B&L Woodwaste Site
Pierce County, Washington

Compliance Monitoring Data Report April 2015

Prepared for

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List of Abbreviations and Acronyms

Abbreviation/ Acronym	Definition
CAP	Cleanup Action Plan
CMDR	Compliance Monitoring Data Report
CMP	Compliance Monitoring Plan
Consent Decree	Consent Decree No. 08-2-10610-7
CPOC	Conditional point of compliance
CUL	Cleanup level
Ecology	Washington State Department of Ecology
Landfill	B&L Woodwaste Landfill
LSAq	Lower Sand Aquifer
µg/L	Micrograms per liter
OMMP	Operations, Maintenance and Monitoring Plan
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
Site	B&L Woodwaste Site
USAq	Upper Sand Aquifer
USEPA	U.S. Environmental Protection Agency

1.0 Introduction

This Compliance Monitoring Data Report (CMDR) summarizes the results of the April 2015 semiannual groundwater and surface water monitoring event for the B&L Woodwaste Site (Site). This CMDR was prepared for the B&L Custodial Trust in accordance with the Compliance Monitoring Plan (CMP), which comprises Appendix B of the B&L Woodwaste Site Operations, Maintenance and Monitoring Plan (OMMP; Floyd|Snider/AMEC 2013) and a memorandum that included additional monitoring requirements related to operations (Operations Recommendation; Floyd|Snider 2014). The monitoring program is intended to support long-term compliance monitoring following implementation of remedy specified in the 2008 Cleanup Action Plan (CAP). The CAP was issued by the Washington State Department of Ecology (Ecology) under Consent Decree No. 08-2-10610-7 (Consent Decree). The CAP remedy is being implemented in phases in accordance with the Scope of Work included in the Consent Decree. Phase 3 consists of the long-term operations, maintenance, and monitoring of the CAP remedy.

Phase 3 compliance monitoring is designed to meet the monitoring requirements specified in the Consent Decree and CAP and the substantive requirements of regulations issued pursuant to the Washington State Model Toxics Control Act and the Washington State Solid Waste Management, Reduction, and Recycle Act. Compliance monitoring is intended to regularly assess plume stability and trends in site groundwater and surface water, confirm the long-term effectiveness of the cleanup action completed at the Site, and eventually confirm compliance with cleanup standards at the point of compliance.

In this CMDR, groundwater elevation measurements and potentiometric contours, ditch surface water arsenic results, groundwater arsenic results from monitoring wells located in the Upper Sand Aquifer (USAq) and Lower Sand Aquifer (LSAq), and trends over time are reported. A more comprehensive report with additional discussion of remediation status, hydraulic containment, and other issues will be submitted as an annual report following the second semiannual monitoring event of the year.

1.1 CLEANUP STANDARD

The cleanup standard for the Site includes the cleanup level (CUL) to be met at the points of compliance specified in the CAP. The constituent of concern for the Site is arsenic; the CUL for arsenic in groundwater and surface water is 5 micrograms per liter (µg/L). A conditional point of compliance (CPOC) for soil, ditch sediment, groundwater, and surface water was established in the CAP at the B&L Woodwaste Landfill (Landfill)/cap perimeter (edge of waste). As noted in the OMMP, the plume of affected groundwater extends downgradient of the designated CPOC location; therefore, it is expected that a substantial period of time will be needed to achieve the CULs at the CPOC. Compliance monitoring during remedy implementation is designed to monitor plume stability in addition to attaining the cleanup standards for the Site.

1.2 COMPLIANCE MONITORING NETWORK

The compliance monitoring network described in the CMP includes 14 USAq monitoring wells, 4 LSAq monitoring wells, and 3 surface water sampling locations in the drainage ditch system adjacent to the Landfill. A fifth LSAq monitoring well (MW-40B) was added to the monitoring network in 2015 to meet the monitoring objectives of the Operations Recommendation. Locations for groundwater monitoring wells and surface water sampling points are shown on Figure 1.1.

1.3 METHODS

Groundwater and surface water samples were collected on April 13 and 14, 2015. Methods used in compliance monitoring, including water level measurements, water quality parameter measurements, groundwater and surface water sampling, equipment decontamination, and field quality control procedures, were carried out in general accordance with the CMP and the Sampling Analysis Plan/Quality Assurance Project Plan (SAP/QAPP; refer to Appendix B of the OMMP).

Groundwater samples were submitted to Analytical Resources, Inc. for total arsenic analysis and surface water samples were submitted for total and dissolved arsenic in accordance with the analytical methods, reporting limits, sample collection, and sample preservation requirements provided in the SAP/QAPP. As described in the SAP/QAPP, a Level 1 data validation was performed on all analytical results and is described in Section 2.2.

2.0 Compliance Monitoring Results

The results of the April 2015 monitoring event are presented in this section. Deviations from the CMP and SAP/QAPP are noted where applicable.

2.1 WATER LEVEL MEASUREMENTS AND POTENTIOMETRIC SURFACE

Water level data for compliance monitoring wells, showing head differences across the barrier wall and between the USAq and LSAq, are presented in Table 2.1. Potentiometric contour maps indicating inferred groundwater flow directions and horizontal hydraulic gradients for the USAq and LSAq are presented in Figures 2.1 and 2.2, respectively. The potentiometric contours illustrated on both figures include measurements from selected piezometers in accordance with the CMP in addition to measurements from the compliance monitoring network. Water levels in the North Pond and West Pond are shown for reference and not used in potentiometric contouring. Hydraulic containment status is described in the Annual Compliance Monitoring Report.

2.2 DATA VALIDATION

A Compliance Screening, Tier 1 data quality review was performed on arsenic data resulting from laboratory analysis. The analytical data were validated in accordance with the U.S. Environmental Protection Agency (USEPA) National Functional Guidelines for Inorganic Superfund Data Review (USEPA 2014).

A total of 21 groundwater and 6 surface water samples were submitted, in two sample delivery groups, AEH4 and AEH5, to Analytical Resources, Inc. of Tukwila, Washington. For all sample delivery groups, the analytical holding times were met. The method blanks, matrix spike, and laboratory control sample recoveries, and sample/sample duplicate relative percent differences all met USEPA requirements.

No qualifiers were added to the analytical results based on the data quality review. Data were determined to be of acceptable quality for use as reported by the laboratory.

2.3 GROUNDWATER RESULTS

Field parameters and analytical results for the April 2015 groundwater monitoring event are presented in Tables 2.2 and 2.3, respectively. April 2015 arsenic concentrations are presented in Figure 1.1. Time-concentration plots[1] for the USAq and LSAq are presented in Appendix A. Laboratory analytical reports for the April 2015 monitoring event are included as Appendix B.

[1] The analytical detection limits used in site monitoring and reported in Appendix A have varied slightly over time. Non-detect results with detection limits of less than 5 µg/L (i.e., equal to the CUL) have been plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have been omitted from the time-concentration plots to avoid inaccurate interpretation of trends.

Groundwater monitoring results are generally consistent with previous measurements. A brief summary of results is presented in this section. Additional discussion of remediation progress and compliance status will be presented in the Annual Compliance Monitoring Report.

2.3.1 Upper Sand Aquifer

Arsenic in USAq groundwater exceeded the CUL of 5 µg/L in all compliance monitoring wells except MW-31A. Total arsenic concentrations in compliance monitoring wells sampled in the USAq ranged from 4.1 to 1,580 µg/L. In the 6 months since the previous semiannual compliance monitoring event, concentrations of arsenic have decreased or remained nearly unchanged in 9 of the 14 USAq wells that were sampled during that event (i.e., D-6A, D-7A, D-9A, MW-13, MW-15, MW-31A, MW-33, MW-35, and W-1). Concentrations increased relative to the previous monitoring event in five USAq monitoring wells (D-5U, D-8A, D-10A, MW-30, and PD-141).

The observed increases in arsenic concentrations in these wells may reflect seasonal fluctuation and longer term trends in plume movement, or a combination of both. The largest increase was observed at Monitoring Well D-8A, where concentrations increased during this period from 107 to 342 µg/L, consistent with the wide seasonal fluctuations that have typically occurred at this well since installation of the barrier wall. Monitoring Well D-8A is located on the western edge of the Landfill in an area of apparent groundwater stagnation, where altered flow paths following installation of the barrier wall appear to have locally affected the groundwater arsenic concentration. Residual arsenic-contaminated shallow soils in the nearby ditch bank that may be contributing to USAq groundwater contamination in this area are planned to be excavated in summer of 2015. The increase at PD-141 appears to be a continuing trend associated with plume evolution in the wetlands following installation of the barrier wall, groundwater recovery wells, and the Phase 2 Pilot Study injections in this area. The increase at D-10A also suggests a trend, which could be explained by higher groundwater levels upgradient of the barrier wall in recent years. The increase at D-5U is relatively slight and characteristic of seasonal fluctuation.

2.3.2 Lower Sand Aquifer

Total groundwater arsenic concentrations in three of the five LSAq wells (D-5L, D-6B, and D-7B) were less than 5 µg/L and consistent with previous measurements. Monitoring Wells D-8B and MW-40B are located in an area where the Lower Silt Aquitard is absent and groundwater flows westward beneath the barrier wall. These two wells are screened at depths that make them suitable for monitoring containment of leachate. At D-8B, arsenic decreased from 10.7 µg/L to 9.3 µg/L since the October 2014 monitoring event. Arsenic concentrations have been decreasing at D-8B during every monitoring event following an increase from 28.2 to 370 µg/L in April 2012. At MW-40B, the arsenic concentration was 8.4 µg/L. These results are consistent with continued effective containment of landfill leachate in this area.

2.4 SURFACE WATER RESULTS

Surface water results are presented in Table 2.4 and Figure 1.1. Historical trends in total and dissolved arsenic concentrations at the surface water sampling locations are plotted in Appendix A.

Consistent with the majority previous observations, total and dissolved arsenic were detected at concentrations slightly greater than the CUL of 5 µg/L in all of the surface water monitoring locations. The greatest concentration of dissolved arsenic was 7.9 µg/L at SW-05, which is located west of the Landfill near the end of the Interurban Trail. The greatest concentration of total arsenic was 14.6 µg/L, at SW-03 on the southwest corner of the landfill. Surface water total arsenic concentrations, which may include arsenic entrained on suspended particles in addition to dissolved arsenic, remained generally consistent in all three locations with only slight variations from the October 2014 monitoring event.

3.0 References

Floyd|Snider and AMEC (Floyd|Snider/AMEC). 2014. *Operations Recommendation for 2015 Memorandum*. 14 November.

_____.2013. *Operations, Monitoring, and Maintenance Plan.* Prepared for the B&L Custodial Trust. May.

U.S. Environmental Protection Agency (USEPA). 2014. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540/R-94/013. February.

_____. 2004. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review Draft Final.* EPA 540-R-04-004. July.

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Tables

Table 2.1
Groundwater Elevations and Head Differences

Location	Aquifer	Date	Time	Groundwater Elevation (ft NAVD 88)	Vertical Head Difference: LSAq - USAq (ft)	Cross-Barrier Head Difference: Outside - Inside (ft)
Upgradient Areas East of Landfill						
D-10A	USAq	4/13/2015	8:58	18.48	--	--
D-11A	USAq	4/13/2015	9:13	18.09	0.04	--
D-11B	LSAq	4/13/2015	9:12	18.13		
MW-35	USAq	4/13/2015	9:10	17.12	--	--
MW-36	USAq	4/13/2015	9:09	18.14	--	--
PD-38	USAq	4/13/2015	9:23	18.43	--	--
PD-60	USAq	4/13/2015	9:21	17.60	--	--
PD-61	USAq	4/13/2015	9:18	18.49	--	--
PD-63B	USAq	4/13/2015	9:33	16.85	--	--
PD-64	USAq	4/13/2015	9:29	17.97	--	--
PD-65	USAq	4/13/2015	12:07	19.09	--	--
PD-201	USAq	4/13/2015	11:53	22.93	--	--
PD-202	USAq	4/13/2015	12:03	28.18	--	--
PD-203	USAq	4/13/2015	12:17	22.99	--	--
Landfill and Perimeter						
D-7A	USAq	4/14/2015	11:05	14.03	0.55	--
D-7B	LSAq	4/14/2015	11:05	14.58		
D-8A	USAq	4/13/2015	10:41	14.50	-0.05	--
D-8B	LSAq	4/13/2015	10:37	14.46		
D-9A	USAq	4/13/2015	11:50	15.46	--	--
North Pond	--	4/13/2015	10:14	18.14	--	--
PD-214	USAq	4/13/2015	14:11	14.41	--	--
PD-215	USAq	4/13/2015	11:03	14.81	--	--
PZ-1A	USAq	4/13/2015	10:12	14.06	--	1.23
PZ-1B	USAq	4/13/2015	10:13	12.83		
PZ-2A	USAq	4/13/2015	10:10	14.26	--	1.45
PZ-2B	USAq	4/13/2015	10:09	12.81		
PZ-3A	USAq	4/13/2015	10:08	14.35	--	0.75
PZ-3B	USAq	4/13/2015	10:07	13.60		
PZ-4A	USAq	4/13/2015	10:05	14.51	--	0.00
PZ-4B	USAq	4/13/2015	10:04	14.51	-1.02	
PZ-4C	LSAq	4/13/2015	10:03	13.49		
PZ-5A	USAq	4/13/2015	10:02	14.86	--	0.27
PZ-5B	USAq	4/13/2015	9:59	14.59	0.26	
PZ-5C	LSAq	4/13/2015	10:00	14.85		--
PZ-6A	USAq	4/13/2015	9:56	15.56	--	0.89
PZ-6B	USAq	4/13/2015	9:57	14.67		
PZ-7A	USAq	4/13/2015	10:22	17.36	--	2.12
PZ-7B	USAq	4/13/2015	10:20	15.24		
PZ-8A	USAq	4/13/2015	10:16	17.96	--	0.57
PZ-8B	USAq	4/13/2015	10:17	17.39	0.05	
PZ-8C	LSAq	4/13/2015	10:18	17.44		--
PZ-12	USAq	4/13/2015	10:43	14.14	--	--
PD-109	USAq	4/13/2015	10:30	14.60		
West Pond	--	4/13/2015	10:45	22.65	--	--
Wetlands North of Landfill						
D-1U	USAq	4/13/2015	14:47	13.54	--	--
D-1L	LSAq	4/13/2015	14:51	(overtopping casing)		
D-5U	USAq	4/13/2015	14:00	13.76	0.82	--
D-5L	LSAq	4/13/2015	13:57	14.59		
D-6A	USAq	4/14/2015	10:10	13.48	--	--
D-6B	LSAq	4/14/2015	10:13	(overtopping casing)		
MW-13	USAq	4/13/2015	12:53	13.54	--	--
MW-14	USAq	4/13/2015	13:26	13.58	--	--
MW-15	USAq	4/13/2015	13:01	13.54	--	--
MW-16	USAq	4/13/2015	13:02	13.70	--	--

Table 2.1
Groundwater Elevations and Head Differences

Location	Aquifer	Date	Time	Groundwater Elevation (ft NAVD 88)	Vertical Head Difference: LSAq - USAq (ft)	Cross-Barrier Head Difference: Outside - Inside (ft)
Wetlands North of Landfill (continued)						
MW-17	USAq	4/13/2015	13:10	13.55	--	--
MW-31A	USAq	4/14/2015	16:10	13.58	1.34	--
MW-31B	LSAq	4/14/2015	16:22	14.92		
MW-32	USAq	4/13/2015	13:40	14.44	--	--
PD-1B	USAq	4/14/2015	16:03	13.57	--	--
PD-6	USAq	4/13/2015	16:18	13.63	--	--
PD-51	USAq	4/13/2015	13:33	13.56	--	--
PD-101	USAq	4/13/2015	16:12	13.63	--	--
PD-140	USAq	4/13/2015	13:46	13.43	--	--
PD-141	USAq	4/13/2015	14:50	13.70	--	--
PD-142	USAq	4/13/2015	13:50	13.97	--	--
PD-204	USAq	4/13/2015	16:36	14.42	--	--
W-3	USAq	4/13/2015	14:03	13.85	--	--
Interurban Trail and Agricultural Fields West of Landfill						
MW-30	USAq	4/13/2015	14:55	13.80	--	--
MW-33	USAq	4/14/2015	12:15	15.11	--	--
MW-34	USAq	4/13/2015	14:14	14.75	--	--
MW-40B	LSAq	4/14/2015	12:15	12.72	--	--
PD-212	USAq	4/13/2015	14:18	12.36	--	--
PD-213	USAq	4/13/2015	11:13	14.26	--	--
PD-216	USAq	4/13/2015	11:08	16.50	--	--
W-1	USAq	4/14/2015	14:00	14.54	--	--

Note:

-- Not collected or not applicable.

Abbreviations:

ft Feet
LSAq Lower Sand Aquifer
NAVD 88 North American Vertical Datum 1988
USAq Upper Sand Aquifer

Table 2.2
Field Water Quality Parameters[1]

Location	Sample Date	Temperature (°C)	pH	Specific Conductivity (mS/cm)	Oxidation-Reduction Potential (mV)
Upper Sand Aquifer					
D-5U	4/13/2015	10.50	6.00	1.40	--[2]
D-6A	4/14/2015	9.26	5.55	0.362	-43
D-7A	4/14/2015	11.52	5.18	1.05	-17
D-8A	4/13/2015	11.80	5.66	0.300	--[2]
D-9A	4/13/2015	10.90	6.29	0.270	--[2]
D-10A	4/13/2015	10.80	5.27	0.262	-70
MW-13	4/13/2015	9.43	5.42	1.02	-57
MW-15	4/13/2015	10.20	5.99	1.70	--[2]
MW-30	4/13/2015	12.48	6.07	0.420	--[2]
MW-31A	4/14/2015	11.69	5.39	1.79	-42
MW-33	4/14/2015	11.80	6.03	0.340	--[2]
MW-35	4/13/2015	11.30	6.40	0.300	--[2]
PD-141	4/13/2015	10.65	5.29	1.35	-52
W-1	4/14/2015	12.53	5.86	0.351	50
Lower Sand Aquifer					
D-5L	4/13/2015	10.90	5.73	0.358	-65
D-6B	4/14/2015	11.00	5.81	0.370	--[2]
D-7B	4/14/2015	12.20	5.94	0.350	--[2]
D-8B	4/13/2015	11.56	5.82	0.235	-69
MW-40B	4/14/2015	13.18	6.05	0.286	-74

Notes:

-- Not measured or not applicable.

1 Field parameters collected with Horiba U-50 and Horiba U-22 water quality instruments and flow-through cells. Reported measurements were recorded when stabilization criteria were reached.

2 ORP field probe malfunction during sampling of this well prevented accurate measurement of the parameter.

Abbreviations:

C Celsius

mS/cm Millisiemens per centimeter

mV Millivolt

ORP Oxidation reduction potential

Table 2.3

Groundwater Arsenic Results[1]

	Upper Sand Aquifer														Lower Sand Aquifer				
	Total Arsenic (µg/L)														Total Arsenic (µg/L)				
Sample Location	**D-5U**	**D-6A**	**D-7A**	**D-8A**	**D-9A**	**D-10A**	**MW-13**	**MW-15**	**MW-30**	**MW-31A**	**MW-33**	**MW-35**	**PD-141**	**W-1**	**D-5L**	**D-6B**	**D-7B**	**D-8B**	**MW-40B**
Sample Date																			
Compliance Monitoring Events																			
April 2015	22	47.8	44.5	342	42.0	354	1,580	1,070	204	4.1	399	25.8	407	10.1	3.6	3.9	4.6	9.3	8.4
October 2014	16.3	50.4	57.3	107	43.6	318	1,650	1,130	117	3.4	436	23.2	323	11.2	3.2	3.9	4.2	10.7	NS
April 2014	17.6	63.7	48.8	415	37.2	183	1,430	1,260	136	5.4	376	23.2	326	10.1	3.4	3.9	4	10.5	NS
October 2013	12.4	107	53.8	168	40.2	181	1,740	1,220	174	5.3	404	21.9	302	12	3.5	3.6	4.6	13.9	NS
April 2013	16.5	163	29.5	363	38.0	199	1,910	1,580	252	6.6	398	23.8	296	10.9	2.8	4.5	4.6	16.6	NS
October 2012	40.8	184	17.1	196	40.1	231	2,350	1,580	261	12.8	NS	NS	NS	NS	3.6	3.0	4.8	155	NS
April 2012	43.8	287	60.8	137	38.3	107	2,180	1,480	305	18.7	NS	NS	NS	NS	4.1	4.3	4.8	370	NS
September 2011	86.3	885	22.5	99.6	38.2	213	2,520	1,520	640	21.7	NS	NS	NS	NS	4.2	3.5	4.8	28.2	NS
April 2011	90	1,170	31.5	126	38.7	203	2,720	1,610	854	5.7	NS	NS	NS	NS	3.2	3.3	5.1	21.2	NS
October 2010	86.4	1,290	40.7	34	37.4	211	2,220	1,460	1,580	5.9	NS	NS	NS	NS	3.4	3.4	4.8	6.1	NS
April 2010	100	1,370	27.4	31.1	36.6	159	2,450	1,610	2,410	15.5	NS	NS	NS	NS	3.5	4.1	4.6	12.8	NS
October 2009	113	1,320	37.7	39.8	36.6	202	2,220	1,390	2,060	16.3	NS	NS	NS	NS	3.4	2.4	4.6	11	NS
April 2009	144	1,490	331	68.2	38.3	175	2,340	1,630	2,190	22.4	NS	NS	NS	NS	2.8	3.2	4.8	11.1	NS
October 2008	143	1,430	97.5	37.7	38.1	204	2,510	1,720	2,270	22.2	NS	NS	NS	NS	3.3	2.4	4.6	12.2	NS
Historical Events																			
March 2007	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	3	5	18	NS
August 2006	89	1,900	56	450	38	200	3,800	3,700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
September 2005	132	1,790	50 U	86.1	50 U	266	3,530	1,810	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
March 2005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.4	2.5 U	5.2	21.2	NS
December 2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6	5 U	6	21	NS
September 2003	190	1,900	5	110	31	300	4,600	2,800	NS	NS	NS	NS	NS	NS	6	5	8	20	NS
June 2003	240	1,800	5 U	370	38	270	4,600	2,600	NS	NS	NS	NS	NS	NS	5	5 U	6	30	NS
March 2003	230	1,700	5 U	330	38	240	4,300	2,500	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	30	NS
December 2002	230	1,600	5 U	58	36	310	4,500	2,500	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
September 2002	220	1,600	5 U	97	35	280	4,500	2,300	NS	NS	NS	NS	NS	NS	5 U	5 U	5	20	NS
June 2002	240	1,800	5		38	260	4,700	2,500	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
April 2002	300	1,800	5 U	400	50	300	4,300	2,500	NS	NS	NS	NS	NS	NS	5 U	5 U	5	30	NS
December 2001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	8	8	5 U	30	NS
June 2001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	6	30	NS
March 2001	280	1,800	3	130	39	230	4,300	2,700	NS	NS	NS	NS	NS	NS	3	3	6	30	NS
December 2000	280	2,100	3	62	39	270	5,300	3,100	NS	NS	NS	NS	NS	NS	4	4	6	20	NS
September 2000	260	2,000	5	68	58	350	4,600	2,700	NS	NS	NS	NS	NS	NS	4	5	6	20	NS
June 2000	180	1,500	5 U	96	40	250	3,200	2,500	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
March 2000	310	1,600	5 U	150	39	220	6,200	2,300	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
January 2000	300	1,400	5 U	130	40	240	4,300	2,600	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
September 1999	300	1,900	5 U	140	47	310	5,600	3,400	NS	NS	NS	NS	NS	NS	4	5	6	20	NS
June 1999	300	1,800	5 U	180	38	260	4,600	2,600	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
March 1999	340	2,000	5 U	200	39	260	4,600	3,000	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
December 1998	320	980	6	100	38	260	5,700	3,200	NS	NS	NS	NS	NS	NS	5 U	5 U	7	30	NS
September 1998	290	1,800	5 U	150	52	340	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
June 1998	320	1,900	5 U	69	42	360	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS

Table 2.3

Groundwater Arsenic Results[1]

	Upper Sand Aquifer														Lower Sand Aquifer				
	Total Arsenic (µg/L)														Total Arsenic (µg/L)				
Sample Location	**D-5U**	**D-6A**	**D-7A**	**D-8A**	**D-9A**	**D-10A**	**MW-13**	**MW-15**	**MW-30**	**MW-31A**	**MW-33**	**MW-35**	**PD-141**	**W-1**	**D-5L**	**D-6B**	**D-7B**	**D-8B**	**MW-40B**
Sample Date																			
Historical Events (cont.)																			
March 1998	380	2,400	5 U	97	38	350	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	40	NS
December 1997	480	2,600	5 U	130	41	490	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	7	60	NS
September 1997	340	2,400	5 U	210	56	390	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	60	NS
June 1997	390	2,200	5 U	200	49	350	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5	60	NS
March 1997	360	1,900	5	110	36	340	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	7	60	NS
January 1997	310	2,000	5 U	130	39	310	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	90	NS
September 1996	300	2,000	5 U	260	73	470	NS	NS	NS	NS	NS	NS	NS	NS	5	6	5	100	NS
June 1996	NS	NS	5 U	130	49	470	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	100	NS
March 1996	NS	NS	5 U	150	39	420	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	100	NS
December 1995	NS	NS	5 U	270	44	540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	100	NS
June 1995	300	2,200	5 U	170	55	540	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	200	NS
March 1995	350	2,400	5 U	180	34	320	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	200	NS
December 1994	312	2,494	5 U	130	42	492	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	300	NS
August 1994	314	3,252	5 U	145	84	542	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	400	NS
May 1994	307	2,745	5 U	133	39	363	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	9	700	NS
January 1994	284	2,505	5 U	165	64	402	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	800	NS
May 1993	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	20 U	NS	NS	NS	NS
August 1990	22	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
December 1989	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
September 1989	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Note:

1 Reported value is the maximum concentration per location, per sampling date.

Abbreviations:

µg/L Micrograms per liter

NS Not sampled

Qualifer:

U Analyte is undetected at given reporting limit.

Table 2.4

Surface Water Arsenic Results[1]

Sampling Date	SW-02 Dissolved Arsenic (µg/L)	SW-02 Total Arsenic (µg/L)	SW-03 Dissolved Arsenic (µg/L)	SW-03 Total Arsenic (µg/L)	SW-05 Dissolved Arsenic (µg/L)	SW-05 Total Arsenic (µg/L)
Compliance Monitoring Events						
April 2015	5.6	7.8	4.4	14.6	7.9	12.1
October 2014	5.9	9.2	3.3	4.1	6.4	12
April 2014	7.6	10.3	5.7	9.6	13.3	18.1
October 2013	10.5	15.6	5.8	9.9	8.4	15.9
April 2013	18.1	22.1	7.9	10.4	11.5	23.4
October 2012	NS	NS	29.4	54.6	11.5	51.2
April 2012	9.3	10.3	4.1	8.2	16.8	24.4
September 2011	8.6	10.1	4.5	5.4	7.9	24.2
April 2011	9.1	9.1	3	6.2	12.4	18.4
October 2010	8	NA	5.3	NA	10.1	NA
April 2010	9.8	10.9	4.5	48	14.3	20.7
October 2009	5.7	7	4.7	8.9	10.1	22.6
April 2009	5.1	8.7	5.6	7	10.5	15.1
October 2008	17.6	25	4.3	8.7	8	54
Historical Events						
December 2006	NS	7	NS	10	NS	14
July 2006	NS	NS	NS	97	NS	65
September 2003	16	53	8	21	NS	NS
June 2003	11	580	NS	NS	NS	NS
March 2003	9	11	11	24	NS	NS
December 2002	5 U	5 U	5 U	5 U	NS	NS
September 2002	10	370	5 U	5 U	NS	NS
June 2002	24	30	14	15	NS	NS
April 2002	22	26	11	17	NS	NS
March 2001	22	75	40	110	NS	NS
December 2000	31	81	24	24	NS	NS
September 2000	13	2,220	92	1,800	NS	NS
June 2000	15	85	37	220	NS	NS
March 2000	23	73	15	20	NS	NS
January 2000	14	18	9	10	NS	NS
June 1999	21	24	8	10	NS	NS
March 1999	10	11	12	19	NS	NS
December 1998	42	40	19	18	NS	NS
March 1997	NS	NS	NS	NS	NS	NS
January 1997	NS	NS	10	9	NS	NS
March 1996	NS	NS	NS	NS	NS	NS
December 1995	NS	NS	NS	NS	NS	NS
June 1995	54	42	21	150	NS	NS
March 1995	31	86	25	41	NS	NS
December 1994	7	14	28	58	NS	NS
August 1994	61	101	60	104	NS	NS
May 1994	41	64	52	95	NS	NS
January 1994	NS	NS	72	222,000	NS	NS
May 1993	90 U	50 U	33	30 U	NS	NS
January 1990	230	370	89	110	NS	NS
November 1989	390	3,400	93	390	NS	NS
October 1989	38	170	49	60	NS	NS

Note:

1 Reported value is the maximum concentration per location, per sampling date.

Abbreviations:

µg/L Micrograms per liter
NA Not analyzed
NS Not sampled

Qualifier:

U Analyte is undetected at given reporting limit.

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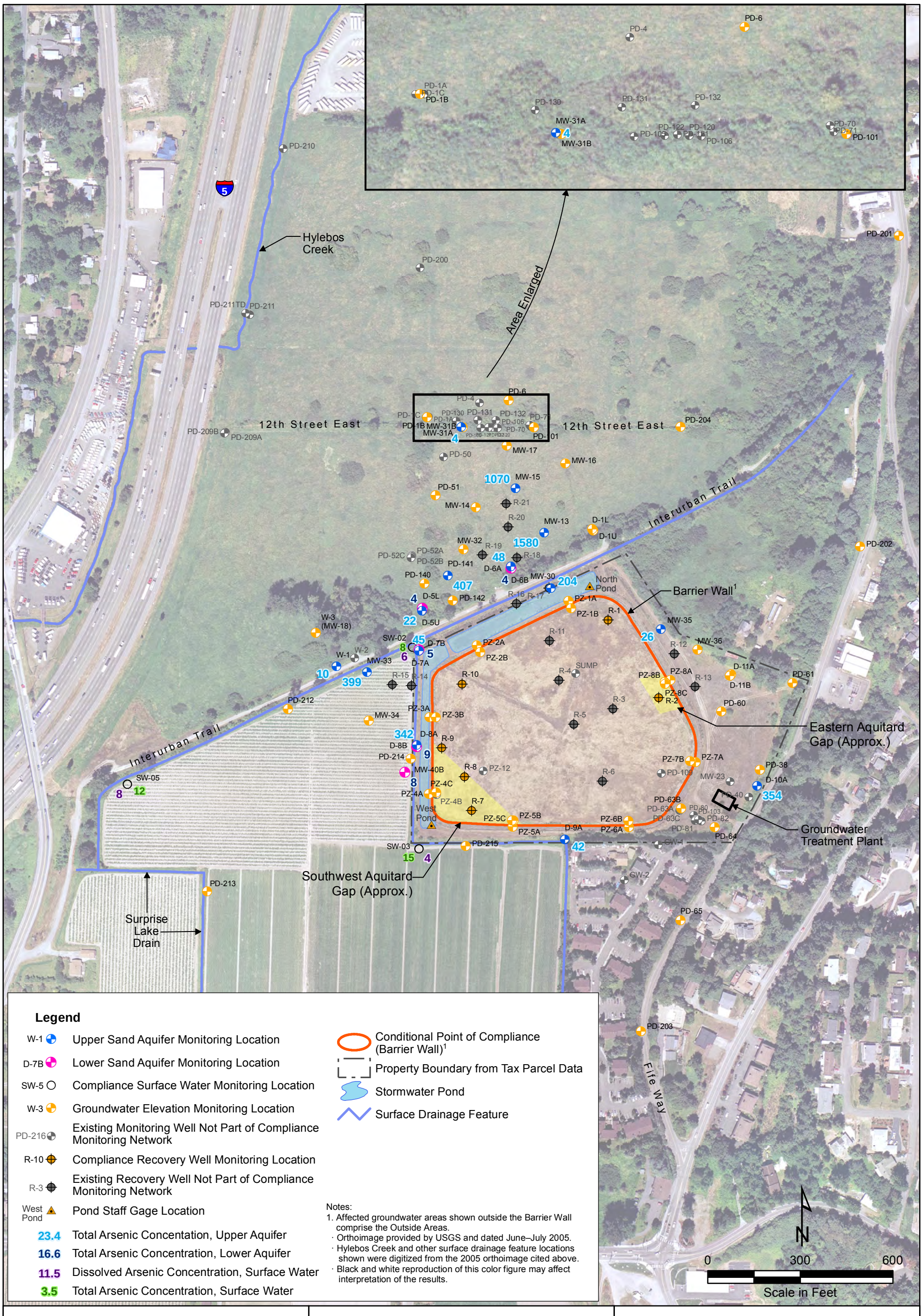
Figures



Legend

- W-1 — Upper Sand Aquifer Monitoring Location
- D-7B — Lower Sand Aquifer Monitoring Location
- SW-5 — Compliance Surface Water Monitoring Location
- W-3 — Groundwater Elevation Monitoring Location
- PD-216 — Existing Monitoring Well Not Part of Compliance Monitoring Network
- R-10 — Compliance Recovery Well Monitoring Location
- R-3 — Existing Recovery Well Not Part of Compliance Monitoring Network
- West Pond — Pond Staff Gage Location
- 23.4 — Total Arsenic Concentation, Upper Aquifer
- 16.6 — Total Arsenic Concentration, Lower Aquifer
- 11.5 — Dissolved Arsenic Concentration, Surface Water
- 3.5 — Total Arsenic Concentration, Surface Water
- Conditional Point of Compliance (Barrier Wall)[1]
- Property Boundary from Tax Parcel Data
- Stormwater Pond
- Surface Drainage Feature

Notes:
1. Affected groundwater areas shown outside the Barrier Wall comprise the Outside Areas.
- Orthoimage provided by USGS and dated June–July 2005.
- Hylebos Creek and other surface drainage feature locations shown were digitized from the 2005 orthoimage cited above.
- Black and white reproduction of this color figure may affect interpretation of the results.

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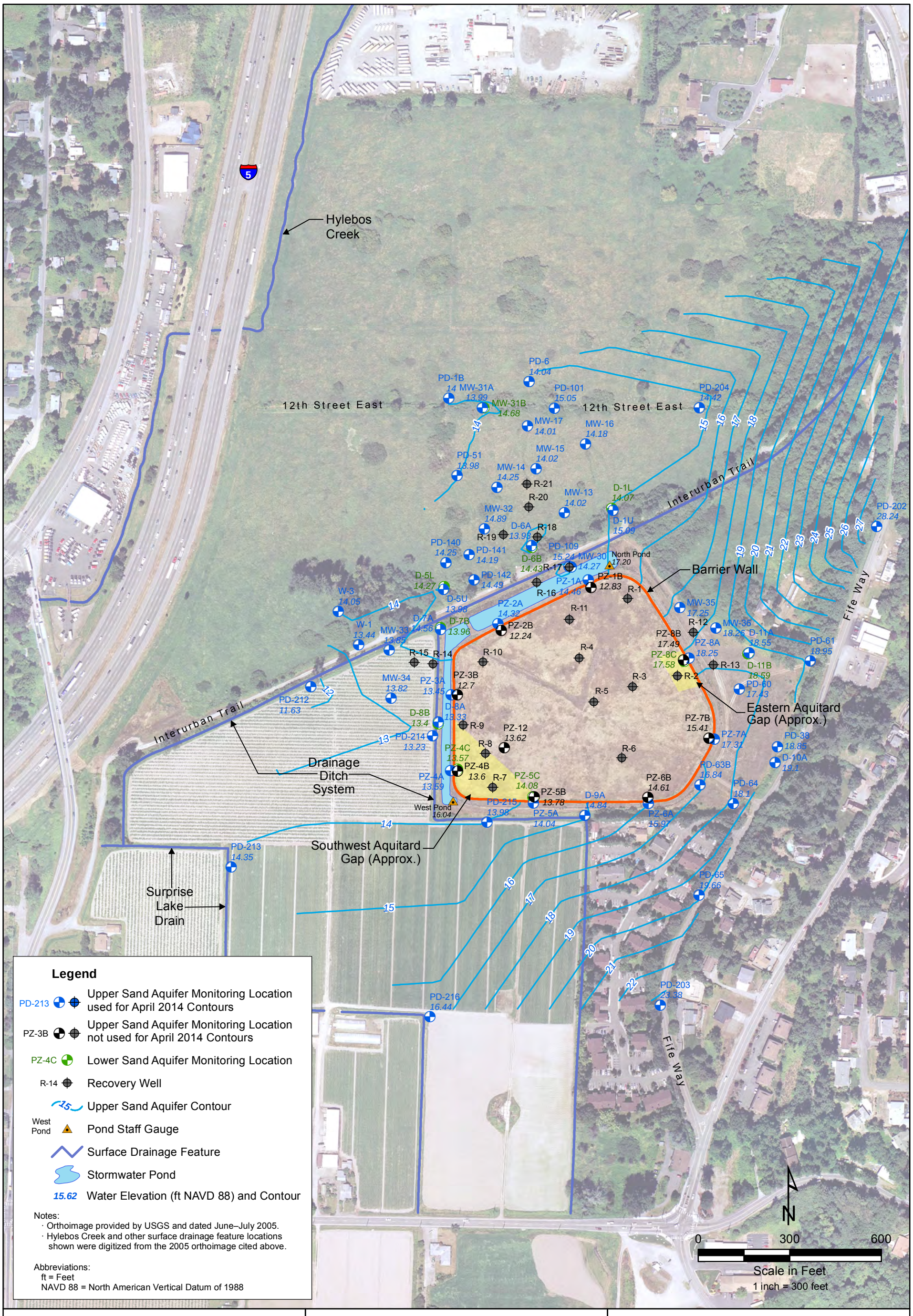
Figure1.1
April 2015 Arsenic Results

Path: I:\GIS\Projects\B&L-O&M\MXD\Compliance Monitoring Report\April 2015\Figure 1.1 - April 2015 Arsenic Results.mxd
Date: 6/29/2015



Legend

- PD-213 — Upper Sand Aquifer Monitoring Location used for April 2014 Contours
- PZ-3B — Upper Sand Aquifer Monitoring Location not used for April 2014 Contours
- PZ-4C — Lower Sand Aquifer Monitoring Location
- R-14 — Recovery Well
- 15 — Upper Sand Aquifer Contour
- West Pond — Pond Staff Gauge
- Surface Drainage Feature
- Stormwater Pond
- 15.62 — Water Elevation (ft NAVD 88) and Contour

Notes:
- Orthoimage provided by USGS and dated June–July 2005.
- Hylebos Creek and other surface drainage feature locations shown were digitized from the 2005 orthoimage cited above.

Abbreviations:
ft = Feet
NAVD 88 = North American Vertical Datum of 1988

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Figure 2.1
April 2015
Upper Sand Aquifer
Potentiometric Contours

I:\GIS\Projects\B&L-O&M\MXD\Compliance Monitoring Report\April 2015\Figure 2.1 - April 2015 Upper Sand Aquifer GW Contours.mxd 6/24/2015

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Pierce County, Washington

Figure 2.2
April 2015
Lower Sand Aquifer
Potentiometric Contours

I:\GIS\Projects\B&L-O&M\MXD\Compliance Monitoring Report\April 2015\Figure 2.2 - April 2015 Lower Sand Aquifer GW Contours.mxd 6/24/2015

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Appendix A
Time-Concentration Plots

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Surface Water Trends Time-Concentration Plots

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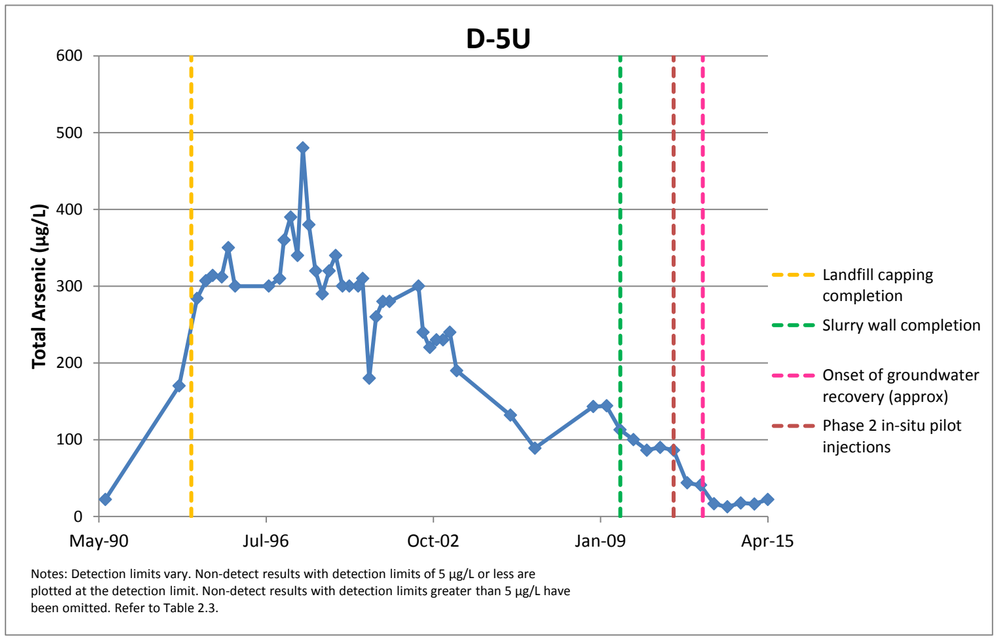
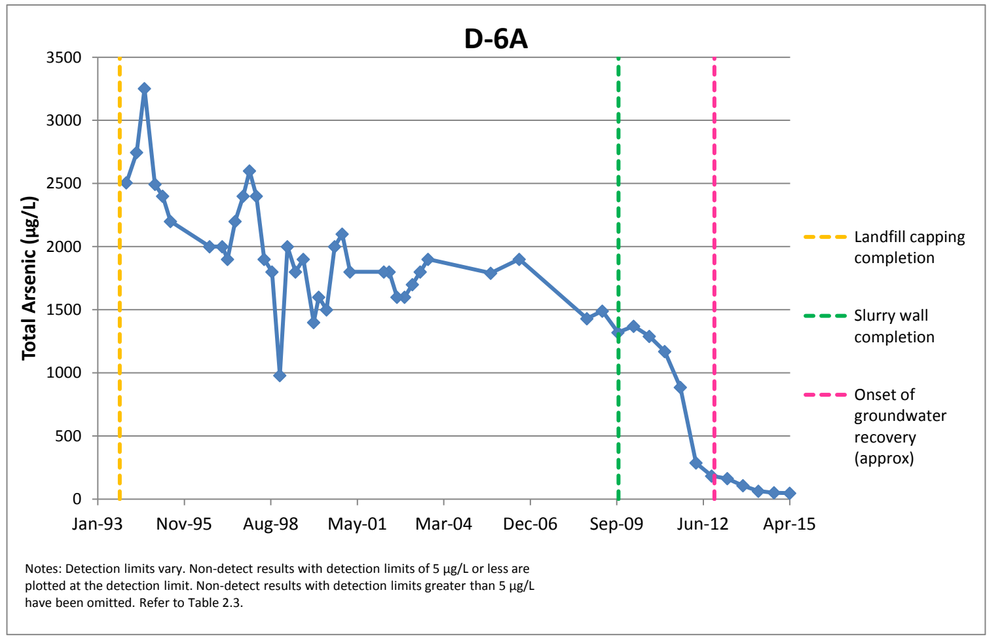
SW-3 ..... A-6
SW-5 ..... A-6

Appendix A
Time-Concentration Plots



Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have been omitted. Refer to Table 2.3.



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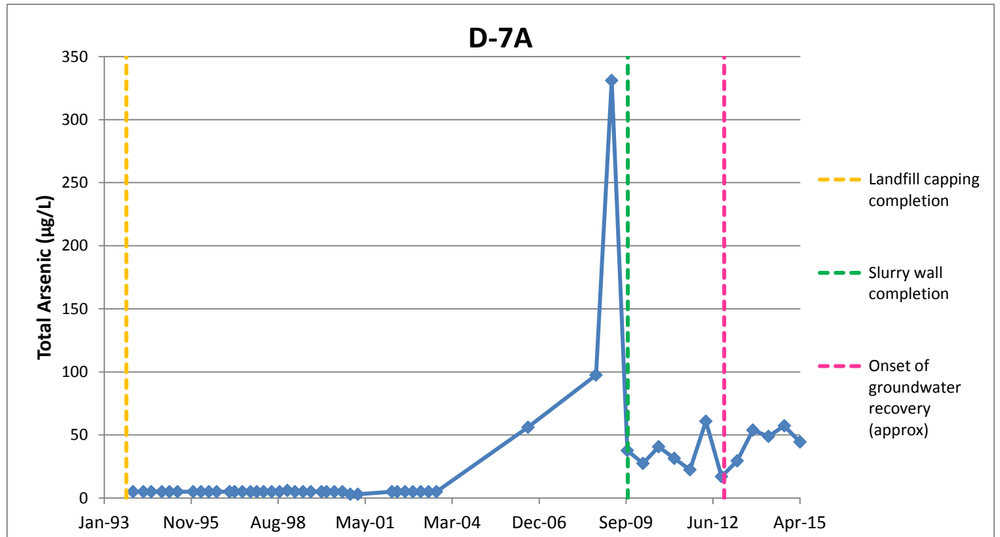

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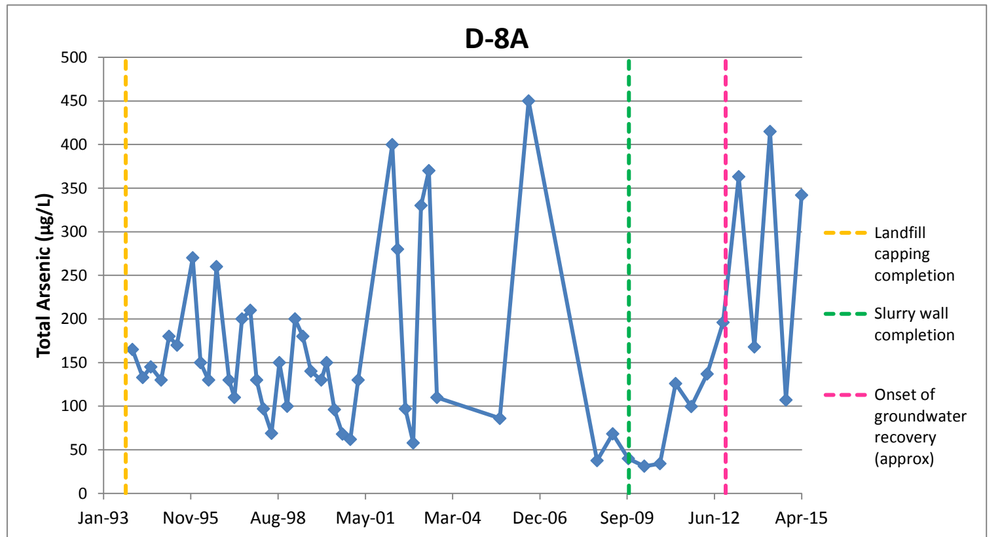

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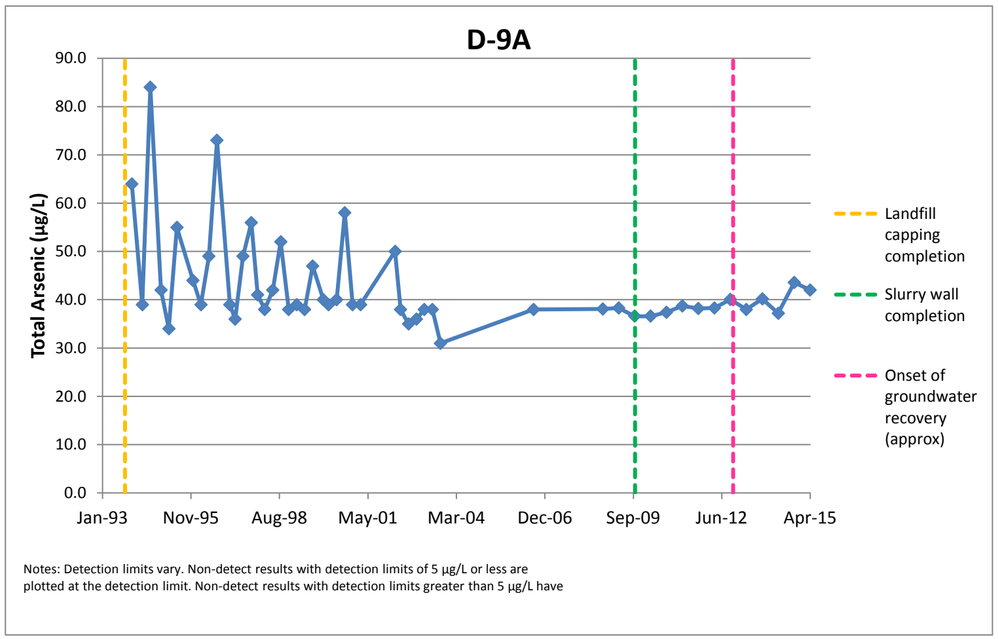
Appendix A
Time-Concentration Plots



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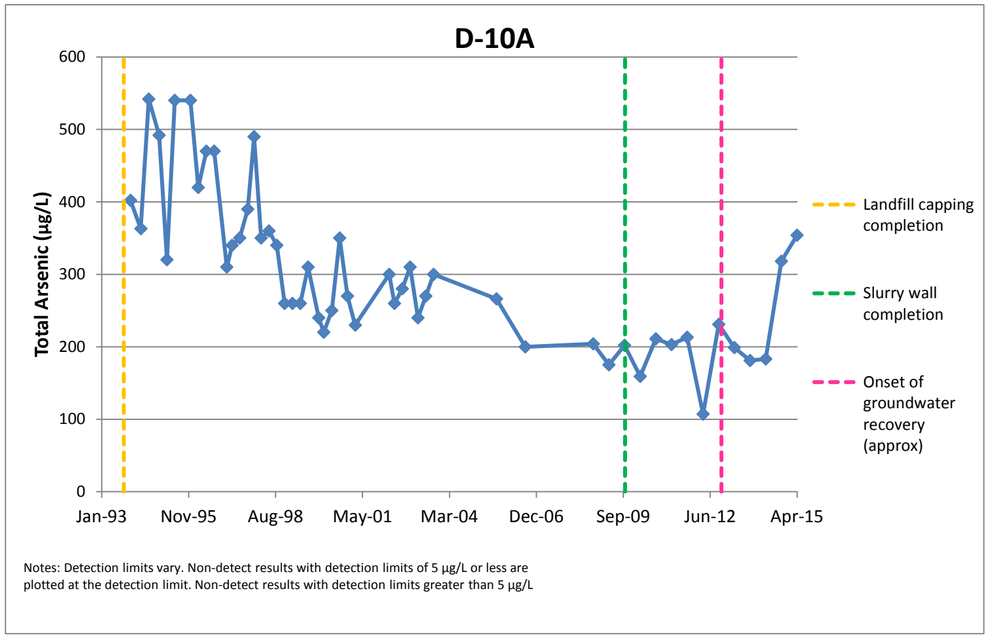

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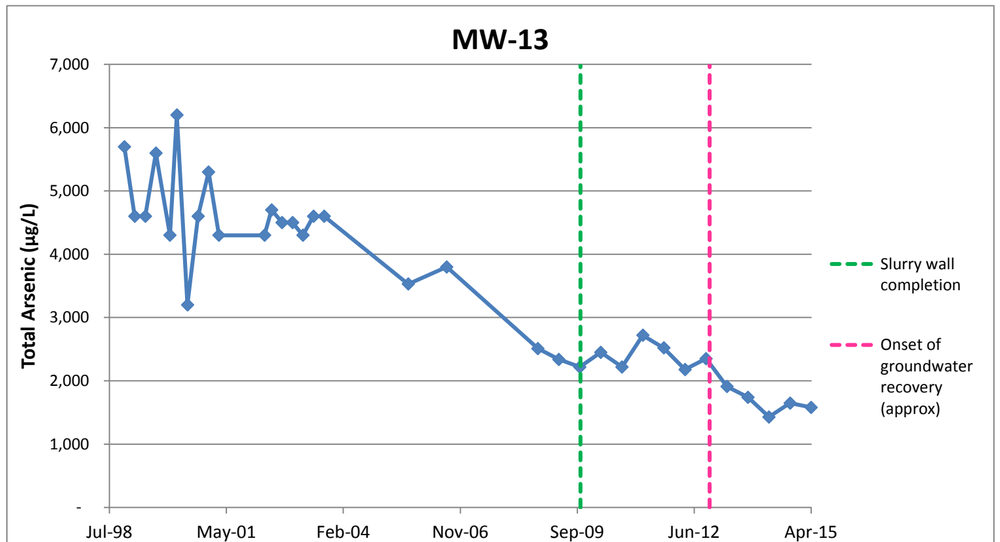

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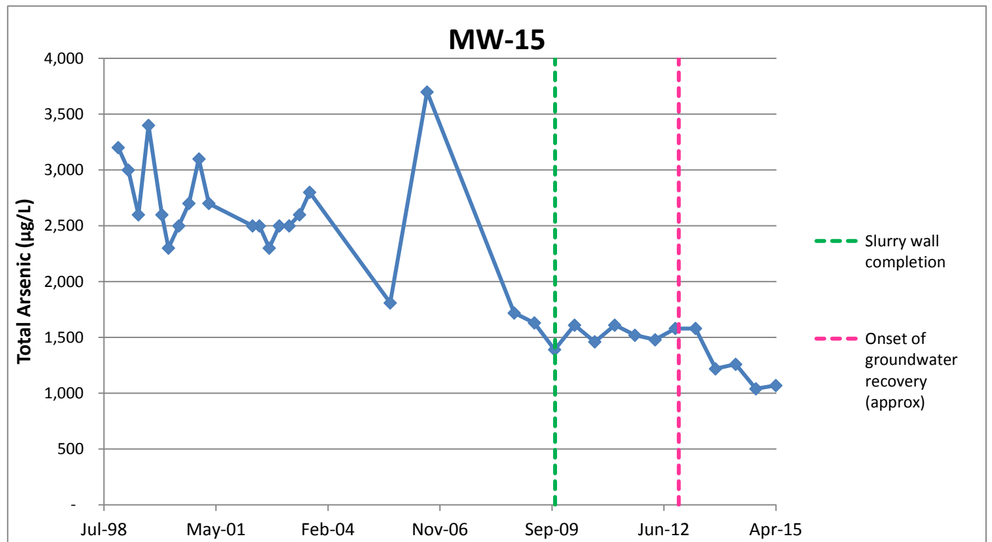

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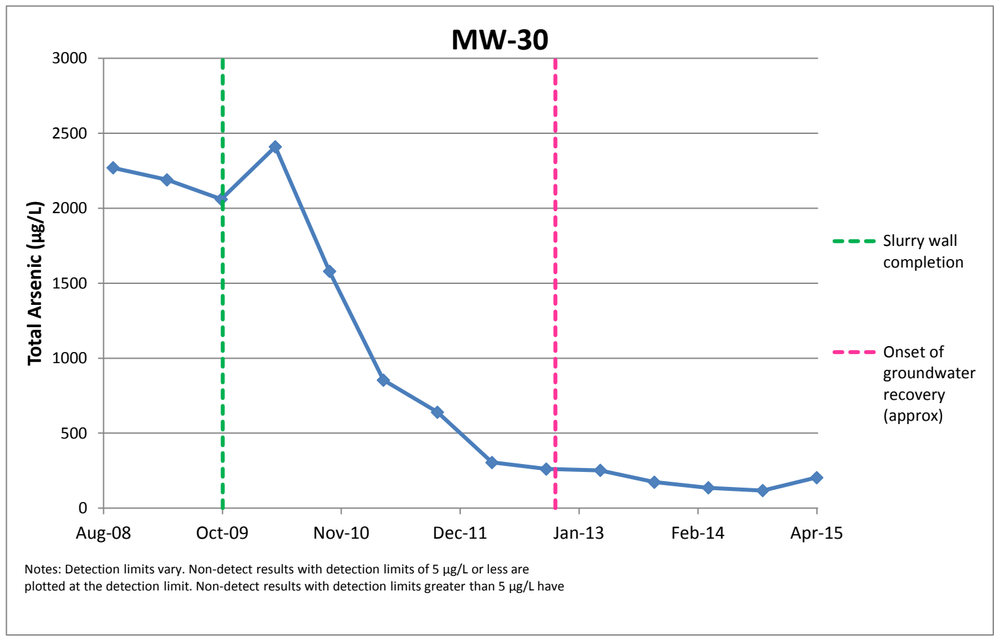

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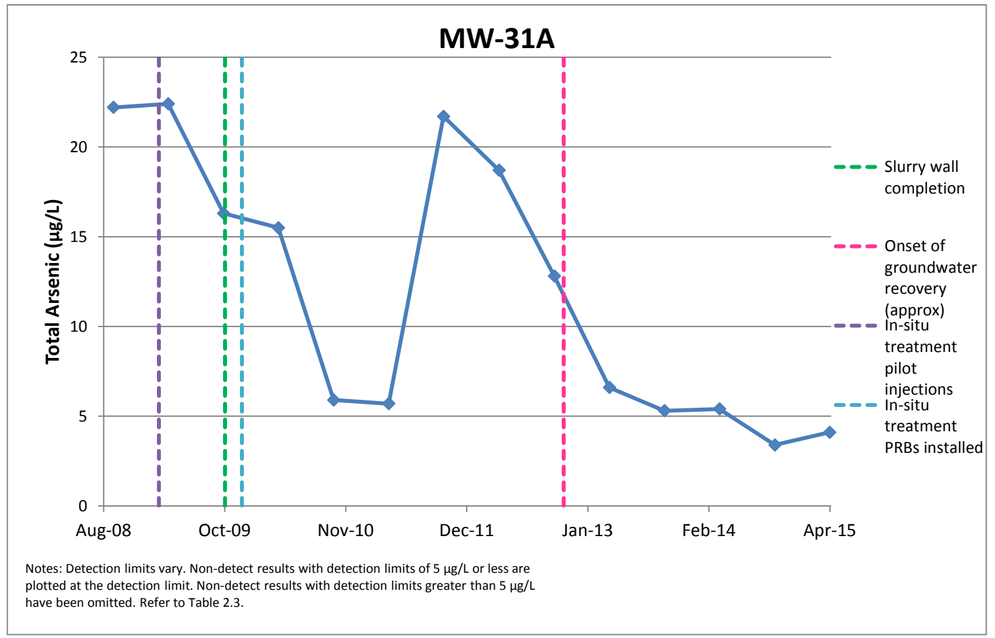

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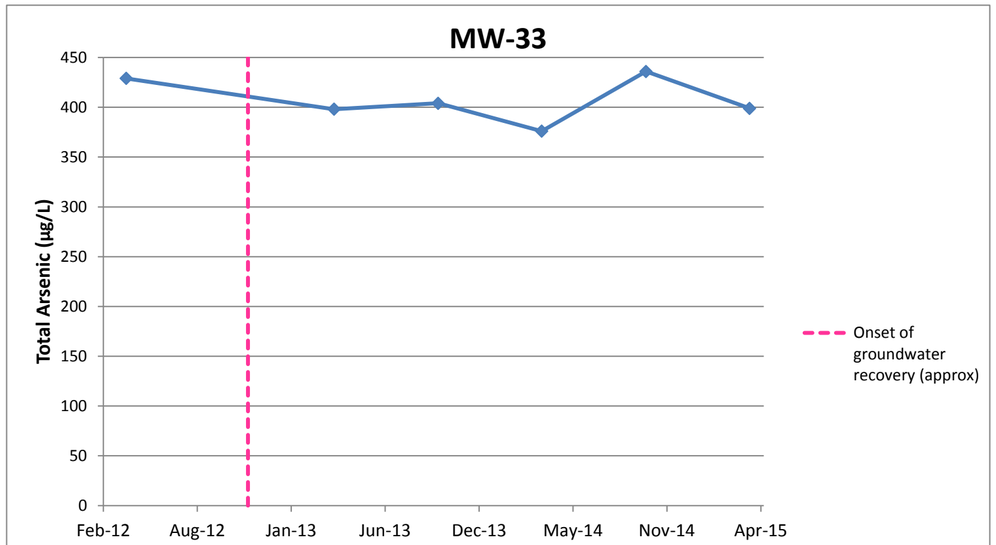
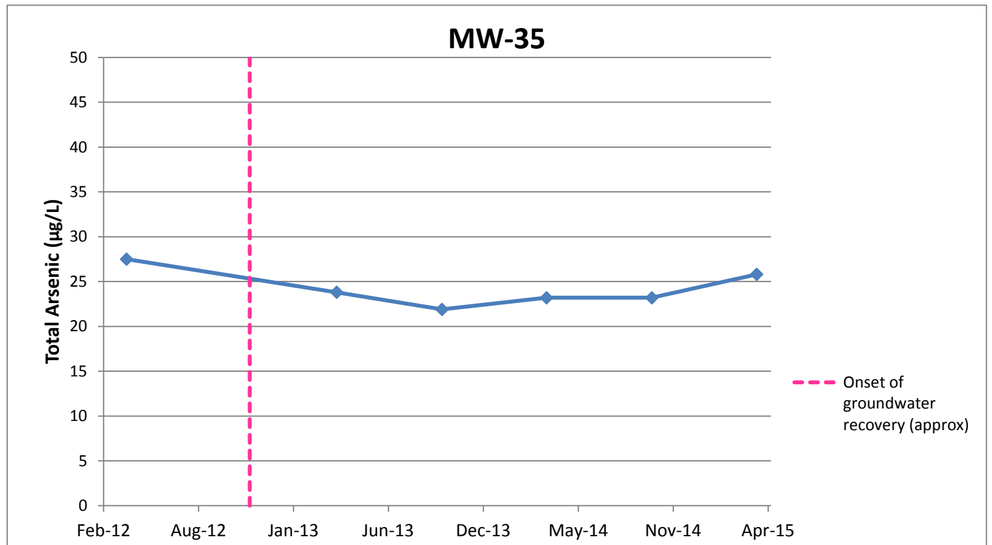


Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have



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Appendix A
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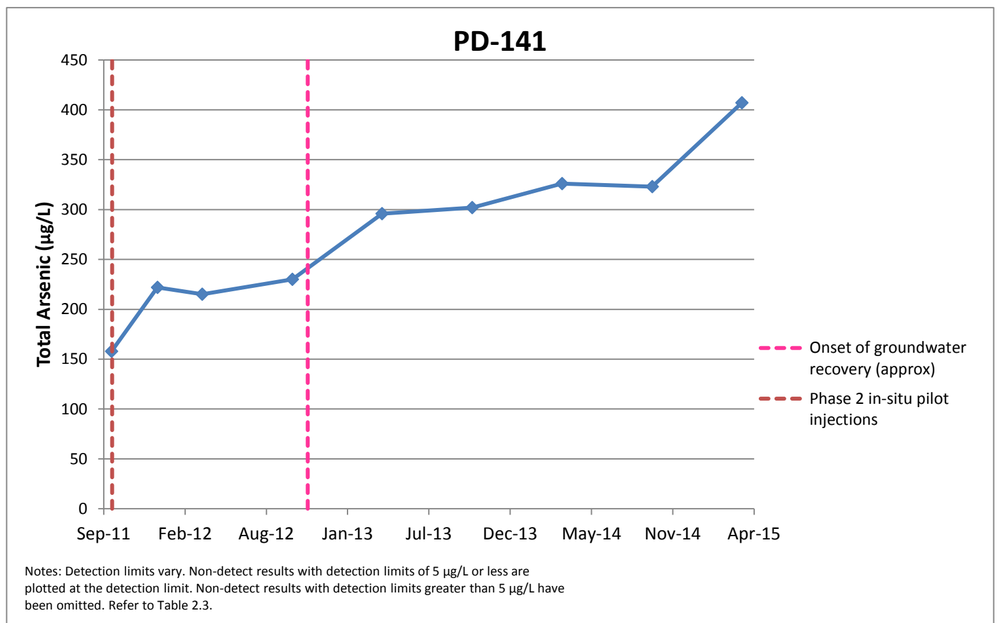

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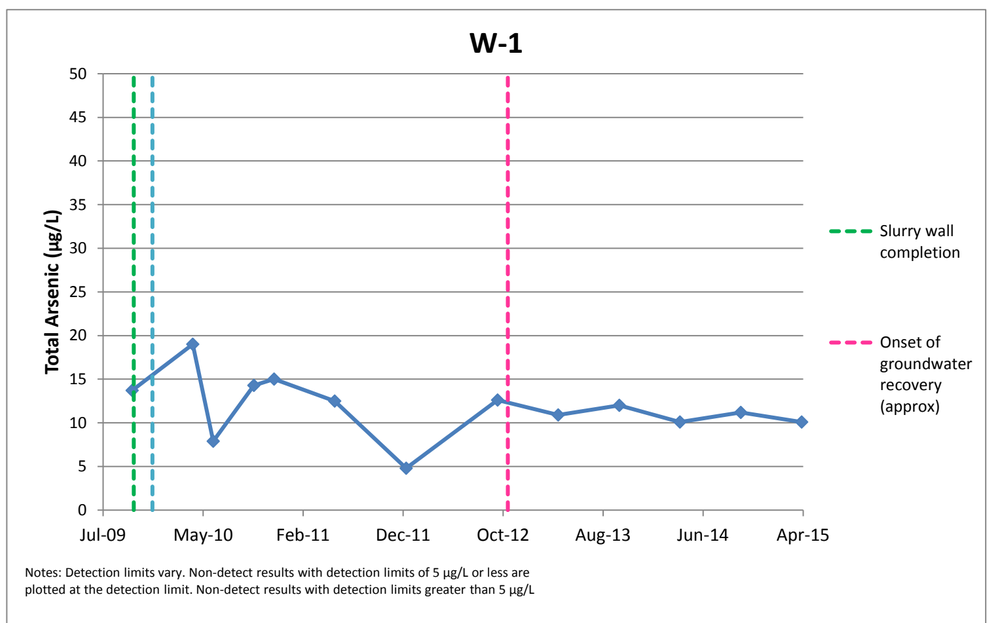

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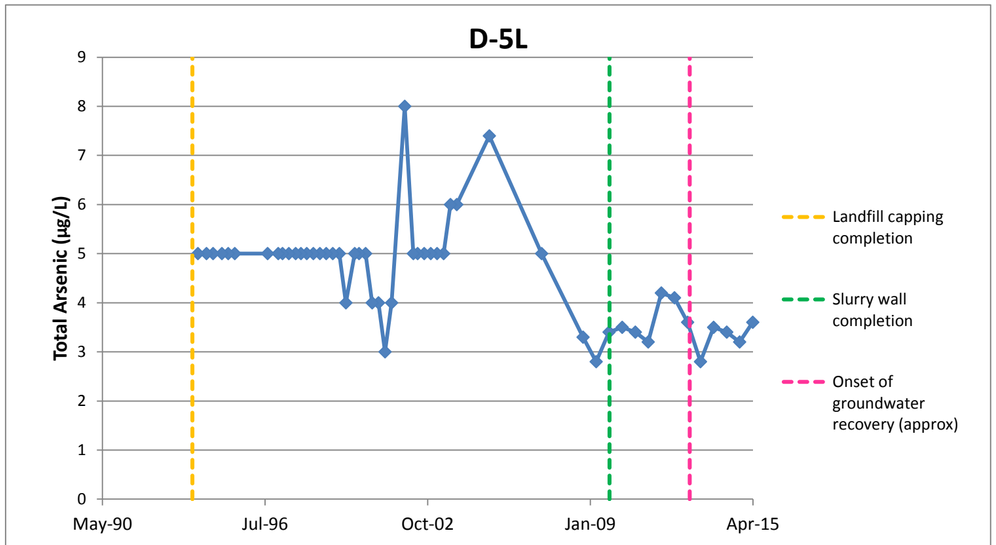

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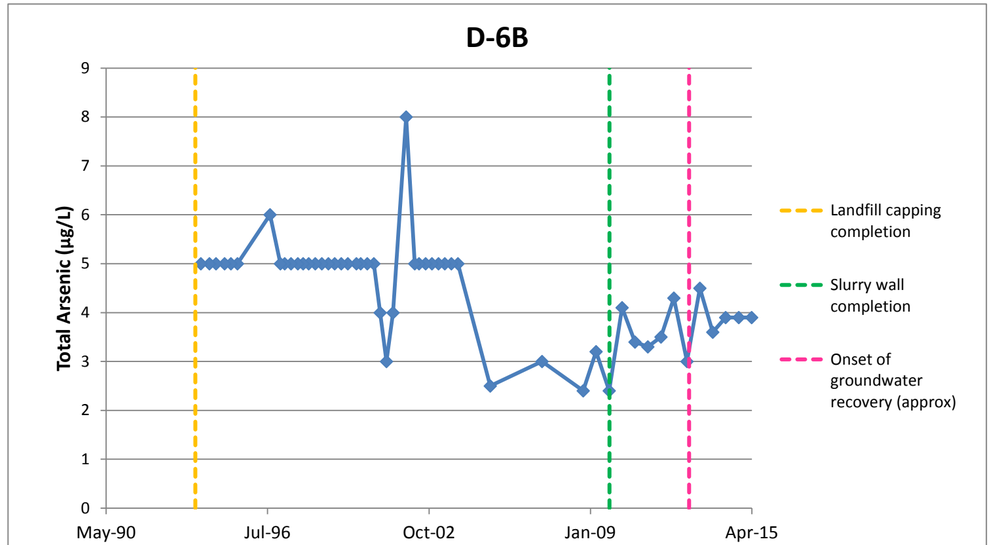

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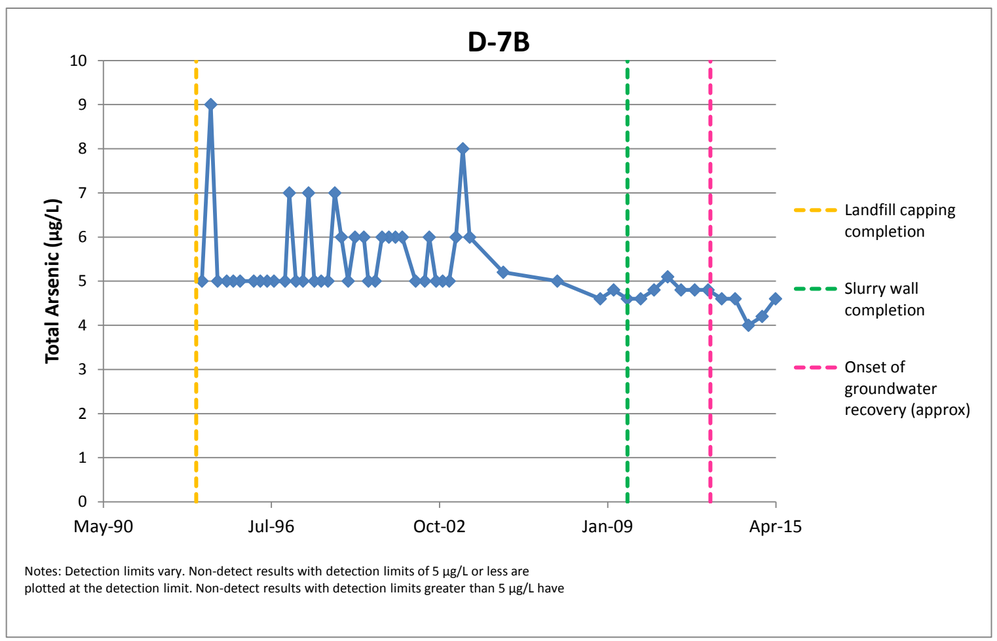
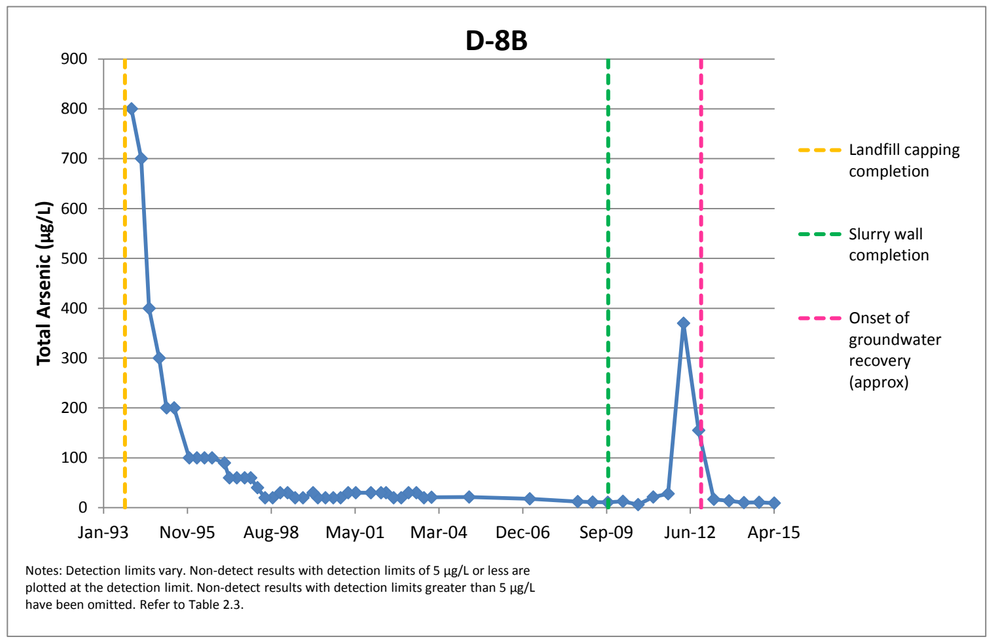
Appendix A
Time-Concentration Plots



Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have



Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have been omitted. Refer to Table 2.3.

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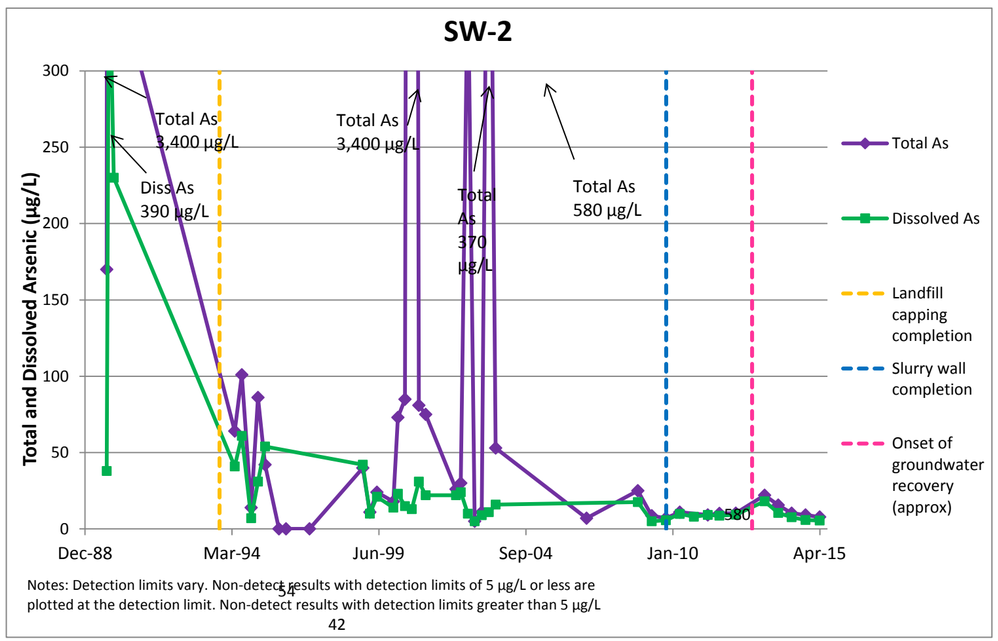

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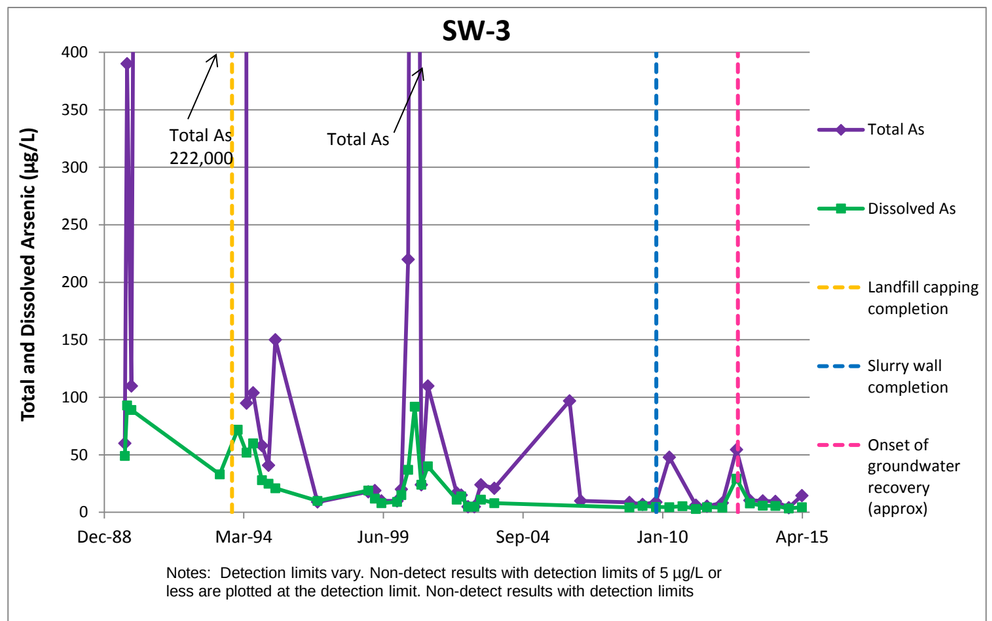

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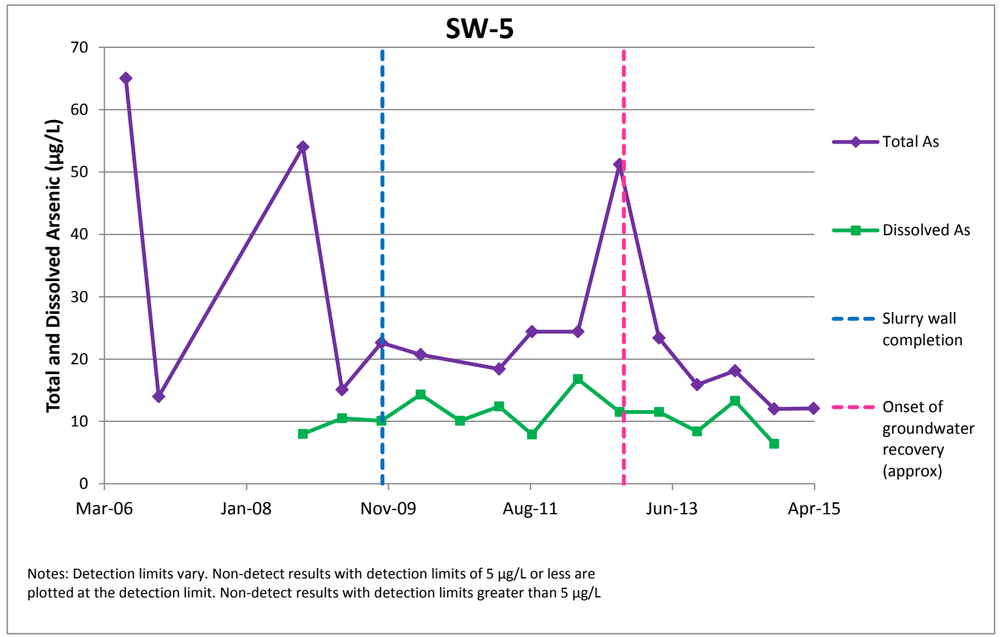

Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L

B&L Woodwaste Site

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April 2015

Appendix B
Analytical Laboratory Results

Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 27, 2015

Brett Beaulieu
Floyd Snider
600 Union Street, Suite 600
Seattle, WA 98101-2341

RE: B&L O+M, 1507.1
ARI Job Nos.: AEH4 & AEH5

Dear Brett:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted twenty-seven water samples on April 14, 2015. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for total and dissolved arsenic, as requested on the COC.

There were no anomalies associated with these analyses.

An electronic copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile AEH4_AEH5

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: AEH4	Turn-around Requested: Std	Page: 1 of 3	
ARI Client Company: Floyd | Snider	Phone: 206-292-2078	Date: 4/13/15	Ice Present? Yes
Client Contact: Brett Beaulieu		No. of Coolers: 1	Cooler Temps: 0 C
Client Project Name: BTL OM			
Client Project #: 1507-1	Samplers: KA, EM, GS, AM		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: As (tot) 200.8	Notes/Comments
BLW-GW-D10A	4/13/15	0930	water	1	X	
BLW-GW-MW35	4/13/15	0939	water	1	X	
BLW-GW-D8B	4/13/15	1105	water	1	X	
BLW-GW-D8A	4/13/15	1107	water	1	X	
BLW-GW-D9A	4/13/15	1215	water	1	X	
BLW-GW-MW13	4/13/15	1320	water	1	X	
BLW-GW-MW100	4/13/15	1330	water	1	X	
BLW-GW-MW15	4/13/15	1325	water	1	X	
BLW-GW-D5L	4/13/15	1425	water	1	X	
BLW-GW-D5U	4/13/15	1428	water	1	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Anderson	Printed Name: Chris Atwell	Printed Name:	Printed Name:
	Company: Floyd | Snider	Company: ARI	Company:	Company:
	Date & Time: 4/14/15 1740	Date & Time: 4-14-15 1740	Date & Time:	Date & Time:

AEH4 : 00002

Chain of Custody Record & Laboratory Analysis Request

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www.arilabs.com

ARI Assigned Number:	Turn-around Requested: std	Page: 2	of 3
ARI Client Company: Floyd | Snider	Phone: 206-292-2078	Date: 4/13/15	Ice Present? yes
Client Contact: Brett Beaulieu		No. of Coolers: 1	Cooler Temps: 0.1
Client Project Name: B+L O+M			
Client Project #: 1507.1	Samplers: KA GS EM AM		

Sample ID	Date	Time	Matrix	No. Containers	As (tot) 200.8	As (dis) 200.8							Notes/Comments
BLW-GW-PD141	4/13/15	1515	water	1	X								
BLW-GW-PD143	4/13/15	1520	water	1	X								
BLW-GW-MW30	4/13/15	1520	water	1	X								
BLW-GW-D6A	4/14/15	1040	water	1	X								
BLW-GW-D6B	4/14/15	1040	water	1	X								
BLW-GW-D7A	4/14/15	1130	water	1	X								
BLW-SW-2	4/14/15	1135	water	1	X								
BLW-SW-2-F	4/14/15	1138	water	1		X							
BLW-GW-D7B	4/14/15	1140	water	1	X								
BLW-GW-MW40B	4/14/15	1251	water	1	X								

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: Kristin Andersen	Printed Name: Chris Atwell	Printed Name:	Printed Name:
	Company: Floyd | Snider	Company: ARI	Company:	Company:
	Date & Time: 4/14/15 1740	Date & Time: 4-14-15 1740	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

AEH4 : 00003

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Floyed Snider

Project Name: B+L O+M

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: AEH4

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? ..... (YES) NO

Were custody papers properly filled out (ink, signed, etc.) ..... YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 0.1

Time: 1740

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: CA Date: 4-14-15 Time: 1740

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ..... NA (YES) NO

Were all bottles sealed in individual plastic bags? ..... YES (NO)

Did all bottles arrive in good condition (unbroken)? ..... (YES) NO

Were all bottle labels complete and legible? ..... (YES) NO

Did the number of containers listed on COC match with the number of containers received? ..... (YES) NO

Did all bottle labels and tags agree with custody papers? ..... (YES) NO

Were all bottles used correct for the requested analyses? ..... (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA (YES) NO

Were all VOC vials free of air bubbles? ..... (NA) YES NO

Was sufficient amount of sample sent in each bottle? ..... (YES) NO

Date VOC Trip Blank was made at ARI..... (NA) _____

Was Sample Split by ARI : (NA) YES Date/Time:_____ Equipment:_____ Split by:_____

Samples Logged by: TS Date: 4-15-15 Time: 728

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: AEH5	Turn-around Requested: std	Page: 3 of 3	
ARI Client Company: Floyd | Snider	Phone: std	Date: 4/14/15	Ice Present? Y
Client Contact: Brett Beaulieu		No. of Coolers: 1	Cooler Temps: 0.1
Client Project Name: B+L O+M			
Client Project #: 1507.1	Samplers: KA AM EM GS		

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Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: As (tot) 200.8	Analysis Requested: As (diss) 200.8	Notes/Comments
BLW-SW-3	4/14/15	1255	water	1	X		
BLW-SW-3-F	4/14/15	1258	water	1		X	
BLW-GW-MW33	4/14/15	1259	water	1	X		
BLW-SW-5	4/14/15	1410	water	1	X		
BLW-SW-5-F	4/14/15	1413	water	1		X	
BLW-GW-W1	4/15/15	1430	water	1	X		
BLW-GW-MW31A	4/15/15	1632	water	1	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Andersen	Printed Name: Chris Atwell	Printed Name:	Printed Name:
	Company: Floyd | Snider	Company: ARI	Company:	Company:
	Date & Time: 4/14/15 1740	Date & Time: 4-14-15 1740	Date & Time:	Date & Time:

AEH: 00005

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Floyed Snider

Project Name: B+L O+M

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: AEH5

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 0.1

Time: 1740

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877752

Cooler Accepted by: CA Date: 4-14-15 Time: 1740

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

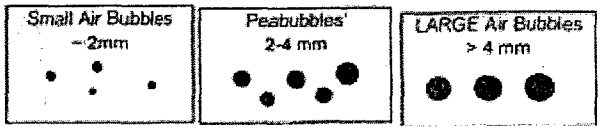
Samples Logged by: TS Date: 4-15-15 Time: 728

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

PRESERVATION VERIFICATION 04/15/15
Page 1 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **AEH4**

Inquiry Number: NONE
Analysis Requested: 04/15/15
Contact: Beaulieu, Brett
Client: Floyd-Snider
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Kelly
VTSR: 04/14/15

Project #: 1507.1
Project: B+L O+M
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
15-7308 **AEH4A**	BLW-GW-D10A						TOT Pass															
15-7309 **AEH4B**	BLW-GW-MW35						TOT Pass															
15-7310 **AEH4C**	BLW-GW-D8B						TOT Pass															
15-7311 **AEH4D**	BLW-GW-D8A						TOT Pass															
15-7312 **AEH4E**	BLW-GW-D9A						TOT Pass															
15-7313 **AEH4F**	BLW-GW-MW13						TOT Pass															
15-7314 **AEH4G**	BLW-GW-MW100						TOT Pass															
15-7315 **AEH4H**	BLW-GW-MW15						TOT Pass															
15-7316 **AEH4I**	BLW-GW-D5L						TOT Pass															
15-7317 **AEH4J**	BLW-GW-D5U						TOT Pass															
15-7318 **AEH4K**	BLW-GW-PD141						TOT Pass															
15-7319 **AEH4L**	BLW-GW-PD143						TOT Pass															
15-7320 **AEH4M**	BLW-GW-MW30						TOT Pass															
15-7321 **AEH4N**	BLW-GW-D6A						TOT Pass															

1507.1 H+L O+M

Checked By TS Date 4.15.15

PRESERVATION VERIFICATION 04/15/15
Page 2 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **AEH4**

Client: Floyd-Snider

Project #: 1507.1
Project: B+L O+M

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
15-7322 **AEH4O**	BLW-GW-D6B						TOT Pass															
15-7323 **AEH4P**	BLW-GW-D7A						TOT Pass															
15-7324 **AEH4Q**	BLW-SW-2						TOT Pass															
15-7325 **AEH4R**	BLW-GW-D7B						TOT Pass															
15-7326 **AEH4S**	BLW-GW-MW40B						TOT Pass															
15-7327 **AEH4T**	BLW-SW-2-F						DIS Pass									Y						

AEH: 9668

Checked By _____ Date 4/15/15

PRESERVATION VERIFICATION 04/15/15
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **AEH5**

Inquiry Number: NONE
Analysis Requested: 04/15/15
Contact: Beaulieu, Brett
Client: Floyd-Snider
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Kelly
VTSR: 04/14/15

Project #: 1507.1
Project: B+L O+M
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
15-7328 **AEH5A**	BLW-SW-3						TOT Pass															
15-7329 **AEH5B**	BLW-GW-MW33						TOT Pass															
15-7330 **AEH5C**	BLW-SW-5						TOT Pass															
15-7331 **AEH5D**	BLW-GW-W1						TOT Pass															
15-7332 **AEH5E**	BLW-GW-MW31A						TOT Pass															
15-7333 **AEH5F**	BLW-SW-3-F						DIS Pass									Y						
15-7334 **AEH5G**	BLW-SW-5-F						DIS Pass									Y						

AEH5 9666

Checked By TS Date 4.15.15

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: AEH4
Client: Floyd-Snider
Project Event: 1507.1
Project Name: B+L O+M

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	BLW-GW-D10A	AEH4A	15-7308	Water	04/13/15 09:30	04/14/15 17:40
2.	BLW-GW-MW35	AEH4B	15-7309	Water	04/13/15 09:39	04/14/15 17:40
3.	BLW-GW-D8B	AEH4C	15-7310	Water	04/13/15 11:05	04/14/15 17:40
4.	BLW-GW-D8A	AEH4D	15-7311	Water	04/13/15 11:07	04/14/15 17:40
5.	BLW-GW-D9A	AEH4E	15-7312	Water	04/13/15 12:15	04/14/15 17:40
6.	BLW-GW-MW13	AEH4F	15-7313	Water	04/13/15 13:20	04/14/15 17:40
7.	BLW-GW-MW100	AEH4G	15-7314	Water	04/13/15 13:30	04/14/15 17:40
8.	BLW-GW-MW15	AEH4H	15-7315	Water	04/13/15 13:25	04/14/15 17:40
9.	BLW-GW-D5L	AEH4I	15-7316	Water	04/13/15 14:25	04/14/15 17:40
10.	BLW-GW-D5U	AEH4J	15-7317	Water	04/13/15 14:28	04/14/15 17:40
11.	BLW-GW-PD141	AEH4K	15-7318	Water	04/13/15 15:15	04/14/15 17:40
12.	BLW-GW-PD143	AEH4L	15-7319	Water	04/13/15 15:20	04/14/15 17:40
13.	BLW-GW-MW30	AEH4M	15-7320	Water	04/13/15 15:20	04/14/15 17:40
14.	BLW-GW-D6A	AEH4N	15-7321	Water	04/14/15 10:40	04/14/15 17:40
15.	BLW-GW-D6B	AEH4O	15-7322	Water	04/14/15 10:40	04/14/15 17:40
16.	BLW-GW-D7A	AEH4P	15-7323	Water	04/14/15 11:30	04/14/15 17:40
17.	BLW-SW-2	AEH4Q	15-7324	Water	04/14/15 11:35	04/14/15 17:40
18.	BLW-GW-D7B	AEH4R	15-7325	Water	04/14/15 11:40	04/14/15 17:40
19.	BLW-GW-MW40B	AEH4S	15-7326	Water	04/14/15 12:51	04/14/15 17:40
20.	BLW-SW-2-F	AEH4T	15-7327	Water	04/14/15 11:38	04/14/15 17:40

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: AEH5
Client: Floyd-Snider
Project Event: 1507.1
Project Name: B+L O+M

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	BLW-SW-3	AEH5A	15-7328	Water	04/14/15 12:55	04/14/15 17:40
2.	BLW-GW-MW33	AEH5B	15-7329	Water	04/14/15 12:59	04/14/15 17:40
3.	BLW-SW-5	AEH5C	15-7330	Water	04/14/15 14:10	04/14/15 17:40
4.	BLW-GW-W1	AEH5D	15-7331	Water	04/14/15 14:30	04/14/15 17:40
5.	BLW-GW-MW31A	AEH5E	15-7332	Water	04/14/15 16:32	04/14/15 17:40
6.	BLW-SW-3-F	AEH5F	15-7333	Water	04/14/15 12:58	04/14/15 17:40
7.	BLW-SW-5-F	AEH5G	15-7334	Water	04/14/15 14:13	04/14/15 17:40

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-D10A
SAMPLE

Lab Sample ID: AEH4A
LIMS ID: 15-7308
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**354**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-MW35
SAMPLE

Lab Sample ID: AEH4B
LIMS ID: 15-7309
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**25.8**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-D8B
SAMPLE

Lab Sample ID: AEH4C
LIMS ID: 15-7310
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**9.3**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-D8A
SAMPLE

Lab Sample ID: AEH4D
LIMS ID: 15-7311
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**342**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-D9A
SAMPLE

Lab Sample ID: AEH4E
LIMS ID: 15-7312
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**42.0**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-MW13
SAMPLE

Lab Sample ID: AEH4F
LIMS ID: 15-7313
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	2	**1,560**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: BLW-GW-MW100
SAMPLE

Lab Sample ID: AEH4G
LIMS ID: 15-7314
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	2	**1,580**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-MW15
SAMPLE

Lab Sample ID: AEH4H
LIMS ID: 15-7315
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	2	**1,070**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D5L
SAMPLE

Lab Sample ID: AEH4I
LIMS ID: 15-7316
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**3.6**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D5U
SAMPLE

Lab Sample ID: AEH4J
LIMS ID: 15-7317
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/23/15	**7440-38-2**	**Arsenic**	1	**22**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-PD141
SAMPLE

Lab Sample ID: AEH4K
LIMS ID: 15-7318
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/23/15	**7440-38-2**	**Arsenic**	1	**407**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

FORM-I

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Sample ID: BLW-GW-PD143
SAMPLE

Lab Sample ID: AEH4L
LIMS ID: 15-7319
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/23/15	**7440-38-2**	**Arsenic**	1	**401**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-MW30
SAMPLE

Lab Sample ID: AEH4M
LIMS ID: 15-7320
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**204**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D6A
SAMPLE

Lab Sample ID: AEH4N
LIMS ID: 15-7321
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**47.8**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D6B
SAMPLE

Lab Sample ID: AEH4O
LIMS ID: 15-7322
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**3.9**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D7A
SAMPLE

Lab Sample ID: AEH4P
LIMS ID: 15-7323
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.5	**44.5**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-2
SAMPLE

Lab Sample ID: AEH4Q
LIMS ID: 15-7324
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**7.8**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D7B
SAMPLE

Lab Sample ID: AEH4R
LIMS ID: 15-7325
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**4.6**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-MW40B
SAMPLE

Lab Sample ID: AEH4S
LIMS ID: 15-7326
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**8.4**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-D10A
MATRIX SPIKE

Lab Sample ID: AEH4A
LIMS ID: 15-7308
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	354	388	25.0	136%	H

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

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Sample ID: BLW-GW-D10A DUPLICATE

Lab Sample ID: AEH4A
LIMS ID: 15-7308
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/13/15
Date Received: 04/14/15

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	354	354	0.0%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

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Sample ID: LAB CONTROL

Lab Sample ID: AEH4LCS
LIMS ID: 15-7326
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	25.0	25.0	100%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

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Sample ID: METHOD BLANK

Lab Sample ID: AEH4MB
LIMS ID: 15-7326
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-2-F
SAMPLE

Lab Sample ID: AEH4T
LIMS ID: 15-7327
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**5.6**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-2-F
MATRIX SPIKE

Lab Sample ID: AEH4T
LIMS ID: 15-7327
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	5.6	30.8	25.0	101%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

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Sample ID: BLW-SW-2-F DUPLICATE

Lab Sample ID: AEH4T
LIMS ID: 15-7327
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M 1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	5.6	5.5	1.8%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

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Sample ID: LAB CONTROL

Lab Sample ID: AEH4LCS
LIMS ID: 15-7327
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	25.5	25.0	102%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

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Sample ID: METHOD BLANK

Lab Sample ID: AEH4MB
LIMS ID: 15-7327
Matrix: Water
Data Release Authorized:
Reported: 04/27/15

QC Report No: AEH4-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-3
SAMPLE

Lab Sample ID: AEH5A
LIMS ID: 15-7328
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**14.6**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-MW33
SAMPLE

Lab Sample ID: AEH5B
LIMS ID: 15-7329
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**399**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-5
SAMPLE

Lab Sample ID: AEH5C
LIMS ID: 15-7330
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**12.1**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-W1
SAMPLE

Lab Sample ID: AEH5D
LIMS ID: 15-7331
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	**7440-38-2**	**Arsenic**	0.2	**10.1**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-GW-MW31A
SAMPLE

Lab Sample ID: AEH5E
LIMS ID: 15-7332
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**4.1**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: LAB CONTROL

Lab Sample ID: AEH5LCS
LIMS ID: 15-7332
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	24.9	25.0	99.6%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

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Sample ID: METHOD BLANK

Lab Sample ID: AEH5MB
LIMS ID: 15-7332
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/21/15	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-3-F
SAMPLE

Lab Sample ID: AEH5F
LIMS ID: 15-7333
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**4.4**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: BLW-SW-5-F
SAMPLE

Lab Sample ID: AEH5G
LIMS ID: 15-7334
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: 04/14/15
Date Received: 04/14/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	**7440-38-2**	**Arsenic**	0.5	**7.9**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

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Sample ID: LAB CONTROL

Lab Sample ID: AEH5LCS
LIMS ID: 15-7334
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	25.8	25.0	103%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

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Sample ID: METHOD BLANK

Lab Sample ID: AEH5MB
LIMS ID: 15-7334
Matrix: Water
Data Release Authorized:
Reported: 04/23/15

QC Report No: AEH5-Floyd-Snider
Project: B+L O+M
1507.1
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	04/17/15	200.8	04/22/15	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation