	NA	NA	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	ND (500)
Arsenic (10)	NA	NA	ND (10)	NA	NA	NA	ND (1)	ND (1)	0,65J	ND (5)	ND (5,00)	ND (5,00)

AP-4413

Total Depth 75,3 ft	Jun-03	Sep-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	218,93	218,87	219,71	219,71	218,86	218,86	219,37	219,08	219,31	219,15	219,18	218,94
PCE (5)	100 J	120	175	171	120	143	190	150	120	120	113	121
Carbon tetrachloride (5)	1.3	0,97J	1,06	1,21	1,04	1,08	1,1	1,1 J+	0,98J	1.32	0,800J	1,66
Chloroform (100)	0,48J	ND (0,46)	0,42J	0,38J	0,510J	0,660J	3.7	4,4	4,6	5,27	5,68	3.99
Aluminum (50)	NA	NA	ND (100)	NA	NA	NA	ND (50)	ND (50J)	ND (50)	415 J	ND (500)	ND (500)
Arsenic (10)	NA	NA	ND (10)	NA	NA	NA	0,47J	ND (1)	0,55J	ND (5)	ND (5,00)	ND (5,00)

AP-4341

Total Depth 68,0 ft	Oct-02	Jun-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	230,41	230,16	230,05	230,37	230,27	230,26	230,31	230,22	230,29	230,21	230,21	230,13
PCE (5)	1,6J	23	12,7	14,6	20,8	19,0	13	12,0	9,3	ND (1)	27,9	16,2 J+
Carbon tetrachloride (5)	0,38J	0,52J	ND (1)	0,37J	0,520J	0,370J	0,85J	0,69J+	0,61J	ND (1)	0,500J	1,06
Chloroform (100)	ND (0,5)	0,58J	ND (1)	0,55J	0,780J	0,780J	ND (1)	1,3	1,5	ND (1)	1,29	ND (1,00)
Aluminum (50)	13000	NA	ND (100)	684	ND (100)	ND (100)	3400	113J+	ND (50)	ND (500)	179J	ND (500)
Arsenic (10)	ND (17)	NA	ND (10)	NA	NA	NA	1,6	ND (1)	0,26J	ND (5)	ND (5,00)	ND (5,00)

AP-3534

Total Depth 138,8 ft	Aug-02	Jun-03	Sep-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jun-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	181,44	182,41	NS	181,41	182,49	184,90	183,29	184,72	183,43	183,76	183,75	182,05	182,31
PCE (5)	21.0	28 J	19 J	25.4	24.1	81.5	59.1	43	18	18	23	24.5	21.9
Carbon tetrachloride (5)	0,22J	ND (0,43)	ND (0,43)	0,42J	ND (1,0)	0,49J	ND (1,0)	0,69J	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Chloroform (100)	0,056J	ND (1,0)	ND (1,0)	ND (1,0)	ND (1,0)	ND (1,0)	ND (1,0)	ND (1)	ND (1)	0,24J	ND (1)	ND (1,00)	0,400 J
Aluminum (50)	ND (16)	NA	NA	ND (100)	NA	NA	NA	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	ND (500)
Arsenic (10)	ND (17)	NA	NA	ND (10)	NA	NA	NA	0,77J	ND (1,2)	1	ND (5)	ND (5,00)	ND (5,00)

AP-3468

Total Depth 114,7 ft	Aug-02	Jun-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jun-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	183,60	183,41	183,39	183,94	180,69	183,28	184,63	183,76	183,87	183,82	183,44	183,35
PCE (5)	30,0	69,0	60,0	53,3	93,6	59,4	72	47	61	63	53,4	64,7
Carbon tetrachloride (5)	0,12J	0,44J	0,32J	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	0,26J	ND (1)	ND (1,00)	ND (1,00)
Chloroform (100)	0,35J	0,52J	0,54J	0,44J	ND (1)	0,320J	ND (1)	0,72J	0,83J	MDI1	0,59J	1,36
Aluminum (50)	11,000	NA	ND (100)	ND (100)	72,8J	ND (100)	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	642
Arsenic (10)	NA	NA	3,5J	ND (10)	ND (10)	ND (10)	0,2J	ND (1)	0,37J	ND (5)	ND (5,00)	ND (5,00)

AP-4342

Total Depth 101,1 ft	Oct-02	Nov-02	Jun-03	Sep-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	196,67	197,51	195,95	195,87	195,76	197,01	195,56	196,34	195,59	196,10	196,39	196,16	196,13	195,93
PCE (5)	39 J	49,0	NA	53,0	41,1	62,5	61,3 J	55,9	66	52,0	52	62,9	55,8	58,0
Carbon tetrachloride (5)	0,75J	0,44J	NA	NA	0,58J	0,91J	0,90J-	0,680J	0,98 J	0,95 J	1	1,29	0,830J	1,28
Chloroform (100)	0,27J	0,26J	NA	ND (0,46)	ND (1)	ND (1)	0,35J-	ND (1)	0,81 J	2,4	2,3	2,74	2,31	ND (2,30)
Aluminum (50)	ND (16)	NA	NA	NA	ND (100)	NA	NA	NA	74,6	ND (50)	ND (50)	ND (500)	ND (500)	8,440
Arsenic (10)	ND (17)	NA	NA	NA	ND (10)	NA	NA	NA	0,48J	ND (1)	0,53J	ND (5)	ND (5,00)	3,69J

AP-4411

Total Depth 72,6 ft	Jun-03	Sep-03	Aug-04	Oct-04	Jun-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	223,62	224,72	223,72	223,71	223,03	223,03	225,23	225,20	225,29	225,17	225,13	224,80
PCE (5)	9,8	8,9	11,2	20,4	23,9	24,6	11	10	12	6,64	7,94	15,6
Carbon tetrachloride (5)	0,33J	ND (0,43)	0,32J	NA	NA	NA	0,59J	ND (1)	ND (1)	ND (1)	ND (1,00)	0,950J
Chloroform (100)	ND (0,080)	ND (0,46)	0,54J	NA	NA	NA	ND (1)	ND (1)	ND (1)	ND (1)	0,340J	ND (1,00)
Aluminum (50)	NA	NA	ND (100)	15,100	ND (100)	ND (100)	ND (50)	ND (50)	132	ND (500)	ND (500)	22,300
Arsenic (10)	NA	NA	ND (10)	3,78J	ND (10)	ND (10)	ND (1)	ND (1)	0,47J	ND (5)	ND (5,00)	11,2

AP-3893

Total Depth 124,2 ft	Aug-02	Aug-04	Oct-04	May-05	Oct-05	Sep-06	Jul-07	Oct-07	Dec-08	May-09	Sep-09
GW Elevation (ft):	212,26	212,88	214,49	216,75	215,76	217,38	216,87	217,53	217,84	214,45	214,94
PCE (5)	ND (0,059)	ND (1)	NA	NA	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Carbon tetrachloride (5)	ND (0,074)	ND (1)	NA	NA	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Chloroform (100)	ND (0,092)	ND (1)	NA	NA	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1,00)	ND (1,00)
Aluminum (50)	570	ND (100)	NA	NA	NA	ND (50)	ND (50)	ND (50)	ND (500)	ND (500)	ND (500)
Arsenic (10)	ND (17)	20,70	16,9	18,3	13,5	19	22,5	24,2	20,7	22,5	21,7

Example

Well Number → AP-3468
Dec 2008 GW Elevation (ft.) → 183,87
Total Depth → Total Depth 114,7 ft

	Aug-02	Jun-03	Aug-04	Oct-04	May-05	Oct-05	Sep-06	← Sampling Date
Groundwater Elevation measured in feet above mean sea level → GW Elevation (ft):	183,6	183,41	183,39	183,94	180,69	183,28	184,63	
PCE (5)	30,0	69,0	60,0	53,3	93,6	59,4	72	← Regulatory Exceedances in Blue
Analyte and MCL In ug/L → Aluminum (50)	11,000	NA	ND (100)	ND (100)	72,8J	ND (100)	ND (50)	
Arsenic (10)	NA	NA	3,5J	ND (10,0)	ND (10,0)	ND (10,0)	0,2J	

MCL ↑ — ↑ Maximum historic value indicated by box

LEGEND

- Monitored Well (Perched Aquifer)
- Monitored Well (Unconfined Aquifer)
- Existing Well Not Monitored for this Event
- Ground Surface Elevation (meters)
- Approximate Extent of PCE Contamination

NOTES

Groundwater elevation in feet above mean sea level (Vertical elevation reference NAVD88). Previous groundwater elevations taken from archived reports.
2008 and 2009 data collected by Shannon & Wilson.
Data prior to August 2004 and for September 2006 through October 2007 collected by CH2M Hill.
Data from 2004 through 2005 collected by Sator Group Inc.
All non-detect values before August 2004 are reported as the Method Detection Limit (MDL).
All non-detect values starting with August/October 2004 are reported as the Practical Quantitation Limit (PQL)
All concentrations are measured in µg/L.
Exceedances compared against EPA 40 CFR 141/143,and ADEC 18AAC80.
Regulatory Exceedances In Blue.
Maximum values are indicated by a box.
August/October 2002 metals data is for total metals with the exception of well AP-4342, which is dissolved metals.

ABBREVIATIONS

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
PCE = Tetrachloroethene

OUE 2009
FORT RICHARDSON, ALASKA

GROUNDWATER MONITORING LOCATIONS AND RESULTS

DECEMBER 2010 — 32-1-17261-741

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2-1

FIGURE 2-1 BACK

TABLE 2-2
Groundwater Quality Monitoring Parameters

Purging Parameters[a]	**Equipment**
Water level	Water-level indicator
Conductivity	Calibrated YSI 556 field meter
Temperature	Calibrated YSI 556 field meter
Dissolved oxygen	Calibrated YSI 556 field meter
pH	Calibrated YSI 556 field meter
Oxidation Reduction Potential (ORP)	Calibrated YSI 556 field meter
Turbidity	Calibrated Hach Turbidimeter
Parameters	**Analytical Method**
Volatile organic compounds	SW8260
Sulfate	EPA 300.0
Nitrate/nitrite	SW9056
Light gases (methane)	RSK 175
Dissolved metals (aluminum, arsenic, iron, and manganese)	SW6020

[a]Analyzed in the field at the time of sample collection

SECTION 3

Field Activities

3.1 Groundwater Elevations

Table 3-1 provides the depths to water, groundwater elevations, and the aquifers sampled. Measurements were taken on May 12 and September 21, 2009. As discussed in Section 1.3, the ten wells sampled during the 2009 monitoring events were screened within either the shallow perched system or downgradient of the confluence of the perched and locally semi-confined systems where the locally semi-confined system becomes unconfined (Figure 1-3).

TABLE 3-1
Monitoring Well Information Summary and May and September 2009 Groundwater Conditions

Monitoring Well	Total Well Depth (ft)[a, b]	Top of Casing Elevation (ft)[C]	Depth to Water (ft)[a] May/September	Groundwater Elevation (feet above mean sea level)[C] May/September	Aquifer Sampled
AP-3468	114.7	293.38	109.94/110.03	183.44/183.35	Shallow, unconfined
AP-3534	138.8	293.05	111.00/110.74	182.05/182.31	Shallow, unconfined
AP-3774	116.4	289.46	108.03/107.77	181.43/181.69	Shallow, unconfined
AP-3870	110.3	281.92	100.78/100.48	181.14/181.44	Shallow, unconfined
AP-3871	120.3	293.46	111.94/111.66	181.52/181.80	Shallow, unconfined
AP-3893	124.2	307.49	93.04/92.55	214.45/214.94	Perched
AP-4341	68.0	294.23	64.02/64.10	230.21/230.13	Perched
AP-4342	101.1	293.36	97.23/97.43	196.13/195.93	Perched
AP-4411	72.8	292.82	67.69/68.02	225.13/224.80	Perched
AP-4413	75.3	291.36	72.18/72.42	219.18/218.94	Perched

[a]All depths are provided in feet below top of casing.
[b]Total well depths were measured during the December 2008 water level survey of OUE wells.
[C]Top of casing elevations used in groundwater elevation calculation from 2003 well survey except AP-3870, which has been back-calculated from the *Fort Richardson Operable Unit E Armored Vehicle Maintenance Area Spring 2007 Groundwater Monitoring Report* (CH2M HILL, 2007a).

3.2 Groundwater Sample Collection

Groundwater samples were collected using low-flow techniques in accordance with procedures outlined in the CH2M HILL *Quality Assurance Program Plan* (2002), *Supplemental Quality Assurance Project Plan for Fort Richardson Groundwater Sampling at Operable Unit B,*

Operable Unit E, and Building 762 (CH2M HILL 2007c), *Sampling and Analysis Plan for Groundwater Monitoring at Fort Richardson Operable Unit B, Operable Unit E, and Building 762* (CH2M HILL, 2007b), and *Sampling and Analysis Plan Technical Memorandum, Groundwater Monitoring Fort Richardson, Alaska* (Shannon & Wilson, 2008) whenever possible.

3.3 Quality Assurance and Quality Control

Four types of quality assurance samples were collected to ensure data quality: trip blanks, equipment blanks, field duplicates, and matrix spike (MS)/matrix spike duplicate (MSD). For each sampling event, one field duplicate, one MS/MSD sample set, and one equipment blank and one trip blank per sample batch were submitted to the laboratory for analysis. The analytical Data Quality Evaluation Report and ADEC Laboratory Data Review Checklists are included in Appendix B.

3.4 Investigation-Derived Waste Handling and Disposal

All water generated from well purging and equipment decontamination was collected in a 55-gallon drum 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.

SECTION 4

Results

This section discusses the analytical results for each analysis completed.

4.1 Analytical Methods

The parameters listed in Table 2-2 are divided into the following categories for discussion:

- VOCs
- Dissolved metals (aluminum and arsenic)
- Biodegradation parameters
  - Dissolved oxygen
  - Sulfate
  - Nitrate/nitrite
  - Methane
  - Dissolved metals (iron and manganese)

Figure 2-1 presents historical results for the COCs included in Table 2-1 for groundwater underlying the AVMA. Groundwater elevations and concentrations of carbon tetrachloride and chloroform are also included in Figure 2-1. The following subsections summarize the analytical results for each category of analysis. Complete validated analytical laboratory results are provided in Appendix B-2, and raw analytical data packages have been included electronically.

4.2 Analytical Results

4.2.1 Volatile Organic Compounds

VOCs detected during sampling of the 10 wells in May and/or September 2009 are as follows:

- PCE was detected during both sampling events in samples from seven wells (AP-3468, AP-3534, AP-3774, AP-4341, AP-4342, AP-4411, and AP-4413) with concentrations ranging from 0.560 J micrograms per liter (µg/L) detected in the September sample from AP-3774 to 64.7 µg/L reported in the September sample from AP-3468 (Figure 2-1). Except for the PCE levels reported in AP-3774, the detected PCE concentrations exceed the MCL and occurred in wells that have histories of PCE contamination. Four of these wells (AP-4341, AP-4342, AP-4411, and AP-4413) are screened across the perched aquifer, directly below the AVMA. Three wells (AP-3468, AP-3534, and AP-3774) are screened downgradient from these three wells, at the confluence, or downgradient, of the perched aquifer system and the locally semi-confined system (Figure 1-3). PCE was not detected in three of the wells located downgradient of the extent of contamination, AP-3870 and AP-3871 or the cross-gradient well, AP-3893.

- Biodegradation of PCE in groundwater sometimes occurs naturally by the process of reductive dechlorination and produces intermediate daughter products including trichloroethene (TCE), 1,1-dichloroethene (DCE), cis- and trans-dichloroethene (cis-DCE/trans-DCE), and vinyl chloride (VC). None of these PCE degradation daughter products were detected in the wells sampled during the 2009 sampling events.
- Carbon tetrachloride was detected in five wells (AP-3871, AP-4341, AP-4342, AP-4411, and AP-4413) during both sampling events except for the May sample collected from AP-4411, which was "non-detect" for carbon tetrachloride. Carbon tetrachloride concentrations in the five wells ranging from 0.500J µg/L in the May sample from AP-4341 to 1.66 µg/L in the September sample from AP-4413. The reported carbon tetrachloride concentrations are less than the MCL of 5 µg/L and occurred in wells that have histories of carbon tetrachloride detections. With the exception of AP-3871, the remaining wells are screened across the perched aquifer, directly below the AVMA.
- Chloroform was detected in six wells in May and four of the ten on-site wells during the September sampling event. Chloroform concentrations detected during both sampling events ranged from 0.340J µg/L (AP-4411) in May to 5.58 µg/L (AP-3871) in September. These chloroform levels are less than the ADEC MCL in 18 AAC 75 of 100 µg/L
- Tetrachloroethene was detected in seven wells (AP-3774, AP-4413, AP-4341, AP-3534, AP-3468, AP-4342, and AP-4411) during both sampling events at concentrations ranging from 0.560J µg/L (AP-3774) to 121 µg/L (AP-4413) in the sample collected in September.

4.2.2 Biodegradation Parameters

The evaluation of geochemical parameters provides a brief look at indicators of biodegradation of chlorinated compounds (such as PCE) to determine whether they provide weight-of-evidence support for the existence of possible biodegradation pathways at the AVMA. These pathways could be an effective route of natural attenuation for PCE under certain biochemical conditions, namely anaerobic environments in the presence of petroleum products. During the 2002-2003 RI (CH2M HILL, 2004), petroleum compounds, including diesel-range organics, residual-range organics, and gasoline-range organics, were detected sporadically at low levels within the extent of contamination. These compounds are no longer monitored at the AVMA.

The following evaluation is based on a comparison of geochemical concentrations within the extent of contamination, which includes wells AP-3468, AP-3534, AP-4341, AP-4342, AP-4411, and AP-4413, and with the cross-gradient background well AP-3893. Relative to background conditions, dissolved oxygen, nitrate, and sulfate concentrations are expected to be lower; dissolved iron, dissolved manganese, and methane are expected to be higher, within the extent of contamination if biodegradation is occurring. The following sections provide an evaluation of the geochemical results.

Dissolved Oxygen

Dissolved oxygen is the most energetically favorable electron acceptor for biodegradation and is used strictly under aerobic conditions. However, for PCE biodegradation to occur anaerobic conditions must exist and a less energetically favorable electron acceptor must be utilized (i.e. nitrate/nitrate, dissolved iron, or manganese). Dissolved oxygen is detrimental

to the strictly anaerobic bacteria that are responsible for reductive dechlorination of longer-chain chlorinated compounds such as PCE; thus, anaerobic or anoxic conditions (dissolved oxygen concentrations less than 2 milligrams per liter [mg/L]) are required for PCE biodegradation. The presence of petroleum hydrocarbons also benefits this process. The lowest detected dissolved oxygen concentration detected in an AVMA monitoring well was 0.48 mg/L, which was recorded in background well AP-3893 in September 2009. Dissolved oxygen concentrations within the area of contaminated groundwater ranged from 4.20 to 12.40 mg/L, which indicates that aerobic conditions are present within the plume boundary.

Complete dissolved oxygen results are included on the Water Sampling Logs in Appendix A.

Total Nitrate/Nitrite

Following dissolved oxygen, nitrate is the second most energetically favorable electron acceptor and can be utilized by facultative anaerobic bacteria. Standard laboratory analysis for nitrate includes analysis of the total nitrate and nitrite due to the short reaction life of nitrite which chemically converts to nitrate rapidly under natural conditions. As a result, nitrite concentrations are typically very low or non-detect in groundwater.

Conditions at the AVMA are currently aerobic; as a result, evidence of denitrification in nitrate levels was not expected. Nitrate was detected in all wells but one (AP-3893) at concentrations ranging from 0.854 mg/L to 3.06 mg/L. Nitrate was not detected in samples collected from the background well, AP-3893. Nitrite was not detected in the groundwater samples collected in May or September. Because the ratios of nitrate vs. nitrite are necessary to determine if denitrification is taking place, these results do not provide support that nitrate/nitrite play a key role in in-situ biodegradation at this site.

Dissolved Iron and Manganese

Dissolved iron was detected in nine of the ten wells sampled in May 2009 with concentrations ranging from 353J µg/L in well AP-4413 to 692J µg/L in well AP-4341. However, dissolved iron was detected in only three of the wells (AP-3468, AP-4342, and AP-4411) in September 2009, with concentrations ranging between 998J µg/L and 36,700 µg/L. There is no clear pattern of iron being used as an electron acceptor at the site.

Dissolved manganese was detected in each of the on-site wells (with the exception of Well AP-3534) during both sampling events. Dissolved manganese concentrations in the six plume wells were between 1.40 µg/L (in May) and 870 µg/L (in September), and in non-plume wells at concentrations between 0.956 J µg/L and 43.3 µg/L.

These results indicate that biodegradation is not occurring through the anaerobic iron and manganese reduction pathways.

Sulfate

Sulfate was detected in each of the on-site wells during both sampling events, with concentrations ranging from 13.5 mg/L to 33.8 mg/L. In general, sulfate concentrations across the area of contaminated groundwater ranged from about 14 mg/L to a 29 mg/L. These results indicate that sulfate is not being utilized as an electron acceptor for in-situ biodegradation within the area of contaminated groundwater.

Methane

Methane was not detected in the samples collected during the 2009 AVMA sampling events. This finding strongly indicates that the anaerobic biodegradation pathway of methanogenesis is not occurring.

4.2.3 Dissolved Aluminum and Arsenic

Aluminum was detected in one well (AP-4341) during the May sampling event and detected in three wells (AP-3468, AP-4342, and AP-4411) during the September sampling event. The reported 2009 dissolved aluminum concentrations exceed the MCL.

Arsenic was detected in the background well (AP-3893) during both the May and September sampling events. Arsenic was also detected in two of the plume wells (AP-4342 and AP-4411) in September. The highest arsenic concentrations were reported in the background well (AP-3893. Dissolved arsenic concentrations reported in the samples from AP-3893 and AP-4411 exceed the MCL. Table 4-1 summarizes the contaminants found in OUE groundwater that exceed MCLs.

TABLE 4-1
Contaminants that Exceed MCLs and Their Locations at the AVMA, May and September 2009

Contaminant	Cleanup Level[a] (µg/L)	Exceedance Locations	
		May 2009	September 2009
PCE	5	AP-4413 (113 µg/L)	AP-4413 (121 µg/L)
		AP-4341 (27.9 µg/L)	AP-4341 (16.2J µg/L)
		AP-3534 (24.5 µg/L)	AP-3534 (21.9 µg/L)
		AP-3468 (53.4 µg/L)	AP-3468 (64.7 µg/L)
		AP-4342 (55.8 µg/L)	AP-4342 (58.0 µg/L)
		AP-4411 (7.94 µg/L)	AP-4411 (15.6 µg/L)
Aluminum	50	AP-4341 (179J µg/L)	AP-3468 (642 µg/L)
			AP-4342 (8,440 µg/L)
			AP-4411 (22,300 µg/L)
Arsenic[b]	10	AP-3893 (22.5 µg/L)	AP-3893 (21.7 µg/L)
			AP-4342 (3.69 µg/L)
			AP-4411 (11.2 µg/L)

[a]Cleanup levels from 18 AAC 80 and 40 CFR 141/143.
[b]Arsenic levels are believed to be attributable to natural sources.
J= estimated quantity
µg/L = micrograms per liter

4.3 Analysis of Trends

4.3.1 PCE

To examine trends in PCE concentrations in wells within the approximate extent of PCE contamination (Figure 2-1), past results are presented graphically for individual wells AP-3468, AP-3534, AP-4341, AP-4342, AP-4411, and AP-4413 in Figure 4-1.

Available historic data for these six wells includes 6 to 7 years of results. To date, PCE concentrations have tended to oscillate within two standard deviations of the mean for each well, with very few exceptions. Overall, increasing or decreasing trends are not definitively apparent. Individual well concentrations throughout the area have varied by anywhere from less than 1 µg/L to more than 90 µg/L between events. The most recent results appear to fall within the normal range of variability. Definitive trends in PCE concentrations at the AVMA may become apparent over time as monitoring continues and more data are collected.

A Mann-Kendall (M-K) statistical analysis was performed to help statistically identify PCE concentration trends at the AVMA in wells within the extent of contamination. M-K analysis is designed to indicate whether an increasing or decreasing trend is present, and to give a percentage that represents the statistical confidence interval of the increase or decrease. A confidence interval of 90 percent or above is considered a "significant" indication that a trend exists; however, it does not indicate the magnitude of the increase or decrease.

According to the M-K analysis, a statistically significant increasing PCE concentration trend exists at wells AP-3468 and AP-4342. The results for the four other wells within the extent of contamination do not show a statistically significant trend for PCE.

The use of a "seasonal" version of the M-K analysis was also considered. This version of M-K analysis is useful in identifying trends when seasonal variations (often related to fluctuations in groundwater levels) are affecting concentrations. At the AVMA, however, groundwater elevations are not highly variable and do not show strong seasonal variations. In addition, sampling has not been conducted on a consistent seasonal schedule, which makes sorting results into "seasons" difficult. As a result, the use of a seasonal M-K analysis was determined to not be useful at this site.

Samples from the three downgradient wells (AP-3774, AP-3870, and AP-3871) and cross-gradient well AP-3893 have historically produced PCE results ranging from non-detect to occasional low-level concentrations that are less than the MCL of 5 µg/L. Except for the PCE concentrations detected in well AP-3774 (0.650 J µg/L in May and 0.560J µg/L in September), PCE was not detected in the three downgradient wells or the cross-gradient well. These data suggest that the extent of contamination continues to remain relatively unchanged.

Figure 4-1: PCE Concentration Trends for Wells within the Extent of Contamination

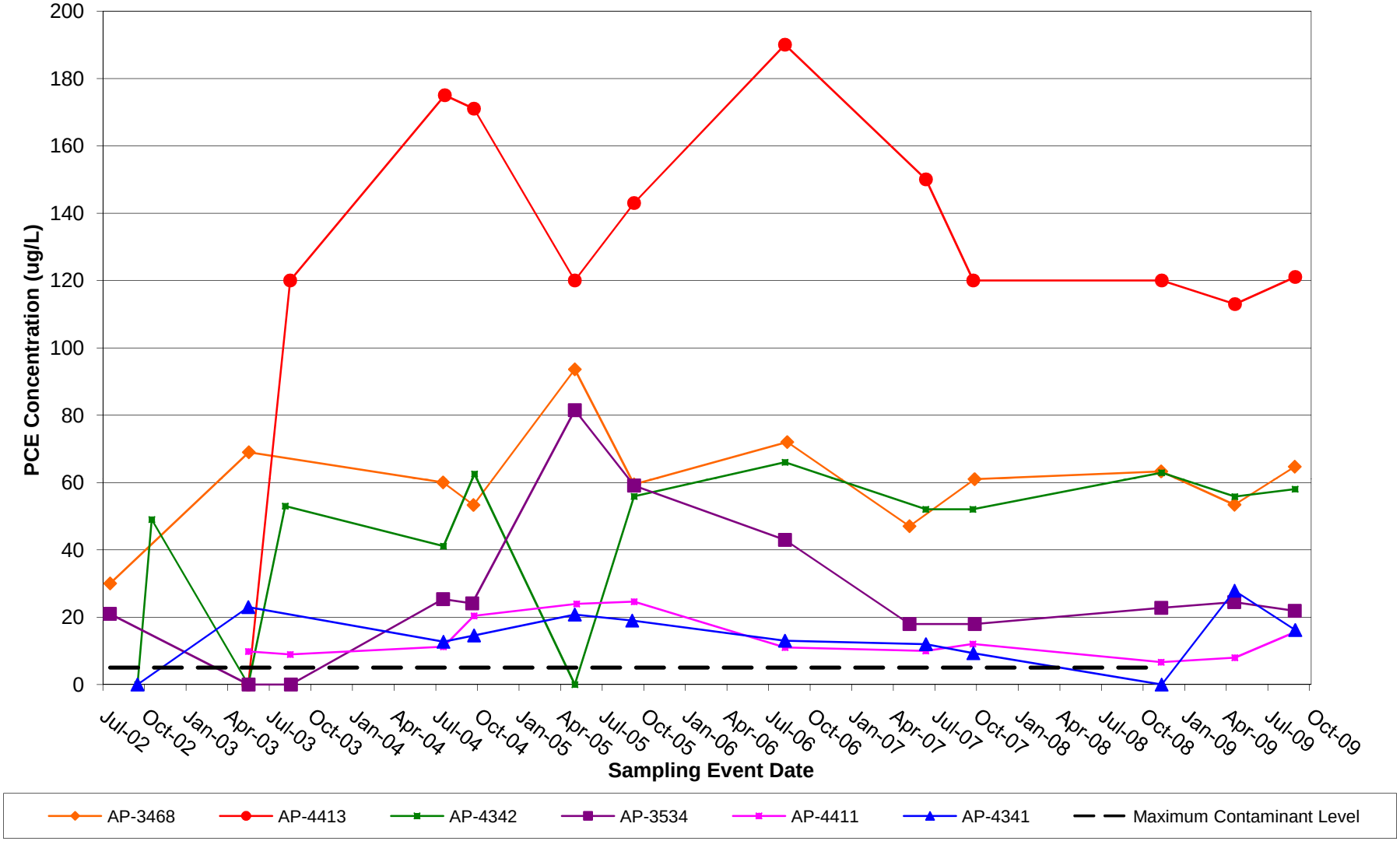


FIGURE 4-1 BACK

4.3.2 Other Detected VOCs

VOC breakdown products (TCE, DCE, cis-DCE, trans-DCE, and VC) of PCE biodegradation were not detected, indicating that these compounds do not exist in the AVMA wells within the extent of PCE contamination. This continued trend suggests that biodegradation is not occurring through reductive dechlorination pathways.

The other detected VOCs, including carbon tetrachloride and chloroform, continue to exist in AVMA wells both within and outside the extent of PCE contamination. These analytes are frequently detected at concentrations less than established MCLs and tend to fluctuate between non-detect and several µg/L (see Figure 2-1). These compounds are not breakdown products of PCE and appear to exist at the site independently from PCE contamination. Chloroform is a daughter product of anaerobic carbon tetrachloride degradation, which suggests that anaerobic degradation of carbon tetrachloride may be occurring on site. No significant increasing or decreasing trends are evident for these compounds.

4.3.3 Dissolved Aluminum

Available historical aluminum results are shown in Figure 2-1. Historical aluminum levels at OUE have sporadically exceeded the MCL of 50 µg/L in 8 of the 10 wells. Results from the 2009 sampling events included one estimated exceedance in well AP-4341 in May and three exceedances in September in wells AP-3468, AP-4342, and AP-4411. Dramatic differences in concentrations often exist from year to year within individual wells. For example, overall results from well AP-4411 have ranged from non-detect to 22,300 µg/L. These differences in observed results may be the outcome of some of the earlier sampling results being reported as total metals results; whereas more recent results (2004 to the present) have been reported as only dissolved metals. The aluminum concentrations in the AVMA wells are currently considered to be representative of background levels.

4.3.4 Dissolved Arsenic

Arsenic levels are also believed to be the result of natural background levels in the area. Historical dissolved arsenic levels have not exceeded the MCL (10 µg/L) within the area of PCE contamination. However, results from the September 2009 sampling event include one exceedance in Well AP-4411 with a reported dissolved arsenic concentration of 11.2 µg/L. The highest levels of arsenic are consistently found in cross-gradient well AP-3893, where they range from 13.5 µg/L to 24.2 µg/L, which may indicate that these concentrations represent background levels.

4.3.5 Biodegradation Parameters

Natural attenuation parameter results for dissolved oxygen, iron, methane, sulfate, and nitrate/nitrite were similar to previous results (CH2M HILL, 2006; CH2M HILL, 2007a, CH2M HILL 2007d). It has been determined that the concentrations of these parameters, along with the lack of PCE daughter products and historically low presence of petroleum products, suggest that biodegradation is not a major component of natural attenuation at the site. The primary natural attenuation pathway for PCE at the AVMA is considered to be dilution.

SECTION 5

Conclusions

Conclusions based on historical and current data through the May and September 2009 monitoring event are as follows:

- PCE is the only established COC for OUE AVMA. The area of the extent of PCE contamination appears to be stable and contained; samples from the three downgradient wells continue to have non-detect or trace results. No significant increasing or decreasing trends in the PCE-affected area are statistically apparent from the historical monitoring data, except for the increasing PCE concentration trend interpreted at wells AP-3468 and AP-4342.
- The results of biodegradation parameters and the near-absence of PCE breakdown products continue to suggest that biodegradation of PCE may be limited at the AVMA and that the primary mechanism of natural attenuation at the site continues to be dilution. For sites where biodegradation is not playing a key role in the attenuation process, monitoring and evaluation of biodegradation parameters provides very little value towards the understanding of the site contaminant conditions. Detected concentrations of other VOCs (such as chloroform), which are considered to be independent of the PCE contamination, continue to exist at low levels (below MCLs) and do not demonstrate increasing or decreasing trends.
- Aluminum was detected in one well (AP-4341) during the May 2009 sampling event and detected in three wells (AP-3468, AP-8440, and AP-22,300) during the September 2009 event. Each of the aluminum detections exceeded MCLs in 2009. The source of aluminum, which is detected sporadically in some of the OUE AVMA wells, is currently believed to be natural (background).
- Arsenic levels in groundwater at the AVMA in PCE-affected wells AP-4411 and AP-3893 exceeded MCLs during the 2009 monitoring events. The only other MCL exceedance for arsenic continues to be from cross-gradient well AP-3893.

SECTION 6

References

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Appendix A
Field Data Collection Forms

Appendix A1
Water Sampling Logs

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~50° F, Clear
Site: Ft. Rich. OU E Well No.: AP-346S
Date: 5/14/09 Time Started: 1142 Time Completed: 1350

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition: Good
Well Identification (labeled with well numbers): Yes
Well locking cap and lock present: Yes ☑ No ☐ Notes: Well cap cracked
Field Screening with PID: 0.0

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1134 Date of Depth Measurement: 5/12/09
Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other: steel casing
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 114.70' (116') Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 109.94 (109.50' 5/14/09
Water Column in Well: 4.9 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.78 (Water Column in Well x Gallons per foot)

after purge measure 116.60'

PURGING DATA

Date Purged: 5/14/09 Time Started: 1225 Time Completed: 1315
Four Well Volumes: 3.17 (Gallons in Well x 4)
Gallons Purged: 2.5 gal Depth of Pump Placement: 112' btoc
Maximum Drawdown: 110.13 Pump Rate: 237.5 ml
Well Purged Dry: Yes ☐ No ☑ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1227	0.3	0.12	110.61	9.06	555	12.86	6.24	149.7	>1000
12.50	0.5	0.12	111.27	7.50	535	11.16	6.29	176.6	>1000
1259	0.7	0.15	111.05	8.54	512	10.92	6.32	167.2	>1000
1305	1.2	0.15	NR	9.91	589	10.40	6.33	156.0	>1000
1313	1.9	0.15	111.05	10.05	594	9.60	6.29	146.1	>1000
1315	1.6	0.15	110.91	11.96	589	9.63	6.35	141.2	>1000
1322	1.6	0.15	110.91	12.54	587	9.23	6.42	138.2	>1000

SAMPLING DATA

Odor: None Color: brown 1340
Sample Designation: 09FRCANIA-11 Time / Date: ~~1317~~ 5/14/09
QC Sample Designation: Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks: Had to re-start groundfos x5 times. DTW meter was getting caught on pump so latter readings could not be measured
Sampling Personnel: JPH

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OU E

Well No.: MP 306B

Date: 5/14/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1330	2.0	0.15		10.46	0.02	10.27	6.42	124.6	21000
1334	2.2	0.15		10.41	556	9.62	6.39	116.1	21000
1340	2.7	0.15		10.45	546	9.66	6.39	109.6	999

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~60°, overcast
Site: OUE Well No.: AP3534
Date: 5/13/09 Time Started: 1550 Time Completed: 17:40

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition): Good
Well Identification (labeled with well numbers): AP3534
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 2.5 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1124 Date of Depth Measurement: 5/12/09
Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 138.75' Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 111.00
Water Column in Well: 27.75 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 4.44 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/13/09 Time Started: 1614 Time Completed: 1450
Four Well Volumes: 17.76 (Gallons in Well x 4)
Gallons Purged: 7.5 Depth of Pump Placement: 113.65'
Maximum Drawdown: 111.33' Pump Rate: 245 Hz
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	~~Drawdown~~ DTW (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1447	1.1	0.7	111.96	6.57	359	7.16	7.46	-88.6	13.9
1620	2.2	0.7	112.43	9.65	385	5.61	7.53	-43.3	10.5
1631	3.3	0.7	112.10	10.34	394	5.05	7.57	-28.4	5.90
1639	4.4	0.7	110.75	10.52	396	4.77	7.57	-25.3	4.16
1647	5.5	0.7	110.95	10.54	396	4.57	7.58	-23.7	4.16
1645	6.6	0.7	110.95	10.50	392	4.35	7.58	-22.9	2.32
	/	/	/	/	/	/	/	/	/

SAMPLING DATA

Odor: None Color: clear
Sample Designation: 09FRCAWA-06 Time / Date: 1650 5/13/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks: MS/MSD Sample collected, same designation
Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: [illegible]

Well No.: AP3534

Date: 5/13/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~55°F, Sunny
Site: OUE Well No.: AP3774
Date: 5/13/09 Time Started: 9:15 Time Completed: 11:45

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition: Good
Well Identification (labeled with well numbers): AP3774
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.1

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 938 Date of Depth Measurement: 5/13/09
Measuring Point (MP): Top of PVC Casing (circled) / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 116.40 Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 108.03
Water Column in Well: 8.37 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.34 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/13/09 Time Started: 9:30 Time Completed: 10:45
Four Well Volumes: 5.36 (Gallons in Well x 4)
Gallons Purged: 4.5 Depth of Pump Placement: 111.9'
Maximum Drawdown: 108.36 Pump Rate: Varies
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (~~gal~~ L/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
935	0.33		107.97	6.00	~~3~~ 454	12.20	7.20	383	—
945	0.66	0.4	107.97	6.88	457	7.45	7.19	58.2	414
959	1.33	0.4	107.95	11.81	507	6.95	7.23	~~392~~	437
1010	1.66	0.3	107.95	11.54	508	6.60	7.23	294	[illegible]
1021	2.0	0.5	—	11.02	506	7.18	7.26	75.4	348
1023	2.33	0.5	107.97	[illegible]	[illegible]	6.40	7.19	57.0	303
1027	2.66	0.5	107.97	[illegible]	[illegible]	7.30	7.25	49.7	267

SAMPLING DATA

Odor: None Color: Sl. turbid brown
Sample Designation: 09FRQAWA-06 Time / Date: 1042 5/13/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump (circled) / Other:
Sampling Method: Grundfos Submersible Pump (circled) / Other:
Remarks: Had to restart pump ~5 times because flow rate would not remain constant, thus temp flux
Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OUE

Well No.: AP3774

Date: 5/13/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1032	30	[illegible]	107.97	1.91	523	6.78	7.21	497	248
1035	33	0.3	107.97	1269	525	7.19	7.22	526	206

Sampling Personnel: Jake Greig, Joe Thomas

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: [illegible]
Site: COE Well No.: AP3870
Date: 5/13/09 Time Started: 12 30 Time Completed: 1:40

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition): Good
Well Identification (labeled with well numbers): AP3870
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 27 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 908 Date of Depth Measurement: 5/12/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 19.25' Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 10.78'
Water Column in Well: 9.47' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.51 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/12/09 Time Started: 13:08 Time Completed: 1330
Four Well Volumes: 6.0 (Gallons in Well x 4)
Gallons Purged: 4.1 Depth of Pump Placement: 10.5' below MP
Maximum Drawdown: 10.11' Pump Rate: 230 ml = 0.9 L/min
Well Purged Dry: Yes ☐ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1311	0.4	0.5	0	7.34	~~0.124~~ 0.387	7.06	7.24	~~[illegible]~~	137
1313	0.8	0.9	0	7.90	290	6.82	7.08	53.6	154
1315	1.3		0	10.75	310	6.17	7.23	20.5	90.4
1317	1.7		0	11.55	318	6.30	7.41	14.2	68.3
1319	2.1		0	11.62	319	6.32	7.38	9.2	49.6
1320	2.5		0	11.46	318	6.26	7.23	~~[illegible]~~ 17.4	31.9
1322	2.9	↓	0	11.14	317	6.32	7.22	11.4	28.5

SAMPLING DATA

Odor: NE Color: Clear
Sample Designation: 09FROAWA-02 Time / Date: 1330 5/12/09
QC Sample Designation: Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks: Engineer present

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OUE

Well No.: AP3876

Date: 5/12/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
833	33	04	0	1102	315	635	730	42	

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~60° F, Clear
Site: OUE Well No.: AP3871
Date: 5/13/09 Time Started: 1120 Time Completed: 1300

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition: Good
Well Identification (labeled with well numbers): AP3871
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.0

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 956 Date of Depth Measurement: 5/12/09
Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: ~~111.90~~ 120.30' Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 111.94
Water Column in Well: 8.36' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.34 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/13/09 Time Started: 1141 Time Completed: 1226
Four Well Volumes: 5.35 (Gallons in Well x 4)
Gallons Purged: 4.5 Depth of Pump Placement: 113
Maximum Drawdown: 13.27 Pump Rate: 235 Hz
Well Purged Dry: Yes ☐ No ☑ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	~~Drawdown~~ DTW (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1146	0.33	0.6	111.90	7.03	421	9.23	7.32	6.2	15.8
1156	0.66	1.2	-	7.29	424	8.52	7.34	-1.5	15.3
1206	1.0	0.7	111.90	7.34	435	8.16	7.33	-3.2	15.6
1154	1.33	0.3	111.90	9.71	458	8.10	7.36	-40.4	17.3
1302	1.66	0.6	111.90	10.67	470	8.67	7.41	-21.8	17.7
1209	2.0	0.5	111.90	11.12	477	7.34	7.36	-34.9	18.5
1218	2.33	0.5	111.90	12.25	485	7.55	7.37	-26.6	21.8

SAMPLING DATA

Odor: None Color: Clear
Sample Designation: 05FRCAWM-07 Time / Date: 1220
QC Sample Designation: - Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks:
Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: COE

Well No.: AP3871

Date: 5/13/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1214	2.66	0.4	111.9	13.24	505	7.19	7.37	-33.4	20.1
1217	3.00	0.4	111.9	14.53	524	6.57	7.37	-37.8	14.7
1222	3.33	0.4	111.9	14.89	525	6.71	7.37	-32.8	12.0
1225	3.5	0.4	111.9	14.9	529	6.36	7.38	-29.5	10.8

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: 60° F, Clear
Site: OUE Well No.: AP3893
Date: 5/12/09 Time Started: 14:35 Time Completed: 16:35

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition: Good
Well Identification (labeled with well numbers): AP3893
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.0

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1019 Date of Depth Measurement: 5/12/09
Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 124.15' Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 93.04
Water Column in Well: 31.11' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: ~~5~~ 4.98 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/12/09 Time Started: 1449 Time Completed: 1605
Four Well Volumes: 19.91 (Gallons in Well x 4)
Gallons Purged: 10.5 Depth of Pump Placement: 119'
Maximum Drawdown: 93.37' Pump Rate: 223 Hz
Well Purged Dry: Yes ☐ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1500	1.25	0.5	93.14	7.83	201	1.95	8.16	19.1	27.7
1505	2.50	0.5	93.22	12.06	227	1.41	8.19	-10.2	14.2
1512	3.75	0.5	93.22	10.59	214	1.35	8.21	-12.0	12.5
1523	5.0	0.4	93.22	11.23	222	1.42	8.19	-14.7.0	5.49
1532	6.25	0.4	93.21	11.35	225	1.34	8.23	-16.2.7	3.30
1541	7.5	0.5	93.21	11.27	223	1.28	8.21	-17.1.3	2.57
1551	8.75	0.5	93.22	11.25	223	1.20	8.21	-16.7.4	1.85

SAMPLING DATA

Odor: None Color: Clear
Sample Designation: 09FECAWA-03 Time / Date: 1600 5/12/09
QC Sample Designation: Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks:
Sampling Personnel: JPC

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OUE

Well No.: AP3839

Date: 5/12/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1552	6	0.5	9.23	11.12	322	1.10	8.29	-18.0	6.65

Sampling Personnel: JPS

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~55° F, Pt. Cloudy
Site: QUE Well No.: AP4341
Date: 5/14/09 Time Started: 900 Time Completed: 1015

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition): Good
Well Identification (labeled with well numbers): AP4341 (in sharpie)
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.2 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1102 Date of Depth Measurement: 5/12/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: unknown
Total Depth of Well Below MP: 67.96' Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 64.02
Water Column in Well: 3.94' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.63 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/14/09 Time Started: 9:10 Time Completed: 1749
Four Well Volumes: 2.52 gal (Gallons in Well x 4)
Gallons Purged: Depth of Pump Placement: NA
Maximum Drawdown: 64.35 Pump Rate: NA
Well Purged Dry: Yes ☑ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
928	0.9	—	—	8.73	486	10.41	7.76	-70	>1000
1122	1.8	—	—	9.92	459	12.37	7.32	-69.1	>1000
1501	2.24	—	—	11.50	483	12.17	6.75	172.4	>1000
1749	- Time of Sample collection			12.7	473	10.64	6.59	352.2	252

SAMPLING DATA

Odor: No Color: Clear
Sample Designation: 090502AWA-12 Time / Date: 1749 5/14/09
QC Sample Designation: — Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other: Bailer
Sampling Method: Grundfos Submersible Pump / Other: "
Remarks: Well purged dry 3 times. Recharged 100% between purge cycles.
Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WELL PURGED DRY LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~65°, clear, slt breeze

Area: OUE Well No.: AP4341

Date: 5/14/09 Time Started: 900 Time Completed: ~~1550~~ 1550 AK

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1102 Date of Depth Measurement: 5/12/09

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: —

Diameter of Casing: 2" Well Screen Interval: Unknown

Total Depth of Well Below MP: 67.96' Product Thickness, if noted: None

Depth-to-Water (DTW) Below MP: 64.02'

Water Column in Well: 3.94' (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 0.63 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/14/09 Time Started: 9:10 Time Completed: 1805

80% Recovery Water Column: ~~64.80'~~ 3.15' (Water Column in Well x 0.8)

80% Recovery DTW: 64.80' (Initial DTW + (Water Col. – 80% Recovery Water Col.)

Purging	Time Well Purged Dry	Time Well Was 80% Recovered	DTW	~~Pump Rate~~
1	9:20	1108 63.95'	→	—
2	1122	1108 1452	63.95	—
3	1458	~~1452~~ 1740	63.95	—

SAMPLING DATA

Odor: None Color: Brown

Sample Designation: 09FRQAWA-12 Time / Date: 1749 5/14/09

QC Sample Designation: — Time / Date: —

Evacuation Method: Grundfos Submersible Pump / Other: Bailer

Sampling Method: Grundfos Submersible Pump / Other: Bailer

Remarks: See Water Sample log for parameters

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

63 . 95 11:00

WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Sunny on 5/14/09, rainy on 5/15/09

Site: OUE Well No.: AP4342

Date: 5/14/09 Time Started: 1510 (5/14/09) Time Completed: 1200 (5/15/09)

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): good

Casing Condition (bent, dented, paint condition: some chips missing from TOC

Well Identification (labeled with well numbers): AP4342

Well locking cap and lock present: Yes ☒ No ☐ Notes:

Field Screening with PID: 0.0 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1148 Date of Depth Measurement: 5/12/09

Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other: 99.0'

Diameter of Casing: 2" Well Screen Interval: Unknown

Total Depth of Well Below MP: 101.10' 100.7 (4/15) Product Thickness, if noted: 0.0

Depth-to-Water (DTW) Below MP: 97.23 97.19 (5/15)

Water Column in Well: 3.87' (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 0.62 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/14/09 Time Started: 1535 Time Completed: 1605

Four Well Volumes: 2.47 (Gallons in Well x 4)

Gallons Purged: 1.6 Depth of Pump Placement: 99' btoc

Maximum Drawdown: 97.56 Pump Rate: 222 Hz.

Well Purged Dry: Yes ☐ No ☑ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1540	0.4	0.2	98.41	9.17	415	10.66	6.46	22.5	897
1545	0.55	~~0.5~~ 0.2	98.41	9.29	418	10.20	6.52	37.6	71000
1548	0.65	~~0.5~~ 0.2	97.5	9.58	416	9.93	6.51	40.4	71000
1553	0.8	~~0.5~~ 0.2		9.95	419	8.19	6.54	39.5	71000
1555	1.0	~~0.5~~ 0.2	97.49	9.88	~~419~~ 419	8.28	6.59	47.9	71000
1558	1.2	0.2	97.29	10.02	~~420~~ 419	~~7.57~~ 7.62	6.59	46.4	71000
1605	1.4	0.2	97.79	10.52	417	7.62	6.49	58.8	71000

SAMPLING DATA

Odor: No Color: Brown

Sample Designation: OUE-ROAWA-15 Time / Date: ~~1600~~ 1140 5/15/09

QC Sample Designation: — Time / Date: —

Evacuation Method: Grundfos Submersible Pump / Other: —

Sampling Method: Grundfos Submersible Pump / Other: Bailer

Remarks: Pump failed to function after parameters stabilized. Returned to AP4342 on 5/15 for sample. Since pump would not function, sampled w/ bailer

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Sunny, ~60°F, slt wind
Site: OUE Well No.: AP4411
Date: 5/13/09 Time Started: 1315 Time Completed: 1440 (5/15)

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): good
Casing Condition (bent, dented, paint condition): dirt in ~~cap~~ monument
Well Identification (labeled with well numbers): no label (flush mount)
Well locking cap and lock present: Yes ☐ No ☒ Notes: Flush monument
Field Screening with PID: 0.8 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10.44 Date of Depth Measurement: 5/12/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: —
Diameter of Casing: 2" Well Screen Interval: unknown
Total Depth of Well Below MP: 72.80 Product Thickness, if noted: <0.01'
Depth-to-Water (DTW) Below MP: 67.69' DTP = 67.68
Water Column in Well: 5.11 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.82 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/14/09 Time Started: 1340 Time Completed: 1440 (5/15/09)
Four Well Volumes: 3.27 (Gallons in Well x 4)
Gallons Purged: Depth of Pump Placement: NA
Maximum Drawdown: 68.02 Pump Rate: NA
Well Purged Dry: Yes ☒ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
	~~0.2~~								
5/14	1.6	—	—	9.51	731	12.58	6.77	493	>1000
5/14 1410	2.5	—	—	6.50	695	11.56	6.74	215.9	>1000
5/15 1010	4.0	—	—	7.07	617	12.20	6.98	195.5	71000
1426	—	—	—	9.16	1092	11.64	7.73	367.7	452

SAMPLING DATA

Odor: None Color: Brown
Sample Designation: QCFROMWA-18 Time / Date: 1420 5/15/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump (Other): Bailer
Sampling Method: Grundfos Submersible Pump (Other): Bailer
Remarks: removed ~3" of dirt and gravel from monument
See Well Purge Dry Log
Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WELL PURGED DRY LOG

Shannon & Wilson, Inc.

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~55° F, pt cloudy
Area: OUF Well No.: AP4411
Date: 5/14/09 Time Started: 10:10 Time Completed: 1440 - 5/15/09

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1044 Date of Depth Measurement: 5/12/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2 Well Screen Interval: Unknown
Total Depth of Well Below MP: 72.80' Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 67.69'
Water Column in Well: 5.11' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.82 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/14/09 Time Started: 10:15 Time Completed:
80% Recovery Water Column: 4.01 (Water Column in Well x 0.8)
80% Recovery DTW: 68.71 (Initial DTW + (Water Col. – 80% Recovery Water Col.)

Purging	Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
1	1026 (5/14/09)	1400 (5/14)	68.68	—
2	1410 (5/14/09)	958 (5/15/09)	[illegible]	—
3	1010 (5/15/09)		68.97	

SAMPLING DATA

Odor: None Color: Brown
Sample Designation: QGFROAWA-18 Time / Date: 1420 5/15/09
QC Sample Designation: Time / Date: —

Evacuation Method: Grundfos Submersible Pump / Other: Disp. Bailer
Sampling Method: Grundfos Submersible Pump / Other: "

Remarks:

Sampling Personnel: JPT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

10 35 - DTW 71.98'
10 50 71.48'
11 35 70.54'

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Rain ~ 50°F
Site: OUE Well No.: AP4413
Date: 5/13/09 Time Started: 1215 Time Completed: 1405

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): Good
Casing Condition (bent, dented, paint condition: Good
Well Identification (labeled with well numbers): AP-4413
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.6 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1200 Date of Depth Measurement: 5/12/09
Measuring Point (MP): ~~Top of PVC Casing~~ / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: Unknown
Total Depth of Well Below MP: 75.30 Product Thickness, if noted: 0.0
Depth-to-Water (DTW) Below MP: 72.18
Water Column in Well: 3.12' (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.5 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 5/15/09 Time Started: 1245 Time Completed: 1315
Four Well Volumes: 2 gal (Gallons in Well x 4)
Gallons Purged: 3.8 Depth of Pump Placement: 74.0'
Maximum Drawdown: 72.51' Pump Rate: 196 ml/min
Well Purged Dry: Yes ☐ No ☑ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (~~gal~~/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1245	0.15	0.3	72.28'	7.38	593	17.62	7.36	97.6	>1000
1247	0.4	0.3	72.22	7.64	561	11.12	7.41	103.6	>1000
1250	0.6	0.3	72.22	9.26	387	9.83	7.60	98.2	>1000
1252	1.0	0.7	72.2	10.04	582	9.50	7.68	99.8	>1000
1300	1.3	0.5	72.25	12.6	~~647~~	9.53	7.34	114.7	>1000
1303	1.8	0.6	72.29	12.99	585	9.86	7.72	156.2	~~>1000~~ 507
1304	2.0	0.5	~~72~~ 72.29	12.35	585	9.28	7.75	165.6	810

SAMPLING DATA

Odor: No Color: brown
Sample Designation: 09FRCAWA-116 Time / Date: 1314 5/15/09
QC Sample Designation: 09FRCAWA-117 Time / Date: 1316
Evacuation Method: ~~Grundfos Submersible Pump~~ / Other:
Sampling Method: ~~Grundfos Submersible Pump~~ / Other:
Remarks:
Sampling Personnel: JBT

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1307	2.2	0.3	7.29	12.25	584	9.79	7.76	1668	516

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Clear ~40°F
Site: OUE Well No.: ~~AP~~-3468
Date: 9/23/09 Time Started: ~~1614~~ Time Completed: 1820

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition): OK
Well Identification (labeled with well numbers): Yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.0 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1016 Date of Depth Measurement: 9/21/09
Measuring Point (MP): (Top of PVC Casing) / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 114.70 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 110.03
Water Column in Well: 4.67 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.75 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/23/09 Time Started: 1446 Time Completed: 1756
Four Well Volumes: 3.0 (Gallons in Well x 4)
Gallons Purged: ~2 Depth of Pump Placement: ~112
Maximum Drawdown: 110.36 Pump Rate: H_2 238
Well Purged Dry: Yes ☒ No ☐ (If yes, use Well Purged Dry Log) - See note on back

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: * (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1454	0.2	0.2	114.60	7.43	635	11.80	~~7.45~~ 7.26	197.4	>1000
1604	0.4	NA	* 111.62	7.60	643	24.81	8.10	110.7	>1000
1614	0.6	NA	* 102.38(?)	6.98	654	11.03	7.58	73.0	>1000
1657	0.75	NA	109.91	6.60	628	10.80	7.47	42.5	>1000
1715	0.95	NA	110.51	6.70	626	9.32	7.39	70.0	>1000
1719	1.15	NA	110.61	6.62	628	10.60	7.45	76.5	>1000
1724	1.35	NA	110.75	6.59	631	10.22	7.43	81.2	>1000

SAMPLING DATA

Odor: none Color: clear
Sample Designation: 09FROAWA10 Time / Date: 1734 : 9/23/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other: Disp Bailer
Sampling Method: Grundfos Submersible Pump / Other: Disp Bailer
Remarks: Began w/Grundfos – purged dry – used Bailer
*Questionable: DO instrument leaking – changed after 3rd reading; DO msmt from cup, not flow-through cell
Sampling Personnel: JB + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OVE

Well No.: AP-3468

Date: 9/23/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: ~~(mS/cm)~~	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
≥ 1131	1.5	NA	110.99	6.54	634	10.88	7.39	87.1	>1000

Sampling Personnel: SJS + RPMM

*Note: Initially, using pump, thought purged dry — using bailer did not purge dry — potentially a problem w/ pump + this well as we have the last 2 events had problems keeping steady flow + quantity in well

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WELL PURGED DRY LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: _____
Area: CVE Well No.: AP-3468
Date: _____ Time Started: _____ Time Completed: _____

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: _____ Date of Depth Measurement: _____
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
Diameter of Casing: _____ Well Screen Interval: _____
Total Depth of Well Below MP: _____ Product Thickness, if noted: _____
Depth-to-Water (DTW) Below MP: _____
Water Column in Well: _____ (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: _____
Gallons in Well: _____ (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: _____ Time Started: _____ Time Completed: _____
80% Recovery Water Column: _____ (Water Column in Well x 0.8)
80% Recovery DTW: _____ (Initial DTW + (Water Col. – 80% Recovery Water Col.)

Purging	Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
1	1502 9/23/09	1600 9/23/09	110.60	NA
2				
3				

SAMPLING DATA

Odor: _____ Color: _____
Sample Designation: _____ Time / Date: _____
QC Sample Designation: _____ Time / Date: _____

Evacuation Method: Grundfos Submersible Pump / (Other: Disp Bailer)
Sampling Method: Grundfos Submersible Pump / Other: _____

Remarks: _____

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Clear ~45°F
Site: OUE Well No.: AP-3534
Date: 9/23/09 Time Started: 1522 Time Completed: 1820

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition: OK
Well Identification (labeled with well numbers): YES
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 2.7 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1010 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: ~
Total Depth of Well Below MP: 138.75 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 110.74
Water Column in Well: 28.01 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 4.48 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/23/09 Time Started: 1544 Time Completed: 1637
Four Well Volumes: 17.92 (Gallons in Well x 4)
Gallons Purged: ~8 total Depth of Pump Placement: ~134
Maximum Drawdown: 111.07 Pump Rate: Hz 235
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1548	1.1	0.6	110.88	6.77	277	6.61	7.36	145.6	17.3
1553	2.2	0.7	110.88	7.96	287	5.72	7.38	133.5	20.8
1600	3.3	0.9	110.88	9.42	299	5.13	7.46	128.1	17.4
1606	4.5	0.8	110.88	9.74	300	4.77	7.41	130.2	12.3
1613	5.6	0.7	110.88	9.86	300	4.31	7.47	135.1	6.5
1620	6.7	0.8	110.88	10.03	300	4.23	7.51	133.9	4.8
1624	~~6~~ 7.8	0.7	110.88	10.24	300	4.20	7.50	133.5	3.3

88 9/23/09

SAMPLING DATA

Odor: none Color: clear
Sample Designation: 09FROAWA08 Time / Date: 1629 ; 9/23/09
QC Sample Designation: 09FROAWA09 (MS/MSD) Time / Date: 1634 9/23/09
Evacuation Method: ~~Grundfos~~ Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks:

Sampling Personnel: SJS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Lt Rain ~45°F
Site: OUE Well No.: AP-3774
Date: 9/21/09 Time Started: 1409 Time Completed: 1632

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition): OK
Well Identification (labeled with well numbers): Yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.0 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 10:42 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 116.40 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 107.77
Water Column in Well: 8.63 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.38 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09 Time Started: 1513 Time Completed: 1548
Four Well Volumes: 5.52 (Gallons in Well x 4)
Gallons Purged: total 2.5 per cmpl Depth of Pump Placement: ~111.4
Maximum Drawdown: 108.10 Pump Rate: Hz 229.70 - 247.63
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (~~gal/min~~):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1518	0.4	0.3	107.75	6.30	322	~~5.61~~ 6.27	7.00	234.3	13.4
1524	0.7	0.2	107.75	6.41	327	4.26	6.94	218.4	13.0
1528	1.0	0.5	107.75	5.97	320	4.64	7.04	208.6	12.5
1534	1.4	0.5	107.75	8.39	343	3.53	7.12	179.5	9.8
1537	1.8	0.5	107.75	10.92	365	3.16	7.18	162.8	5.5
1539	2.1	0.5	107.75	11.59	372	3.10	7.20	153.0	4.6
	2.4								

SAMPLING DATA

Odor: none Color: clear
Sample Designation: 09FRAWA02 Time / Date: 1548 / 9/21/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks: 29.25 in Hg

Sampling Personnel: SJS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
					NA				

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Lt Rain ~45°F
Site: QUE Well No.: AP-3870
Date: 9/21/09 Time Started: 1635 Time Completed: 1840

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition: OK
Well Identification (labeled with well numbers): Yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 1.5 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1130 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 110.3 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 100.48
Water Column in Well: 9.82 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.57 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09 Time Started: 1721 Time Completed: 1746
Four Well Volumes: 6.28 (Gallons in Well x 4)
Gallons Purged: 3.4 post smp1 Depth of Pump Placement: ~105.3
Maximum Drawdown: 100.81 Pump Rate: Hz 224.31
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1727	0.4	1.0	100.50	6.10	267	10.33	7.35	176.9	57.1
1729	0.8	1.0	100.50	6.54	272	7.73	7.31	172.6	46.9
1731	1.2	1.0	100.50	7.09	276	7.53	7.32	170.0	39.6
1733	1.6	1.0	100.50	8.01	284	7.12	7.35	162.7	33.0
1735	2.0	1.0	100.50	8.38	286	6.94	7.36	160.1	31.2
1737	2.4	1.0	100.50	8.84	290	6.90	7.37	158.4	29.6

SAMPLING DATA

Odor: none Color: sl. turbid brown
Sample Designation: 09FRDAWP03 Time / Date: 1738 ; 9/21/09
QC Sample Designation: Time / Date:
Evacuation Method: ~~Grundfos~~ Submersible Pump / Other:
Sampling Method: ~~Grundfos~~ Submersible Pump / Other:
Remarks:

Sampling Personnel: JIS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Clear ~35°F
Site: WE Well No.: AP-3871
Date: 9/23/09 Time Started: 0956 Time Completed: 1125

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition: OK
Well Identification (labeled with well numbers): yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.0 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1114 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 120.3 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 111.66
Water Column in Well: 8.64 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.38 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/23/09 Time Started: 1022 Time Completed: 1059
Four Well Volumes: 5.52 (Gallons in Well x 4)
Gallons Purged: ~~5.5~~ 4.2 Depth of Pump Placement: ~115
Maximum Drawdown: 111.99 Pump Rate: 235→
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1025	0.35	0.28	111.68	5.85	296	7.25	7.07	324.2	31.1
1032	0.7	0.2	111.82	5.94	298	7.10	7.22	312.7	35.9
1040	1.05	0.2	111.85	8.82	321	7.14	7.21	302.9	33.2
1043	1.8	0.2	111.85	10.36	339	6.76	7.35	282.4	33.5
1054	2.1	0.3	111.85	11.70	350	7.29	7.38	275.3	33.2
1057	2.8	0.3	111.85	10.82	340	7.13	7.39	268.0	33.3

where sampled

SAMPLING DATA

Odor: none Color: clear
Sample Designation: 09FRCAWP06 Time / Date: 1057 / 9/23/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks:

Sampling Personnel: SJS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Clear ~35°F
Site: OWF Well No.: AP-3893
Date: 9/23/09 Time Started: 1130 Time Completed: 1354

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition: OK
Well Identification (labeled with well numbers): yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 1.3 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 1148 Date of Depth Measurement: 9/24/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 124.2 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 92.55
Water Column in Well: 31.65 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 5.06 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/23/09 Time Started: 1200 Time Completed: 1325
Four Well Volumes: 20.24 (Gallons in Well x 4)
Gallons Purged: 10 Depth of Pump Placement: ~119
Maximum Drawdown: 92.88 Pump Rate: 213
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: ±3% (~~mS~~/cm)	DO: ±10% (mg/L)	pH: ±0.2 (S.U.)	ORP: ±10 mV (mV)	Turb: (ntu)
1204	1.25	0.3	92.80	7.03	235	3.88	8.10	242.8	4.29
1216	2.50	0.5	92.85	8.96	246	0.86	8.22	194.5	1.77
1226	3.75	0.5	92.85	9.80	255	0.70	8.22	173.1	1.02
1237	5.0	0.5	92.82	9.95	257	0.58	8.19	156.0	0.96
1247	6.25	0.4	92.85	10.28	258	0.56	8.16	126.0	0.84
1258	7.5	0.4	92.85	10.15	258	0.56	8.18	104.9	0.98
1309	8.75	0.4	92.83	10.58	262	0.57	8.16	85.0	

SAMPLING DATA

Odor: none Color: clear
Sample Designation: 09FROAWA07 Time / Date: 1324 ; 9/23/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks:
Sampling Personnel: JS & RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OUE

Well No.: AP-3893

Date: 9/23/09

Time:	Gallons:	Pump Rate (~~gal~~/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (~~mS~~/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1322	10.0	0.4	92.80	10.5	261	~~4.4~~ 0.48 9/23	8.19	67.2	0.62

Sampling Personnel: SJ + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

WATER SAMPLING LOG

Shannon & Wilson, Inc.

~350 overcast (9/24)

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~40° Rain (9/21, 9/22); ~35°F Foggy (9/23)

Site: OUE Well No.: AP-434 0910 (9/24)

Date: 9/21/09 > Time Started: 1320 0955 0900 Time Completed: 1358 1015 ; 0919 ; 0945

9/21/09 9/22/09 9/23/09 9/21/09 9/24/09 9/23 9/24

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK

Casing Condition (bent, dented, paint condition): ~~good~~ OK

Well Identification (labeled with well numbers): Yes

Well locking cap and lock present: Yes ☒ No ☐ Notes:

Field Screening with PID: 1.6 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0912 Date of Depth Measurement: 9/21/09

Measuring Point (MP): ~~Top of PVC Casing~~ Top of Steel Protective Casing / Other:

Diameter of Casing: 2" Well Screen Interval: —

Total Depth of Well Below MP: 67.96 Product Thickness, if noted: None

Depth-to-Water (DTW) Below MP: 64.10

Water Column in Well: 3.86 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 0.62 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09; 9/23; 9/23 Time Started: 1322; 0954; 0909 Time Completed: 1352; 1006; 0916

Four Well Volumes: 2.48 (Gallons in Well x 4)

Gallons Purged: ~2 total Depth of Pump Placement: NA

Maximum Drawdown: 64.43 Pump Rate: NA

Well Purged Dry: Yes ☒ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
9/21/09 1327	0.15	NA	65.51	7.47	282	—	7.93	194.9	40.3
1332	0.30	NA	66.40	6.92	281	—	7.41	202.5	>1000
1335	0.45	NA	66.95	6.93	280	—	7.33	195.3	>1000
1338	0.60	NA	67.27	6.91	281	—	7.46	185.5	>1000
1342	0.75	NA	67.39	6.94	281	—	7.46	186.3	>1000
1345	0.90	NA	67.56	6.85	280	—	7.47	181.4	>1000
9/24/09 0957	1.05	NA	66.39	7.02	290	—	8.07	300.9	>1000

SAMPLING DATA

Odor: None Color: ~~Tan~~ turbid brn

Sample Designation: 09FRAWA-13 Time / Date: 0935 9/24/09

QC Sample Designation: MS/MSD Time / Date: Same ↑

Evacuation Method: Grundfos Submersible Pump / Other: Disp Bailer

Sampling Method: Grundfos Submersible Pump / Other: Disp Bailer

Remarks:

Sampling Personnel: SIS - RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

1352

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: JVE

Well No.: AP-4341

Date: 9/21-24/09

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
9/21/09 1002	1.2	NA	67.58	6.67	288	12.06	7.42	308.1	>1000
9/23/09 0909	1.35	NA	61.60 ~~66.70~~ SS 9/23	6.51	347	15.56	6.02	355.0	>1000
0913	1.5	NA	67.90	6.52	344	14.06	5.49	386.8	>1000
0915	1.65	NA	67.90	6.20	284	12.81	6.59	335.0	>1000
9/24 0935	1.9	NA		4.58	321	13.13	7.42	246.6	>1000

Sampling Personnel: BS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WELL PURGED DRY LOG

~35°F overcast (9/24)

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~40°F Rain (9/21-22) ~35°F Foggy (9/23)

Area: OUE Well No.: AP-434

Date: 9/21/09 → 9/24/09 Time Started: 1320 (9/21/09); 0955 (9/22/09); 0900 (9/23); 0918 (9/24) Time Completed: 1358 (9/21/09); 1015 (9/22/09); 0919 (9/23); 0945 (9/24)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0912 Date of Depth Measurement: 9/21/09

Measuring Point (MP): (Top of PVC Casing) / Top of Steel Protective Casing / Other:

Diameter of Casing: 2" Well Screen Interval: —

Total Depth of Well Below MP: 67.96 Product Thickness, if noted: none

Depth-to-Water (DTW) Below MP: 64.10

Water Column in Well: 3.86 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 0.62 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09; 9/22; 9/23 Time Started: 1322; 0954; 0909 Time Completed: 1352; 1006; 0916

80% Recovery Water Column: 3.09 (Water Column in Well x 0.8)

80% Recovery DTW: 67.19 (Initial DTW + (Water Col. – 80% Recovery Water Col.)

Purging	Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
1	1352 9/21/09	0954; 9/22/09	65.26	NA
2	1006 9/22/09	0909 9/23/09	65.31	NA
3	0916 9/22/09	0910 9/24/09	65.29	NA

SAMPLING DATA

Odor: none Color: turbid brown

Sample Designation: 091AP01AWA-13 Time / Date: 0935; 9/24/09

QC Sample Designation: MSMD Time / Date: Same

Evacuation Method: Grundfos Submersible Pump / (Other: Disp Bailer)

Sampling Method: Grundfos Submersible Pump / (Other: Disp Bailer)

Remarks:

Sampling Personnel: JHS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Overcast ~35°F
Site: OUE Well No.: AP-4342
Date: 9/24/09 Time Started: 1021 Time Completed: 1110

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK
Casing Condition (bent, dented, paint condition): OK
Well Identification (labeled with well numbers): Yes.
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 3.4 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0942 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 101.10 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 97.43
Water Column in Well: 6.67 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 1.07 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/24/09 Time Started: 1030 Time Completed: 1105
Four Well Volumes: (Gallons in Well x 4)
Gallons Purged: 1.2 total Depth of Pump Placement: NA
Maximum Drawdown: 97.36 Pump Rate: NA
Well Purged Dry: Yes ☐ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: * (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1034	0.25	NA	97.71	5.95	291	12.68	7.92	246.4	69.5
1041	0.5	NA	98.00	5.81	293	9.16	7.54	249.1	>1000
1048	0.75	NA	98.37	5.95	296	8.12	7.53	247.2	>1000
1053	1.0	NA	98.21	~~5.90~~ 5.95	294	7.80	7.52	248.3	>1000

SAMPLING DATA

Odor: None Color: turbid brown
Sample Designation: 09FROAWA-15 Time / Date: 1100 / 9/24/09
QC Sample Designation: — Time / Date: —
Evacuation Method: Grundfos Submersible Pump / Other: Disp Bailer
Sampling Method: Grundfos Submersible Pump / Other: Disp Bailer
Remarks: * Assume DO ms/ms are questionable - field screening collected from cup - not flow through cell -
Sampling Personnel:

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

~35° Overcast 9/24

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: ~~40°~~ F Rain (9/21-22); ~35° Fog 9/23

Site: OUE Well No.: MP-4411

Date: 9/21/09 > 9/24/09 Time Started: 1225 (9/21/09); 1020 (9/22/09); 0927 (9/23) Time Completed: 1305 (9/21/09); 1056 (9/22/09); 0951 (9/23)

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): OK

Casing Condition (bent, dented, paint condition: OK

Well Identification (labeled with well numbers): Finish - NU

Well locking cap and lock present: Yes ☒ No ☐ Notes:

Field Screening with PID: 1.5 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0957 Date of Depth Measurement: 9/21/09

Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:

Diameter of Casing: 2" Well Screen Interval: —

Total Depth of Well Below MP: 72.80 Product Thickness, if noted: none

Depth-to-Water (DTW) Below MP: 68.02

Water Column in Well: 4.78 (Total Depth of Well Below MP - DTW Below MP)

Gallons per foot: 0.16

Gallons in Well: 0.76 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09, 9/22, 9/23 Time Started: 1235 (9/21/09); 1030 (9/22/09); 0930 (9/23/09) Time Completed: 1300 (9/21/09); 1050 (9/22/09); 0946 (9/23); 1010 (9/24)

Four Well Volumes: 3.04 (Gallons in Well x 4)

Gallons Purged: 3.0 total Depth of Pump Placement: NA

Maximum Drawdown: 68.35 Pump Rate: NA

Well Purged Dry: Yes ☒ No ☐ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: µS (~~mS/cm~~)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
9/21/09 1240	0.2	NA	70.00	8.39	~~0.520~~ 355	15.01	7.42	185.8	>1000
1/2 1246	0.8	NA	70.00	7.43	345	14.02	7.20	198.5	>1000
1248	1.2	NA	71.46	7.53	344	12.92	7.27	194.6	>1000
1257	1.4	NA	72.25	7.60	209	10.52	7.43	181.8	>1000
22 2/3 1032	1.6	NA	69.14	7.14	350	16.50	8.03	453.0	>1000
1035	1.8	NA	70.95	6.92	349	12.21	7.40	458.6	>1000
1043	2.0	NA	72.59	6.98	349	12.40	7.75	425.1	>1000

SAMPLING DATA

Odor: none Color: turbid brown

Sample Designation: 09FROMWA-14 Time / Date: 1001 9/24/09

QC Sample Designation: — Time / Date: —

Evacuation Method: Grundfos Submersible Pump / Other: Disp. Bailer

Sampling Method: Grundfos Submersible Pump / Other: Disp Bailer

Remarks:

Sampling Personnel: JS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: OVE

Well No.: MW-4411

Date: 9/21, 9/22/, 9/23

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: ~ (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
9/21 0930	2.2	NA	68.52	7.02	411	14.30	7.24	338.8	>1000
0934	2.4	NA	69.55	6.80	424	10.40	7.08	349.4	>1000
0938	2.6	NA	71.02	6.77	424	11.35	7.12	345.7	>1000
0942	2.8	NA	71.99	6.70	422	10.93	7.32	333.3	>1000
9/24 1000	30	NA	69.30	6.73	420	16.33	7.45	256.4	>1000

Sampling Personnel: JS + RM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WELL PURGED DRY LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: 40° F Rain (9/21-22) ; ~35° Fog 9/23
Area: OVE Well No.: AP-4411
Date: 9/21/09 → Time Started: 1225; 1028; 0927, 0946 9/24 Time Completed: 1305; 1056; 0951
9/21/09 9/22/09 9/23 9/21/09 9/22/09 9/23

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0957 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: —
Total Depth of Well Below MP: 72.80 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 68.02
Water Column in Well: 4.78 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.76 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/21/09, 9/22/09 Time Started: 1235; 1030; 0930; 0845 9/24 Time Completed: 1300; 1050; 0946; 1010
9/21 9/22 9/23 9/21 9/22 9/23 9/24
80% Recovery Water Column: 3.82 (Water Column in Well x 0.8)
80% Recovery DTW: 71.84 (Initial DTW + (Water Col. – 80% Recovery Water Col.)

Purging	Time Well Purged Dry	Time Well Was 80% Recovered	DTW	Pump Rate
1	1257 9/21/09	1028 9/22/09	68.50	NA
2	1050 9/22/09	0930 9/23/09	68.52	NA
3	0946 9/23/09	0955 9/24/09	68.54	NA

SAMPLING DATA

Odor: None Color: tinted by
Sample Designation: 09FRCAWA-14 Time / Date: 1001 9/24/09
QC Sample Designation: — Time / Date: —

Evacuation Method: Grundfos Submersible Pump / Other: Disp Bailer
Sampling Method: Grundfos Submersible Pump / Other: Disp Bailer

Remarks:

Sampling Personnel: SJS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Job No: 32-1-17261 Location: Fort Richardson, Alaska Weather: Overcast ~ 35°F
Site: OUE Well No.: AP-4413
Date: 9/24/09 Time Started: 1141 Time Completed: 1318

WELL INSPECTION OBSERVATIONS

Pad Condition (cracked, heaved, subsided): ok
Casing Condition (bent, dented, paint condition: ok
Well Identification (labeled with well numbers): yes
Well locking cap and lock present: Yes ☒ No ☐ Notes:
Field Screening with PID: 0.2 ppm

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 0930 Date of Depth Measurement: 9/21/09
Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other:
Diameter of Casing: 2" Well Screen Interval: unknown
Total Depth of Well Below MP: 75.30 Product Thickness, if noted: none
Depth-to-Water (DTW) Below MP: 72.42 ; 72.51 9/24/09 1200
Water Column in Well: 2.88 (Total Depth of Well Below MP - DTW Below MP)
Gallons per foot: 0.16
Gallons in Well: 0.46 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/24/09 Time Started: 1214 Time Completed: 1258
Four Well Volumes: 1.84 (Gallons in Well x 4)
Gallons Purged: ~2.5 total Depth of Pump Placement: ~ 74
Maximum Drawdown: 12.75 Pump Rate: ~ 259 - 265
Well Purged Dry: Yes ☐ No ☒ (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate ~~(gal/min)~~:	Drawdown (feet):	Temp: (°C)	Sp. Cond.: ~~(mS/cm)~~	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)
1234	0.6	0.25	72.54	12.56	370	8.34	7.62	212.8	>1000
1236	0.9	0.16	72.55	12.53	371	8.29	7.66	202.9	>1000
1243	1.1	0.28	72.57	10.31	355	9.87	7.70	196.6	>1000
1252	1.4	0.7	72.80	9.72	350	9.85	7.66	180.7	>1000
				5.80	411	7.99	7.63	172.9	>1000

SAMPLING DATA

Odor: none Color: turbid Brown
Sample Designation: 09FROAWA-16 Time / Date: 1255 ; 9/24/09
QC Sample Designation: — Time / Date:
Evacuation Method: Grundfos Submersible Pump / Other:
Sampling Method: Grundfos Submersible Pump / Other:
Remarks: Flow fluctuating - could not get even flow rate.

Sampling Personnel: SJS + RMM

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65
ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Shannon & Wilson, Inc.

WATER SAMPLING LOG

Continued from previous page

Job No: 32-1-17261 Location: Fort Richardson, Alaska Site: _____

Well No.: _____

Date: _____

Time:	Gallons:	Pump Rate (gal/min):	Drawdown (feet):	Temp: (°C)	Sp. Cond.: (mS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (ntu)

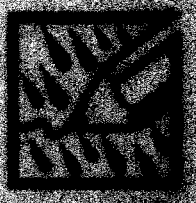
Sampling Personnel: _____

WELL CASING VOLUMES (GAL/FT): 2" = 0.16 4" = 0.65

ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

Appendix A2
Field Log

Shannon+Wilson
Book 1
Operable Unit E
12/2/08-



ALL-WEATHER
JOURNAL
No. 350

Fort Richardson GW
Monitoring

Task Order 001

W911KB-06-D-0005

NPDL 09-006

JPT

May~~ch~~ 12, 2009

Weather - 50° F, Clear

Personnel - Joe Thomas, Jake Gano S+W

PPE - Nitrile Gloves, Steel toe boots, Safety Glasses

Field Instruments - PID, Depth to product meter, depth to water, YSI 556, Hach turbidimeter, Grundfos pump

Samples Collected

09FROAWA-01 water trip Blank (1300)

09FROAWA-02-AP-3870 (1330)

09FROAWA-02-AP-3893 (1600) - 3?

09FROAWA-03 - Rinsate (1630) - 4?

Cooler 1

IDW

Well - AP3870 - 4.1 gal

Well - AP3893 - 10.5 "

Decon Water - 9.5 "

JPT

May~~ch~~ 12, 2009

8:10 - Leave S-W

8:12 - Pick up extra coolers from SES

8:50 - Enter Ft. Rich

9:00 - Calibrate PID, arrive @ well AP-3870

PID result = 102.0 ppm

Well AP-3870 - DTW - 100.78'

No product

9:20 - Well AP-3774

DTW = 108.05' No product

9:40 - Well AP-3871

10:07 - Well AP-3893

DTW - 93.04' No product

10:30 - Check in to fenced area

AP-4711 - Gravel in ~~manument~~

DTP. - 67.68'

DTW - 67.68' No odor on probe after brought out of well.

PID not working.

10:55 - Well AP-4341

11:15 - Called Dick Nenahlo to let him know we are on site. Left messages on

May 12, 09 JPT

his cell and office phones

11:10 - Well AP-3534

11:30 - Well AP-3468

11:42 - Well AP-4342

11:55 - Well AP-4413

12:10 - 12:25 - Lunch

12:25 - Begin setup at well AP-3570. Well purged well with little problems. 0 drawdown

13:30 - Parameters stabilized under alternative criteria (> 2 well vol.) Collect sample. Had problems coiling tubing because it takes 2 people to easily coil tubing onto plastic-lined wooden spool, but grundfos requires one person.

13:50 - While trying to decon pump, Grundfos was giving a Ground Fault error and not working. After examining wires on pump, discovered a break in one wire's housing, and metal wire had small

May 12, 09 JPT

fraying + rusting. We were able to start pump while wire was out of water, and remained on during decon ning.

14:05 Called Haydar to see if he could arrange another pump to use tomorrow, He said try to use it in next well, and that he would call TTT.

14:35 - Begin Setup on Well AP-3893. Pump seems to be working OK.

16:00 - Collect Sample AP-3593

16:30 - Collect rinsate sample

16:45-1700 Dewatering facility Labeled drum OUE 1. Filled 1/2 full

1700 - 17:35 - Drive back to office.

17:35 - Current (17:58) Demob.

End of 5/12/09

Joe Glanz

(5)

May 13, 2009
Weather ~50F, sunny
Personell - Joe Thomas, Jake Gano STN
PPE - Nitrile gloves, steel toe boots, safety glasses
Field Instruments - PID, DTW meter, DT product meter, YSI556, Hach Turbidimeter, Grundfos submersible pump

Samples Collected Cooler 2
09FROAWA-05 Trip Blank (1000)
09FROAWA-06 Well AP3774 (1042)
09FROAWA-07 Well AP3871 (1226)
09FROAWA-08 Well AP3534 (1650)
MS/MSD Set taken AP3534
09FROAWA-09 Rinsate (1728)

IDW

AP3774 Purgewater		4.5 gal
AP3871	"	4.5 "
AP3534	"	7.5 gal
Decon		9.0 "

172611-OUE JPT

(6)

May 13, 2009
8:20 - Leave STW office
8:50 - Arrive at AP3774
Jake calibrates YSI 556
Collect sample at 10:42 Pump was not maintaining constant flow rate. Had to continuously adjust control. Had to restart ~5 times during purge
11:20 - Arrive @ well AP3871
13:00 - Complete well AP3871
1315 - Check in with personnel in Shop by gate that surrounds well AP4411. They said they would be here after 1500 today, and it would be a good time to sample
1320 - Start setting up pump. AP4411. Water would not pump through sample cell. Tried re-starting pump several times with no success. Double checked DTW to see if there was plenty of water, and made sure pump head was in water.

(7)

17261-OUE
JPT

May 13, 2009

14:00 - gave up. pulled pump at of well. It would not work in wash bucket. Opened pump head to clean out. Couple small gravel pieces in pump indicating gravel may have fallen into pump from tubing. I don't see how this could have happened unless they fell in from around casing within the flush-mount monument. We did have to clean out gravel from the monument before opening pressure valve.

14:~~15~~ - Tried to call Randy. Not available. Talked to JT, who said to call TTT.

14:25 - Called TTT. Brian answered phone and said Tom will call us back once he is off the other line.

14:55 - Left Well AP4411 with no sample collected

17261-OUE
JPT

(8)

May 13, 2009

Drove to Well AP 5000 (782 Bldg.) to see if I could find it

1515 - TTT calls to say pump is on its way, and to meet Currior at entrance.

1540 - Currior arrives w/ new pump.

1550 - Arrive @ AP3534

~~1~~ 1650 - Collect Sample 09FROAWA-08 and MS/MSD

1725 - Collect rinsate 09FROAWA-08

1745 - 1753 - POL Dewatering facility

1800 - Off site

1835 - At SoW office Donoka Talked to Randy about wells that purged dry last sampling event. He thinks using a bailer for those wells (AP4411 and AP4341) would be justifiable since groundwater elevations have dropped in all wells. High turbidity in well AP4411 would make

(9) 17261-OVE
JPT

May 13, 2009
Using Grundfos difficult.
Haydar Agreed.
1900 – Finish w/notes.

End of 5/13/09

17261-OVE (10)

May 14, 2009 JPT
Weather – 60°, clear + calm
Personnel - Joe Thomas and
Robert McNaughton
PPE - Nitrile Gloves, steel toe
boots, safety glasses
Field Instruments - YSI 556,
Hach Turbidimeter, Grundfos 10"
pump, Disposible HDPE bailers,
Depth to water meter,

Samples collected - Cooler 3
09FR0AWA-10 - Water trip blank
09FR0AWA-11 - AP3468 (1340)
09FR0AWA-12 - AP4341 (1749)
09FR0AWA-13 - Rinsate (1800)

IDW - Drum OVE 2
AP3468 – 2.5 gal
AP4411 – 2.5 "
AP4441 – 2.5 "
Decon – 9 gal.

May 14, 2009

8:25 - Leave office
Stop at Holiday station to clean windows. Took long route.

8:53 - Arrive on site

9:00 - ~~Set~~ removed tubing from well AP-4341 so that we can purge dry with bailer. Historically purges dry.

9:10 - JPT calibrates YSI
Well purges dry. Wait for 15 min to see if recharge will be fast enough to finish, but was not

10:10 - Move to AP 4411 to purge dry. Also, historically purges dry

10:50 - Measure DTW in well AP4411 which is recovering slowly.

11:00 - Move to AP 4341 to remeasure DTW. Water has recharged to 100%. Purge second time dry

11:32 - Back to AP4411 to check recharge. Still 15' shy of 80%.

May 14, 2009

12 - Arrive @ AP 3409. Calibrate PID. Result = 104.0 ppm
Had to cut new piece of tubing because old one was not long enough to produce water. Took additional setup time. When purging, we could not keep the water elevation within the goal of 4" drawdown, even when flow rate was 0.1 liter/min. Had to re-start pump several times during purge cycle because it would not maintain constant flow rate. Eventually got parameters stabilize to alternative criteria. Purged 2.5 gal.

1:00 - Check DTW @ AP4411. Recharged to 80%. Purged 0.9 gal (dry)

Note: my ~~stop~~ watch has stopped so times prior to now may be innacurate

14:48 - Arrive @ AP 4341 to purge dry for third time

(13) May 14, 2009 17261-OUE JPT

15:02 - Go to AP 4342
Purging well had to stop pump 6 or 7 times. Parameters stabilized after ~2 well vols. Stopped pump for better flow, and it would not start up. Pulled pump from well and it did work in 4 decon buckets. Called TIT who after discussion ~~he~~ said we need to bring pump in to have bushings swapped out. No sample collected
17:44 moved to well 4341 to collect sample. Took photos of well

18:20-18:30 - IDW station. Started Drum OUE 2
18:40 - Leave Ft. Rich
19:05 - Back at office.
19:30 - Leave office

End of 5/14/09
Joe Thomas

17261-OUE (14)

May 15, 2009 JPT

Weather - ~50°, Rain
Sampling personnel: Joe Thomas - Robert McNaughten
PPE: Nitrile gloves, safety glasses, steel toe boots
Sampling Equip: PID, Depth to Water Meter, Product interface probe, YSI 556, Grundfos w/ fresh bushing kit

Samples Collected - Cooler 4
- Q9FR0AWA-14 - Trip blank (1102)
- Q9FR0AWA-15 AP4342 (1140)
- Q9FR0AWA-16 AP4413 (1314)
- Q9FR0AWA-17 Dup AP4413 (1316)
- Q9FR0AWA-18 - AP4411 (1420)
- Q9FR0AWA-19 - Rinsate (1400)

IDW Drum OUE 2
AP4413 - 3 gal
Purgewater - 9.5 gal
AP4411 - 1.5 gal

May 15, 2009 JPT

8:20 - Leave S+W. Left sealed cooler #3 w/ HT for SGS dropoff
8:30 - Go to SGS to have bushing kit in Grundfor replaced and change out YSI, which was not working 100% at end of yesterday. Seemed to be a problem with cable connection
9:00 - Talk to HT about bringing samples to SGS before 5 and requesting approval to change from Grundfos to Proactive pump from USACE.
9:35 - Arrive Ft. Rich entrance stop @ bathroom.
9:45 - 1010 - Purge AP4411 for second time. Raining heavily
10:15 - Set up low-flow system on AP 4342. Pump would not pump water. Water level indicator showed that water column was same as yesterday, and pump was

May 15, 2009
trying to move water (could tell by sound of generator and movement of tubing). Called HT for advice. they recommended trying different well.
10:50 - Called HT to explain situation and we agreed to sample w/ bailer then move on to well AP 4413. Collect sample @ CPROAWA15 @ 1146.
(Haydar also mentioned a discrepancy in CoC from Cooler #3, and to talk to Heidi Gen @ SGS about it.
11:00 - Called Heidi (SGS) and figured out that sample marked w/ -15 on containers was supposed to be -11. Had pre-labeled several sets and must have accidentally grabbed and filled wrong set.

(17)

17261-OUE
JPT

May 15, 2009

1215 - Set up at AP4413. Initially, pump did not function, but after running it in reverse, it began to flow. Then we pumped it on forward, and it worked fairly well. Did have to watch flow rate for changes. Collected sample 09FROAWA-16 (1314) and duplicate -17 (1316).

13:20-1400 - Took down sample low-flow system and decon'ed. Collecting rinsate sample. 09FROAWA-18 @ 1400

1410 - Went to AP 4411 to collect sample. Well did not recharge totally to 80%, but was close. Needed to get to SGS to drop off samples by 1600, so could not wait for full 80% recharge.

17261-OUE
JPT

(18)

May 15, 2009

Collected sample @ 1420 (09FROAWA-18)

14:35-1445 - Add purge and decon water to drum OUE 2.

15:00 - Leave Ft Richardson

15:30 - Drop cooler #4 @ SGS.

15:40 - Back at S+W

End of 5/15/09

Jess Lamar

Sept 21, 2009

Weather - 45° Rain

Personnel - Shayla Swedlund, Robert McNaughton

PPE - Nitrile Gloves, Steel Toe Boots, Safety Glasses

Field Instruments - PID, Product Interface Probe, YSI556, Hach Turbidimeter Grundfos

FIELD EQUIPMENT

Balder Grundfos Controller *
→ H0307210006

Grundfos Pump *
→ A1A06003P10917 0008

Hach Turbidimeter
→ 040300035037

DTW Solinist
→ 26821

Honda EU 2000i Generator *
→ EAAJ1206054

YSI 556 MPS *
→ 04D5945AB

Product Interface Probe (no brand) *
→ 3087 → 580U-61501-332

~~PID~~ (ThermoEnvironmentalInst) OVM580B * (#4)

S+W Alt Equipment used for AP-3468

Rediflow Grundfos Controller
→ 217729

Slope Indicater Co. Model 51453
→ 22856

YSI 556MPS
→ 04D6670AC

Grundfos A 1A106003 P1 0841 0613

* Rented from TTT - remaining from S&W

Samples Collected

09FROAWA01 - Trip Blank - 0900
09FROAWA02 - AP-3774 - 1548
09FROAWA03 - AP 3870 - 1738
09FROAWA04 - Rinsate - 1830

IDW

AP-3774 - 2.5gal
AP-4341 - 0.9 gal
AP-4411 - 1.4 gal
AP-3870 - 3.4 gal

Rinsate/Decon = 9 gal

Sept 21, 2009

0745 - Robert arrives to office, pick up truck

0810 - LV office, pick up equipment @ ΠΠ; Calibrate PID, YSI

0822 - LV ΠΠ for Ft Rich
- arrive @ gate - System w/ lots are down - go turn w/ my old JBER

0855 - At Bldg 724 to check in w/ Dick - not there, left note.

0912 - Well AP-4341
DTW = 64.10'; no Prod; 1.6 ppm (PID)

0930 - Well AP-4413
DTW = 72.42'; no Prod; 0.2 ppm (PID)

0942 - Well AP-4342
DTW = 97.43; no Prod; 3.4 ppm (PID)

0957 - Well AP-4411
DTW = 68.02'; no Prod; 1.5 ppm (PID)

1010 - Well AP-3534
DTW = 110.74'; no prod; 2.7 ppm (PID)

1016 - Well AP-3468
DTW = 110.03; no prod; 0.0 ppm (PID)

1042 - Well AP-3774
DTW = 107.77; no prod; 0.0 ppm (PID)

1114 - Well AP-3871
DTW = 111.66'; no prod; 0.0 ppm (PID

Sept 21, 2009

1116 - Call Anna @ CRREL - cannot get well lock on well AP-3870 open; left msg - returned call shortly after
→ use combo #4670 on Well AP-3870 and any other CRREL locks.
→ expressed concern re: transducer last time pulled one out + wires were frayed; requested we put additional care when removing transducers from wells.

1130 - Well AP-3870
DTW = 100.48'; no prod; 1.5 ppm (PID)

1148 - Well AP-3893
DTW = 92.55'; no prod; 1.3 ppm (PID)

1200 - Go back to Bldg 724 for bathroom / lunch break / catch up on notes + calculations

1225 - On Well AP-4411
- Disp. Bailer - purged 1.4 gallons before well purged dry @ 1257

1305 - Off Well AP-4411

1311 - Get call from Dick - asked about combo + new # for him too.

1320 - On well AP-4341; purges dry @ 1352 after 0.9 gal; off well 1358

(5) SLS 17261-OUE

Sept 21, 2009

1408 - On well AP-3774

1548 - Collect Analytical Samples from well AP-3774
09FROAWA02

1632 - OFF WELL AP-3774

1635 - On well AP-3870

1738 - Collect Sample from AP-3870
09FROAWA03

1840 off well AP-3870

1830 - Collect Rinsate Sample
09FROAWA04

1850 - At POL Dewatering Facility drop off IDW - purgewater

1900 - Leave POL facility; Lock up. leave FT Rich

1950 - At Office - Derrick

End Sept 21, 2009

Shayla Swedlund

17261-OUE SLS (6)

Sept 22, 2009

Weather - ~45° Windy

Personnel - Shayla Swedlund + Robert MC Naughton

PPE - Nitrile gloves, Steel toe Boots. Safety glasses

Field Instruments - Grundfos, YSI, DTW, Turbidimeter

Samples Collected

none

IDW

0.3 gal - AP-4341

0.6 gal - AP-4411

9 gal - decon H_2O

(7) SIS 17261-OUE

Sept 22, 2009

0800 - Calibrate YSI; MOB
0845 - To TII to get YSI's connectors, Non-Reg stickers, check on tubing
0900 - Leave TII to Ft Rich
0915 - Arrive on base, get passes
0955 - At well AP-4341 - recovered 80% - purged dry again.
1006 - Well AP-4341 purges dry.
1028 - On well AP-4411 - purges dry @ 1050
1100 - Get call from office to come back
1130 - Back in office - finish for the day @ Ft Rich

End Sept 22, 2009

Sharla Swedlund

17261-OUE SIS (8)

Sept 23, 2009

Weather - Clear ~ 40°F
Personnel - Sharla Swedlund & Robert McNaughton
PPE - Nitrile gloves, steel toe boots, Safety glasses
Field equipment - YSI, DTW Instrument, Grundfos, Turbidimeter

Samples Collected

09FROAWA05 - 0800 - Trip Blank
09FROAWA06 - 1057 - AP-3871
09FROAWA07 - 1324 - AP-3893
09FROAWA08 - 1629; ~~AP-3534~~ ss 9/24/09
09FROAWA09 - 1634 - ~~MS/MSD~~, AP 3534 - Duplicate
09FROAWA10 - 1734 - AP-3468
09FROAWA11 - Rinsate - 1815

IDW

~~AP~~-4341 - 3gal
~~AP~~-4411 - 0.6gal
AP-3871 - 4.9 gal
AP-3893 - 10.0 gal
AP-3534 - 8.0 gal
~~AP~~-3468 - ~ 20 gal

⑨ RS 17261-OUE

Sept 23, 2009

0800 – Mob, Calibrate YSI
0830 – Leave office
0900 – on Well AP-4341 ; purge dry for third time
0919 – Off Well ~~AP~~ 4341 to Well AP-4411
0946 – Purge Well AP-4411 dry
0956 – on Well AP-3871
– surging – 'blasts of water' followed by slow flow
1057 – Collect sample 09FROAWA06 from Well AP-3871
1125 – Off Well AP-3871 to Well AP3893
1324 – Collect Sample 09FROAWA07 from Well AP-3893
1354 – Off Well AP-3893 – Go to Bldg 724 to use bathroom
1414 – On Well AP-3468 – set up. well appeared to purge dry w/ pump – used bailer + never purged dry ; suspect it may have something to do w/ this Well + Grundfos → had problems last 2 events @ this well

17261-OUE 515 (10)

Sept 23, 2009

1522 – Set up Well AP-3534
1629 – Collect Sample 09FROAWA08 from Well AP-3534 ; 9/24/09
1634 – Collect ~~MS/MSD~~ from Duplicate Well AP-3534 ; Sample 09FROAWA08
1637 – Complete Well AP-3534 – continue bailing Well AP 3468
1734 – Collect Sample 09FROAWA10 from Well AP-3468
1815 – Collect Rinsate Sample 09FROAWA11
1820 – Off Wells AP-3468 + 3534
1830 – At POL Dewatering Facility for IDW
1850 – Leave POL Dewatering Facility + lock up ; leave Ft Rich.
920 – Back @ office – Demob

End Sept 23, 2009

Shayla Swedlund

(11) SIS 17261-00E

Sept 24, 2009

0800 - Mob; ~~Calibrate~~ YSI + PID

0845 - ~~On~~ Ft Rich.

Weather - ~35°F Overcast

Personnel - Shayla Swedlund + Robert McNaughton

PPE - Nitrile gloves, steel toe boots, safety glasses

Field Instruments - Grundfos, YSI Turbidimeter, DTW Instrument PID

Samples Collected

09FR0AWA-12 - TripBlank - 0900

09FR0AWA-13 - AP-4341 - 0935 - MS/MSD

09FR0AWA-14 - AP-4411 - 1001

09FR0AWA-15 - AP-4342 - 1100

09FR0AWA-16 - AP-4413 - 1255

09FR0AWA-17 - Rinsate 1549

IDW

0.2 gal - AP-4341

0.2 gal - AP-4411

1.2 gal - AP-4342

2.5 gal - AP-4413

~14 gal - Decon H2O

17261-00E SIS (12)

Sept 24, 2009

0800 - mob, Calibrate YSI, PID

0845 - TO ~~Ft~~ Rich

0910 - On Well AP-4341 - Purged dry 3xs - ~~collect~~

0935 - Collect Analytical Sample 09FR0AWA-13 from Well AP-4341 and MS/MSD

0945 - Off Well AP-4341 - check in W/ motor pool to access Well AP-4411

1001 - Well AP-4411 recovered - purged 3xs in last couple days - collect Sample 09FR0AWA-14

1021 - Off Well AP-4411 to Well ~~AP-~~ 2 AP-4342

→ decide to purge using bailer since well has historically had high sediment load that caused problems w/ pump

1100 - Collect Sample 09FR0AWA-15 from Well AP-4342

1110 - Off Well AP-4342, to Bldg 724 for bathroom/lunch break

17261-OVE

(13) SLS

Sept 24, 2009

1141 - On well AP-4413 - Adjusted well fluctuating rate - waited only flow between 259 and 269 Hz. + would either trickle or gush.

1255 - Sample 09FROAWA-16 collected from well AP-4413

1318 - Off Well AP-4413 - start DTW rounds @ Four Bldg 762

1449 - At POL Dewatering Facility to drop off IDW

1500 - Leave POL Dewatering Facility, lock up + leave FT Rich.

1530 - Back @ office

1539 - Collect Rinsate Sample 09FROAWA-17

1615 - Finish demobing

End Sept 24, 2009

Shayla Swedlund

Oct 12, 2009

Weather - Clear ~ 50 + °F

Sampling Personnel - Shayla Swedlund, Robert McNaughton

Sampling Equipment - none

Sampling PPE - Nitrile Gloves, Steel toe boots, Safety glasses

Samples Collected - none

IDW - None

see next pg

Oct 12, 2009

1502 - Pull tubing from AP-4413
1516 - Pull tubing from well AP-4342
1524 - Pulled tubing from well AP-3534
1529 - " " " well AP-3468
1537 - " " " well AP-3774
1542 - " " " " AP-3870
1555 - " " " " AP-3871
→ Drop off OUB IDW + head back to TH to drop off equipment

End Oct 12, 2009

Oct 13, 2009

Weather - ~35-40°F Foggy
Sampling Personnel - Kayla Swedlund + Robert McNaughton
Sampling Equipment - none
PPE - Safety glasses, Nitrile gloves, steel toe boots
Samples Collected - None
IDW - None

0800 - At work - load tubing
0820 - Leave work
0900 - At Fort Rich - get into gate for well AP-4411 - realized already had pulled this tubing.
0906 - Check in well AP-4341 - already pulled tubing.
0915 - Pulled tubing from well AP-3893
1010 - At Bldg 724 to return radio (to Cynthia Tomlinson) + drop off tubing at warehouse in Bldg 724 -
1047 - Return keys to Dicke Nesbitt - leave Ft Rich

End Oct 13, 2009

Appendix B
Chemical Data Quality Review

Appendix B1
Data Quality Evaluation Report

Fort Richardson Operable Unit E Groundwater Monitoring Spring 2009 Chemical Data Quality Review

Introduction

This chemical data quality review (CDQR) assesses the quality of analytical results for water samples collected as part of ongoing groundwater monitoring at Operable Unit E (OUE; Armored Vehicle Maintenance Area), Fort Richardson, Alaska. We used data quality objectives (DQOs) and criteria presented in CH2M HILL's November 2002 Quality Assurance Program Plan (QAPP), as well as internal laboratory quality-control limits for this assessment.

This report presents a summary of data-quality issues and anomalies identified in our review that may affect the use of the results for ongoing groundwater monitoring.

Analytical Results

We collected a total of 10 project samples and one field-duplicate sample from 10 wells within OUE. We also collected one equipment-blank sample (EB) per area per day and, with one exception, delivered trip-blank samples (TBs) with coolers containing samples for analysis of volatile organic compounds (VOCs). We hand-delivered the samples to the SGS Environmental Services, Inc. (SGS) Anchorage laboratory in four sample-delivery groups (SDGs): SGS work orders 1092008, 1092030, 1092046, and 1092063. The samples were analyzed for the analytes listed in Table 1 by the methods shown:

Table 1
OUE Groundwater Analyses

Parameter	Method	Laboratory
Volatile Organic Compounds (VOC)	SW8260B	SGS Anchorage
Dissolved metals (aluminum, arsenic, iron, manganese)	SW6020	SGS Anchorage
Nitrite, nitrate, and sulfate	SW9056	SGS Anchorage
Dissolved methane	RSK 175	Columbia Analytical Services, Simi Valley, California

SGS transferred samples for methane analysis to Columbia Analytical Services (CAS) by overnight carrier.

As part of this CDQR, we reviewed: (1) sample handling information, including chain-of-custody (COC) documentation, holding-time compliance, and sample-receipt forms; (2) calibration information presented in the laboratory case narratives; (3) analytical sensitivity, including comparison of practical quantitation limits (PQLs) to DQOs and examination of field blank and method blank results; (4) accuracy, as assessed by laboratory control sample (LCS)

and LCS duplicate (LCSD), matrix spike (MS) and MS duplicate (MSD), and surrogate recoveries; and (5) precision, as assessed by relative percent difference between LCS/LCSD, MS/MSD, and project sample/field duplicate results.

We validated analytical results, when affected by data-quality issues identified above, with data flags defined in the QAPP. We present the flagged results in Table 2; where multiple data flags were assigned for different data-quality issues, the most conservative flag was designated as the final data flag for that result.

The data flags used 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 (biased high).
- J- = Analyte was present but the reported value may not be accurate or precise (biased low).
- R = The result was rejected as unusable due to analytical deficiencies.
- U = Analyte was not detected at the specified reporting limit.
- UJ = Analyte was not detected and the specified reporting limit may not be accurate or precise (estimated), or analyte was not detected and sample handling or QC failures may have resulted in a low bias (and thus the non-detect result).

Findings

We present a summary of our data-quality review below, and present flagged results in Table 2. We included the Alaska Department of Environmental Conservation laboratory data-review checklists for each SDG in Appendix B3.

Sample Handling

We reviewed sample-receipt forms and COC documentation as we received it from SGS. Holding-time compliance was assessed upon receipt of the Level II laboratory reports.

Sample Condition

Temperature blank and cooler temperatures were within the acceptable range (2 °C to 6 °C) for the four work orders.

Chain of Custody

We did not place COC seals on coolers we hand-delivered to the Anchorage SGS laboratory, since samples were in our custody until delivery.

Holding Times

Holding-time criteria were met, with the exception of nitrate/nitrite in SDGs 1092046 and 1092063. Samples in 1092046 were reanalyzed for nitrate/nitrite due to the lack of closing continuous calibration verification (CCV) data; reanalysis confirmed the original results, and

there was no effect on data quality or usability. Sample *09FROAWA-15* in SDG 1092063 was also reanalyzed out of hold-time to confirm results. Samples *09FROAWA-16* through *09FROAWA-19* were analyzed out of hold-time for nitrate/nitrite due to an instrument error; the results were flagged J as estimated, and the reporting limits flagged UJ. Nitrate/nitrite results were not flagged J- as we cannot determine the direction of potential bias to nitrate/nitrite results (due to the potential for oxidation *or* reduction over time).

Calibration

As mentioned above, no closing CCV was conducted for nitrate/nitrite in SDG 1092046. Reanalysis confirmed the results, so data quality was unaffected. There were several analytes that were recovered high in the initial calibration verification (ICV) for one or more work orders; these analytes were not detected in project samples, so data quality was unaffected.

Analytical Sensitivity

PQLs were compared to the reporting-limit objectives in the QAPP, and blank samples were checked to determine if water samples were contaminated from laboratory practices, cross-contamination from other samples, or sampling equipment.

Practical Quantitation Limits

PQLs met the reporting limit objectives specified in the QAPP.

Method Blanks

Method blanks (MBs) were analyzed for every preparation/analysis batch. MB results were below method detection limits (MDLs) and PQLs.

Field Blanks

Trip blanks were transported in coolers containing VOC samples, equipment blanks were collected at the required frequency (one per area per day), and results were below MDLs, with the following exceptions.

Carbon disulfide was detected above the PQL in the MB for 1092063; this analyte was not detected in project samples.

Toluene, sulfate, benzene, o-xylene and chloromethane were detected in one or more equipment blanks (EBs); these analytes were either not detected in corresponding project samples, or were greater than 5-times the EB concentrations, so results were unaffected.

Accuracy

We reviewed the analyte recovery information for QC samples and surrogate spikes to assess the accuracy of the analyses. LCS/LCSDs were reported for VOCs; LCSs and MS/MSDs were reported for metals (with the exception of SDGs 1092046 and 1092063); LCSs and undigested bench spikes and/or sample duplicates were reported for nitrate, nitrite, and sulfate; and LCS/LCSDs or MS/MSDs were reported for methane.

Laboratory Control Samples

LCS and LCSD analyte recoveries were within the laboratory control limits.

Matrix Spike Samples

Matrix spike samples provide information about the laboratory's ability to recover analytes from the actual sample matrix, thus providing a measure of matrix effects. We designated sample *09FROAWA-08* for MS/MSD analysis (the project, or billable, MS/MSD). The laboratory also analyzed internal MS/MSDs, spiking other project samples. MS/MSD analyte recoveries were within laboratory control limits in all cases.

Surrogates

Surrogates were added to all project and QC samples for VOC analysis. Surrogate recoveries were within laboratory control limits, with the exception of surrogate 1,2-dichloroethane-d4 (biased high) in sample *09FROAWA-06*; analytes corresponding to the surrogate were not detected in the sample, so results were unaffected.

Precision

We assessed precision by calculating relative percent difference (RPD; the difference between the original and duplicate results divided by the mean of the two) for LCS/LCSD, MS/MSD, and project-sample/field-duplicate pairs.

The LCS/LCSD RPD for methyl iodide and the sample/laboratory-duplicate RPD for nitrite (SDG 1092008) were above the laboratory QC limits; these analytes were not detected in project samples. Four VOC analytes had LCS/LCSD RPDs above the laboratory control limit for SDG 1092046; these analytes were not detected above PQLs in project samples. Field-duplicate RPDs met the DQOs from the QAPP, with the exception of manganese; this analyte is flagged J for the sample/duplicate pair.

In SDGs 1092046 and 1092063, the laboratory did not report duplicate or MS/MSD information for metals; in these cases, we were unable to evaluate the analytical precision of the metal results. The field-duplicate RPDs indicated adquate overall precision with the exception of manganese, so these results were not qualified as estimates. Manganese results for these two SDGs were flagged J as estimates, since our only measure of precision was the field-duplicate with an elevated manganese RPD.

Overall Assessment

To conclude our data review, we evaluated whether the quality of the analytical results was sufficient for the purposes of the project and whether data completeness goals were achieved.

No data were rejected as unusable, and completeness objectives were met. The data are accurate, precise, and representative, as qualified by the following data flags resulting from the QC anomalies described above.

We summarize the key findings of our data-quality review below:

1. Nitrate and nitrite holding-times were exceeded for four samples; nitrate and nitrite results for these samples were qualified as estimates (J).
2. Manganese results for two of four SDGs were qualified as estimates (J) due to lack of laboratory duplicate information and elevated field-duplicate RPD.

In general, the precision and accuracy of the data met the goals specified in the QAPP, and the data are of sufficient quality for the purposes of groundwater monitoring.

Table 2
Validation Flags

Sample ID	Method	Analyte	Final Result	PQL	Units	Final Flag	Reason
09FROAWA-16	SW9056	Nitrate	1240		µg/L	J	HT Exceeded
09FROAWA-16	SW9056	Nitrite		100	µg/L	UJ	HT Exceeded
09FROAWA-17	SW9056	Nitrate	1220		µg/L	J	HT Exceeded
09FROAWA-17	SW9056	Nitrite		100	µg/L	UJ	HT Exceeded
09FROAWA-18	SW9056	Nitrate	3060		µg/L	J	HT Exceeded
09FROAWA-18	SW9056	Nitrite		100	µg/L	UJ	HT Exceeded
09FROAWA-11	SW6020	Manganese	20.2	2	µg/L	J	FD RPD
09FROAWA-12	SW6020	Manganese	7.29	2	µg/L	J	FD RPD
09FROAWA-15	SW6020	Manganese	4.13	2	µg/L	J	FD RPD
09FROAWA-16	SW6020	Manganese	1.40	2	µg/L	J	FD RPD
09FROAWA-17	SW6020	Manganese	1.12	2	µg/L	J	FD RPD
09FROAWA-18	SW6020	Manganese	0.862	2	µg/L	J	FD RPD

Notes:

µg/L	micrograms per liter
HT	holding time
FD RPD	Field-duplicate RPD was elevated, and there was no measure of laboratory precision
J	analyte was present but the reported value may not be accurate or precise (estimated)
UJ	analyte was not detected and the specified reporting limit may not be accurate or precise (estimated)

Fort Richardson Operable Unit E Groundwater Monitoring Fall 2009 Chemical Data Quality Review

Introduction

This chemical data quality review (CDQR) assesses the quality of analytical results for water samples collected as part of ongoing groundwater monitoring at Operable Unit E (OUE; Armored Vehicle Maintenance Area), Fort Richardson, Alaska. We used data quality objectives (DQOs) and criteria presented in CH2M HILL's November 2002 Quality Assurance Program Plan (QAPP), as well as internal laboratory quality-control limits for this assessment.

This report presents a summary of data-quality issues and anomalies identified in our review that may affect the use of the results for ongoing groundwater monitoring.

Analytical Results

We collected a total of 10 project samples and one field-duplicate sample from 10 wells within OUE. We also collected one equipment-blank sample (EB) per area per day and delivered trip-blank samples (TBs) with coolers containing samples for analysis of volatile organic compounds (VOCs). We hand-delivered the samples to the SGS Environmental Services, Inc. (SGS) Anchorage laboratory in three sample-delivery groups (SDGs): SGS work orders 1095135, 1095181, and 1095214. The samples were analyzed for the analytes listed in Table 1 by the methods shown:

Table 1
OUE Groundwater Analyses

Parameter	Method	Laboratory
Volatile Organic Compounds (VOC)	SW8260B	SGS Anchorage
Dissolved metals (aluminum, arsenic, iron, manganese)	SW6020	SGS Anchorage
Nitrite, nitrate, and sulfate	SW9056A †	SGS Anchorage
Dissolved methane	RSK 175	Columbia Analytical Services, Simi Valley, California

† Standard Methods SM20 4500 was used to determine these analytes for SDG 1095135 (see comments in Findings, Chain of Custody, below)

SGS transferred samples for methane analysis to their Wilmington, North Carolina laboratory by overnight carrier.

As part of this CDQR, we reviewed: (1) sample handling information, including chain-of-custody (COC) documentation, holding-time compliance, and sample-receipt forms; (2) calibration information presented in the laboratory case narratives; (3) analytical sensitivity, including comparison of practical quantitation limits (PQLs) to DQOs and examination of field blank and method blank results; (4) accuracy, as assessed by laboratory control sample (LCS) and LCS duplicate (LCSD), matrix spike (MS) and MS duplicate (MSD), and surrogate

recoveries; and (5) precision, as assessed by relative percent difference between LCS/LCSD, MS/MSD, and project sample/field duplicate results.

We validated analytical results, when affected by data-quality issues identified above, with data flags defined in the QAPP. We present the flagged results in Table 2; where multiple data flags were assigned for different data-quality issues, the most conservative flag was designated as the final data flag for that result.

The data flags used 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 (biased high).
- J- = Analyte was present but the reported value may not be accurate or precise (biased low).
- R = The result was rejected as unusable due to analytical deficiencies.
- U = Analyte was not detected at the specified reporting limit.
- UJ = Analyte was not detected and the specified reporting limit may not be accurate or precise (estimated), or analyte was not detected and sample handling or QC failures may have resulted in a low bias (and thus the non-detect result).

Findings

We present a summary of our data-quality review below, and present flagged results in Table 2. We included the Alaska Department of Environmental Conservation laboratory data-review checklists for each SDG in Appendix B3.

Sample Handling

We reviewed sample-receipt forms and COC documentation as we received them from SGS. Holding-time compliance was assessed upon receipt of the Level II laboratory reports.

Sample Condition

Temperature blank and cooler temperatures were within the acceptable range (2 °C to 6 °C) for the three work orders.

Chain of Custody

We did not place COC seals on coolers we hand-delivered to the Anchorage SGS laboratory, since samples were in our custody until delivery. COC seals were present and intact on coolers containing methane samples upon receipt at SGS in Wilmington, NC. On the COC for SDG 1095135, we requested nitrate/nitrite be analyzed by EPA Method 9056A; the laboratory analyzed nitrate/nitrite by method SM20 4500 instead, in order to process samples quicker. Results should be similar, and were acceptable to the USACE project chemist. This was corrected in the other two work orders, where nitrate/nitrite was analyzed by 9056A.

Holding Times

Holding-time criteria were met for each sample and analysis.

Calibration

We reviewed the case narrative notes regarding calibration failures. There were several analytes that were recovered high in the continuing calibration verification (CCV) for one or more work orders; these analytes were not detected in project samples, so data quality was unaffected.

Analytical Sensitivity

PQLs were compared to the reporting-limit objectives in the QAPP, and blank samples were checked to determine if water samples were contaminated from laboratory practices, cross-contamination from other samples, or sampling equipment.

Practical Quantitation Limits

PQLs met the reporting limit objectives specified in the QAPP.

Method Blanks

Method blanks (MBs) were analyzed for every preparation/analysis batch. MB results were below method detection limits (MDLs) and PQLs.

Field Blanks

Trip blanks were transported in coolers containing VOC samples, equipment blanks were collected at the required frequency (one per area per day), and results were below MDLs, with the following exceptions.

Chloromethane was detected between the MDL and the PQL in the trip blank for SDG 1095135; chloromethane was not detected in project samples, so results were unaffected.

Sulfate, chloromethane, and chloroform were detected in one or more EBs; with the exception of chloromethane in sample *09FROAWA-09* and chloroform in samples *09FROAWA-13* and *09FROAWA-15,* these analytes were either not detected in corresponding project samples, or were greater than 5-times the EB concentrations. The affected chloromethane and chloroform results for the samples listed above are flagged U in Table 2; remaining sulfate, chloromethane, and chloroform results were unaffected by the equipment-blank detections.

Accuracy

We reviewed the analyte recovery information for QC samples and surrogate spikes to assess the accuracy of the analyses. An LCS/LCSD or LCS and MS/MSD were reported for VOCs; LCSs and MS/MSDs were reported for metals; LCSs and undigested bench spikes and/or sample duplicates were reported for nitrate, nitrite, and sulfate; and LCS/LCSDs and MS/MSDs were reported for methane.

Laboratory Control Samples

LCS and LCSD analyte recoveries were within the laboratory control limits, with the exception of the LCS/LCSD recovery of 1,1,1-trichloroethane (biased high) in SDG 1095214; this analyte was not detected in project samples, so results were unaffected.

Matrix Spike Samples

Matrix spike samples provide information about the laboratory's ability to recover analytes from the actual sample matrix, thus providing a measure of matrix effects. We designated sample *09FROAWA-13* for MS/MSD analysis (the project, or billable, MS/MSD [BMS/BMSD]). The laboratory also analyzed internal MS/MSDs, spiking other project samples, and in some cases reported MS/MSDs of spiked non-project samples (other clients' samples in the same analytical batch; a stand-in MS/MSD).

Recoveries of one or more analytes were outside QC limits in several stand-in MS/MSDs; the originals were not in our sample set, so our results were unaffected. MSD recovery of methane in SDG 1095181 was below the laboratory QC limit; the PQL for the original sample, *09FROAWA-11* (the equipment blank; not listed on Table 2 or Appendix Table B2) should be flagged UJ to indicate the non-detect result may be due to a low analytical bias. BMS and BMSD recovery of trichlorofluoromethane was below QC limits, and BMSD recovery of tetrachloroethene (PCE) was below QC limits. BMS and BMSD recoveries of methane were below laboratory QC limits. Trichlorofluoromethane and methane were not detected in the original sample (*09FROAWA-13*); PQLs for these analytes for the original sample are flagged UJ in Table 2 to indicate the non-detect result may have been caused by a low bias. PCE was detected in sample *09FROAWA-13*, and is flagged J- to indicate the low bias due to the BMSD recovery failure.

Surrogates

Surrogates were added to all project and QC samples for VOC analysis. Surrogate recoveries were within laboratory control limits for the VOC analytes and samples.

Precision

We assessed precision by calculating relative percent difference (RPD; the difference between the original and duplicate results divided by the mean of the two) for LCS/LCSD, MS/MSD, and project-sample/field-duplicate pairs.

The MS/MSD RPD for methane in SDG 1095181 was above the QC limit of 30 percent; the methane PQL for the original sample is flagged UJ already due to the low recovery of methane in the associated MSD. Remaining QC-sample RPDs were within QC limits.

Field-duplicate RPDs met the DQOs from the QAPP.

Overall Assessment

To conclude our data review, we evaluated whether the quality of the analytical results was sufficient for the purposes of the project and whether data completeness goals were achieved.

No data were rejected as unusable, and completeness objectives were met. The data are accurate, precise, and representative, as qualified by the following data flags resulting from the QC anomalies described above.

We summarize the key findings of our data-quality review below:

1. Chloromethane result for sample *09FROAWA-09* and chloroform results for samples *09FROAWA-13* and *09FROAWA-15,* may be attributable to equipment-based contamination, and are flagged U as not detected.

2. The PCE result for sample *09FROAWA-13* is biased low and flagged J- due to low MSD recovery.
3. Trichlorofluoromethane and methane PQLs for sample *09FROAWA-13* are flagged UJ to indicate the non-detect result may have been attributable to a low bias (as indicated by poor MS/MSD recovery).

In general, the precision and accuracy of the data met the goals specified in the QAPP, and the data are of sufficient quality for the purposes of groundwater monitoring.

Table 2
Validation Flags

Sample ID	Method	Analyte	Final Result	PQL	Units	Final Flag	Reason
09FROAWA-09	SW8260B	Chloromethane	ND	1.00	µg/L	U	EB Detection
09FROAWA-13	RSK175	Methane	ND	7.2	µg/L	UJ	Low MSD Recovery
09FROAWA-13	SW8260B	Chloroform	ND	1.00	µg/L	U	EB Detection
09FROAWA-13	SW8260B	Tetrachloroethene	16.2	1.00	µg/L	J-	Low MSD Recovery
09FROAWA-13	SW8260B	Trichlorofluoromethane	ND	1.00	µg/L	UJ	Low MSD Recovery
09FROAWA-15	SW8260B	Chloroform	ND	2.30	µg/L	U	EB Detection

Notes:

µg/L	micrograms per liter
Low MSD Recovery	MSD recovery of the analyte was below quality-control limits, resulting in a low bias
EB Detection	result was less than 5-times the concentration detected in the equipment blank
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 (biased low)
UJ	analyte was not detected and the specified reporting limit may not be accurate or precise (estimated)

Appendix B2
Validated Analytical Results

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3870	PS	12-May-09	09FROAWA-02	9056A	Nitrate-N	1060		100	31.0	ug/L
AP3870	PS	12-May-09	09FROAWA-02	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3870	PS	12-May-09	09FROAWA-02	9056A	Sulfate	23700		100	31.0	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW6020	Aluminum	ND		500	150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW6020	Iron	440	J	1000	310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW6020	Manganese	0.956	J	2.00	0.62	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Acetone	ND		10	3.1	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Chloroform	ND		1.00	0.300	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Tetrachloroethene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3870	PS	12-May-09	09FROAWA-02	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP3893	PS	12-May-09	09FROAWA-03	9056A	Nitrate-N	ND		100	31.0	ug/L
AP3893	PS	12-May-09	09FROAWA-03	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3893	PS	12-May-09	09FROAWA-03	9056A	Sulfate	18700		100	31.0	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW6020	Aluminum	ND		500	150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW6020	Arsenic	22.5		5.00	1.50	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW6020	Iron	ND		1000	310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW6020	Manganese	37.1		2.00	0.62	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Acetone	ND		10	3.1	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Chloroform	ND		1.00	0.300	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Tetrachloroethene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3893	PS	12-May-09	09FROAWA-03	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP3774	PS	13-May-09	09FROAWA-06	9056A	Nitrate-N	1240		100	31.0	ug/L
AP3774	PS	13-May-09	09FROAWA-06	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3774	PS	13-May-09	09FROAWA-06	9056A	Sulfate	25800		100	31.0	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW6020	Aluminum	ND		500	150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW6020	Iron	505	J	1000	310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW6020	Manganese	1.35	J	2.00	0.62	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Acetone	ND		10	3.1	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Chloroform	ND		1.00	0.300	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Naphthalene	ND		2.00	0.620	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Tetrachloroethene	0.650	J	1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3774	PS	13-May-09	09FROAWA-06	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP3871	PS	13-May-09	09FROAWA-07	9056A	Nitrate-N	865		100	31.0	ug/L
AP3871	PS	13-May-09	09FROAWA-07	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3871	PS	13-May-09	09FROAWA-07	9056A	Sulfate	28500		100	31.0	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW6020	Aluminum	ND		500	150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW6020	Iron	483	J	1000	310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW6020	Manganese	2.20		2.00	0.62	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Acetone	ND		10	3.1	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Carbon tetrachloride	0.550	J	1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Chloroform	3.86		1.00	0.300	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Tetrachloroethene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3871	PS	13-May-09	09FROAWA-07	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP3534	PS	13-May-09	09FROAWA-08	9056A	Nitrate-N	1250		100	31.0	ug/L
AP3534	PS	13-May-09	09FROAWA-08	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3534	PS	13-May-09	09FROAWA-08	9056A	Sulfate	25900		100	31.0	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW6020	Aluminum	ND		500	150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW6020	Iron	355	J	1000	310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW6020	Manganese	ND		2.00	0.62	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Acetone	ND		10	3.1	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Chloroform	ND		1.00	0.300	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Tetrachloroethene	24.5		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3534	PS	13-May-09	09FROAWA-08	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP3468	PS	14-May-09	09FROAWA-11	9056A	Nitrate-N	2110		100	31.0	ug/L
AP3468	PS	14-May-09	09FROAWA-11	9056A	Nitrate-N	2060		100	31.0	ug/L
AP3468	PS	14-May-09	09FROAWA-11	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3468	PS	14-May-09	09FROAWA-11	9056A	Nitrite-N	ND		100	31.0	ug/L
AP3468	PS	14-May-09	09FROAWA-11	9056A	Sulfate	26700		100	31.0	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW6020	Aluminum	ND		500	150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW6020	Iron	535	J	1000	310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW6020	Manganese	20.2	J	2.00	0.62	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Acetone	ND		10	3.1	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Bromomethane	ND		3.00	0.940	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Chloroform	0.590	J	1.00	0.300	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Tetrachloroethene	53.4		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP3468	PS	14-May-09	09FROAWA-11	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP4341	PS	14-May-09	09FROAWA-12	9056A	Nitrate-N	1510		100	31.0	ug/L
AP4341	PS	14-May-09	09FROAWA-12	9056A	Nitrate-N	1500		100	31.0	ug/L
AP4341	PS	14-May-09	09FROAWA-12	9056A	Nitrite-N	ND		100	31.0	ug/L
AP4341	PS	14-May-09	09FROAWA-12	9056A	Nitrite-N	ND		100	31.0	ug/L
AP4341	PS	14-May-09	09FROAWA-12	9056A	Sulfate	19000		100	31.0	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW6020	Aluminum	179	J	500	150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW6020	Iron	692	J	1000	310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW6020	Manganese	7.29	J	2.00	0.62	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Acetone	ND		10	3.1	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Carbon tetrachloride	0.500	J	1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Chloroform	1.29		1.00	0.300	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Tetrachloroethene	27.9		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP4341	PS	14-May-09	09FROAWA-12	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP4342	PS	15-May-09	09FROAWA-15	9056A	Nitrate-N	1690		100	31.0	ug/L
AP4342	PS	15-May-09	09FROAWA-15	9056A	Nitrite-N	ND		100	31.0	ug/L
AP4342	PS	15-May-09	09FROAWA-15	9056A	Sulfate	28700		100	31.0	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW6020	Aluminum	ND		500	150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW6020	Iron	405	J	1000	310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW6020	Manganese	4.13	J	2.00	0.62	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Acetone	ND		10	3.1	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Carbon tetrachloride	0.630	J	1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Chloroform	2.31		1.00	0.300	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Tetrachloroethene	55.8		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP4342	PS	15-May-09	09FROAWA-15	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP4413	PS	15-May-09	09FROAWA-16	9056A	Nitrate-N	1240	J	100	31.0	ug/L
AP4413	PS	15-May-09	09FROAWA-16	9056A	Nitrite-N	ND	UJ	100	31.0	ug/L
AP4413	PS	15-May-09	09FROAWA-16	9056A	Sulfate	28800		100	31.0	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW6020	Aluminum	ND		500	150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW6020	Iron	353	J	1000	310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW6020	Manganese	1.40	J	2.00	0.62	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Acetone	ND		10	3.1	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Carbon tetrachloride	0.800	J	1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Chloroform	5.68		1.00	0.300	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Tetrachloroethene	113		10	3.1	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP4413	PS	15-May-09	09FROAWA-16	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP9413	FD	15-May-09	09FROAWA-17	9056A	Nitrate-N	1220	J	100	31.0	ug/L
AP9413	FD	15-May-09	09FROAWA-17	9056A	Nitrite-N	ND	UJ	100	31.0	ug/L
AP9413	FD	15-May-09	09FROAWA-17	9056A	Sulfate	28900		100	31.0	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW6020	Aluminum	ND		500	150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW6020	Iron	353	J	1000	310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW6020	Manganese	1.12	J	2.00	0.62	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Acetone	ND		10	3.1	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Carbon tetrachloride	0.710	J	1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Chloroform	5.47		1.00	0.300	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Naphthalene	ND		2.00	0.620	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	n-Butylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	n-Propylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	o-Xylene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	P & M -Xylene	ND		2.00	0.620	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	sec-Butylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Styrene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	tert-Butylbenzene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Tetrachloroethene	115		10	3.1	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Toluene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Trichloroethene	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Vinyl chloride	ND		1.00	0.310	ug/L
AP9413	FD	15-May-09	09FROAWA-17	SW8260B	Xylenes (total)	ND		2.00	1.00	ug/L
AP4411	PS	15-May-09	09FROAWA-18	9056A	Nitrate-N	3060	J	100	31.0	ug/L
AP4411	PS	15-May-09	09FROAWA-18	9056A	Nitrite-N	ND	UJ	100	31.0	ug/L
AP4411	PS	15-May-09	09FROAWA-18	9056A	Sulfate	23700		100	31.0	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW6020	Aluminum	ND		500	150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW6020	Arsenic	ND		5.00	1.50	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW6020	Iron	599	J	1000	310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW6020	Manganese	0.862	J	2.00	0.62	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	2-Butanone (MEK)	ND		10	3.1	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	2-Chlorotoluene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	2-Hexanone	ND		10	3.1	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	4-Chlorotoluene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10	3.1	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Acetone	ND		10	3.1	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Benzene	ND		0.400	0.120	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Bromobenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Bromochloromethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Bromodichloromethane	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Bromoform	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Bromomethane	ND		3.00	0.940	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Carbon disulfide	ND		2.00	0.620	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Carbon tetrachloride	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Chlorobenzene	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Chloroethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Chloroform	0.340	J	1.00	0.300	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Chloromethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Dibromochloromethane	ND		0.500	0.150	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Dibromomethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Ethylbenzene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Methylene chloride	ND		5.00	1.00	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	ug/L
AP4411	PS	15-May-09	09FROAWA-18	SW8260B	Naphthalene	ND		2.00	0.620	ug/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3774	PS	21-Sep-09	09FROAWA-02	9056A	Sulfate	25,300		100	31.0	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	RSK175	Methane	ND		7.2	2.28	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SM20 4500NO	Nitrate-N	1,120		100	31.0	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SM20 4500NO	Nitrite-N	ND		100	31.0	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW6020	Aluminum	ND		500	150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW6020	Iron	ND		1,000	310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW6020	Manganese	1.07	J	2.00	0.620	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Chloroform	ND		1.00	0.300	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Tetrachloroethene	0.560	J	1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Toluene	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3774	PS	21-Sep-09	09FROAWA-02	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	9056A	Sulfate	23,200		100	31.0	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	RSK175	Methane	ND		7.2	2.28	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SM20 4500N(	Nitrate-N	1,380		100	31.0	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SM20 4500N(	Nitrite-N	ND		100	31.0	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW6020	Aluminum	ND		500	150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW6020	Iron	ND		1,000	310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW6020	Manganese	1.04	J	2.00	0.620	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Chloroform	ND		1.00	0.300	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	o-Xylene	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Tetrachloroethene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3870	PS	21-Sep-09	09FROAWA-03	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	RSK175	Methane	ND		7.2	2.28	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	9056A	Nitrate-N	884		100	31.0	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	9056A	Nitrite-N	ND		100	31.0	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	9056A	Sulfate	33,800		100	31.0	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW6020	Aluminum	ND		500	150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW6020	Iron	ND		1,000	310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW6020	Manganese	1.58	J	2.00	0.620	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Carbon tetrachloride	1.07		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Chloroform	5.58		1.00	0.300	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Tetrachloroethene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3871	PS	23-Sep-09	09FROAWA-06	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	RSK175	Methane	ND		7.2	2.28	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	9056A	Nitrate-N	ND		100	31.0	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	9056A	Nitrite-N	ND		100	31.0	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	9056A	Sulfate	19,700		100	31.0	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW6020	Aluminum	ND		500	150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW6020	Arsenic	21.7		5.00	1.50	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW6020	Iron	ND		1,000	310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW6020	Manganese	43.3		2.00	0.620	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Chloroform	ND		1.00	0.300	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Tetrachloroethene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3893	PS	23-Sep-09	09FROAWA-07	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	RSK175	Methane	ND		7.2	2.28	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	9056A	Nitrate-N	1,260		100	31.0	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	9056A	Nitrite-N	ND		100	31.0	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	9056A	Sulfate	24,700		100	31.0	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW6020	Aluminum	ND		500	150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW6020	Iron	ND		1,000	310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW6020	Manganese	ND		2.00	0.620	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Chloroform	0.400	J	1.00	0.300	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Tetrachloroethene	21.9		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3534	PS	23-Sep-09	09FROAWA-08	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3534	PS	23-Sep-09	09FROAWA-09	RSK175	Methane	ND		7.2	2.28	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	9056A	Nitrate-N	1,260		100	31.0	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	9056A	Nitrite-N	ND		100	31.0	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	9056A	Sulfate	24,800		100	31.0	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW6020	Aluminum	ND		500	150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW6020	Iron	ND		1,000	310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW6020	Manganese	ND		2.00	0.620	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Chloroform	ND		1.00	0.300	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Chloromethane	ND	U	1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Tetrachloroethene	23.9		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3534	FD	23-Sep-09	09FROAWA-09	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	RSK175	Methane	ND		7.2	2.28	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	9056A	Nitrate-N	2,160		100	31.0	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	9056A	Nitrite-N	ND		100	31.0	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	9056A	Sulfate	24,900		100	31.0	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW6020	Aluminum	642		500	150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW6020	Iron	998	J	1,000	310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW6020	Manganese	25.0		2.00	0.620	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Carbon tetrachloride	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Chloroform	1.36		1.00	0.300	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Tetrachloroethene	64.7		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP3468	PS	23-Sep-09	09FROAWA-10	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	RSK175	Methane	ND	UJ	7.2	2.28	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	9056A	Nitrate-N	976		100	31.0	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	9056A	Nitrite-N	ND		100	31.0	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	9056A	Sulfate	13,500		100	31.0	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW6020	Aluminum	ND		500	150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW6020	Iron	ND		1,000	310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW6020	Manganese	3.08		2.00	0.620	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Carbon tetrachloride	1.06		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Chloroform	ND	U	1.00	0.300	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Tetrachloroethene	16.2	J-	1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Trichlorofluoromethane	ND	UJ	1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP4341	PS	24-Sep-09	09FROAWA-13	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	RSK175	Methane	ND		7.2	2.28	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	9056A	Nitrate-N	1,710		100	31.0	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	9056A	Nitrite-N	ND		100	31.0	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	9056A	Sulfate	16,600		100	31.0	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW6020	Aluminum	22,300		5,000	1,500	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW6020	Arsenic	11.2		5.00	1.50	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW6020	Iron	36,700		1,000	310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW6020	Manganese	870		2.00	0.620	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Carbon tetrachloride	0.950	J	1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Chloroform	ND		1.00	0.300	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Tetrachloroethene	15.6		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP4411	PS	24-Sep-09	09FROAWA-14	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	RSK175	Methane	ND		7.2	2.28	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	9056A	Nitrate-N	1,800		100	31.0	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	9056A	Nitrite-N	ND		100	31.0	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	9056A	Sulfate	28,500		100	31.0	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW6020	Aluminum	8,440		5,000	1,500	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW6020	Arsenic	3.69	J	5.00	1.50	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW6020	Iron	11,800		1,000	310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW6020	Manganese	240		2.00	0.620	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Carbon tetrachloride	1.28		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Chloroform	ND	U	2.30	0.300	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Tetrachloroethene	58.0		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP4342	PS	24-Sep-09	09FROAWA-15	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	RSK175	Methane	ND		7.2	2.28	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	9056A	Nitrate-N	2,250		100	31.0	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	9056A	Nitrite-N	ND		100	31.0	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	9056A	Sulfate	25,800		100	31.0	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW6020	Aluminum	ND		500	150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW6020	Arsenic	ND		5.00	1.50	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW6020	Iron	ND		1,000	310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW6020	Manganese	7.08		2.00	0.620	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1,1,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1,1-Trichloroethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1,2,2-Tetrachloroethane	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1,2-Trichloroethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1-Dichloroethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1-Dichloroethene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,1-Dichloropropene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2,3-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2,3-Trichloropropane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2,4-Trichlorobenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2,4-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2-Dibromo-3-chloropropane	ND		2.00	0.620	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2-Dibromoethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2-Dichloroethane	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,3,5-Trimethylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,3-Dichlorobenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,3-Dichloropropane	ND		0.400	0.120	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	1,4-Dichlorobenzene	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	2,2-Dichloropropane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	2-Butanone (MEK)	ND		10.0	3.10	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	2-Chlorotoluene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	2-Hexanone	ND		10.0	3.10	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	4-Chlorotoluene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	4-Isopropyltoluene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	4-Methyl-2-pentanone (MIBK)	ND		10.0	3.10	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Acetone	ND		10.0	3.10	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Benzene	ND		0.400	0.120	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Bromobenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Bromochloromethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Bromodichloromethane	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Bromoform	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Bromomethane	ND		3.00	0.940	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Carbon disulfide	ND		2.00	0.620	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Carbon tetrachloride	1.66		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Chlorobenzene	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Chloroethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Chloroform	3.99		1.00	0.300	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Chloromethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	cis-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	cis-1,3-Dichloropropene	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Dibromochloromethane	ND		0.500	0.150	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Dibromomethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Dichlorodifluoromethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Ethylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Hexachlorobutadiene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Isopropylbenzene (Cumene)	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Methylene chloride	ND		5.00	1.00	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Methyl-t-butyl ether	ND		5.00	1.50	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Naphthalene	ND		2.00	0.620	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	n-Butylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	n-Propylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	o-Xylene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	P & M -Xylene	ND		2.00	0.620	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	sec-Butylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Styrene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	tert-Butylbenzene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Tetrachloroethene	121		10.0	3.10	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Toluene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	trans-1,2-Dichloroethene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	trans-1,3-Dichloropropene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Trichloroethene	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Trichlorofluoromethane	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Vinyl chloride	ND		1.00	0.310	µg/L
AP4413	PS	24-Sep-09	09FROAWA-16	SW8260B	Xylenes (total)	ND		2.00	1.00	µg/L

Location	Sample Type	Sample Date	Sample ID	Method	Analyte	Final Result	Final Validation Flag	PQL	MDL	Units

Notes:

µg/L	micrograms per liter
mg/L	milligrams per liter
ND	analyte not detected above PQL
PQL	practical quantitation limit
MDL	method detection limt
PS	project sample
FD	field duplicate
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 (biased high)
J-	analyte was present but the reported value may not be accurate or precise (biased low)
UJ	analyte was not detected and the specified reporting limit may not be accurate or precise (estimated)
U	analyte was not detected at the specified reporting limit

Appendix B3
ADEC Laboratory Data Review Checklists

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E
Date: January 2010

Laboratory Report Date: June 10, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1092008

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Methane was analyzed by Columbia Analytical Services in Simi Valley, CA; ADEC certification not required for RSK175.

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° ± 2° C)?

Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: None of the anomalies noted affected data quality or usability.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample 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? ***NA*** **/ 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: PQLs for 1,2,3-trichloropropane and ethylene dibromide were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ 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 (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (AK petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No**
Comments: The sample/laboratory-duplicate RPD for sulfate was above the laboratory QC limit; sulfate was between the MDL and PQL. LCS/LCSD RPD for methyl iodide was also above the QC limit; this analyte was not detected in project samples.

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

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments: Trip blank was *09FROAWA-01*.

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments**:**

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate pair was *09FROAWA-16/09FROAWA017*, analyzed in work order 1092063

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: see QAPP) ***NA*** **/ Yes / No**
Comments: RPD for manganese (22%) was above the data quality objective of 20% specified in the CH2MHill QAPP.

iv. Data quality or usability affected? Explain. ***NA*** Manganese results should be considered estimates for the sample and duplicate; they are flagged J.

f. Decontamination or Equipment Blank (EB) (if applicable)
NA **/ Yes / No Note: EB was *09FROAWA-04.***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: Toluene was detected at 1.03 µg/L, above the PQL. Sulfate was detected between the MDL and the PQL.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: Analytes listed above were either not-detected or greater than 5-times the EB concentrations.

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Date: January 2010

Laboratory Report Date: June 10, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1092030

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Methane was analyzed by Columbia Analytical Services in Simi Valley, CA; ADEC certification not required for RSK175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments: There was a minor labeling discrepancy that was corrected and documented on the sample receipt form. There was another minor labeling discrepancy that was not caught by the laboratory; sample IDs in the lab report had an extra 9 in between 09FR and OAWA (*09FR9OAWA-06*, should be *09FROAWA-06*).

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: None of the QC anomalies noted had an effect on data quality or usability.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments:

b. All applicable holding times met? **Yes / No**

c. All soils reported on a dry-weight basis? ***NA*** **/ 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: PQLs for 1,2,3-trichloropropane and ethylene dibromide were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ 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 (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (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? **NA**
Comments:

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments: VOC surrogate 1,2-dichloroethane-D4 was recovered high for sample *09FROAWA-06*.

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments: Analytes associated with the surrogate were not detected above PQLs.

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments:

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments**:**

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate pair was *09FROAWA-16/09FROAWA017*, analyzed in work order 1092063

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: see QAPP) ***NA*** **/ Yes / No**
Comments: RPD for manganese (22%) was above the data quality objective of 20% specified in the CH2MHill QAPP.

iv. Data quality or usability affected? Explain. ***NA*** Manganese results should be considered estimates for the sample and duplicate; they are flagged J.

f. Decontamination or Equipment Blank (EB) (if applicable)
NA **/ Yes / No Note: EB was *09FROAWA-09***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: However, sulfate, benzene, toluene, and o-xylene were detected between the MDL and PQL.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: Analytes listed above were either not-detected or greater than 5-times the EB concentrations.

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Date: January 2010

Laboratory Report Date: June 10, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1092046

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Methane was analyzed by Columbia Analytical Services in Simi Valley, CA; ADEC certification not required for RSK175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: Email correspondence is attached documenting sample # discrepancy (corrected) and lack of closing CCV for nitrate/nitrite.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments: Anions were reanalyzed out of hold-time to confirm results.

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments:

b. All applicable holding times met? **Yes / No**
Comments: Holding times were met with the exception of the anion re-analysis.

c. All soils reported on a dry-weight basis? ***NA*** **/ Yes / No**

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No**
Comments: PQLs for 1,2,3-trichloropropane and ethylene dibromide were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ Yes / No**
Comments: There was no duplicate analyzed for metals; we have no way to assess analytical precision for this analysis. See field-duplicate results for overall precision.

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 (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (AK petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No**
Comments: Four VOC analytes had LCS/LCSD RPDs greater than laboratory QC goals.

v. If %R or RPD is outside of acceptable limits, what samples are affected? **NA**
Comments: None of the four VOC analytes with high RPDs were detected above PQLs in project samples.

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments: Trip blank was *09FROAWA-10*.

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments**:**

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate pair was *09FROAWA-16/09FROAWA017*, analyzed in work order 1092063

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: see QAPP) ***NA*** **/ Yes / No**
Comments: RPD for manganese (22%) was above the data quality objective of 20% specified in the CH2MHill QAPP.

iv. Data quality or usability affected? Explain. ***NA*** Manganese results should be considered estimates for the sample and duplicate; they are flagged J.

f. Decontamination or Equipment Blank (EB) (if applicable)
NA **/ Yes / No Note: EB was *09FROAWA-13***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: However, toluene was detected between the MDL and PQL.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: Toluene was not detected in project samples.

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Date: January 2010

Laboratory Report Date: June 10, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1092063

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Methane was analyzed by Columbia Analytical Services in Simi Valley, CA; ADEC certification not required for RSK175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments:

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments: Anions were reanalyzed out of hold-time to confirm results.

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments: Remaining discrepancies noted did not affect data quality or usability.

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments:

b. All applicable holding times met? **Yes / No**
Comments: Holding times were met with the exception of the anion re-analysis.

c. All soils reported on a dry-weight basis? ***NA*** **/ 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: PQLs for 1,2,3-trichloropropane and ethylene dibromide were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ Yes / No**
Comments: There was no duplicate analyzed for metals; we have no way to assess analytical precision for this analysis. See field-duplicate results for overall precision.

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 (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (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? **NA**
Comments:

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments: Trip blank was *09FROAWA-14*.

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments: Carbon disulfide was detected above the PQL in the trip blank.

iii. If above PQL, what samples are affected? ***NA***
Comments**:** Carbon disulfide was not detected in project samples.

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate pair was *09FROAWA-16/09FROAWA017*.

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: see QAPP) ***NA*** **/ Yes / No**
Comments: RPD for manganese (22%) was above the data quality objective of 20% specified in the CH2MHill QAPP.

iv. Data quality or usability affected? Explain ***NA*** Manganese results should be considered estimates for the sample and duplicate; they are flagged J.

f. Decontamination or Equipment Blank (EB) (if applicable)
NA **/ Yes / No Note: EB was *09FROAWA-19***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: However, toluene, chloromethane, and o-xylene were detected between the MDL and PQL.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: These analytes were not detected in project samples.

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Laboratory Report Date: October 20, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist
Date: November 2, 2009

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1095135

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Samples were shipped to SGS North America in Wilmington, NC for analysis of methane. ADEC does not require laboratory certification for methane analysis by method RSK 175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: Several MS/MSD recovery failures were noted, but as explained below, these failures did not affect our project samples.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments: We requested nitrate to be analyzed by method SW9056A on the COC, but SGS used SM20 4500 in order to expedite analysis. They corrected this for future work orders for this project.

b. All applicable holding times met? **Yes / No**
Comments: Holding times for chloride and sulfate were beyond the 48-hour hold time

listed in method SW9056A. However, this short hold time is specified since the method includes nitrate/nitrite analysis; chloride and sulfate are relatively more stable, and have 28-day hold times when unpreserved and analyzed by method EPA 300.0. In our opinion, chloride and sulfate results are unaffected by the exceeded holding times.

c. All soils reported on a dry-weight basis? ***NA*** **/ 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: PQLs for 1,2,3-trichloropropane and 1,2-dibromoethane were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ 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: MS recovery of iron and manganese and MSD recovery of bromoform were below laboratory QC limits.

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (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? **NA**
Comments:

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments: The original samples spiked for the metals and VOC MS/MSDs were not in our project sample set; project sample results are unaffected.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments: The trip blank was 09FROAWA-01.

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments: Chloromethane was detected between the MDL and the PQL, at 0.320J µg/L.

iii. If above PQL, what samples are affected? ***NA***
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments: Chloromethane was not detected in project samples.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate samples (*09FROAWA-08*/*09FROAWA-09*) were submitted in SDG 1095181.

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***

f. Decontamination or Equipment Blank (if applicable)
NA **/ Yes / No EB was sample *09FROAWA-04***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

ii. If results are above PQL, what samples are affected? ***NA***
Comments:

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Laboratory Report Date: October 14, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist
Date: November 10, 2009

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1095181

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Samples were shipped to SGS North America in Wilmington, NC for analysis of methane. ADEC does not require laboratory certification for methane analysis by method RSK 175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: QC failures noted in the case narrative did not affect data quality.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments:

b. All applicable holding times met? **Yes / No**
Comments: Holding times for chloride and sulfate were beyond the 48-hour hold time listed in method SW9056A. However, this short hold time is specified since the method includes nitrate/nitrite analysis; chloride and sulfate are relatively more stable, and have 28-day hold times when unpreserved and analyzed by method EPA 300.0. In our opinion,

chloride and sulfate results are unaffected by the exceeded holding times.

c. All soils reported on a dry-weight basis? ***NA*** **/ 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: PQLs for 1,2,3-trichloropropane and 1,2-dibromoethane were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ Yes / No**

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: MS recovery of iron and manganese and MSD recovery of bromoform were below laboratory QC limits. MSD recovery of methane was also below laboratory QC limits.

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (AK petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No**
Comments: MS/MSD RPD for methane was above the QC limit.

v. If %R or RPD is outside of acceptable limits, what samples are affected? **NA**
Comments: The methane PQL for the MS/MSD original should be considered estimated due to MS/MSD recovery and RPD failures.

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments: The original samples spiked for the metals and VOC MS/MSDs were not in our project sample set; project sample results are unaffected. The methane PQL for sample FROAWA-11 is affected as noted above (flagged UJ).

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments: The trip blank for this SDG was 09FROAWA-05.

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate samples (*09FROAWA-08/09FROAWA-09*) were analyzed in this sample delivery group.

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***

f. Decontamination or Equipment Blank (if applicable)
NA **/ Yes / No EB was sample *09FROAWA-11***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: Sulfate was detected at 60.0J µg/L and chloroform was detected at 0.350 µg/L.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: Chloromethane result for sample 09FROAWA-09 is less than 5-times the concentration in the method blank and may be attributable to equipment-based contamination.

iii. Data quality or usability affected? Explain. ***NA***
Comments: Chloromethane result for sample 09FROAWA-09 is affected as noted above, and flagged U.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Fort Richardson Groundwater Monitoring – Operable Unit E

Laboratory Report Date: October 21, 2009

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Rodney Guritz
Title: Environmental Chemist
Date: November 16, 2009

Laboratory Name: SGS Environmental Services, Inc.
SGS Work Order Number: 1095214

ADEC File Number: 2102.38.005

(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

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?
NA **/ Yes / No**
Comments: Samples were shipped to SGS North America in Wilmington, NC for analysis of methane. ADEC does not require laboratory certification for methane analysis by method RSK 175.

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° ± 2° C)?
Yes / No
Comments:

b. Sample preservation acceptable - acidified waters, methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: **No problems.**

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments:

e. Data quality or usability affected? Explain. ***NA***
Comments:

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: The QC anomalies identified did not affect data quality, with the exception of BMS/BMSD recovery failures, described in section 6.b.iii.

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative? ***NA***
Comments:

5. Sample 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? ***NA*** **/ Yes / No**

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No**
Comments: PQLs for 1,2,3-trichloropropane and 1,2-dibromoethane were above the respective ADEC Table C groundwater cleanup levels; the PQLs met the reporting limit objectives specified in the QAPP, and these analytes are not a focus of this project, so data usability is not affected.

e. Data quality or usability affected? Explain. ***NA***
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? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

v. Data quality or usability affected? Explain. ***NA***
Comments:

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

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples?
(LCS/LCSD required per AK methods, LCS required per SW846) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one matrix spike/matrix spike duplicate or sample duplicate reported per matrix, analysis and 20 samples? ***NA*** **/ Yes / No**
Comments: The BMS/BMSD was used to assess precision.

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: LCS/LCSD recovery of 1,1,1-trichloroethane was above QC limits; this analyte was not detected in project samples. BMS/BMSD recovery of trichlorofluoromethane was below QC limits, and BMSD recovery of tetrachloroethene (PCE) was below QC limits. BSM/BMSD recovery of methane was below QC limits.

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits (and project specified DQOs, if applicable)? RPD reported from LCS/LCSD and/or MS/MSD. (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? **NA**
Comments: The PCE result for sample 09FROAWA-13 (BMS/BMSD original) is biased low (flagged JL) and PQLs for trichlorofluoromethane and methane in sample 09FROAWA-13 are not representative of the laboratory's ability to detect the analyte (flagged UJ).

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments: Data was not flagged in the SGS laboratory report.

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments: The data is affected as described above and flagged appropriately in Table 2.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.)

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments:

ii. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: OUE field-duplicate samples (*09FROAWA-08/09FROAWA-09*) were submitted in SDG 1095181.

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain. ***NA***

f. Decontamination or Equipment Blank (if applicable)
NA **/ Yes / No EB was sample *09FROAWA-17***

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments: Sulfate was detected at 70.0J µg/L and chloroform was detected at 0.530 µg/L.

ii. If results are above PQL, what samples are affected? ***NA***
Comments: Chloroform results for sample 09FROAWA-13 and 09FROAWA-15 were less than 5-times the level detected in the EB; these results may be attributable to equipment-based contamination, and are flagged U.

iii. Data quality or usability affected? Explain. ***NA***
Comments: Affected chloroform results are flagged U; remaining sulfate and chloroform results were either not-detected or were greater than 5-times the EB concentration and therefore unaffected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments:

Appendix B4
Sample Receipts and Chain-of-Custody Forms

1092008

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

Page 1 of 1

Laboratory SGS

Attn: Heidi Geri

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOCs (EPA 8260) 3 HCl preserved	Dissolved Fe, Mn, Al, As, (SW6020) Field ft. Hered HDPE - HNO3	Sulfide (SW9030) NaOH preserved	Methane, ethane, ethene, 3x VOAs HCl preserved (RSK-175)	Total Number of Containers	Remarks/Matrix
09FROAWA-01	④ A-C	1300	5/12/09		✓	✓				1 box	Water Trip Blank
09FROAWA-02	① A-H	1330	"		✓	✓	✓	✓	✓	8	Water, Metals, Field ft Hered
09FROAWA-03	② ↓	1600	"		✓	✓	✓	✓	✓	8	" "
09FROAWA-04	③ ↓	1630	"		✓	✓	✓	✓	✓	8	" "

Project Information		Sample Receipt	
Project Number:	32-1-17261	Total Number of Containers	
Project Name:	Ft. Rich. OVE	COC Seals/Intact? Y/N/NA	
Contact:	Haydar Turker	Received Good Cond./Cold	
Ongoing Project?	Yes ☑ No ☐	Delivery Method:	
Sampler:	Joe Thomas	(attach shipping bill, if any)	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1815	Signature: Time: 12:07	Signature: Time:
Printed Name: Joe Thomas Date: 5/12/09	Printed Name: HAYDAR TURKER Date: 5/13/09	Printed Name: Date:
Company: Shannon+Wilson	Company: S&W	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 18:15	Signature: Time:	Signature: Time: 1207
Printed Name: HAYDAR TURKER Date: 5/12/09	Printed Name: Date:	Printed Name: Joe R1 Date: 5/13/09
Company: S&W	Company:	Company: SGS

Instructions
Requested Turnaround Time: Standard
Special Instructions: USACE/Corps-Task Order 001 Contract W911KB-08-D-0005 Cooler #1 NPRL 09-0006

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

TB= 5.9

F-19-91/UR

No. 28590

1092008

SGS

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA		
			Are samples **RUSH**, priority or *w/in 72 hrs* of **hold time**?	
called			If yes, have you done *e-mail ALERT notification*?	
	✓		Are samples *within 24 hrs.* of **hold time** or **due date**?	
		✓	If yes, have you also *spoken with* supervisor?	
		✓	Archiving bottles: Are lids marked w/ red "X"?	
✓			Were samples collected with proper preservative?	
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**	
	✓		If this is for PWS, provide **PWSID:**	
	✓		Payment received: $_____ by Check or Credit Card	
	✓		Will courier charges apply?	
✓			Data package required? (Level: 1 / 2 / 3 / 4)	
✓			Is this a DoD project? (USACE, Navy, AFCEE)	

Notes:

TAT (circle one): ~~Standard~~ -or- Rush

Received Date: 5/13/09

Received Time: 1207

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
1	5.9 °C	#7
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):

(Client) / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: *(√ if applicable)*

_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
✓ Ref Lab required for ①-③ D-F
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.*
		If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected
	✓	Was there an airbill? *(If "yes," see attached.)*
	✓	Was cooler sealed with custody seals & were they intact? # / where: _____
✓		Was there a COC with cooler?
	✓	Was COC sealed in plastic bag & taped inside lid of cooler?
✓		Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with: *(circle one)*: (Bubble Wrap) Vermiculite Other (specify): Foam cube
✓		Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

This section must be completed if problems are noted.

Was client notified of problems? Yes / No

By (SGS PM): _____

Individual contacted: _____

Via: Phone / Fax / E-mail *(circle one)*

Date/Time: _____

Reason for contact: _____

Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** Joe Ruel

Login proof: Self-check completed JJR **Peer-reviewer's Initials** _____

1092008

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
1-3	A-C	1	VOC								9		✓					✓			✓								
	D-F	↓	methane								9		✓					✓			✓								
	G	↓	NO2 NO3 SO4							3						✓				✓									
	H	↓	Diss Fe, Mn, Al, As					3							✓							✓							
4	A-C	1	VOC		✓						3		✓					✓			✓								
			Bottle Totals					3		3	21																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: Joe Reid Date: 5/13/09

1092030

SHORT HOLDING

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

Laboratory SGS
Attn: Heidi Geri

Analysis Parameters/Sample Container Description (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOC VOAs w/HCl	EPA 8260B Methanol VOAs w/HCl	PSK-175 Dissolved Methane, Ethane, Ethene	Fe, Mn, As, Pb SW6020 HNO3	Sulfate, Nitrate/Nitrite SW9056 Nalgene Unpres	Total Number of Containers	Remarks/Matrix
09FROAWA-05	⑦ A-C	1000	5/13/09			X					3	Trip blank
09FROAWA-06	① A-H	1042	5/13/09			X	X	X	X		8	Water, Metals field & Hexcel
09FROAWA-07	② A-H	1226	5/13/09			X	X	X	X		8	" "
09FROAWA-08	③④⑤ A-H	1650	"			X	X	X	X		16	" "
09FROAWA-09	⑥ A-H	1728	"			X	X	X	X		8	" "

SHORT HOLDING

Project Information		Sample Receipt	
Project Number:	17261	Total Number of Containers	
Project Name:	Fort Richardson OU5	COC Seals/Intact? Y/N/NA	
Contact:	Haydar Turker	Received Good Cond./Cold	
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	
Sampler:	Joe Thomas	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	USACE/Corps contract W911KB-08-D-0005 NPDL 09-006

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 8:00	Signature: Time: 1314	Signature: Time:
Printed Name: Joe Thomas Date: 5/14/09	Printed Name: Jake Gano Date: 5/14/09	Printed Name: Date:
Company: Shannon & Wilson	Company: Shannon + Wilson	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 9:05	Signature: Time:	Signature: Time: 1314
Printed Name: Jake Gano Date: 5/14/09	Printed Name: Date:	Printed Name: Date: 5-14-09
Company: Shannon & Wilson	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

Cooler #2 70d 3.7

No. 28589

SGS

1092030

SAMPLE RECEIPT FORM

SGS WO#: _____

Yes	No	NA		
✓			Are samples **RUSH** priority (*within 72 hrs* of **hold time**)?	SHORT HOLDING
CALLED			If yes, have you done a *RUSH ALERT notification*?	
✓			Are samples *within 24 hrs.* of **hold time** or **due date**?	
✓			If yes, have you *spoken with* supervisor?	
		✓	Archiving bottles: Are lids marked w/ red "X"?	
✓			Were samples collected with proper preservative?	
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**	
		✓	If this is for PWS, provide **PWSID:** _____	
		✓	Payment received: $_____ by Check or Credit Card	
	✓		Will courier charges apply?	
✓			Data package required? (Level: 1 / 2 / 3 / 4)	
			Notes: _____	
✓			Is this a DoD project? (USACE, Navy, AFCEE)	

TAT (circle one): (Standard) -or- Rush

Received Date: 5.14.09

Received Time: 1314

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
2	3.7 °C	70d
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):

(Client) Alert Courier / Lynden / SGS UPS / FedEx / USPS / DHL / Carlile AkAir Goldstreak / NAC / ERA / PenAir

Other: _____

Additional Sample Remarks: (√ *if applicable*)

_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
_____ Ref Lab required for_____
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.* If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
	✓	Was there an airbill? *(If "yes," see attached.)*
	✓	Was cooler sealed with custody seals & were they intact? #'s/where: _____
✓		Was there a COC with cooler?
	✓	Was COC sealed in plastic bag & taped inside lid of cooler?
✓	*	Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*: Bubble Wrap Vermiculite Other (specify): _____
✓		Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

This section must be completed if problems are noted.

Was client notified of problems? Yes / No

By (SGS PM): _____

Individual contacted: _____ (to:

Via: Phone / Fax / E-mail (*circle one*)

Date/Time: _____

Reason for contact: _____

Change Order Required? Yes / No

Notes:

* Diss Metals Sample Container FOR SAMPLE 09FRO1WA-06 WAS Labeled 09FRO1WA-05. all other info. WAS CORRECT FOR THIS Container TO BE USED AS 09FRO1WA-06. JSO

Completed by (sign): _____ **(print):** JAMIE MOCCETTI

Login proof: Self-check completed X **Peer-reviewer's Initials** JJR

1092030

SGS

SAMPLE RECEIPT FORM (page 2) **SGS WO#:**

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
1,2,6	A-C	1	VOC								9		✓					✓			✓								
	D-F		METHANE								9		✓					✓			✓								
	G		NO_2 NO_3 SO_4							3						✓				✓									
	H		Diss Metals					3							✓							✓							
3	A,B	1	VOC								2		✓					✓			✓								
	C,D		Methane								2		✓					✓			✓								
	E		NO_2 NO_3 SO_4							1						✓				✓									
	F		Diss Metals					1							✓							✓							
	G		EDTA VOC							1						✓				✓									
	H		↓					1							✓							✓							
4	A,B		VOC	MS							2		✓					✓			✓								
	C,D		Methane	MS							2		✓					✓			✓								
	E		NO_2 NO_3 SO_4	MS					5	1	1	3E																	
	F		Diss Metals	MS					↓	↓	↓	3F																	
			Bottle Totals					5		5	26																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: _____ Date: 5.14.09

1092030

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
5	A,B	1	VOC	[illegible]							2		✓					✓			✓								
	C,D		METHANE	[illegible]							2		✓					✓			✓								
	E		NO_2 NO_3 SO_4	[illegible]					5	J	1	3E																	
	F		Diss Metals	[illegible]					↓	↓	↓	3F																	
7	A-C	1	VOC		✓						3		✓					✓			✓								
			Bottle Totals								7																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: [signature] Date: 5-14-09

Geri, Heidi (Anchorage)

From: Geri, Heidi (Anchorage)
Sent: Friday, May 15, 2009 11:35 AM
To: 'Haydar Turker'
Subject: 1092046

Hi Haydar,

Joe called me and has requested that we use the containers labeled #15 as sample #11; further, he stipulated that we should use the 13:40 collection time.

Thank you,

Heidi

Heidi Geri, BS
SGS North America, Inc.
Project Manager

SGS North America, Inc.
200 W Potter Drive
US - 99518 Anchorage, AK
Phone: +01 907 562 2343
Direct: +01 907 550 3211
Fax: +01 907 561 5301
E-mail: Heidi.Geri@SGS.com

1092046

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn: Heidi Ger.

Analysis Parameters/Sample Container Description
(include preseryative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOCs (EPA 8260B) 3x40ml HCl preserved	Methane (RSK-175) 3x40ml HCl preserved	Dissolved Mn, Fe, NA (5ml 6020)	Nitrate/Nitrite, Sulfate 40ml Nalgene 40 preserved			Total Number of Containers	Remarks/Matrix
09FROAWA-10	④ A-C	1200	5/14/09		✓	✓						3	Water trip blank
09FROAWA-11	① A-H	1340	"		✓	✓	✓	✓	✓			8	Water, metals - field filtered
09FROAWA-12	② ↓	1749	"		✓	✓	✓	✓	✓			8	"
09FROAWA-13	③ ↓	1800	"		✓	✓	✓	✓	✓			8	"

Project Information	Sample Receipt
Project Number: Ft. Richardson	Total Number of Containers
Project Name: 32-1-17261	COC Seals/Intact? Y/N/NA
Contact: Haydar Turker	Received Good Cond./Cold
Ongoing Project? Yes ☑ No ☐	Delivery Method:
Sampler: Joe Thomas	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: Standard
Special Instructions: USACE/Corps Task order 001 Contract W911KB-08-D-0005 NPDL 09-006

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 900	Signature: Time:	Signature: Time:
Printed Name: Joe Thomas Date: 5/15/09	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 0910
Printed Name: Date:	Printed Name: Date:	Printed Name: Joe Rud. Date: 5/15/09
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR Cooler # 3

#7 TB = 4.2

No. 28577

1092046

SGS

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA		
✓			Are samples **RUSH**, priority or *w/in 72 hrs* of hold time?	**TAT (circle one):** Standard -or- Rush
Called			If yes, have you done *e-mail ALERT notification*?	**Received Date:** 5/15/09
	✓		Are samples *within 24 hrs.* of **hold time** or **due date**?	**Received Time:** 0910
		✓	If yes, have you also *spoken with* supervisor?	
		✓	Archiving bottles: Are lids marked w/ red "X"?	
✓			Were samples collected with proper preservative?	
			Any problems (ID, cond'n, HT, etc)? Explain:	

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
1	4.2 °C	#7
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

		✓	If this is for PWS, provide **PWSID:**
	✓		Payment received: $_____ by Check or Credit Card
	✓		Will courier charges apply?
✓			Data package required? (Level: 1 / 2 / 3 / 4)
			Notes:
✓			Is this a DoD project? (USACE, Navy, AFCEE)

Delivery method (circle all that apply):
(Client) / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: (√ *if applicable*)
_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved
✓ Ref Lab required for ① ③ D-F
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.*
		If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
	✓	Was there an airbill? *(If "yes," see attached.)*
✓		Was cooler sealed with custody seals & were they intact? # / where: 2, 1 on front + 1 on back
✓		Was there a COC with cooler?
✓		Was COC sealed in plastic bag & taped inside lid of cooler?
✓		Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*:
		(Bubble Wrap) Vermiculite Other (specify):
✓		Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

This section must be completed if problems are noted.

Was client notified of problems? (Yes) / No
By (SGS PM): Hayden Tinder
Individual contacted: Hayden Tinder
Via: (Phone) / Fax / E-mail *(circle one)*
Date/Time: 5-15-09 2:17
Reason for contact: Received Sample #15 but it is not on COC - Did not receive Sample #11 Collection times #15 & #11 do not match. See Attached e-mail.
Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** Joe Rudi

Login proof: Self-check completed JJR **Peer-reviewer's Initials** _____

SGS

1092046

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
1-3	A-C	1	VOC								9		✓						✓		✓								
	D-F	↓	methane								9		✓						✓		✓								
	G	↓	NO2 NO3 SO4							3										✓									
	H	↓	Diss. Fe, Mn, Al, As					3														✓							
4	A-C	1	VOC		✓						3		✓						✓		✓								
Bottle Totals								3		3	21																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: Joe Rohi Date: 5/15/09

SGS Environmental

CUSTODY SEAL

Signature: _____ Date/Time: 5/15/09 800

SGS Environmental

CUSTODY SEAL

Signature: _____ Date/Time: 5/15/09 800

1092046

1092063

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Laboratory SGS
Attn: Heidi Geri

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOCs (EPA 8260B) 3x VOAs HCl pres.	Methane (RSK 175) 3 x VOAs, HCl pres.	Dissolved Fe, Mn, Al, As (SW6020) HNO3 pres.	Nitrate/Nitrite (SW 9056) Sulfate (SW 9056) Nalgene, No pres.			Total Number of Containers	Remarks/Matrix
09FROAWA-14	6 A-C	1100	5/15/09		✓	✓						3	Water Trip Blank
09FROAWA-15	1 A-H	1140	"		✓	✓	✓	✓	✓			8	Water; metals field-filtered
09FROAWA-16	2	1314	"		✓	✓	✓	✓	✓			8	"
09FROAWA-17	3	1316	"		✓	✓	✓	✓	✓			8	"
09FROAWA-18	4	1420	"		✓	✓	✓	✓	✓			8	"
09FROAWA-19	5	1400	"		✓	✓	✓	✓	✓			8	"

Project Information	Sample Receipt
Project Number: 32-1-17261	Total Number of Containers
Project Name: Ft. Richardson OUE	COC Seals/Intact? Y/N/NA
Contact: Haydar Turker	Received Good Cond./Cold
Ongoing Project? Yes ☑ No ☐	Delivery Method:
Sampler: Joe Thomas	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: Standard
Special Instructions: USACE/Corps Task Order 1 W911KB-08-D-0005 NPDL 09 0016

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1535	Signature: Time:	Signature: Time:
Printed Name: Joe Thomas Date: 5/15/09	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 1535
Printed Name: Date:	Printed Name: Date:	Printed Name: James Dougherty Date: 5-15-09
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR Cooler #4 #6 4.2

No. 28578

SGS

1092063

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA		
✓			Are samples **RUSH**, priority or *w/in 72 hrs* of hold time?	
✓ACCEPT			If yes, have you done *e-mail ALERT notification*?	
✓			Are samples *within 24 hrs.* of **hold time** or **due date**?	
✓			If yes, have you also *spoken with* supervisor?	
		✓	Archiving bottles: Are lids marked w/ red "X"?	
✓			Were samples collected with proper preservative?	
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**	
		✓	If this is for PWS, provide **PWSID:**	
		✓	Payment received: $_____ by Check or Credit Card	
	✓		Will courier charges apply?	
✓			Data package required? (Level: 1 / 2 / 3 / 4)	
			Notes:	
✓			Is this a DoD project? (USACE, Navy, AFCEE)	

TAT (circle one): Standard -or- Rush

Received Date: 5.15.09

Received Time: 1535

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
1	4.2 °C	#6
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):
Client / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: *(√ if applicable)*
_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
✓ Ref Lab required for METHANE
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.*
		If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected
	✓	Was there an airbill? *(If "yes," see attached.)*
	✓	Was cooler sealed with custody seals & were they intact?
		#'s where:
✓		Was there a COC with cooler?
	✓	Was COC sealed in plastic bag & taped inside lid of cooler?
✓		Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*:
		Bubble Wrap Vermiculite Other (specify)
	✓	Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

This section must be completed if problems are noted.

Was client notified of problems? Yes / No

By (SGS PM): _____

Individual contacted: _____

Via: Phone / Fax / E-mail *(circle one)*

Date/Time: _____

Reason for contact: _____

Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** JAMES MOCKETT

Login proof: Self-check completed ✓ **Peer-reviewer's Initials** _____

1092063

SGS

SAMPLE RECEIPT FORM (page 2)

SGS WO#:

						Container Volume							Container Type							Preservative									
#	Container ID	Matrix	Test	QC	TB	1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
1-5	A-C	1	VOC								15		✓					✓			✓								
	D-F		METHANE								15		✓					✓			✓								
	G		NO_2 NO_3 SO_4							5						✓				✓	~~✓~~ gev								
	H		Diss Metals					5							✓							✓							
6	A-C	1	VOC		✓						3		✓					✓			✓								
			Bottle Totals					5		5	33																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: [signature] Date: 5-15-09

1095181

SHANNON & WILSON, INC. — CHAIN-OF-CUSTOD

Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Laboratory SGS Page 1 of 1

Attn: Jason Kottsick

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	DJ&C Lab No.	Time	Date Sampled	Comp	Grab	VOCs - (HCl) SW8260B	Methane - (HCl) RSK 175	Sulfate AND Nitrate-N mix SW 300.0 (NEAT)	Dissolved Fe/Mn (HNO3) SW6020 * *Field filtered			Total Number of Containers	Remarks/Matrix
09FROAWA-05	① ⑦A	0800	9/23/09		X	X						3	Water
09FROAWA-06	② ① A-H	1057			X	X	X	X	X			8	Metals - field filtered
09FROAWA-07	③ ②	1324			X	X	X	X	X			8	
09FROAWA-08	④ ③	1629			X	X	X	X	X			8	
09FROAWA-09	⑤ ④	1634			X	X	X	X	X			8	
09FROAWA-10	⑥ ⑤	1734			X	X	X	X	X			8	
09FROAWA-11	⑥	1815			X	X	X	X	X			8	

Project Information		Sample Receipt	
Project Number:	32-1-17261-003	Total Number of Containers	
Project Name:	Ft Rich -OUE	COC Seals/Intact? Y/N/NA	
Contact:	Haydar Turker	Received Good Cond./Cold	
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	
Sampler:	Shayla Swedlund	(attach shipping bill, if any)	

Instructions

Requested Turnaround Time: Standard

Special Instructions: USACE/Corps Task Order 001
Contract W911KB-08-D-0005
NPDL-09-006

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 2010	Signature: Time: 12:15	Signature: Time:
Printed Name: Shayla Swedlund Date: 9/23/09	Printed Name: HAYDAR TURKER Date: 9/24/09	Printed Name: Date:
Company: Shannon + Wilson	Company: S&W	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time: 2010	Signature: Time:	Signature: Time: 10/5
Printed Name: HAYDAR TURKER Date: 9/23/09	Printed Name: Date:	Printed Name: Joe Rud Date: 9/24/09
Company: S&W	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

Cooler #02

10 D TB = 5.6 cc = 3.6

No. 02

SGS

SAMPLE RECEIPT FORM

SGS WO#: 1095181

Yes	No	NA	
✓			Are samples **RUSH**, priority or *w/in 72 hrs* of **hold time**?
✓			If yes, have you done *e-mail ALERT notification*?
	✓		Are samples *within 24 hrs.* of **hold time** or **due date**?
		✓	If yes, have you also *spoken with* supervisor?
		✓	Archiving bottles: Are lids marked w/ red "X"?
✓			Were samples collected with proper preservative?
			Any problems (ID, cond'n, HT, etc)? Explain:
		✓	If this is for PWS, provide **PWSID:**
	✓		Payment received: $_____ by Check or Credit Card
	✓		Will courier charges apply?
✓			Data package required? (Level: 1 / 2 / 3 / 4)
			Notes:
✓			Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): ~~Standard~~ -or- Rush
Received Date: 9/24/09
Received Time: 1015

Cooler ID	Temperature	Measured w/ (Therm/IR ID#)
1	TB: 5.6 CF 3.6 °C	# 70D
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):
(Client) / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: *(√ if applicable)*
_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
_____ Ref Lab required for_____
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.*
		If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
(✓)	✓	Was there an airbill? *(If "yes," see attached.)*
✓	✓	Was cooler sealed with custody seals & were they intact?
		# / where:
✓		Was there a COC with cooler?
	✓	Was COC sealed in plastic bag & taped inside lid of cooler?
✓		Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*:
		~~Bubble Wrap~~ Vermiculite Other (specify):
✓		Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

This section must be completed if problems are noted.

Was client notified of problems? Yes / No
By (SGS PM): _____
Individual contacted: _____
Via: Phone / Fax / E-mail *(circle one)*
Date/Time: _____
Reason for contact: _____

Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** Joe Rust

Login proof: Self-check completed JJR **Peer-reviewer's Initials** ala

Sample LOCID and Matrix Code List

NPDL #	Cooler/ Custody Seal Number	Delivery Date	Laboratory SDG Number	Lab #	Sample ID	Collection Date	Collection Time	LOCID	Matrix Code
09-006	01	9/22/09	1095135		09FROAWA-01	9/21/09	9:00	TB01	WQ
					09FROAWA-02	9/21/09	15:48	AP3774	WG
					09FROAWA-03	9/21/09	17:38	AP3870	WG
					09FROAWA-04	9/21/09	18:30	EBOUE01	WQ
	02	9/24/09	5181		09FROAWA-05	9/23/09	8:00	TB02	WQ
					09FROAWA-06	9/23/09	10:57	AP3871	WG
					09FROAWA-07	9/23/09	13:24	AP3893	WG
					09FROAWA-08	9/23/09	16:29	AP3534	WG
					09FROAWA-09	9/23/09	16:34	AP9534	WG
					09FROAWA-010	9/23/09	17:34	AP3468	WG
					09FROAWA-11	9/23/09	18:15	EBOUE02	WQ

1095181

1095181

SGS

SAMPLE RECEIPT FORM - Bottle Tracking SGS WO#

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1L	500mL	250mL or 8oz	125mL or 4oz	60mL	40mL	Other:	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other:	Preservative: None	HCl	HNO3	H2SO4	NaOH	Ascorbic Acid	NH_4Cl	Other:	*Notes
1-6	A-C	1	VOC								18		✓					✓			✓							
	D-F	1	methane								18		✓					✓			✓							
	G	↓	NO2 NO3 SO4							6						✓				✓								
	H	↓	Diss Al, As, Fe, Mn					6							✓							✓						
7	A-C	1	VOC		✓						3		✓					✓			✓							
Bottle Totals								6		6	39																	

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106

Completed by: Joe Rudi Date: ~~9/5~~ 9/24/09

F042r02 Revised 9/8/2009

1095135

SHANNON & WILSON, INC. CHAIN-OF-CUSTODY RECORD

Geotechnical and Environmental Consultants

Page 1 of 1

Laboratory: SGS
Attn: Jason Rottsick

400 N. 34th Street, Suite 100, Seattle, WA 98103, (206) 632-8020
2043 Westport Center Drive, St. Louis, MO 63146-3564, (314) 699-9660
303 Wellsian Way, Richland, WA 99352, (509) 946-6309
2355 Hill Road, Fairbanks, AK 99709, (907) 479-0600
5430 Fairbanks Street, Suite 3, Anchorage, AK 99518, (907) 561-2120
2255 S.W. Canyon Road, Portland, OR 97201-2498, (503) 223-6147
1200 17th Street, Suite 1024, Denver, Co 80202, (303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOCs (HCl) SW 8260B	Methane (HCl) RSK 175	Sulfate and Nitrate/Nitrite SW 9056 (No Pres)	Dissolved Fe/Mn (HNO3) SW6020 (HNO3) * Field Filtered			Total Number of Containers	Remarks/Matrix
09FROAWA01	09④A-C	0900	9/21/09		X	X						3	WATER;
09FROAWA02	①A-H	1548	↓		X	X	X	X	X			8	↓ Metals-field filtered
09FROAWA03	② ↓	1738			X	X	X	X	X			8	
09FROAWA04	③ ↓	1830	↓		X	X	X	X	X			8	↓

Project Information		Sample Receipt	
Project Number:	32-1-17261-003	Total Number of Containers	
Project Name:	Ft. Rich-OVE	COC Seals/Intact? Y/N/NA	
Contact:	Haydar Turker	Received Good Cond./Cold	
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	
Sampler:	Shayla Swedlund	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	USACE/Corps Task Order 001 Contract W911KB-08-D-0005 NPDL-09-006

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 2030	Signature: Time: 17:25	Signature: Time:
Printed Name: Shayla Swedlund Date: 9/21/09	Printed Name: Haydar Turker Date: 9/22/09	Printed Name: Date:
Company: Shannon + Wilson	Company: S&W	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 1325
Printed Name: Date:	Printed Name: Date:	Printed Name: Joe Rut Date: 9/22/09
Company:	Company:	Company: S&S

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91.UR

Cooler #01

700 TB= 3.1 <= 2.9

No.

Sample LOCID and Matrix Code List

NPDL #	Cooler/ Custody Seal Number	Delivery Date	Laboratory SDG Number	Lab #	Sample ID	Collection Date	Collection Time	LOCID	Matrix Code
09-006	01	9/22/09			09FROAWA-01	5/21/09	9:00	TB01	WQ
					09FROAWA-02	5/21/09	15:48	AP3774	WG
					09FROAWA-03	5/21/09	17:38	AP3870	WG
					09FROAWA-04	5/21/09	18:30	EBOUE01	WQ

JK 2454109
See COC
for correct dates.

1095135

SHORT HOLDING

SGS

SAMPLE RECEIPT FORM

SGS WO#: 1095135

Yes	No	NA	
✓			Are samples **RUSH**, priority or *w/in 72 hrs* of **hold time**?
✓			If yes, have you done *e-mail ALERT notification*?
	✓		Are samples *within 24 hrs.* of **hold time** or **due date**?
		✓	If yes, have you also *spoken with* supervisor?
		✓	Archiving bottles: Are lids marked w/ red "X"?
✓			Were samples collected with proper preservative?
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**
		✓	If this is for PWS, provide **PWSID:**
	✓		Payment received: $_____ by Check or Credit Card
	✓		Will courier charges apply?
✓			Data package required? (Level: 1 / 2 / 3 / 4)
✓			*Notes:*
✓	X	JSR	Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): Standard -or- Rush

Received Date: 9/22/09

Received Time: 1325

Cooler ID	Temperature	Measured w/ (Therm #)
1	TS= 3.1 c=2.9 °C	700
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):

(Client) / Alert Courier / Lynden / SGS UPS / FedEx / USPS / DHL / Carlile AkAir Goldstreak / NAC / ERA / PenAir

Other: _____

Additional Sample Remarks: (√ *if applicable*)

_____ Extra Sample Volume?

_____ Limited Sample Volume?

_____ Multi-Incremental Samples?

_____ Lab-filtered for dissolved _____

✓ Ref Lab required for 8260 B-F

_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
✓		Is received temperature ≤6°C?
✓		Were containers ice-free? *Notify PM immediately of any ice in samples.* If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
	✓	Was there an airbill? *(If "yes," see attached.)*
	✓	Was cooler sealed with custody seals & were they intact? # / where: _____
✓		Was there a COC with cooler?
	✓	Was COC sealed in plastic bag & taped inside lid of cooler?
✓		Was the COC filled out properly? Did labels correspond?
✓		Did the COC indicate USACE / Navy / AFCEE project?
✓		Samples were packed to prevent breakage with *(circle one)*: Bubble Wrap Vermiculite Other (specify): _____
✓		Were all samples sealed in separate plastic bags?
✓		Were all VOCs free of headspace and/or MeOH preserved?
✓		Were correct container / sample sizes submitted?
✓		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

Cooler ID _____ Cooler Temp °C _____ Cooler ID _____ Cooler Temp °C _____

Cooler ID _____ Cooler Temp °C _____ Cooler ID _____ Cooler Temp °C _____

This section must be completed if problems are noted.

Was client notified of problems? Yes / No

By (SGS PM): _____

Individual contacted: _____

Via: Phone / Fax / E-mail (*circle one*)

Date/Time: _____

Reason for contact: _____

Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** Joe Rudi

Login proof: **Self-check completed** JSR **Peer-reviewer's Initials** _____

SGS

1095135

SGS

SAMPLE RECEIPT FORM (page 2)

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1 L	500 mL	250 mL or 8oz	125 mL or 4oz	60 mL	40 mL	Other (specify)	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other (specify)	Preservative: None	HCl	HNO_3	H_2SO_4	MeOH	$Na_2S_2O_3$	NaOH	NaOH+ZnAc	Other (specify)	* Notes
1-3	A-C	1	VOC								12		✓					✓			✓								
	D-F	↓	methane								12		✓					✓			✓								
	G	↓	NO2, NO3, SO4							3						✓				✓									
	H	↓	Diss Al, As, Mn, Fe					3							✓							✓							
4	A-C	1	VOC		✓						3		✓					✓			✓								
			Bottle Totals					3		3	27																		

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106.

Completed by: Joe R. Date: 8/22/09

Form # F004r20 revised 05/05/2009

1095214

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Laboratory: WCS
Attn: Jason Kottsick / Karen Waak

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOCs (HCl) SW8260B	Methane (HCl) RSK 175	Sulfate, Nitrate/Nitrite (no Pres) SW9056	Dissolved Al, As, Fe, Mn (HNO3) SW6020			Total Number of Containers	Remarks/Matrix
09FROAWA-12	(8) A-C	0900	9/24/09		X	X						3	Water
09FROAWA-13	(8) A-C D-E	0935	↓		X	X	X	X	X			16	Metals field filtered; MS/MSD
09FROAWA-14	(4) A-H	1001			X	X	X	X	X			8	
09FROAWA-15	(5)	1100			X	X	X	X	X			8	
09FROAWA-16	(6)	1255			X	X	X	X	X			8	
09FROAWA-17	(9)	1549	↓		X	X	X	X	X			8	↓ ↓

Project Information	Sample Receipt
Project Number: 321-1726-005	Total Number of Containers
Project Name: Ft Rich-OVE	COC Seals/Intact? Y/N/NA
Contact: Haydar Turker	Received Good Cond./Cold
Ongoing Project? Yes ☒ No ☐	Delivery Method:
Sampler: Shayla Swedlund	(attach shipping bill, if any)

Instructions

Requested Turnaround Time: Standard

Special Instructions: USACE / Corps Task Order 001
Contract W911KB-08-D-0005
NPDL 09-006

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1630	Signature: Time: 10:10	Signature: Time:
Printed Name: Shayla Swedlund Date: 9/24/09	Printed Name: HAYDAR TURKER Date: 9/25/09	Printed Name: Date:
Company: Shannon + Wilson	Company: S&W	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time: 16:30	Signature: Time:	Signature: Time: 1010
Printed Name: HAYDAR TURKER Date: 9/24/09	Printed Name: Date:	Printed Name: Date: 9-25-09
Company: S&W	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

Cooler # 03

10d TB = 3.1 C = 2.9

No. 29267

Sample LOCID and Matrix Code List

NPDL #	Cooler/ Custody Seal Number	Delivery Date	Laboratory SDG Number	Lab #	Sample ID	Collection Date	Collection Time	LOCID	Matrix Code
09-006	01	9/22/09	1095135	4	09FROAWA-01	9/21/09	9:00	TB01	WQ
				1	09FROAWA-02	9/21/09	15:48	AP3774	WG
				2	09FROAWA-03	9/21/09	17:38	AP3870	WG
				3	09FROAWA-04	9/21/09	18:30	EBOUE01	WQ
	02	9/24/09	1095181	7	09FROAWA-05	9/23/09	8:00	TB02	WQ
				1	09FROAWA-06	9/23/09	10:57	AP3871	WG
				2	09FROAWA-07	9/23/09	13:24	AP3893	WG
				3	09FROAWA-08	9/23/09	16:29	AP3534	WG
				4	09FROAWA-09	9/23/09	16:34	AP9534	WG
				5	09FROAWA-10	9/23/09	17:34	AP3468	WG
				6	09FROAWA-11	9/23/09	18:15	EBOUE02	WQ
	03	9/25/09			09FROAWA-12	9/24/09	9:00	TB03	WQ
					09FROAWA-13	9/24/09	9:35	AP4341	WG
					09FROAWA-14	9/24/09	10:01	AP4411	WG
					09FROAWA-15	9/24/09	11:00	AP4342	WG
					09FROAWA-16	9/24/09	12:55	AP4413	WG
					09FROAWA-17	9/24/09	15:49	EBOUE03	WQ

SGS

SAMPLE RECEIPT FORM

SGS WO#: 1095214

Yes	No	NA		
✓			Are samples **RUSH**, priority or *w/in 72 hrs* of **hold time**?	
✓			If yes, have you done *e-mail ALERT notification*?	
✓			Are samples *within 24 hrs.* of **hold time** or **due date**?	
		✓	If yes, have you also *spoken with* supervisor?	
✓		✓	Archiving bottles: Are lids marked w/ red "X"?	
✓			Were samples collected with proper preservative?	
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**	
		✓	If this is for PWS, provide **PWSID:**	
	✓		Payment received: $_____ by Check or Credit Card	
	✓		Will courier charges apply?	
	✓		Data package required? (Level: 1 / 2 / 3 / 4)	
			Notes:	
	✓		Is this a DoD project? (USACE, Navy, AFCEE)	

TAT (circle one): ~~Standard~~ -or- Rush
Received Date: 9/25/19
Received Time: 1010

Cooler ID	Temperature	Measured w/ (Therm #)
1	C: 2.9 TB: 3.1 °C	70D
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):
(Client) / Alert Courier / Lynden / SGS UPS / FedEx / USPS / DHL / Carlile AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: (√ *if applicable*)
_____ Extra Sample Volume?
__X__ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
_____ Ref Lab required for_____
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
		Is received temperature ≤6°C?
		Were containers ice-free? *Notify PM immediately of any ice in samples.*
		If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
		Was there an airbill? *(If "yes," see attached.)*
		Was cooler sealed with custody seals & were they intact? #'s where:
		Was there a COC with cooler?
		Was COC sealed in plastic bag & taped inside lid of cooler?
		Was the COC filled out properly? Did labels correspond?
		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*: Bubble Wrap Vermiculite Other (specify):
		Were all samples sealed in separate plastic bags?
		Were all VOCs free of headspace and/or MeOH preserved?
		Were correct container / sample sizes submitted?
		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

Cooler ID: _____ Cooler Temp °C: _____ Cooler ID: _____ Cooler Temp °C: _____
Cooler ID: _____ Cooler Temp °C: _____ Cooler ID: _____ Cooler Temp °C: _____

This section must be completed if problems are noted.

Was client notified of problems? Yes / No
By (SGS PM): _____
Individual contacted: _____
Via: Phone / Fax / E-mail *(circle one)*
Date/Time: _____
Reason for contact: _____

Change Order Required? Yes / No

Notes: * NO_2, NO_3 SO_4 MUST BE DONE BY SW 9056 !!

Completed by (sign): Annie Adkins **(print):** Annie Adkins

Login proof: **Self-check completed** AA **Peer-reviewer's Initials** JJL

1095214

SGS

Page 1 of 2

SAMPLE RECEIPT FORM - Bottle Tracking SGS WO#

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1L	500mL	250mL or 8oz	125mL or 4oz	60mL	40mL	Other:	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other:	Preservative: None	HCl	HNO3	H2SO4	NaOH	Ascorbic Acid	NH_4Cl	Other:	*Notes
1	A,B	1	VOCs SW8260B								2		X					X			X							
	C,D	1	Methane RSK 175								2		X					X			X							
	E	1	NO_2NO_3 SW9056							1						X				X								
	F	1	Diss Al, As, Fe, MN				~~1~~ X								X						X							
	G	1	Extra Volume					1							X						X							
2	A,B	1	VOCs SW8260B	MS							2		X					X										
	C,D	1	Methane RSK 175	MS							2		X					X										
	E	1	NO_2NO_3 SW9056	MS						1											X							
	F	1	Diss Al, As, Fe, MN	MS			SJA	(1)	F																			
3	A,B	1	VOCs SW8260B	MSD							2		X					X			X							
	C,D	1	Methane RSK 175	MSD							2		X					X			X							
	E	1	NO_2NO_3	MSD			SJA	(2)	E																			
	F	1	Diss Al, As, Fe, MN	MSD			SJA	(1)	F																			
4-7	A-C	1	VOCs SW8260B								12		X					X			X							
	D-F	1	Methane RSK 175								12		X					X			X							
	G	1	NO_2NO_3 SW9056							3						X				X								
Bottle Totals																												

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106

Completed by: _____ Date: 9/25/09

F042r02 Revised 9/8/2009

page 2 of 2

1095214

SGS

SAMPLE RECEIPT FORM - Bottle Tracking SGS WO#

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1L	500mL	250mL or 8oz	125mL or 4oz	60mL	40mL	Other:	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other:	Preservative: None	HCl	HNO3	H2SO4	NaOH	Ascorbic Acid	NH_4Cl	Other:	*Notes
4-7 (cont)	H	1	Diss Al, As, Fe, Mn					4							X							X						
8	A-C	1	VOCs SW8260B		X						3		X					X			X							
Bottle Totals																												

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106

Completed by: Date: 9/25/09

F042r02 Revised 9/8/2009

Appendix B5
COELT (electronic file only)