Williams Petroleum Services, LLC
One Williams Center
P.O. Box 3483
Tulsa, OK 74101-3483

April 29, 2021

Mr. Don Lininger, CHMM
Chief, Waste Remediation & Permitting
Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Re: Quarterly Update – 1st Quarter 2021
Former Augusta Refinery (FAR) RCRA Facility Investigation (RFI)
Williams Petroleum Services (WPS), LLC
Augusta, Kansas – KSD007235138

Dear Mr. Lininger:

This letter is offered as the report of investigation activities at the Former Augusta Refinery (FAR) in accordance with Section X, "Reporting," of the Administrative Order on Consent dated October 24, 2003, Docket No. RCRA-07-2004-0009. This report addresses activities occurring during the period of January 1 through March 31, 2021.

Description of Activities

- In accordance with the August 26, 2015 LNAPL Corrective Measures Study (CMS) Work Plan Addendum, completed routine manual and passive light non-aqueous phase liquid (LNAPL) recovery efforts for the continued evaluation of LNAPL removal efficacy.
- In correspondence dated January 15, 2021, the 4th quarter 2020 NPDES report was submitted to the Kansas Department of Health and Environment (KDHE).
- In correspondence dated January 26, 2021, KDHE provided comments to Williams Petroleum Services, LLC (WPS), on the Phytoremediation Feasibility Assessment Work Plan.
- In correspondence dated January 29, 2021, the 4th quarter 2020 Quarterly Report was submitted to the USEPA and KDHE.
- On March 9, 2021, APTIM contacted KDHE to provide information in response to the KDHE comments letter and provided tentative schedule for completion of the phytoremediation feasibility assessment during the week of May 10, 2021.

- In email dated March 26, 2021, APTIM submitted to KDHE the SWMU 1 and 2 2020 Annual Post-Closure Groundwater Monitoring Report.
- In March 2021, downloaded transducer data and collected water levels as part of the continued Water Balance evaluation through the ongoing monitoring of water level data per the September 11, 2013 scope of work.
- In March 2021, completed 1st quarterly NPDES sampling.

Summary of All Findings

- The results for 2020 Walnut River AOI Interim Measures surface water performance sampling, monthly inspections, and evaluation of the PBA capacity are presented in Attachment A. Surface water performance sampling was completed in both June and December of 2020 even with reported high Walnut River flow rates (>50 cubic feet per second). It has been noted that the USGS gauge on the Walnut River records flow levels higher than what has been historically observed in the past at similar stages.

  Surface water sampling results for the December 2020 sampling event reported benzene (1.6 ug/l) and pentachlorophenol (1.2 ug/l) in the surface water sample collected at the former Seep-8 above the Kansas Surface Water Quality Standard.

Summaries of All EPA/KDHE Approved Changes

- None.

Summaries of All Contacts

- See description of activities.

Summaries of Problems Encountered

- The reported detections of benzene and pentachlorophenol at Seep-8 of the Walnut River AOI are thought to come from residual hydrocarbons that were not excavated or addressed during installation of the PAB at the north end and adjacent to the river.

Actions to Rectify Problems

- A second biased Seep-8 and upgradient surface water sample will be collected within the next month for VOC and SVOC analysis. If the results of the second sample does not have constituent concentrations that exceed screening levels, then a third biased sample at former Seep-8 and an upgradient sample will be collected immediately following receipt of the second sample results (as long as the Walnut River flow rate is less than 100 cfs) as confirmation. WPS is currently evaluation options to address soil north of the PAB.

Changes in Key Project Entities

- None.

Projected Work for the Next Reporting Period

The following activities will be performed or initiated during the next reporting period:

- Continue LNAPL monitoring and removal.
- Continue quarterly NPDES monitoring.
- Completion of the phytoremediation feasibility assessment during the week of May 10, 2021.
- Complete evaluation and identify options for addressing area of former Seep-8.

Other Relevant Documentation

- None

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with the procedures designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please provide all written correspondence regarding this Quarterly Update directly to Mr. Lee Andrews, with Williams Petroleum Services, LLC. If you have any questions, do not hesitate to contact Mr. Andrews at (918) 573-6912.

Sincerely,
Williams Petroleum Services, LLC

Mark A. Gebbia
Vice President, Environmental, Regulatory & Permitting

c: Gary Blackburn, KDHE
Lee Andrews, Williams Petroleum Services, LLC
David Way, Aptim Environmental & Infrastructure, Inc.

Walnut River Area of Interest Interim Corrective Measure 2020 Monitoring

Per the Operations and Maintenance Plan, monitoring and sampling activities were completed at the Walnut River AOI. These activities included revegetation monitoring, light non-aqueous phase liquid recovery, surface water sampling, and Permeable Adsorptive Barrier (PAB) performance monitoring. Installation of the PAB was completed at the end of February 2016.

Revegetation Monitoring

The observed vegetation within the disturbed area of the WRAOI has continued to fill in with new grass throughout the last year. The area was mowed in November 2020 and does not appear to require any over seeding at this time.

LNAPL Recovery

Monitoring wells WRAOI-16-01 and WRAOI-16-02 are gauged on a monthly basis during other site wide monitoring activities. Both monitoring wells have had measurable LNAPL at some point during the 2020 monitoring activities. Monitoring well WRAOI-16-01 has had no measurable LNAPL most of the year with 0.10 feet of LNAPL measured during the November monitoring event. Monitoring well WRAOI-16-02 has had a trace to as much as 0.20 feet of LNAPL. LNAPL was removed as needed by bailing or peristaltic pump. Total LNAPL removed from WRAOI-16-01 during 2020 was approximately 1 ounce and from WRAOI-16-02 was 10 ounces. The monthly gauging activities for these two monitoring wells is included in the attached field notes.

Surface Water Sampling

Performance acceptability of the PAB is measured by evaluating surface water quality at locations noted as Former Seep-07 and Former Seep-08 and verification that no seeps are visible at the river bank along the extent of the PAB. As specified in the Operations and Maintenance Plan, the flow rate of the Walnut River should be less than 50 cubic feet per second (cfs) for collection of representative surface water samples.

Due to significant precipitation events in 2020, the Walnut River flow rate was higher than the 50 cfs threshold for most of the year. During the June 22, 2020 surface water sampling event the USGS gauging station for the Walnut River measured a river flow of 103 cfs. During the December 11, 2020 surface water sampling event the USGS gauging station for the Walnut River measured a river flow of 64.4 cfs.

Biased surface water samples were collected from the western bank of the Walnut River east of the historical locations of former Seep-07 and former Seep-08 sampling locations on June 22 and December 11, 2020. A background surface water sample is also collected from the west bank of the Walnut River, approximately 20 to 30 feet up stream of the PAB.

The Walnut River surface water samples were analyzed per the O&M Plan for target volatile organic compounds (VOC analysis by EPA Method 8260), target semi-volatile organic compounds (SVOC analysis by EPA Method 8270), and target total metals (total metals only by EPA Method 6010 and arsenic by EPA Method 6020). A surface water sample was also collected at each sampling location for hardness as calcium carbonate by Standard Methods 2340C. A summary of the surface water sampling results are shown in **Table 1**. Complete laboratory results for the surface water samples collected on June 22 and December 11, 2019 are attached.

The laboratory analytical results for the surface water samples were screened against the Kansas Surface Water Quality Standard. If there is no Kansas Surface Water Quality Standard for the constituent, then the results were compared to the United States Environmental Protection Agency (USEPA) Primary Drinking Water Standard Maximum Contaminant Level (MCL).

Surface water sampling results for the December 2020 sampling event reported benzene at 1.6 µg/l and pentachlorophenol at 1.2 ug/l in the surface water sample collected at the former Seep-8. No other VOCs were detected in the surface water samples collected during the June 2020 or the December 2020 sampling events. All detected inorganics were less than their respective standard. The average concentrations of inorganic analytical results for the down-gradient surface water samples are comparable to the up-gradient surface water analytical results with no notable increase in concentrations.

Monthly inspection of the PAB area did not indicate the presence of any hydrocarbon seeps along the length of the PABs documented in the inspection forms. There continues to be residual iron bacteria noted in the area of the former Seep-8 location that was not excavated during the installation of the PAB, however, no evidence of a hydrocarbon seep was observed.

PAB Performance Monitoring

The long-term PAB monitoring for remaining adsorption capacity calculations are included in **Table 2**. Trace amounts of LNAPL prevented groundwater sampling of several of the monitoring wells during the 2019 groundwater sampling event in the area of the WRAOI. Therefore, the same benzene concentration of 3,760 µg/l was used. The benzene concentration of 3,760 µg/l is the maximum benzene concentration observed in monitoring well WRFAR10-03S during the 2010 groundwater sampling event.

The arsenic data from the 2019 groundwater sampling event of 175 µg/l for monitoring well DG-03D was used in place of the previous concentration of 195 µg/l used in the June 2017 calculation. The updated estimates of the remaining adsorption capacities of the AquaGate+Organoclay and the AquaGate+ProvectIRM portions of the PAB were found to be from 27.9 (using benzene saturation limit to represent LNAPL) to 500.6 years (using maximum benzene concentration observed in monitoring well WRFAR10-03S during the 2010 groundwater sampling event) for the AquaGate+Organoclay and 12.9

years (using most recent highest actual dissolved arsenic concentrations) for the Aqua-Gate+ProvectIRM.

Updated capacities represent worst case scenarios where 100% of the PAB materials are exposed to either highest dissolved benzene/arsenic concentrations or LNAPL. Capacity calculations do not include the AquaGate+PAC portion of the PAB which would add several additional years to the PAB adsorption capacity.

Summary and Planned Actions

Surface water sampling results for the December 2020 sampling event reported benzene and pentachlorophenol in the surface water sample collected at the former Seep-8 above the Kansas Surface Water Quality Standard. The reported detections of benzene and pentachlorophenol are thought to come from residual hydrocarbons that were not excavated at the north end and adjacent to the river during the installation of the PAB in the area of former Seep-8. A second biased surface water sample at former Seep-8 and upgradient sample will be collected for VOC and SVOC analysis. If the results of the second sample does not have constituent concentrations that exceed screening levels, then a third biased sample at former Seep-8 and an upgradient sample will be collected immediately following receipt of the second sample results (as long as the Walnut River flow rate is less than 100 cfs) as confirmation. WPS is currently evaluating options for the excavation of additional soil in the area.

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Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	1,1,1-trichloro ethane (ug/l)	1,1-Dichloro ethane (ug/l)	1,1-Dichloro ethylene (ug/l)	Acetone (ug/l)	Benzene (ug/l)	Carbon Disulfide (ug/l)	Chlorobenzene (ug/l)
Maximum Contaminant Level		200		7		5		100
KDHE Surface Water SL		200		7		1.2[(b)]		100
Seep 7	7/20/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	12/11/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	6/15/2018	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/12/2019	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	6/22/2020	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/11/2020	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
Seep 8	7/20/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	12/11/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	6/15/2018	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/12/2019	<1.0	<1.0	<1.0	6.0	<1.0	<2.0	<1.0
	6/22/2020	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/11/2020	<1.0	<1.0	<1.0	<2.0	**1.6**	<2.0	<1.0
Upstream	7/20/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	12/11/2017	<1.0	<1.0	<1.0	<50	<1.0	<5.0	<1.0
	6/15/2018	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/12/2019	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	6/22/2020	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0
	12/11/2020	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0

[x]=Indicates a result greater than or equal to the method detection limit but Less than Reporting Limit

Maximum Contaminant Level = Maximum Contaminant Level EPA Spring 2012 Edition of the Drinking Water Standard and Health Advisories
KDHE Surface Water SL = Domestic Water Supply Screening Levels, Kansas Surface Water Quality Standards: Tables of Numeric Criteria, December 15, 2017
(a) = Criterion not available
(b) = US EPA has promulgated criterion for Kansas under the Code of Federal Regulations, Title 40, part 131.36

Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	Ethylbenzene (ug/l)	MTBE (ug/l)	Methylene chloride (ug/l)	Tetrachloro ethylene (ug/l)	Toluene (ug/l)	Vinyl chloride (ug/l)	Xylene (total) (ug/l)
Maximum Contaminant Level		700		5	5	1000	2	10000
KDHE Surface Water SL		700		5	0.8[(b)]	1000	2	10000
Seep 7	7/20/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	12/11/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	6/15/2018	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/12/2019	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	6/22/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/11/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
Seep 8	7/20/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	12/11/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	6/15/2018	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/12/2019	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	6/22/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/11/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
Upstream	7/20/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	12/11/2017	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<3.0
	6/15/2018	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/12/2019	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	6/22/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0
	12/11/2020	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0

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Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	2-Methyl naphthalene (ug/l)	Benzoic acid (ug/l)	Penta-chlorophenol (ug/l)	Bis(2-ethyl hexyl)phthalate (BEHP) (ug/l)	Chrysene (ug/l)	Naphthalene (ug/l)	Phenanthrene (ug/l)
Maximum Contaminant Level				1	6.0			
KDHE Surface Water SL				0.28[(b)]	1.8[(b)]	0.0038	(a)	(a)
Seep 7	7/20/2017	<5.8	<23	<29	<5.8	<0.10	<0.10	<0.10
	12/11/2017	<5.0	[3.9]	<25	<5.0	<0.10	<0.10	<0.10
	6/15/2018	<0.10	0.38	<0.20	2.9	<0.10	[0.027]	<0.10
	12/12/2019	<0.10	0.48	<0.20	<0.20	<0.10	<0.10	<0.10
	6/22/2020	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10
	12/11/2020	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10
Seep 8	7/20/2017	<6.7	<27	<33	<6.7	<0.11	<0.11	<0.11
	12/11/2017	<1.6	<20	<25	<5.0	<0.10	<0.10	<0.10
	6/15/2018	[0.033]	0.52	<0.20	[0.078]	<0.10	[0.051]	<0.10
	12/12/2019	<0.10	0.43	<0.20	<0.20	<0.10	0.25	<0.10
	6/22/2020	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10
	12/11/2020	<0.10	<0.20	**1.2**	<0.20	<0.10	<0.10	<0.10
Upstream	7/20/2017	<5.9	<24	<29	<5.9	<0.12	<0.12	<0.12
	12/11/2017	<5.0	<20	<25	<5.0	<0.10	<0.10	<0.10
	6/15/2018	<0.10	0.25	<0.20	<0.20	<0.10	<0.10	<0.10
	12/12/2019	<0.10	0.43	<0.20	<0.20	<0.10	0.19	<0.10
	6/22/2020	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10
	12/11/2020	<0.10	<0.20	<0.20	[0.064]	<0.10	<0.10	<0.10

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Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	Pyrene (ug/l)	Total Arsenic (ug/l)	Dissolved Arsenic (ug/l)	Total Barium (ug/l)	Dissolved Barium (ug/l)	Total Cadmium (ug/l)	Dissolved Cadmium (ug/l)
Maximum Contaminant Level			10	10	2000	2000	5	5
KDHE Surface Water SL		960[(b)]	10	10	2000	2000	5	5
Seep 7	7/20/2017	<0.10	[1.6]	[1.9]	[157]	[158]	<5.00	<5.00
	12/11/2017	<0.10	[1.4]	[2.2]	[169]	[159]	<5.00	<5.00
	6/15/2018	<0.10	6.26	6.02	158	152	<2.00	<2.00
	12/12/2019	<0.10	[1.84]	[1.36]	138	140	<2.00	<2.00
	6/22/2020	<0.10	2.35	2.23	159	161	<2.00	<2.00
	12/11/2020	<0.10	2.31	2.24	118	121	<2.00	<2.00
Seep 8	7/20/2017	<0.11	<10	[2.2]	[155]	[156]	<5.00	<5.00
	12/11/2017	<0.10	[1.8]	[1.6]	[170]	[163]	<5.00	<5.00
	6/15/2018	<0.10	7.38	6.78	158	155	<2.00	<2.00
	12/12/2019	<0.10	[1.86]	[1.52]	132	136	<2.00	<2.00
	6/22/2020	<0.10	2.09	2.06	143	148	<2.00	<2.00
	12/11/2020	<0.10	4.29	3.38	129	126	<2.00	<2.00
Upstream	7/20/2017	<0.12	[1.6]	[2.0]	[150]	[148]	<5.00	<5.00
	12/11/2017	<0.10	[1.9]	<10	[166]	[160]	<5.00	<5.00
	6/15/2018	<0.10	6.12	5.92	153	159	<2.00	<2.00
	12/12/2019	<0.10	[1.42]	[1.58]	132	156	<2.00	<2.00
	6/22/2020	<0.10	[1.87]	2.29	136	155	<2.00	<2.00
	12/11/2020	<0.10	2.36	2.46	122	136	<2.00	<2.00

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Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	Total Chromium (ug/l)	Dissolved Chromium (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Total Mercury (ug/l)	Dissolved Mercury (ug/l)	Total Selenium (ug/l)
Maximum Contaminant Level		100	100	15	15	2	2	50
KDHE Surface Water SL		100	100	15	15	2	2	50
Seep 7	7/20/2017	<10	<10	<5.0	<5.0	<0.50	[0.036]	<10
	12/11/2017	<10	<10	<5.0	<5.0	<0.50	<0.50	<10
	6/15/2018	<4.00	<4.00	[0.945]	<2.00	[0.030]	<0.200	2.14
	12/12/2019	<4.00	<4.00	<2.00	<2.00	_	<0.200	3.30
	6/22/2020	[0.437]	<4.00	[0.652]	<2.00	<0.200	<0.200	<2.00
	12/11/2020	[0.668]	<4.00	<2.00	<2.00	<0.200	<0.200	5.50
Seep 8	7/20/2017	<10	<10	[1.2]	<5.0	[0.041]	[0.039]	<10
	12/11/2017	<10	<10	<5.0	<5.0	<0.50	<0.50	<10
	6/15/2018	<4.0	<4.0	[0.890]	<2.00	<0.200	<0.200	2.10
	12/12/2019	<4.0	<4.0	<2.00	<2.00	_	<0.200	2.80
	6/22/2020	[0.417]	<4.0	<2.00	<2.00	<0.200	<0.200	<2.00
	12/11/2020	<4.0	<4.0	<2.00	<2.00	<0.200	<0.200	6.23
Upstream	7/20/2017	<10	<10	<5.0	<5.0	[0.042]	<0.50	<10
	12/11/2017	<10	<10	<5.0	<5.0	<0.50	<0.50	<10
	6/15/2018	[0.507]	<4.00	[0.991]	<2.00	[0.0310]	[0.0330]	[1.90]
	12/12/2019	<4.00	<4.00	<2.00	<2.00	_	<0.200	3.05
	6/22/2020	<4.00	<4.00	<2.00	[0.703]	<0.200	<0.200	<2.00
	12/11/2020	<4.00	<4.00	<2.00	<2.00	<0.200	<0.200	6.4

[x]=Indicates a result greater than or equal to the method detection limit but Less than Reporting Limit

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Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

SAMPLE TYPE: Water

SITE	DATE	Dissolved Selenium (ug/l)	Total Silver (ug/l)	Dissolved Silver (ug/l)	Hardness (mg/l)
Maximum Contaminant Level		50			
KDHE Surface Water SL		50	100	100	
Seep 7	7/20/2017	<10	<10	<10	216
	12/11/2017	[3.3]	<10	<10	297
	6/15/2018	3.78	<2.00	<2.00	222
	12/12/2019	3.79	<2.00	<2.00	273
	6/22/2020	[1.31]	<2.00	<2.00	238
	12/11/2020	5.56	<2.00	<2.00	227
Seep 8	7/20/2017	<10	<10	<10	226
	12/11/2017	<10	<10	<10	299
	6/15/2018	3.41	<2.00	<2.00	222
	12/12/2019	2.99	<2.00	<2.00	260
	6/22/2020	[1.11]	<2.00	<2.00	215
	12/11/2020	5.73	<2.00	<2.00	244
Upstream	7/20/2017	<10	<10	<10	236
	12/11/2017	[3.8]	<10	<10	300
	6/15/2018	3.62	<2.00	<2.00	220
	12/12/2019	3.97	<2.00	<2.00	260
	6/22/2020	[1.25]	<2.00	<2.00	210
	12/11/2020	6.82	<2.00	<2.00	239

[x]=Indicates a result greater than or equal to the method detection limit but Less than Reporting Limit

Maximum Contaminant Level = Maximum Contaminant Level EPA Spring 2012 Edition of the Drinking Water Standard and Health Advisories
KDHE Surface Water SL = Domestic Water Supply Screening Levels, Kansas Surface Water Quality Standards: Tables of Numeric Criteria, December 15, 2017
(a) = Criterion not available
(b) = US EPA has promulgated criterion for Kansas under the Code of Federal Regulations, Title 40, part 131.36

Table 2

Permeable Adsorptive Barrier Capacity Calculation
Walnut River AOI ICM Post-Construction Performance Monitoring
July 2016 through December 2020

Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

AquaGate + Organoclay								
Estimate of Contaminant Adsorption Capacity Starting June 2016 (lbs)[1]	Contaminant	Concentration (µg/l)	Conductivity K (m/day)[2]	i[3]	Area (m^2)[4]	Estimated Mass Flux (lbs/year)	Estimate of Remaning Contaminant Adsorption Capacity (lbs)	Estimated Remaining Treatment Time for Organoclay only (years)
27981.2	Benzene[5]	3,760	8.64	0.0204	104	55.4	27731.9	500.6
27709	Benzene[6]	58,000	8.64	0.0204	104	854	23866.0	27.9
AquaGate + ProvectIRM								
Estimate of Arsenic Sequestration Capacity with ProvectIRM with Aquagate June 2016 (lbs)[1]	Contaminant	Concentration (µg/l)	Conductivity K (m/day)[2]	i[3]	Area (m^2)[4]	Estimated Mass Flux (lbs/year)	Estimate of Remaning Contaminant Adsorption Capacity (lbs)	Estimate Remaining Time for Arsenic Sequestration (years)
45.5	Arsenic[7]	175	8.64	0.0204	104	2.58	33.2	12.9

[1]Treatment capacity provided by John Collins, Aquablok 7/2/15 (Burns&McDonnell, Sept. 13, 2016).

[2]Conductivity of Auagate + Organoclay (Burns&McDonnell, Sept. 13, 2016).

[3]Highest gradient reported in AOI report (Shaw, 2011)

[4]Based on PAB design drawings of 8 feet deep and 140 feet long (Burns&McDonnell, Sept. 13, 2016).

[5]Maximum benzene concentration observed 2010 sampling event (WRFAR10-03S). WRFAR10-03S had LNAPL during the 2019 groundwater sampling event and was not sampled.

[6]API data (1985): Expected concentration of benzene in water (Cw) from a typical unleaded gasoline, https://info.ngwa.org/GWOL/pdf/910155295.pdf.

[7]Maximum arsenic concentration observed 2019 sampling event (DG-03D).

Assumptions:
1. No transfer of contaminant from vadose zone
2. Excavation/Capping inhibits furher migration of free phase

Mass Flux = C*K*i*Area
C = Concentration of benzene upgradient of Permeable Adsorptive Barrier (PAB)
K = Conductivity of Aquagate + Organoclay
i = Groundwater gradient up gradient of PAB.
1 g/day = 0.804687 lbs/yr

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561-12121320
Date : 01-15-20 and 1-30-20 Phil Olson
Weather: 50°F, partly Cloudy
Inspector: Craig Taylor

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK, Put Sign in Book in New Container w/ Lid
SWPP drainage and site ponding water check:	water level is up in main ditch
~~South~~ Pond Info: 1/30 North	1219.51 - 4.42 = 1215.09
~~North~~ Pond Info: 1/30 South	1226.96 - 7.99 = 1221.97, drains from S to N pond thru culverts
Pump House check: East & West Pumps	ran west pump 11:50 to
Flood corridor check:	
River Outfall check (Qtrly): (check valve annually)	
Fence and Gate Breech checks:	none observed
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	none observed
Site mowing and growth check:	recently mowed, Site is good
River AOI Inspection: (PO) 1/30/20	OK River is up e 6.65 Flow ~ 400 cfs
Product Storage Unit Inspection:	OK
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561-12121320
Date : 01-15-20
Weather: 50°F, partly Cloudy
Inspector: Craig Taylor

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	10.36	
FAR10-6S	T	8.18	
FAR10-7S	—	6.78	
GM-1SR	10.03	10.33	30oz product Removed 124oz Water Removed
GM-2S	12.78	12.93	4oz product Removed 20oz Water Removed
GM-3S	T	4.97	
GM-6SR	—	8.28	
GM-9	—	5.50	
WRAOI16-02	T	21.38	
WRAOI16-01	—	22.80	

Former Augusta Refinery Monthly Site Inspection Form

Project # 631013130.27A21320
Date : 02/18/20
Weather: Sunny, 48°
Inspector: Craig Taylor

Check List	Comments
Overhead Line fuses:	good
Locks at, Gate 1: ✓ Gate 15: ✓ Gate 12: ✓ Gate 16: ✓ Gate 14: ✓ Gate 17: ✓	good
~~Sign IN/OUT sheet Check:~~	Good
SWPP drainage and site ponding water check:	OK
South Pond Info:	DTW = 8.20 @ 0839
North Pond Info:	DTW = 4.25 @ 0834 DTW = 11.14 @ 0832 Weather Station
Pump House check: East & West Pumps	OK, Oil in pumps good & 2 Squirts of Grease
Flood corridor check:	OK, Very low to no water
River Outfall check (Qtrly): (check valve annually)	OK
Fence and Gate Breech checks:	None observed
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	None Observed
Site mowing and growth check:	OK
River AOI Inspection:	OK
Product Storage Unit Inspection:	New Drum ✗ Start Date: 02/18/20
Other comments:	Turned pump on @ 0850 Pump Off @ 1110

Former Augusta Refinery Monthly Site Inspection Form

Project # 631013130.27A21320
Date : 02/17/20
Weather: Sunny, 55°
Inspector: Craig Taylor

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	11.78	
FAR10-6S	T	7.84	
FAR10-7S	—	6.74	
GM-1SR	9.16	9.37	22oz product Removed 48oz Water Removed
GM-2S	12.26	12.32	2oz product 18oz water
GM-3S	—	4.92	
GM-6SR	—	7.04	
GM-9	—	4.91	
WRAOI16-02	~~21.74~~ OT T	21.81	
WRAOI16-01	—	22.87	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101.3130.27A21320
Date : 3/30/20
Weather: Partly Cloudy, 60°F
Inspector: Craig Taylor

Check List		Comments
Overhead Line fuses:		good
Locks at,	Gate 1:✓ good Gate 15:✓ good Gate 12:✓ good Gate 16:✓ good Gate 14:✓ good Gate 17:✓ good	
Sign IN/OUT sheet Check:		good
SWPP drainage and site ponding water check:		good
South Pond Info:		DTW = 8.05 Levee pond DTW = 7.75
North Pond Info: Outfall Drainage Water level 26" Below Top of Concrete		DTW = 3.03 Weather Station DTW = 9.92
Pump House check: East & West Pumps		Pumphouses good, Checked oil in levee pond pump it's good 2 pumps of grease in Levee pump
Flood corridor check:		good, water is low
River Outfall check (Qtrly): (check valve annually)		good
Fence and Gate Breech checks:		none observed
SWMU 1&2 checks: (ruts, erosion, burrows, etc)		none observed
Site mowing and growth check:		good
River AOI Inspection:		good
Product Storage Unit Inspection:		good, labeled ✓
Other comments:		

Former Augusta Refinery Monthly Site Inspection Form

Project # 631013130.27A21320
Date : 3/30/20
Weather: Partly Cloudy, 55°F
Inspector: C. Taylor

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	10.15	
FAR10-6S	Trace on IP	7.16	
FAR10-7S	—	6.29	
GM-1SR	8.33	8.51	12oz Product Removed 64oz Water Removed
GM-2S	11.58	11.63	6oz product 34oz water
GM-3S	—	4.70	
GM-6SR	—	6.00	
GM-9	—	4.60	
WRAOI16-02	19.94	20.02	2oz product 24oz water
WRAOI16-01	—	15.15	

Former Augusta Refinery Monthly Site Inspection Form

Project #: 63101330-27A 2/320
Date : 4-20-20
Weather: Clear 75°F
Inspector: Abel Osborn

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK added New sheets + pulled old
SWPP drainage and site ponding water check:	OK
South Pond Info: 8.19	
North Pond Info: 10.15	
Pump House check: East & West Pumps	East Pump Pulled. Set by New floats on West Pump.
Flood corridor check:	OK
River Outfall check (Qtrly): (check valve annually)	OK slight drip at end of pipe maybe from surveyors. checked valve –
Fence and Gate Breech checks: OK	
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	OK
River AOI Inspection:	OK several soil pegs coming up on bank
Product Storage Unit Inspection:	OK. labeled + dated
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 6310131130.27A
Date : 4/23/20 & 4/27/20
Weather: Clear, 65°
Inspector: D. Ceniti

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	-	13.35	
FAR10-6S	-	7.70	
FAR10-7S	-	7.30	
GM-1SR	9.81	10.02	Removed 24oz of product
GM-2S	13.00	13.05	Removed 6oz of product
GM-3S	-	5.46	
GM-6SR	-	6.50	
GM-9	-	6.72	
WRAOI16-02	T	20.81	
WRAOI16-01	-	20.00	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101313O.27A
Date : 5/26/20 - 5/27/20
Weather: Cloudy, 64°
Inspector: D. Ceniti

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	–	8.00	
FAR10-6S	–	7.21	
FAR10-7S	–	6.22	
GM-1SR	7.85	8.00	Removed 28oz of product
GM-2S	T	10.41	
GM-3S	–	4.50	
GM-6SR	–	5.65	
GM-9	–	3.80	
WRAOI16-02	15.75	15.90	
WRAOI16-01	–	14.28	

Former Augusta Refinery Monthly Site Inspection Form

Project #:

Date: 5-28-20

Weather: Clear 68°F

Inspector: M. J Osborn

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	OK recent rains —
South Pond Info: 7.26	elev 1219.74
North Pond info: 6.75	elev 1219.69
Pump House check: East & West Pumps	Grease and run West Pump — East Pump is pulled
Flood corridor check:	Grass ~ 1' tall —
River Outfall check (Qtrly): (check valve annually)	
Fence and Gate Breech checks:	None Noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Cap OK
Site mowing and growth check:	grass ~ 1.0' + growing
River AOI Inspection:	City Plowed part of AOI sub — River Cap — flow 4,500 cfs @ 9.01'
Product Storage Unit Inspection:	Locked + OK 2/18
Other comments:	

APTIM

APTIM Wichita, Kansas
Site Visit Form

Project: Williams FAR	Project Number: 631011702.128
Task: Walnut River Surface Water Sampling	Personnel: C. Taylor, D. Cenish
Methodology: Dip Sample	Equipment:
Weather: Sunny 80°F	

Date(s): 6/22/20

Time:	Notes:
1115	Arrived on site, Signed in. Completed JSA
1145	Sampled former Seep 7
1200	Sampled former Seep 8
1215	Sampled upstream ≈ 50' upstream from former Seep 8
	SOW noted Iron bacteria @ Former Seep 8 NO noted Sheens
1230	Done Surface water Samples, Coolers Dropped off @ Fedex Switched to LNAPL Gauging
	CT

Name (Print): Craig Taylor Signature: CT

Name (Print): _____ Signature: _____

Chain of Custody Form

Cincinnati, OH +1 513 733 5336	Fort Collins, CO +1 970 490 1511		Houston, TX +1 281 530 5656	Spring City, PA +1 610 948 4903
Everett, WA +1 425 356 2600	Holland, MI +1 616 399 6070		Middletown, PA +1 717 944 5541	Salt Lake City, UT +1 801 266 7700

South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Page 1 of 1

COC ID: 16347

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	[illegible]	Project Name	William FAR Surface Water	A	8260 LL W (VOC 8260 Select List)
Work Order		Project Number	63011902	B	8270 LOW W (Williams FAR sel list)
Company Name	Aptim Environmental & Infrastruct	Bill To Company	Aptim Environmental and Infrastru	C	ICP DISS (RCRA 8 Metals (Add Hg))
Send Report To	Phil Osborn	Invoice Attn	AP	D	ICP TW (RCRA 8 Metals (Add Hg))
Address	8871 N Ridge Rd Suite 1025	Address	7330 W 33rd St North Suite 105	E	HARD (Add Ca and Mg)
				F	
City/State/Zip	Wichita, KS 67205	City/State/Zip	Wichita KS 67205	G	
Phone	(316) [illegible]	Phone		H	
Fax		Fax		I	
e-Mail Address	phil.osborn@aptim.com	e-Mail Address	accountspayable@aptim.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Farmer Seep 7	6/22/20	1145	W	12.8	2	X	X	X	X	X						
2	Farmer Seep 8	6/22/20	1200	|	|	7	X	X	X	X	X						
3	[illegible]	6/22/20	1215	|	|	4	X	X	X	X	X						
4	Trip Blank	|	—	|	|	2	X										
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Cori Taylor [signature]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
[signature]	6/22/20	1300	FedEx
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: CBI William FAR

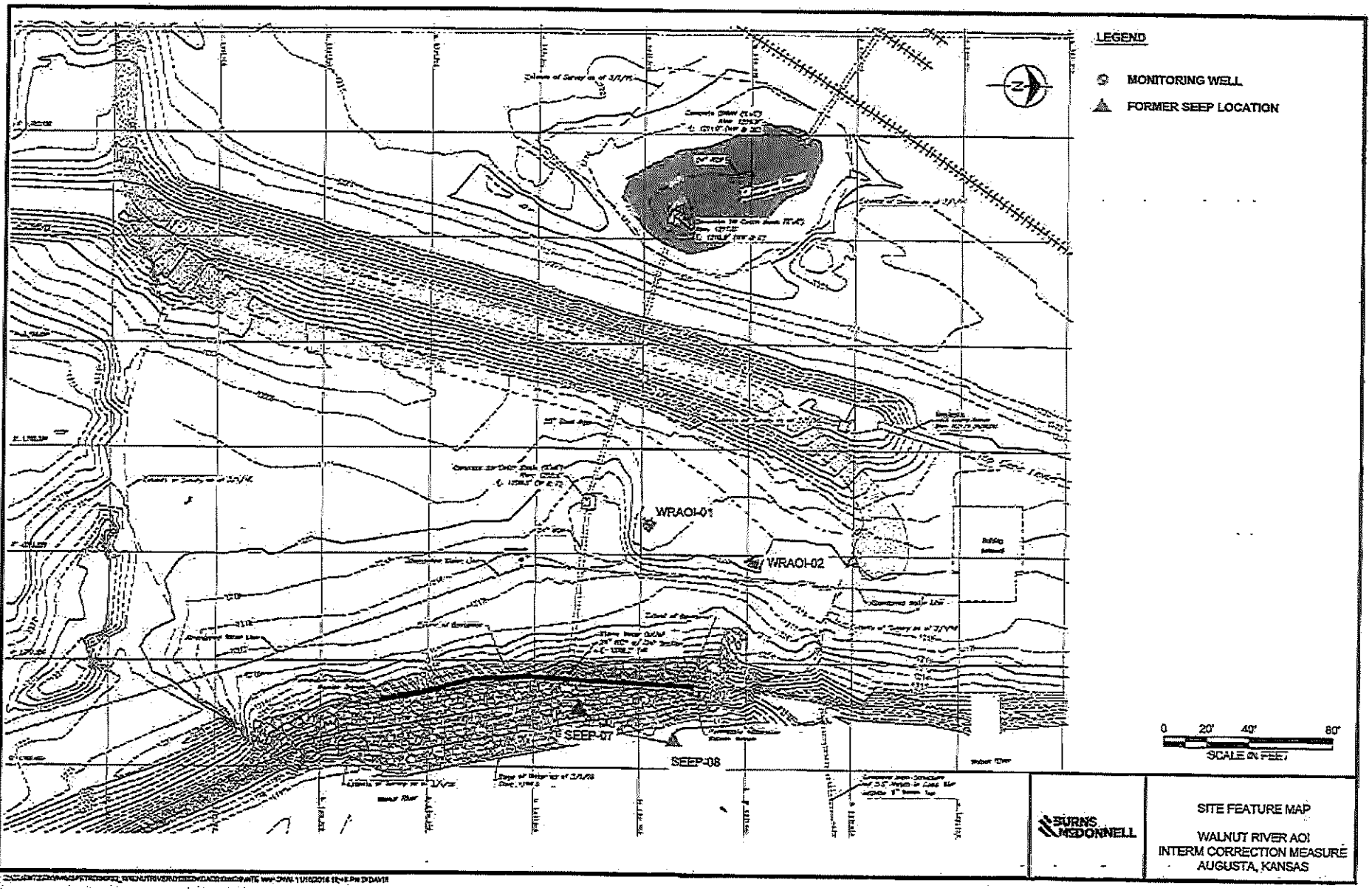
Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[X] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

06/22 14:15	5.78ft	0.103kcfs
06/22 14:00	5.78ft	0.103kcfs
06/22 13:45	5.78ft	0.103kcfs
06/22 13:30	5.78ft	0.103kcfs
06/22 13:15	5.78ft	0.103kcfs
06/22 13:00	5.78ft	0.103kcfs
06/22 12:45	5.78ft	0.103kcfs
06/22 12:30	5.78ft	0.103kcfs
06/22 12:15	5.78ft	0.103kcfs
06/22 12:00	5.78ft	0.103kcfs
06/22 11:45	5.78ft	0.103kcfs
06/22 11:30	5.78ft	0.103kcfs
06/22 11:15	5.78ft	0.103kcfs
06/22 11:00	5.78ft	0.103kcfs
06/22 10:45	5.78ft	0.103kcfs
06/22 10:30	5.78ft	0.103kcfs
06/22 10:15	5.78ft	0.103kcfs
06/22 10:00	5.78ft	0.103kcfs
06/22 09:45	5.78ft	0.103kcfs
06/22 09:30	5.78ft	0.103kcfs
06/22 09:15	5.78ft	0.103kcfs
06/22 09:00	5.78ft	0.103kcfs
06/22 08:45	5.78ft	0.103kcfs
06/22 08:30	5.78ft	0.103kcfs
06/22 08:15	5.78ft	0.103kcfs
06/22 08:00	5.78ft	0.103kcfs
06/22 07:45	5.79ft	0.106kcfs
06/22 07:30	5.79ft	0.106kcfs
06/22 07:15	5.79ft	0.106kcfs
06/22 07:00	5.79ft	0.106kcfs
06/22 06:45	5.79ft	0.106kcfs
06/22 06:30	5.79ft	0.106kcfs
06/22 06:15	5.79ft	0.106kcfs
06/22 06:00	5.79ft	0.106kcfs
06/22 05:45	5.78ft	0.103kcfs
06/22 05:30	5.78ft	0.103kcfs
06/22 05:15	5.79ft	0.106kcfs
06/22 05:00	5.78ft	0.103kcfs
06/22 04:45	5.79ft	0.106kcfs
06/22 04:30	5.79ft	0.106kcfs
06/22 04:15	5.78ft	0.103kcfs
06/22 04:00	5.78ft	0.103kcfs
06/22 03:45	5.78ft	0.103kcfs
06/22 03:30	5.78ft	0.103kcfs
06/22 03:15	5.78ft	0.103kcfs
06/22 03:00	5.78ft	0.103kcfs
06/22 02:45	5.78ft	0.103kcfs
06/22 02:30	5.77ft	0.0997kcfs


LEGEND
MONITORING WELL
FORMER SEEP LOCATION
WRAOI-01
WRAOI-02
SEEP-07
SEEP-08
0 20' 40' 80'
SCALE IN FEET
BURNS McDONNELL
SITE FEATURE MAP
WALNUT RIVER AOI
INTERIM CORRECTION MEASURE
AUGUSTA, KANSAS

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101.3130.27A
Date : 6-23-20
Weather: Sunny, 85°F
Inspector: Craig Taylor

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	OK Leveepond Low
South Pond Info:	8.27 = DTW @ 1500
North Pond info: DTW = ~~4.76 @ 1504~~	Leveepond DTW = 9.97 @ 1430 WS DTW = 11.61 @ 1504
Pump House check: East & West Pumps	East pump house: good, pump oil good, 2 shots of grease Broke up wasp nest under pump rim
Flood corridor check:	Weeds Tall / Dry OK
River Outfall check (Qtrly): (check valve annually)	
Fence and Gate Breech checks:	None noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Cap OK
Site mowing and growth check:	Some mower ateny Fence & Near Hut Rest is about ±1'-2' Tall
River AOI Inspection:	Some mowed, Tall grass around wells
Product Storage Unit Inspection:	Labeled & OK
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101330.27A
Date : 6-23-20
Weather: Sunny, 85°F
Inspector: Craig Taylor

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	12.55	Trace on Ip
FAR10-6S	—	7.93	
FAR10-7S	—	9.44	
GM-1SR	9.20	9.40	46oz product 78oz water
GM-2S	T	11.90	
GM-3S	—	7.22	
GM-6SR	—	9.60	
GM-9	—	6.20	
WRAOI16-02	21.00	21.20	6 oz product 2oz water
WRAOI16-01	—	21.55	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101313D.27A
Date : 7/24/20
Weather: Sunny, 87°
Inspector: Daniel Ceriti

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	
South Pond Info:	DTW = 8.55 @ 1135
North Pond Info: DTW = 5.20	Levee Pond DTW = 12.00 @ 1200 WS DTW = 12.00 @ 1125
Pump House check: East & West Pumps	East Pump - Good, Oil is good, But 2 pumps of grease
Flood corridor check:	Dry w/ tall weeds - OK
River Outfall check (Qtrly): (check valve annually)	
Fence and Gate Breech checks:	OK
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	OK - Some mowed along the fence & Close to Hut - 2-3' tall grass
River AOI Inspection:	OK - Some mowed in areas, tall grass around walls
Product Storage Unit Inspection:	Labeled & OK
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101313O.27A
Date : 7/22/20 - 7/23/20
Weather: Sunny, 87°
Inspector: Daniel Cenith

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	15.00	
FAR10-6S	-	8.40	
FAR10-7S	—	11.00	
GM-1SR	12.00	12.25	18 oz product removed
GM-2S	14.50	14.55	1 oz product removed
GM-3S	T	8.90	
GM-6SR	-	11.95	
GM-9	-	8.60	
WRAOI16-02	T	21.70	
WRAOI16-01	—	22.67	

Former Augusta Refinery Monthly Site Inspection Form

Project # 6310130-27A

Date : 8/14/20

Weather: Clear 85°F

Inspector: Phil Olson

Check List	Comments
Overhead Line fuses:	OK @ 2nd + Oak
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	all Gates OK/locked
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	OK grass ~2-3' tall
South Pond Info: AW 8.82 @ transducer	
North Pond Info: AW 12.31 @	Rain fall transducer
Pump House check: East & West Pumps	[illegible] pump run. East pump pulled.
Flood corridor check:	OK grass 2-3' tall
River Outfall check (Qtrly): (check valve annually)	Valve open, No discharge [illegible]
Fence and Gate Breech checks:	None Noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	grass 1-6' overall tall
River AOI Inspection:	some [illegible] from seeps No odor — few small trees in riprap —
Product Storage Unit Inspection:	OK
Other comments:	Walnut river Bridge 5.76' @ 0.0969 Kcfs

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101313O.27A
Date : 8/26/20 - 8/28/20
Weather: Clear, 95°
Inspector: D. Cenitti

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	T	16.20	
FAR10-6S	-	8.83	
FAR10-7S	-	11.90	
GM-1SR	13.76	14.20	30oz product removed
GM-2S	15.65	15.95	3oz product removed
GM-3S	-	10.25	
GM-6SR	-	13.30	
GM-9	T	9.80	
WRAOI16-02	T	22.45	
WRAOI16-01	T	23.40	

Former Augusta Refinery Monthly Site Inspection Form

Project # 60613130 - 27A 21320

Date : 9-1-20

Weather: Clear

Inspector: Phil Osborn

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	OK
South Pond Info: 17:15	OK DTW 9.19 temperature
North Pond Info: 13:10	OK DTW 13.10 low rainfall temperature
Pump House check: East & West Pumps	OK General Vent Pump / East pump removed
Flood corridor check:	OK recently mowed
River Outfall check (Qtrly): (check valve annually)	OK No discharge
Fence and Gate Breech checks:	None Noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	Started mowing ground outside of site
River AOI Inspection:	OK some Noted iron staining seeps. No Hydrocarbon odor
Product Storage Unit Inspection:	OK
Other comments:	River flow back down River Stage 5.57 ft flow ~ 50 cfs

Former Augusta Refinery Monthly Site Inspection Form

Project # 63|013|30.27A
Date : 9/28/20-9/30/20
Weather: Clear
Inspector: D. Cenith

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	–	17.10	
FAR10-6S	–	9.05	
FAR10-7S	–	12.52	
GM-1SR	14.50	15.30	32oz of product removed
GM-2S	16.83	17.05	4oz of product removed
GM-3S	T	12.25	
GM-6SR	–	14.10	
GM-9	T	11.00	
WRAOI16-02	T	22.50	
WRAOI16-01	–	23.60	

Former Augusta Refinery Monthly Site Inspection Form

Project # 6710/3130-27A
Date : 10-16-20
Weather: Clear 55°F
Inspector: Phil Osborn

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK to completed perimeter fence walk.
Sign IN/OUT sheet Check:	OK
SWPP drainage and site ponding water check:	OK site dry
South Pond Info:	MW 9.57 from Transducer
North Pond Info:	MW 13.27 rainfall transducer
Pump House check: East & West Pumps	Ran & Greased West Pump. East Pump Failed
Flood corridor check:	OK mowed Grass ~1" tall
River Outfall check (Qtrly): (check valve annually)	New valve replaced last month -
Fence and Gate Breech checks:	~~None~~ six small holes noted in fence.
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	Need fall mowing
River AOI Inspection:	OK river flow. 52.3 cfs. flow
Product Storage Unit Inspection:	OK NOWA 5.55' MSL Stage
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63103130.27A
Date : 10/21/20 - 10/23/20
Weather: Warm
Inspector: D. Ceniti

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	-	17.26	
FAR10-6S	-	9.20	
FAR10-7S	-	13.10	
GM-1SR	15.35	15.70	30oz of product removed
GM-2S	17.00	17.30	4oz of product removed
GM-3S	13.55	13.70	3oz of product removed
GM-6SR	-	14.76	
GM-9	-	11.20	
WRAOI16-02	T	22.80	
WRAOI16-01	T	24.08	

Former Augusta Refinery Monthly Site Inspection Form

Project # 6310/3170-27A
Date : 11/18/20
Weather: Clear 60° windy
Inspector: Neil Osborn

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed Product / Water
FAR10-5S	trace	17.06	9:55 11/18
FAR10-6S	—	9.17	10:00 11/18
FAR10-7S	—	17.20	10:05 11/18
GM-1SR	14.53	15.21	10:35 11/18 100 oz / 24 oz
GM-2S	16.50	16.91	10:45 11/18 12 oz / 5 oz
GM-3S	13.27	13.37	1010 11/18 6 oz / 6 oz
GM-6SR	—	13.94	9:50 11/18
GM-9	—	10.71	10:55 11/18
WRAOI16-02	22.76	22.41	1610 11/18 2 oz product / 0 water
WRAOI16-01	23.78	23.79	1600 11/18 1 oz / 0 oz

Former Augusta Refinery Monthly Site Inspection Form

Project # 63/0131 30-27A
Date : 11/23/20
Weather: 45°F Cloudy
Inspector: [signature]

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	OK being used by [illegible].
SWPP drainage and site ponding water check:	dry ponds down.
South Pond Info: 9.69	
North Pond info: 13.41' Lower Pond 9.97'	
Pump House check: East & West Pumps	East Pump is Pulled Ran + Greased west pump. 11:45
Flood corridor check:	Mowed last week
River Outfall check (Qtrly): (check valve annually)	North Pond is down ~1' from valve inlet
Fence and Gate Breech checks:	None Noted. Early Bird working on fence clips
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK mowed last week
Site mowing and growth check:	Site Mowed in last couple week.
River AOI Inspection:	Noted iron bacteria in Former Seep B, RVR AOI mowed last week, + trees cut out of RipRap.
Product Storage Unit Inspection:	OK
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101313D.27A
Date : 12/17/20 - 12/21/20
Weather: Warm
Inspector: D. Ceniti

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	–	17.63	
FAR10-6S	-	9.20	
FAR10-7S	-	13.70	
GM-1SR	15.10	15.45	Removed 16oz of product
GM-2S	17.20	17.40	Removed 6oz of product
GM-3S	13.45	13.50	Removed 4oz of product
GM-6SR	–	14.15	
GM-9	T	11.26	
WRAOI16-02	T	22.98	
WRAOI16-01	T	24.10	

APTIM

APTIM Wichita, Kansas
Site Visit Form

Project: Williams FAR	Project Number:
Task:	Personnel:
Methodology:	Equipment:
Weather: Cloud, 40°F	

Date(s): 12/11/2020

Time:	Notes:
10:30	On site to complete 63101 7100-2744
	NPDES Sampling, Site Inspection &
	and River surface water sampling
	63101 1702-1287,
	River stage @ 5.62' flow 64.4 cfs.
	Some noted iron ~~staining~~ bacteria at
	former seep B location.
	Ran and greased West lower pump
14:00	Off site

Name (Print): M. J Osborn Signature: [signature]
Name (Print): _____ Signature: _____

Former Augusta Refinery Monthly Site Inspection Form

Project # 63101310-22A
Date : 11/11/2020
Weather: Cloudy 40°F
Inspector: Phil Osborn

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	OK
Sign IN/OUT sheet Check:	O/C
SWPP drainage and site ponding water check:	Dry and recently Mowed
South Pond Info:	MW 9.75 126.98 = 121.23
North Pond Info:	MW 6.60 119.51 = 112.91
Pump House check: East & West Pumps	Ran + Greased West Pump. East Pump Pulled
Flood corridor check:	Recently Mowed, dry
River Outfall check (Qtrly): (check valve annually)	OK. open + closed value, Water more than 1' from inlet
Fence and Gate Breech checks:	None Noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Cap Recently mowed Looks Good
Site mowing and growth check:	Recently Completed Full Mowing
River AOI Inspection:	R.W Stage 5.62' Flow 64.4 cfs
Product Storage Unit Inspection:	OK
Other comments:	

Cincinnati, OH +1 513 733 5336 · Everett, WA +1 425 356 2600 · Fort Collins, CO +1 970 490 1511 · Holland, MI +1 616 399 6070 · Houston, TX +1 281 530 5656 · Middletown, PA +1 717 944 5541 · Spring City, PA +1 610 948 4903 · Salt Lake City, UT +1 801 266 7700 · South Charleston, WV +1 304 356 3168 · York, PA +1 717 505 5280

Chain of Custody Form

Page ____ of ____

COC ID: 232447

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	[illegible]	Project Name	[illegible]	A	[illegible]
Work Order		Project Number		B	[illegible]
Company Name	[illegible]	Bill To Company	[illegible]	C	[illegible]
Send Report To	[illegible]	Invoice Attn	AP	D	[illegible]
Address	[illegible]	Address	[illegible]	E	[illegible]
				F	
City/State/Zip	[illegible]	City/State/Zip	[illegible]	G	
Phone	[illegible]	Phone		H	
Fax		Fax		I	
e-Mail Address	[illegible]	e-Mail Address	[illegible]	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Farmer Seep 7	12/11	[illegible]	W		7	3	2									
2	Farmer Seep 8	12/11	1245	W		7	3	2									
3	Up Gradient	12/11	[illegible]	W		7	3	2									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: [illegible signature]

Shipment Method: [illegible]

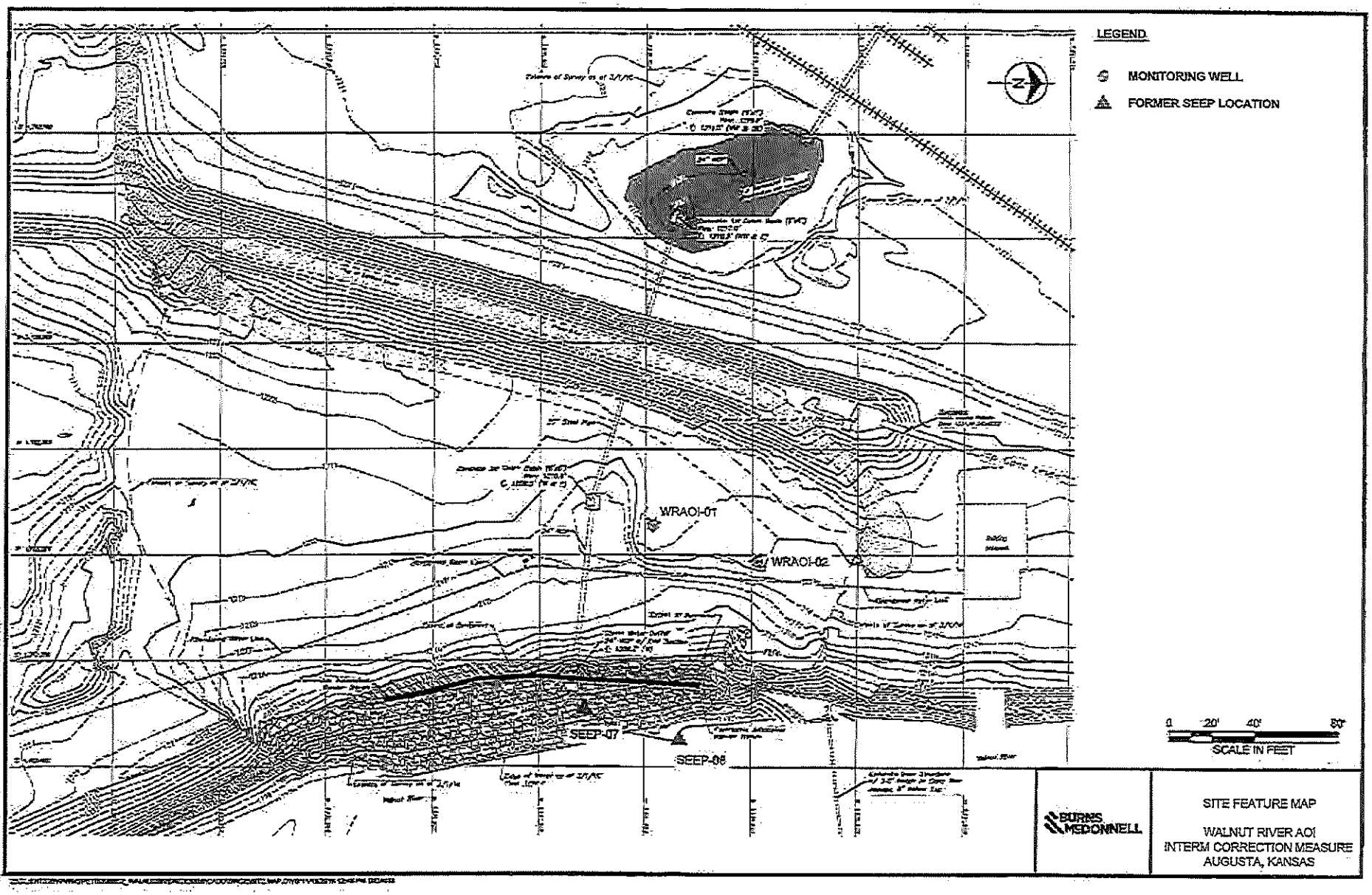
Required Turnaround Time: (Check Box) [illegible]

Results Due Date:

Relinquished by: [illegible]	Date: 12/11/[illegible]	Time: [illegible]	Received by: [illegible]	Notes: [illegible]
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp. / QC Package: (Check One Box Below)
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.


LEGEND
MONITORING WELL
FORMER SEEP LOCATION
WRAOI-01
WRAOI-02
SEEP-07
SEEP-08
0
20'
40'
80'
SCALE IN FEET
BURNS MCDONNELL
SITE FEATURE MAP
WALNUT RIVER AOI
INTERIM CORRECTION MEASURE
AUGUSTA, KANSAS

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 06, 2021

Phil Osborn
Aptim Environmental & Infrastructure
2872 N Ridge Rd, Suite 102B
Wichita, KS 67205

Work Order: **HS20061183**

Laboratory Results for: **William FAR Surface Water**

Dear Phil Osborn,

ALS Environmental received 4 sample(s) on Jun 23, 2020 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: RJ.MODASHIA
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Work Order: HS20061183

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20061183-01	Former Seep 7	Water		22-Jun-2020 11:45	23-Jun-2020 09:30	☐
HS20061183-02	Former Seep 8	Water		22-Jun-2020 12:00	23-Jun-2020 09:30	☐
HS20061183-03	Upstream	Water		22-Jun-2020 12:15	23-Jun-2020 09:30	☐
HS20061183-04	Trip Blank	Water	CG-060320-58	22-Jun-2020 00:00	23-Jun-2020 09:30	☐

Client: Aptim Environmental & Infrastructure **CASE NARRATIVE**
Project: William FAR Surface Water
Work Order: HS20061183

Work Order Comments

- REV01: Revised to update the 8270 SVOC compound list.

GCMS Semivolatiles by Method SW8270

Batch ID: 154823

Sample ID: LCSD-154823

- The RPD between the LCS and LCSD was outside of the control limit.

GCMS Volatiles by Method SW8260

Batch ID: R364473

Sample ID: Former Seep 7(HS20061183-01MS)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD may be due to sample matrix interference.

Metals by Method M2340 B

Batch ID: R364716

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470

Batch ID: 155145,155168

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 154920

Sample ID: HS20061133-61MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 154924

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 7
Collection Date: 22-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
Acetone		U	0.0020	0.0020	mg/L	1	02-Jul-2020 15:31
Benzene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
Carbon disulfide		U	0.00060	0.0020	mg/L	1	02-Jul-2020 15:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 15:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 15:31
m,p-Xylene		U	0.00050	0.0020	mg/L	1	02-Jul-2020 15:31
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jul-2020 15:31
o-Xylene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 15:31
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 15:31
Toluene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
Vinyl chloride		U	0.00020	0.0010	mg/L	1	02-Jul-2020 15:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jul-2020 15:31
Surr: 1,2-Dichloroethane-d4	*76.7*			*70-126*	*%REC*	*1*	*02-Jul-2020 15:31*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*02-Jul-2020 15:31*
Surr: Dibromofluoromethane	*85.1*			*77-123*	*%REC*	*1*	*02-Jul-2020 15:31*
Surr: Toluene-d8	*109*			*82-127*	*%REC*	*1*	*02-Jul-2020 15:31*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jun-2020		Analyst: GEY
2-Methylnaphthalene		U	0.019	0.10	ug/L	1	07-Jul-2020 14:53
Benzoic acid		U	0.022	0.20	ug/L	1	07-Jul-2020 14:53
Bis(2-ethylhexyl)phthalate		U	0.037	0.20	ug/L	1	07-Jul-2020 14:53
Chrysene		U	0.021	0.10	ug/L	1	07-Jul-2020 14:53
Naphthalene		U	0.020	0.10	ug/L	1	07-Jul-2020 14:53
Pentachlorophenol		U	0.079	0.20	ug/L	1	07-Jul-2020 14:53
Phenanthrene		U	0.021	0.10	ug/L	1	07-Jul-2020 14:53
Pyrene		U	0.019	0.10	ug/L	1	07-Jul-2020 14:53
Surr: 2,4,6-Tribromophenol	*37.5*			*34-129*	*%REC*	*1*	*07-Jul-2020 14:53*
Surr: 2-Fluorobiphenyl	*44.4*			*40-125*	*%REC*	*1*	*07-Jul-2020 14:53*
Surr: 2-Fluorophenol	*33.1*			*20-120*	*%REC*	*1*	*07-Jul-2020 14:53*
Surr: 4-Terphenyl-d14	*47.3*			*40-135*	*%REC*	*1*	*07-Jul-2020 14:53*
Surr: Nitrobenzene-d5	*46.9*			*41-120*	*%REC*	*1*	*07-Jul-2020 14:53*
Surr: Phenol-d6	*34.0*			*20-120*	*%REC*	*1*	*07-Jul-2020 14:53*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: JHD
Hardness (As CaCO3)	**238**		**2.00**	**2.00**	**mg/L**	1	08-Jul-2020 13:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 7
Collection Date: 22-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Arsenic	**0.00235**		**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 22:27
Barium	**0.159**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 22:27
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:27
Calcium	**74.1**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:27
Chromium	**0.000437**	J	**0.000400**	**0.00400**	**mg/L**	1	29-Jun-2020 22:27
Lead	**0.000652**	J	**0.000600**	**0.00200**	**mg/L**	1	29-Jun-2020 22:27
Magnesium	**12.8**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 22:27
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 22:27
Silver	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:27
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 27-Jun-2020		Analyst: JC
Arsenic	**2.23**		**0.400**	**2.00**	**ug/L**	1	30-Jun-2020 15:15
Barium	**161**		**1.90**	**4.00**	**ug/L**	1	30-Jun-2020 15:15
Cadmium	U		0.200	2.00	ug/L	1	30-Jun-2020 15:15
Chromium	U		0.400	4.00	ug/L	1	30-Jun-2020 15:15
Lead	U		0.600	2.00	ug/L	1	30-Jun-2020 15:15
Selenium	**1.31**	J	**1.10**	**2.00**	**ug/L**	1	30-Jun-2020 15:15
Silver	U		0.200	2.00	ug/L	1	30-Jun-2020 15:15
MERCURY BY SW7470A	**Method:SW7470**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	06-Jul-2020 18:17
DISSOLVED MERCURY BY SW7470A	**Method:SW7470 (dissolved)**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0300	0.200	ug/L	1	06-Jul-2020 16:15

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision: 1**

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 8
Collection Date: 22-Jun-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
Acetone		U	0.0020	0.0020	mg/L	1	02-Jul-2020 18:43
Benzene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
Carbon disulfide		U	0.00060	0.0020	mg/L	1	02-Jul-2020 18:43
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 18:43
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 18:43
m,p-Xylene		U	0.00050	0.0020	mg/L	1	02-Jul-2020 18:43
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jul-2020 18:43
o-Xylene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 18:43
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 18:43
Toluene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
Vinyl chloride		U	0.00020	0.0010	mg/L	1	02-Jul-2020 18:43
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jul-2020 18:43
Surr: 1,2-Dichloroethane-d4	*74.8*			*70-126*	*%REC*	*1*	*02-Jul-2020 18:43*
Surr: 4-Bromofluorobenzene	*97.9*			*81-113*	*%REC*	*1*	*02-Jul-2020 18:43*
Surr: Dibromofluoromethane	*83.1*			*77-123*	*%REC*	*1*	*02-Jul-2020 18:43*
Surr: Toluene-d8	*108*			*82-127*	*%REC*	*1*	*02-Jul-2020 18:43*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jun-2020		Analyst: GEY
2-Methylnaphthalene		U	0.019	0.10	ug/L	1	07-Jul-2020 15:12
Benzoic acid		U	0.022	0.20	ug/L	1	07-Jul-2020 15:12
Bis(2-ethylhexyl)phthalate		U	0.037	0.20	ug/L	1	07-Jul-2020 15:12
Chrysene		U	0.021	0.10	ug/L	1	07-Jul-2020 15:12
Naphthalene		U	0.020	0.10	ug/L	1	07-Jul-2020 15:12
Pentachlorophenol		U	0.079	0.20	ug/L	1	07-Jul-2020 15:12
Phenanthrene		U	0.021	0.10	ug/L	1	07-Jul-2020 15:12
Pyrene		U	0.019	0.10	ug/L	1	07-Jul-2020 15:12
Surr: 2,4,6-Tribromophenol	*34.9*			*34-129*	*%REC*	*1*	*07-Jul-2020 15:12*
Surr: 2-Fluorobiphenyl	*48.6*			*40-125*	*%REC*	*1*	*07-Jul-2020 15:12*
Surr: 2-Fluorophenol	*50.2*			*20-120*	*%REC*	*1*	*07-Jul-2020 15:12*
Surr: 4-Terphenyl-d14	*53.5*			*40-135*	*%REC*	*1*	*07-Jul-2020 15:12*
Surr: Nitrobenzene-d5	*65.3*			*41-120*	*%REC*	*1*	*07-Jul-2020 15:12*
Surr: Phenol-d6	*70.6*			*20-120*	*%REC*	*1*	*07-Jul-2020 15:12*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: JHD
Hardness (As CaCO3)	**215**		**2.00**	**2.00**	**mg/L**	1	08-Jul-2020 13:51

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision: 1**

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 8
Collection Date: 22-Jun-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Arsenic	**0.00209**		**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 22:29
Barium	**0.143**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 22:29
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:29
Calcium	**67.1**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:29
Chromium	**0.000417**	J	**0.000400**	**0.00400**	**mg/L**	1	29-Jun-2020 22:29
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 22:29
Magnesium	**11.5**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 22:29
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 22:29
Silver	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:29
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 27-Jun-2020		Analyst: JC
Arsenic	**2.06**		**0.400**	**2.00**	**ug/L**	1	30-Jun-2020 15:17
Barium	**148**		**1.90**	**4.00**	**ug/L**	1	30-Jun-2020 15:17
Cadmium	U		0.200	2.00	ug/L	1	30-Jun-2020 15:17
Chromium	U		0.400	4.00	ug/L	1	30-Jun-2020 15:17
Lead	U		0.600	2.00	ug/L	1	30-Jun-2020 15:17
Selenium	**1.11**	J	**1.10**	**2.00**	**ug/L**	1	30-Jun-2020 15:17
Silver	U		0.200	2.00	ug/L	1	30-Jun-2020 15:17
MERCURY BY SW7470A	**Method:SW7470**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	06-Jul-2020 18:19
DISSOLVED MERCURY BY SW7470A	**Method:SW7470 (dissolved)**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0300	0.200	ug/L	1	06-Jul-2020 16:28

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision: 1**

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Upstream
Collection Date: 22-Jun-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
Acetone		U	0.0020	0.0020	mg/L	1	02-Jul-2020 19:07
Benzene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
Carbon disulfide		U	0.00060	0.0020	mg/L	1	02-Jul-2020 19:07
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:07
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:07
m,p-Xylene		U	0.00050	0.0020	mg/L	1	02-Jul-2020 19:07
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jul-2020 19:07
o-Xylene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:07
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:07
Toluene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
Vinyl chloride		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:07
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:07
Surr: 1,2-Dichloroethane-d4	*76.8*			*70-126*	*%REC*	*1*	*02-Jul-2020 19:07*
Surr: 4-Bromofluorobenzene	*97.5*			*81-113*	*%REC*	*1*	*02-Jul-2020 19:07*
Surr: Dibromofluoromethane	*85.5*			*77-123*	*%REC*	*1*	*02-Jul-2020 19:07*
Surr: Toluene-d8	*110*			*82-127*	*%REC*	*1*	*02-Jul-2020 19:07*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 25-Jun-2020		Analyst: GEY
2-Methylnaphthalene		U	0.019	0.10	ug/L	1	07-Jul-2020 15:32
Benzoic acid		U	0.022	0.20	ug/L	1	07-Jul-2020 15:32
Bis(2-ethylhexyl)phthalate		U	0.037	0.20	ug/L	1	07-Jul-2020 15:32
Chrysene		U	0.021	0.10	ug/L	1	07-Jul-2020 15:32
Naphthalene		U	0.020	0.10	ug/L	1	07-Jul-2020 15:32
Pentachlorophenol		U	0.079	0.20	ug/L	1	07-Jul-2020 15:32
Phenanthrene		U	0.021	0.10	ug/L	1	07-Jul-2020 15:32
Pyrene		U	0.019	0.10	ug/L	1	07-Jul-2020 15:32
Surr: 2,4,6-Tribromophenol	*41.9*			*34-129*	*%REC*	*1*	*07-Jul-2020 15:32*
Surr: 2-Fluorobiphenyl	*44.3*			*40-125*	*%REC*	*1*	*07-Jul-2020 15:32*
Surr: 2-Fluorophenol	*63.6*			*20-120*	*%REC*	*1*	*07-Jul-2020 15:32*
Surr: 4-Terphenyl-d14	*47.7*			*40-135*	*%REC*	*1*	*07-Jul-2020 15:32*
Surr: Nitrobenzene-d5	*43.3*			*41-120*	*%REC*	*1*	*07-Jul-2020 15:32*
Surr: Phenol-d6	*71.6*			*20-120*	*%REC*	*1*	*07-Jul-2020 15:32*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: JHD
Hardness (As CaCO3)	**210**		**2.00**	**2.00**	**mg/L**	1	08-Jul-2020 13:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Upstream
Collection Date: 22-Jun-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Arsenic	**0.00187**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 22:31
Barium	**0.136**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 22:31
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:31
Calcium	**65.8**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:31
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 22:31
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 22:31
Magnesium	**11.2**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 22:31
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 22:31
Silver	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:31
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 27-Jun-2020		Analyst: JC
Arsenic	**2.29**		**0.400**	**2.00**	**ug/L**	1	30-Jun-2020 15:37
Barium	**155**		**1.90**	**4.00**	**ug/L**	1	30-Jun-2020 15:37
Cadmium	U		0.200	2.00	ug/L	1	30-Jun-2020 15:37
Chromium	U		0.400	4.00	ug/L	1	30-Jun-2020 15:37
Lead	**0.703**	J	**0.600**	**2.00**	**ug/L**	1	30-Jun-2020 15:37
Selenium	**1.25**	J	**1.10**	**2.00**	**ug/L**	1	30-Jun-2020 15:37
Silver	U		0.200	2.00	ug/L	1	30-Jun-2020 15:37
MERCURY BY SW7470A	**Method:SW7470**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	06-Jul-2020 18:21
DISSOLVED MERCURY BY SW7470A	**Method:SW7470 (dissolved)**				Prep:SW7470 / 06-Jul-2020		Analyst: FO
Mercury	U		0.0300	0.200	ug/L	1	06-Jul-2020 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Trip Blank
Collection Date: 22-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061183
Lab ID:HS20061183-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
Acetone		U	0.0020	0.0020	mg/L	1	02-Jul-2020 19:31
Benzene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
Carbon disulfide		U	0.00060	0.0020	mg/L	1	02-Jul-2020 19:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:31
m,p-Xylene		U	0.00050	0.0020	mg/L	1	02-Jul-2020 19:31
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jul-2020 19:31
o-Xylene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:31
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:31
Toluene		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
Vinyl chloride		U	0.00020	0.0010	mg/L	1	02-Jul-2020 19:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jul-2020 19:31
Surr: 1,2-Dichloroethane-d4	*75.5*			*70-126*	*%REC*	*1*	*02-Jul-2020 19:31*
Surr: 4-Bromofluorobenzene	*97.7*			*81-113*	*%REC*	*1*	*02-Jul-2020 19:31*
Surr: Dibromofluoromethane	*84.3*			*77-123*	*%REC*	*1*	*02-Jul-2020 19:31*
Surr: Toluene-d8	*111*			*82-127*	*%REC*	*1*	*02-Jul-2020 19:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Weight / Prep Log

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

Batch ID: 154823 **Start Date:** 25 Jun 2020 09:00 **End Date:** 25 Jun 2020 15:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061183-01	1	1000 (mL)	1 (mL)	0.001
HS20061183-02	1	1000 (mL)	1 (mL)	0.001
HS20061183-03	1	1000 (mL)	1 (mL)	0.001

Batch ID: 154920 **Start Date:** 27 Jun 2020 10:30 **End Date:** 27 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061183-01		10 (mL)	10 (mL)	1
HS20061183-02		10 (mL)	10 (mL)	1
HS20061183-03		10 (mL)	10 (mL)	1

Batch ID: 154924 **Start Date:** 29 Jun 2020 10:30 **End Date:** 29 Jun 2020 14:30
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061183-01		10 (mL)	10 (mL)	1
HS20061183-02		10 (mL)	10 (mL)	1
HS20061183-03		10 (mL)	10 (mL)	1

Batch ID: 155145 **Start Date:** 06 Jul 2020 10:00 **End Date:** 06 Jul 2020 12:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061183-01		10 (mL)	10 (mL)	1
HS20061183-02		10 (mL)	10 (mL)	1
HS20061183-03		10 (mL)	10 (mL)	1

Batch ID: 155168 **Start Date:** 06 Jul 2020 12:00 **End Date:** 06 Jul 2020 14:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061183-01		10 (mL)	10 (mL)	1
HS20061183-02		10 (mL)	10 (mL)	1
HS20061183-03		10 (mL)	10 (mL)	1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154823 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45		25 Jun 2020 09:00	07 Jul 2020 14:53	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00		25 Jun 2020 09:00	07 Jul 2020 15:12	1
HS20061183-03	Upstream	22 Jun 2020 12:15		25 Jun 2020 09:00	07 Jul 2020 15:32	1
Batch ID: 154920 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45		27 Jun 2020 14:30	29 Jun 2020 22:27	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00		27 Jun 2020 14:30	29 Jun 2020 22:29	1
HS20061183-03	Upstream	22 Jun 2020 12:15		27 Jun 2020 14:30	29 Jun 2020 22:31	1
Batch ID: 154924 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45		27 Jun 2020 14:30	30 Jun 2020 15:15	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00		27 Jun 2020 14:30	30 Jun 2020 15:17	1
HS20061183-03	Upstream	22 Jun 2020 12:15		27 Jun 2020 14:30	30 Jun 2020 15:37	1
Batch ID: 155145 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45		06 Jul 2020 10:00	06 Jul 2020 16:15	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00		06 Jul 2020 10:00	06 Jul 2020 16:28	1
HS20061183-03	Upstream	22 Jun 2020 12:15		06 Jul 2020 10:00	06 Jul 2020 16:30	1
Batch ID: 155168 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45		06 Jul 2020 12:00	06 Jul 2020 18:17	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00		06 Jul 2020 12:00	06 Jul 2020 18:19	1
HS20061183-03	Upstream	22 Jun 2020 12:15		06 Jul 2020 12:00	06 Jul 2020 18:21	1
Batch ID: R364473 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45			02 Jul 2020 15:31	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00			02 Jul 2020 18:43	1
HS20061183-03	Upstream	22 Jun 2020 12:15			02 Jul 2020 19:07	1
HS20061183-04	Trip Blank	22 Jun 2020 00:00			02 Jul 2020 19:31	1
Batch ID: R364716 (0)	**Test Name :** HARDNESS, TOTAL AS CACO3 BY SM2340B				**Matrix:** Water	
HS20061183-01	Former Seep 7	22 Jun 2020 11:45			08 Jul 2020 13:51	1
HS20061183-02	Former Seep 8	22 Jun 2020 12:00			08 Jul 2020 13:51	1
HS20061183-03	Upstream	22 Jun 2020 12:15			08 Jul 2020 13:51	1

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MBLK Sample ID: **MBLK-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:13**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642480** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Lead	U	0.00200								
Magnesium	0.01789	0.200								J
Selenium	U	0.00200								
Silver	U	0.00200								

LCS Sample ID: **LCS-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:15**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642481** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04854	0.00200	0.05	0	97.1	80 - 120				
Barium	0.0511	0.00400	0.05	0	102	80 - 120				
Cadmium	0.05065	0.00200	0.05	0	101	80 - 120				
Calcium	4.743	0.500	5	0	94.9	80 - 120				
Chromium	0.04832	0.00400	0.05	0	96.6	80 - 120				
Lead	0.04879	0.00200	0.05	0	97.6	80 - 120				
Magnesium	4.922	0.200	5	0	98.4	80 - 120				
Selenium	0.04639	0.00200	0.05	0	92.8	80 - 120				
Silver	0.04894	0.00200	0.05	0	97.9	80 - 120				

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MS Sample ID: **HS20061133-61MS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:21**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642484** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0477	0.00200	0.05	0.001541	92.3	80 - 120				
Barium	0.243	0.00400	0.05	0.1978	90.3	80 - 120				
Cadmium	0.04533	0.00200	0.05	0	90.7	80 - 120				
Calcium	751.8	0.500	5	776.7	-497	80 - 120				SEO
Chromium	0.04584	0.00400	0.05	0	91.7	80 - 120				
Lead	0.04731	0.00200	0.05	0	94.6	80 - 120				
Magnesium	131.1	0.200	5	131.1	-1.07	80 - 120				SO
Selenium	0.04856	0.00200	0.05	0.00525	86.6	80 - 120				
Silver	0.04354	0.00200	0.05	0	87.1	80 - 120				

MSD Sample ID: **HS20061133-61MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:23**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642485** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05076	0.00200	0.05	0.001541	98.4	80 - 120	0.0477	6.21	20	
Barium	0.2587	0.00400	0.05	0.1978	122	80 - 120	0.243	6.26	20	S
Cadmium	0.04801	0.00200	0.05	0	96.0	80 - 120	0.04533	5.74	20	
Calcium	816.2	0.500	5	776.7	791	80 - 120	751.8	8.21	20	SEO
Chromium	0.04862	0.00400	0.05	0	97.2	80 - 120	0.04584	5.89	20	
Lead	0.05032	0.00200	0.05	0	101	80 - 120	0.04731	6.17	20	
Magnesium	141.2	0.200	5	131.1	200	80 - 120	131.1	7.4	20	SO
Selenium	0.05261	0.00200	0.05	0.00525	94.7	80 - 120	0.04856	8.01	20	
Silver	0.04543	0.00200	0.05	0	90.9	80 - 120	0.04354	4.23	20	

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:25**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642486** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09505	0.00200	0.1	0.001541	93.5	75 - 125				
Barium	0.2904	0.00400	0.1	0.1978	92.6	75 - 125				
Cadmium	0.09022	0.00200	0.1	0.000098	90.1	75 - 125				
Chromium	0.09176	0.00400	0.1	0.000216	91.5	75 - 125				
Lead	0.09731	0.00200	0.1	0.000268	97.0	75 - 125				
Magnesium	133.7	0.200	10	131.1	25.2	75 - 125				SO
Selenium	0.09348	0.00200	0.1	0.00525	88.2	75 - 125				
Silver	0.09144	0.00200	0.1	0.000018	91.4	75 - 125				

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 14:23**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644557** PrepDate: **27-Jun-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	737.7	5.00	10	768	-303	75 - 125				SO

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:19**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642483** PrepDate: **27-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.001541	0	10	
Barium	0.1976	0.0200					0.1978	0.0996	10	
Cadmium	U	0.0100					0.000098	0	10	
Chromium	U	0.0200					0.000216	0	10	
Lead	U	0.0100					0.000268	0	10	
Magnesium	132.3	1.00					131.1	0.906	10	
Selenium	0.006436	0.0100					0.00525	0	10	J
Silver	U	0.0100					0.000018	0	10	

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:21**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644556** PrepDate: **27-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	802.1	25.0					768	4.43	10	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154924 (0) **Instrument:** ICPMS04 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF2-154924** Units: **mg/L** Analysis Date: **30-Jun-2020 13:52**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644661** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Chromium	U	0.00400								
Lead	U	0.00200								
Selenium	U	0.00200								
Silver	U	0.00200								

MBLK Sample ID: **MBLKF3-154924** Units: **mg/L** Analysis Date: **30-Jun-2020 13:54**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644662** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Chromium	U	0.00400								
Lead	U	0.00200								
Selenium	U	0.00200								
Silver	U	0.00200								

MBLK Sample ID: **MBLKF1-154924** Units: **mg/L** Analysis Date: **30-Jun-2020 13:50**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644660** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	0.02284	0.00400								
Cadmium	U	0.00200								
Chromium	U	0.00400								
Lead	U	0.00200								
Selenium	U	0.00200								
Silver	U	0.00200								

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154924 (0) **Instrument:** ICPMS04 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-154924** Units: **mg/L** Analysis Date: **30-Jun-2020 13:48**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644659** PrepDate: **27-Jun-2020** DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Chromium	U	0.00400								
Lead	U	0.00200								
Selenium	U	0.00200								
Silver	U	0.00200								

LCS Sample ID: **LCS-154924** Units: **mg/L** Analysis Date: **30-Jun-2020 13:56**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644663** PrepDate: **27-Jun-2020** DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05157	0.00200	0.05	0	103	80 - 120				
Barium	0.05103	0.00400	0.05	0	102	80 - 120				
Cadmium	0.05221	0.00200	0.05	0	104	80 - 120				
Chromium	0.04996	0.00400	0.05	0	99.9	80 - 120				
Lead	0.05069	0.00200	0.05	0	101	80 - 120				
Selenium	0.05207	0.00200	0.05	0	104	80 - 120				
Silver	0.05066	0.00200	0.05	0	101	80 - 120				

MS Sample ID: **HS20061290-02MS** Units: **mg/L** Analysis Date: **30-Jun-2020 14:13**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644670** PrepDate: **27-Jun-2020** DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05351	0.00200	0.05	0.002335	102	75 - 125				
Barium	0.103	0.00400	0.05	0.05557	94.9	75 - 125				
Cadmium	0.04719	0.00200	0.05	0.000518	93.4	75 - 125				
Chromium	0.04746	0.00400	0.05	0.000118	94.7	75 - 125				
Lead	0.04904	0.00200	0.05	0.000137	97.8	75 - 125				
Selenium	0.05689	0.00200	0.05	0.002907	108	75 - 125				
Silver	0.04417	0.00200	0.05	0.000014	88.3	75 - 125				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154924 (0) **Instrument:** ICPMS04 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS20061290-02MSD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:15**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644671** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0524	0.00200	0.05	0.002335	100	75 - 125	0.05351	2.1	20	
Barium	0.1001	0.00400	0.05	0.05557	89.0	75 - 125	0.103	2.92	20	
Cadmium	0.04636	0.00200	0.05	0.000518	91.7	75 - 125	0.04719	1.79	20	
Chromium	0.04635	0.00400	0.05	0.000118	92.5	75 - 125	0.04746	2.38	20	
Lead	0.04787	0.00200	0.05	0.000137	95.5	75 - 125	0.04904	2.42	20	
Selenium	0.0546	0.00200	0.05	0.002907	103	75 - 125	0.05689	4.12	20	
Silver	0.043	0.00200	0.05	0.000014	86.0	75 - 125	0.04417	2.67	20	

PDS Sample ID: **HS20061290-02PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 14:17**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644672** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1092	0.00200	0.1	0.002335	107	75 - 125				
Barium	0.1579	0.00400	0.1	0.05557	102	75 - 125				
Cadmium	0.09907	0.00200	0.1	0.000518	98.6	75 - 125				
Chromium	0.09921	0.00400	0.1	0.000118	99.1	75 - 125				
Lead	0.1039	0.00200	0.1	0.000137	104	75 - 125				
Selenium	0.1132	0.00200	0.1	0.002907	110	75 - 125				
Silver	0.0991	0.00200	0.1	0.000014	99.1	75 - 125				

SD Sample ID: **HS20061290-02SD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:11**
Client ID: Run ID: **ICPMS04_364240** SeqNo: **5644669** PrepDate: **27-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002384	0.0100					0.002335	0	10	J
Barium	0.05678	0.0200					0.05557	2.18	10	
Cadmium	U	0.0100					0.000518	0	10	
Chromium	U	0.0200					0.000118	0	10	
Lead	U	0.0100					0.000137	0	10	
Selenium	U	0.0100					0.002907	0	10	
Silver	U	0.0100					0.000014	0	10	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 155145 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLK-155145** Units: **mg/L** Analysis Date: **06-Jul-2020 16:11**
Client ID: Run ID: **HG03_364560** SeqNo: **5651532** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-155145** Units: **mg/L** Analysis Date: **06-Jul-2020 16:13**
Client ID: Run ID: **HG03_364560** SeqNo: **5651533** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0	100	80 - 120				

MS Sample ID: **HS20061183-01MS** Units: **mg/L** Analysis Date: **06-Jul-2020 16:16**
Client ID: **Former Seep 7** Run ID: **HG03_364560** SeqNo: **5651535** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00508	0.000200	0.005	0.000011	101	80 - 120				

MSD Sample ID: **HS20061183-01MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 16:18**
Client ID: **Former Seep 7** Run ID: **HG03_364560** SeqNo: **5651536** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00509	0.000200	0.005	0.000011	102	80 - 120	0.00508	0.197	20	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 155168 (0) **Instrument:** HG03 **Method:** MERCURY BY SW7470A

MBLK Sample ID: **MBLK-155168** Units: **mg/L** Analysis Date: **06-Jul-2020 18:28**
Client ID: Run ID: **HG03_364560** SeqNo: **5651909** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-155168** Units: **mg/L** Analysis Date: **06-Jul-2020 18:29**
Client ID: Run ID: **HG03_364560** SeqNo: **5651910** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0	100	80 - 120				

MS Sample ID: **HS20061382-01MS** Units: **mg/L** Analysis Date: **06-Jul-2020 18:33**
Client ID: Run ID: **HG03_364560** SeqNo: **5651912** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.000200	0.005	0.000012	100	75 - 125				

MSD Sample ID: **HS20061382-01MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 18:34**
Client ID: Run ID: **HG03_364560** SeqNo: **5651913** PrepDate: **06-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00499	0.000200	0.005	0.000012	99.6	75 - 125	0.00502	0.599	20	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154823 (0) **Instrument:** SV-7 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D

MBLK Sample ID: **MBLK-154823** Units: **ug/L** Analysis Date: **26-Jun-2020 10:45**
Client ID: Run ID: **SV-7_364025** SeqNo: **5638562** PrepDate: **25-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	U	0.10								
Benzoic acid	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Naphthalene	U	0.10								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.721*	*0.20*	*5*	*0*	*74.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.131*	*0.20*	*5*	*0*	*62.6*	*40 - 125*				
Surr: 2-Fluorophenol	*2.968*	*0.20*	*5*	*0*	*59.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.802*	*0.20*	*5*	*0*	*76.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.871*	*0.20*	*5*	*0*	*57.4*	*41 - 120*				
Surr: Phenol-d6	*3.556*	*0.20*	*5*	*0*	*71.1*	*20 - 120*				

LCS Sample ID: **LCS-154823** Units: **ug/L** Analysis Date: **26-Jun-2020 11:04**
Client ID: Run ID: **SV-7_364025** SeqNo: **5638563** PrepDate: **25-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	2.925	0.10	5	0	58.5	50 - 120				
Benzoic acid	4.015	0.20	5	0	80.3	10 - 110				
Bis(2-ethylhexyl)phthalate	4.152	0.20	5	0	83.0	40 - 139				
Chrysene	3.016	0.10	5	0	60.3	43 - 120				
Naphthalene	2.821	0.10	5	0	56.4	45 - 120				
Pentachlorophenol	2.835	0.20	5	0	56.7	19 - 121				
Phenanthrene	3.419	0.10	5	0	68.4	45 - 121				
Pyrene	3.192	0.10	5	0	63.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.285*	*0.20*	*5*	*0*	*65.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.519*	*0.20*	*5*	*0*	*50.4*	*40 - 125*				
Surr: 2-Fluorophenol	*2.464*	*0.20*	*5*	*0*	*49.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*2.944*	*0.20*	*5*	*0*	*58.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.018*	*0.20*	*5*	*0*	*60.4*	*41 - 120*				
Surr: Phenol-d6	*3.131*	*0.20*	*5*	*0*	*62.6*	*20 - 120*				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: 154823 (0) **Instrument:** SV-7 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D

LCSD Sample ID: LCSD-154823 Units: ug/L Analysis Date: 26-Jun-2020 11:24
Client ID: Run ID: SV-7_364025 SeqNo: 5638564 PrepDate: 25-Jun-2020 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	3.508	0.10	5	0	70.2	50 - 120	2.925	18.1	20	
Benzoic acid	3.976	0.20	5	0	79.5	10 - 110	4.015	0.958	20	
Bis(2-ethylhexyl)phthalate	4.017	0.20	5	0	80.3	40 - 139	4.152	3.29	20	
Chrysene	3.395	0.10	5	0	67.9	43 - 120	3.016	11.8	20	
Naphthalene	3.183	0.10	5	0	63.7	45 - 120	2.821	12.1	20	
Pentachlorophenol	3.285	0.20	5	0	65.7	19 - 121	2.835	14.7	20	
Phenanthrene	3.486	0.10	5	0	69.7	45 - 121	3.419	1.95	20	
Pyrene	3.521	0.10	5	0	70.4	40 - 130	3.192	9.81	20	
Surr: 2,4,6-Tribromophenol	*3.751*	*0.20*	*5*	*0*	*75.0*	*34 - 129*	*3.285*	*13.2*	*20*	
Surr: 2-Fluorobiphenyl	*3.095*	*0.20*	*5*	*0*	*61.9*	*40 - 125*	*2.519*	*20.5*	*20*	R
Surr: 2-Fluorophenol	*2.856*	*0.20*	*5*	*0*	*57.1*	*20 - 120*	*2.464*	*14.8*	*20*	
Surr: 4-Terphenyl-d14	*3.378*	*0.20*	*5*	*0*	*67.6*	*40 - 135*	*2.944*	*13.7*	*20*	
Surr: Nitrobenzene-d5	*3.102*	*0.20*	*5*	*0*	*62.0*	*41 - 120*	*3.018*	*2.73*	*20*	
Surr: Phenol-d6	*3.567*	*0.20*	*5*	*0*	*71.3*	*20 - 120*	*3.131*	*13*	*20*	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: R364473 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-200702** Units: **ug/L** Analysis Date: **02-Jul-2020 13:55**
Client ID: Run ID: **VOA6_364473** SeqNo: **5649666** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
Acetone	U	2.0								
Benzene	U	1.0								
Carbon disulfide	U	2.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
Methyl tert-butyl ether	U	1.0								
Methylene chloride	U	2.0								
o-Xylene	U	1.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*39*	*1.0*	*50*	*0*	*78.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.65*	*1.0*	*50*	*0*	*95.3*	*82 - 115*				
Surr: Dibromofluoromethane	*43.01*	*1.0*	*50*	*0*	*86.0*	*73 - 126*				
Surr: Toluene-d8	*54.75*	*1.0*	*50*	*0*	*109*	*81 - 120*				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: R364473 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

LCS Sample ID: **VLCSW-200702** Units: **ug/L** Analysis Date: **02-Jul-2020 13:07**
Client ID: Run ID: **VOA6_364473** SeqNo: **5649665** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	18.53	1.0	20	0	92.7	70 - 130				
1,1-Dichloroethane	18.06	1.0	20	0	90.3	71 - 122				
1,1-Dichloroethene	15.76	1.0	20	0	78.8	70 - 130				
Acetone	47.63	2.0	40	0	119	70 - 130				
Benzene	19.47	1.0	20	0	97.4	74 - 120				
Carbon disulfide	30.48	2.0	40	0	76.2	70 - 130				
Chlorobenzene	19.22	1.0	20	0	96.1	76 - 113				
Ethylbenzene	18.81	1.0	20	0	94.1	77 - 117				
m,p-Xylene	38.58	2.0	40	0	96.4	77 - 122				
Methyl tert-butyl ether	19.48	1.0	20	0	97.4	70 - 130				
Methylene chloride	16.85	2.0	20	0	84.3	70 - 127				
o-Xylene	19.53	1.0	20	0	97.7	75 - 119				
Tetrachloroethene	19.38	1.0	20	0	96.9	76 - 119				
Toluene	19.45	1.0	20	0	97.3	77 - 118				
Vinyl chloride	16.13	1.0	20	0	80.7	70 - 130				
Xylenes, Total	58.11	1.0	60	0	96.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.14*	*1.0*	*50*	*0*	*96.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*46.44*	*1.0*	*50*	*0*	*92.9*	*82 - 115*				
Surr: Dibromofluoromethane	*47.14*	*1.0*	*50*	*0*	*94.3*	*73 - 126*				
Surr: Toluene-d8	*48.14*	*1.0*	*50*	*0*	*96.3*	*81 - 120*				

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: R364473 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS20061183-01MS** Units: **ug/L** Analysis Date: **02-Jul-2020 17:31**
Client ID: **Former Seep 7** Run ID: **VOA6_364473** SeqNo: **5649675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1-Trichloroethane	17.23	1.0	20	0	86.2	70 - 130				
1,1-Dichloroethane	16.16	1.0	20	0	80.8	70 - 127				
1,1-Dichloroethene	14.61	1.0	20	0	73.0	70 - 130				
Acetone	26.05	2.0	40	0	65.1	70 - 130				S
Benzene	18.9	1.0	20	0	94.5	70 - 127				
Carbon disulfide	28.06	2.0	40	0	70.1	70 - 130				
Chlorobenzene	19.86	1.0	20	0	99.3	70 - 114				
Ethylbenzene	20.38	1.0	20	0	102	70 - 124				
m,p-Xylene	41.56	2.0	40	0	104	70 - 130				
Methyl tert-butyl ether	17.59	1.0	20	0	87.9	70 - 130				
Methylene chloride	15.02	2.0	20	0	75.1	70 - 128				
o-Xylene	20.59	1.0	20	0	103	70 - 124				
Tetrachloroethene	21.37	1.0	20	0	107	70 - 130				
Toluene	20.48	1.0	20	0	102	70 - 123				
Vinyl chloride	13.88	1.0	20	0	69.4	70 - 130				S
Xylenes, Total	62.15	1.0	60	0	104	70 - 130				
Surr: 1,2-Dichloroethane-d4	*37.77*	*1.0*	*50*	*0*	*75.5*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.76*	*1.0*	*50*	*0*	*95.5*	*81 - 113*				
Surr: Dibromofluoromethane	*42.71*	*1.0*	*50*	*0*	*85.4*	*77 - 123*				
Surr: Toluene-d8	*54.94*	*1.0*	*50*	*0*	*110*	*82 - 127*				

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QC BATCH REPORT

Batch ID: R364473 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS20061183-01MSD** Units: **ug/L** Analysis Date: **02-Jul-2020 17:55**
Client ID: **Former Seep 7** Run ID: **VOA6_364473** SeqNo: **5649676** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	18.08	1.0	20	0	90.4	70 - 130	17.23	4.8	20	
1,1-Dichloroethane	16.21	1.0	20	0	81.1	70 - 127	16.16	0.314	20	
1,1-Dichloroethene	16.19	1.0	20	0	81.0	70 - 130	14.61	10.3	20	
Acetone	28.5	2.0	40	0	71.2	70 - 130	26.05	8.98	20	
Benzene	18.97	1.0	20	0	94.8	70 - 127	18.9	0.328	20	
Carbon disulfide	33.75	2.0	40	0	84.4	70 - 130	28.06	18.4	20	
Chlorobenzene	20.02	1.0	20	0	100	70 - 114	19.86	0.801	20	
Ethylbenzene	20.64	1.0	20	0	103	70 - 124	20.38	1.24	20	
m,p-Xylene	42.71	2.0	40	0	107	70 - 130	41.56	2.73	20	
Methyl tert-butyl ether	17.26	1.0	20	0	86.3	70 - 130	17.59	1.88	20	
Methylene chloride	14.8	2.0	20	0	74.0	70 - 128	15.02	1.44	20	
o-Xylene	20.7	1.0	20	0	104	70 - 124	20.59	0.57	20	
Tetrachloroethene	22.7	1.0	20	0	113	70 - 130	21.37	6	20	
Toluene	20.75	1.0	20	0	104	70 - 123	20.48	1.29	20	
Vinyl chloride	13.9	1.0	20	0	69.5	70 - 130	13.88	0.15	20	S
Xylenes, Total	63.41	1.0	60	0	106	70 - 130	62.15	2.02	20	
Surr: 1,2-Dichloroethane-d4	*39.24*	*1.0*	*50*	*0*	*78.5*	*70 - 126*	*37.77*	*3.82*	*20*	
Surr: 4-Bromofluorobenzene	*47.62*	*1.0*	*50*	*0*	*95.2*	*81 - 113*	*47.76*	*0.303*	*20*	
Surr: Dibromofluoromethane	*42.16*	*1.0*	*50*	*0*	*84.3*	*77 - 123*	*42.71*	*1.29*	*20*	
Surr: Toluene-d8	*53.99*	*1.0*	*50*	*0*	*108*	*82 - 127*	*54.94*	*1.75*	*20*	

The following samples were analyzed in this batch: HS20061183-01 HS20061183-02 HS20061183-03 HS20061183-04

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20061183

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20061183 **Date/Time Received:** 23-Jun-2020 09:30

Client Name: CBI-Wichita **Received by:** Jared R. Makan

Completed By: */S/ Nilesh D. Ranchod* 24-Jun-2020 18:02 **Reviewed by:** */S/ RJ Modashia* 25-Jun-2020 14:48

eSignature Date/Time eSignature Date/Time

Matrices: **Water** Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:218947
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2C UC/C	IR # 25	
Cooler(s)/Kit(s):	46129		
Date/Time sample(s) sent to storage:	06/24/2020 19:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 218947

HS20061183

Aptim Environmental & Infrastructure

William FAR Surface Water

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	213809 OS	Project Name	William FAR Surface Water	A	8260_LL_W (VOC 8260 Select List)
Work Order		Project Number	631011702	B	8270_LOW_W (Williams FAR sel list)
Company Name	Aptim Environmental & Infrastruct	Bill To Company	Aptim Environmental and Infrastru	C	ICP_DISS (RCRA 8 Metals (Add Hg))
Send Report To	Phil Osborn	Invoice Attn	AP	D	ICP_TW (RCRA 8 Metals (Add Hg))
Address	2872 N Ridge Rd, Suite 102B	Address	7330 W 33rd St. North Suite 106	E	HARD (Add Ca and Mg)
				F	
City/State/Zip	Wichita, KS 67205	City/State/Zip	Wichita KS 67205	G	
Phone	(316) 220-8020	Phone		H	
Fax		Fax		I	
e-Mail Address	phil.osborn@aptim.com	e-Mail Address	accountspayable@aptim.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Former Seep 7	6/22/20	1145	W	1,2,8	7	X	X	X	X	X						
2	Former Seep 8	6/22/20	1200	"	"	7	X	X	X	X	X						
3	Upstream	6/22/20	1215	"	"	7	X	X	X	X	X						
4	Trip Blank					2	X										
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Craig Taylor

Shipment Method: Fedex

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	6/22/20	1700	Fedex
Relinquished by:	Date:	Time:	Received by (Laboratory):
	6/23/20	09:30	J. Hannah
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: CBI William FAR

Cooler ID	Cooler Temp.
46129	1.2°C

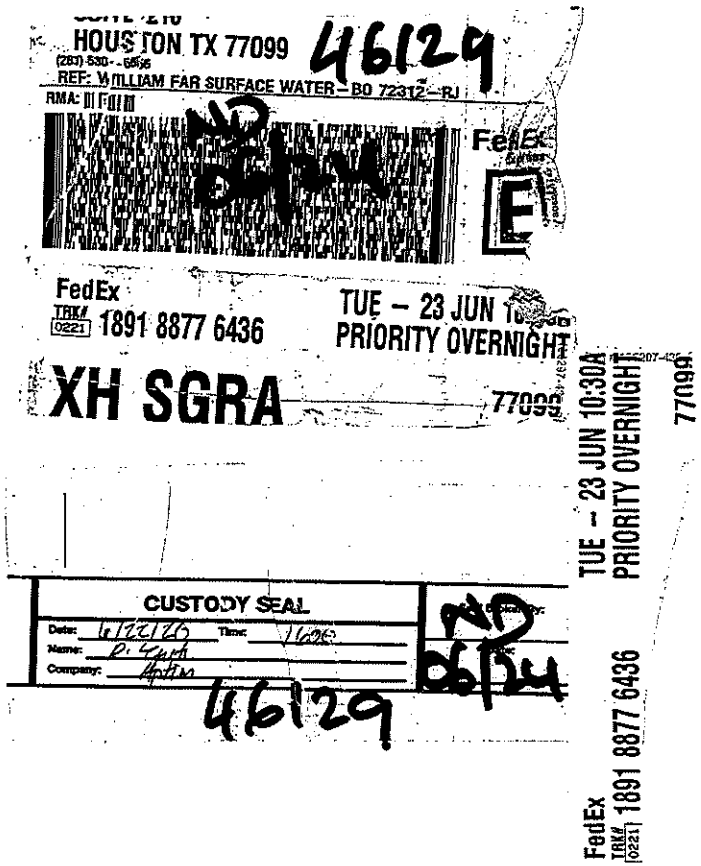
QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [X] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] TRRP Checklist
- [ ] TRRP Level IV
- [ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

1425 450.0

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed.



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 06, 2021

Phil Osborn
Aptim Environmental & Infrastructure
2872 N Ridge Rd, Suite 102B
Wichita, KS 67205

Work Order: **HS20120645**

Laboratory Results for: **William FAR Surface Water**

Dear Phil Osborn,

ALS Environmental received 4 sample(s) on Dec 12, 2020 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: RJ.MODASHIA
RJ Modashia
Project Manager

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Work Order: HS20120645

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20120645-01	Former Seep 7	Water		11-Dec-2020 12:30	12-Dec-2020 10:20	☐
HS20120645-02	Former Seep 8	Water		11-Dec-2020 12:45	12-Dec-2020 10:20	☐
HS20120645-03	Up Stream	Water		11-Dec-2020 13:00	12-Dec-2020 10:20	☐
HS20120645-04	Trip Blank	Water	CG 113020 -70	12-Dec-2020 00:00	12-Dec-2020 10:20	☑

Revision:1

Client: Aptim Environmental & Infrastructure **CASE NARRATIVE**
Project: William FAR Surface Water
Work Order: HS20120645

Work Order Comments

- REV01: Revised to update the 8270 SVOC compound list.

GCMS Semivolatiles by Method SW8270

Batch ID: 160703

Sample ID: HS20120572-36MSD

- MSD is for an unrelated sample

Sample ID: Up Stream (HS20120645-03)

- Sample was spiked at 2X the normal concentration

GCMS Volatiles by Method SW8260

Batch ID: R375341

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method M2340 B

Batch ID: R375719

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 160886

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 160885

Sample ID: HS20120757-09MSD

- MSD is for an unrelated sample (Calcium)

Metals by Method SW7470

Batch ID: 160853

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 160693

Sample ID: HS20120318-01MS

- MS and MSD are for an unrelated sample

Client: Aptim Environmental & Infrastructure

Project: William FAR Surface Water

Sample ID: Former Seep 7

Collection Date: 11-Dec-2020 12:30

ANALYTICAL REPORT

WorkOrder:HS20120645

Lab ID:HS20120645-01

Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
Acetone		U	0.0020	0.0020	mg/L	1	23-Dec-2020 18:42
Benzene		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
Carbon disulfide		U	0.00060	0.0020	mg/L	1	23-Dec-2020 18:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 18:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 18:42
m,p-Xylene		U	0.00050	0.0020	mg/L	1	23-Dec-2020 18:42
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Dec-2020 18:42
o-Xylene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 18:42
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 18:42
Toluene		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Dec-2020 18:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Dec-2020 18:42
Surr: 1,2-Dichloroethane-d4	*99.5*			*70-126*	*%REC*	*1*	*23-Dec-2020 18:42*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*1*	*23-Dec-2020 18:42*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*23-Dec-2020 18:42*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*23-Dec-2020 18:42*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Dec-2020		Analyst: GEY
2-Methylnaphthalene		U	0.019	0.10	ug/L	1	23-Dec-2020 14:38
Benzoic acid		U	0.022	0.20	ug/L	1	23-Dec-2020 14:38
Bis(2-ethylhexyl)phthalate		U	0.037	0.20	ug/L	1	23-Dec-2020 14:38
Chrysene		U	0.021	0.10	ug/L	1	23-Dec-2020 14:38
Naphthalene		U	0.020	0.10	ug/L	1	23-Dec-2020 14:38
Pentachlorophenol		U	0.079	0.20	ug/L	1	23-Dec-2020 14:38
Phenanthrene		U	0.021	0.10	ug/L	1	23-Dec-2020 14:38
Pyrene		U	0.019	0.10	ug/L	1	23-Dec-2020 14:38
Surr: 2,4,6-Tribromophenol	*84.9*			*34-129*	*%REC*	*1*	*23-Dec-2020 14:38*
Surr: 2-Fluorobiphenyl	*91.8*			*40-125*	*%REC*	*1*	*23-Dec-2020 14:38*
Surr: 2-Fluorophenol	*77.5*			*20-120*	*%REC*	*1*	*23-Dec-2020 14:38*
Surr: 4-Terphenyl-d14	*108*			*40-135*	*%REC*	*1*	*23-Dec-2020 14:38*
Surr: Nitrobenzene-d5	*97.6*			*41-120*	*%REC*	*1*	*23-Dec-2020 14:38*
Surr: Phenol-d6	*73.5*			*20-120*	*%REC*	*1*	*23-Dec-2020 14:38*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: RPM
Hardness (As CaCO3)	**227**		**2.00**	**2.00**	**mg/L**	1	31-Dec-2020 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 7
Collection Date: 11-Dec-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20120645
Lab ID:HS20120645-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**0.00231**		**0.000400**	**0.00200**	**mg/L**	1	22-Dec-2020 15:37
Barium	**0.118**		**0.00190**	**0.00400**	**mg/L**	1	22-Dec-2020 15:37
Cadmium	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:37
Calcium	**69.8**		**0.0340**	**0.500**	**mg/L**	1	22-Dec-2020 15:37
Chromium	**0.000668**	J	**0.000400**	**0.00400**	**mg/L**	1	22-Dec-2020 15:37
Lead	U		0.000600	0.00200	mg/L	1	22-Dec-2020 15:37
Magnesium	**12.8**		**0.0100**	**0.200**	**mg/L**	1	22-Dec-2020 15:37
Selenium	**0.00550**		**0.00110**	**0.00200**	**mg/L**	1	22-Dec-2020 15:37
Silver	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:37
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**2.24**		**0.400**	**2.00**	**ug/L**	1	21-Dec-2020 21:51
Barium	**121**		**1.90**	**4.00**	**ug/L**	1	21-Dec-2020 21:51
Cadmium	U		0.200	2.00	ug/L	1	21-Dec-2020 21:51
Chromium	U		0.400	4.00	ug/L	1	21-Dec-2020 21:51
Lead	U		0.600	2.00	ug/L	1	21-Dec-2020 21:51
Selenium	**5.56**		**1.10**	**2.00**	**ug/L**	1	21-Dec-2020 21:51
Silver	U		0.200	2.00	ug/L	1	21-Dec-2020 21:51
MERCURY BY SW7470A	**Method:SW7470**				Prep:SW7470 / 15-Dec-2020		Analyst: JC
Mercury	U		0.0000300	0.000200	mg/L	1	16-Dec-2020 16:57
DISSOLVED MERCURY BY SW7470A	**Method:SW7470 (dissolved)**				Prep:SW7470 / 18-Dec-2020		Analyst: JC
Mercury	U		0.0300	0.200	ug/L	1	18-Dec-2020 18:30

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 8
Collection Date: 11-Dec-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20120645
Lab ID:HS20120645-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
1,1,1-Trichloroethane		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
1,1-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
1,1-Dichloroethene		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
Acetone		U	0.0020	0.0020	mg/L	1	23-Dec-2020 19:03
Benzene	**0.0016**		**0.00020**	**0.0010**	**mg/L**	1	23-Dec-2020 19:03
Carbon disulfide		U	0.00060	0.0020	mg/L	1	23-Dec-2020 19:03
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 19:03
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 19:03
m,p-Xylene		U	0.00050	0.0020	mg/L	1	23-Dec-2020 19:03
Methyl tert-butyl ether		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Dec-2020 19:03
o-Xylene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 19:03
Tetrachloroethene		U	0.00030	0.0010	mg/L	1	23-Dec-2020 19:03
Toluene		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Dec-2020 19:03
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Dec-2020 19:03
Surr: 1,2-Dichloroethane-d4	*99.5*			*70-126*	*%REC*	*1*	*23-Dec-2020 19:03*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*23-Dec-2020 19:03*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*23-Dec-2020 19:03*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*1*	*23-Dec-2020 19:03*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Dec-2020		Analyst: GEY
2-Methylnaphthalene		U	0.019	0.10	ug/L	1	23-Dec-2020 14:57
Benzoic acid		U	0.022	0.20	ug/L	1	23-Dec-2020 14:57
Bis(2-ethylhexyl)phthalate		U	0.037	0.20	ug/L	1	23-Dec-2020 14:57
Chrysene		U	0.021	0.10	ug/L	1	23-Dec-2020 14:57
Naphthalene		U	0.020	0.10	ug/L	1	23-Dec-2020 14:57
Pentachlorophenol	**1.2**		**0.079**	**0.20**	**ug/L**	1	23-Dec-2020 14:57
Phenanthrene		U	0.021	0.10	ug/L	1	23-Dec-2020 14:57
Pyrene		U	0.019	0.10	ug/L	1	23-Dec-2020 14:57
Surr: 2,4,6-Tribromophenol	*85.5*			*34-129*	*%REC*	*1*	*23-Dec-2020 14:57*
Surr: 2-Fluorobiphenyl	*84.7*			*40-125*	*%REC*	*1*	*23-Dec-2020 14:57*
Surr: 2-Fluorophenol	*75.7*			*20-120*	*%REC*	*1*	*23-Dec-2020 14:57*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*1*	*23-Dec-2020 14:57*
Surr: Nitrobenzene-d5	*90.6*			*41-120*	*%REC*	*1*	*23-Dec-2020 14:57*
Surr: Phenol-d6	*71.7*			*20-120*	*%REC*	*1*	*23-Dec-2020 14:57*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: RPM
Hardness (As CaCO3)	**244**		**2.00**	**2.00**	**mg/L**	1	31-Dec-2020 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision: 1**

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Former Seep 8
Collection Date: 11-Dec-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20120645
Lab ID:HS20120645-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**0.00429**		**0.000400**	**0.00200**	**mg/L**	1	22-Dec-2020 15:55
Barium	**0.129**		**0.00190**	**0.00400**	**mg/L**	1	22-Dec-2020 15:55
Cadmium	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:55
Calcium	**75.0**		**0.0340**	**0.500**	**mg/L**	1	22-Dec-2020 15:55
Chromium	U		0.000400	0.00400	mg/L	1	22-Dec-2020 15:55
Lead	U		0.000600	0.00200	mg/L	1	22-Dec-2020 15:55
Magnesium	**13.8**		**0.0100**	**0.200**	**mg/L**	1	22-Dec-2020 15:55
Selenium	**0.00623**		**0.00110**	**0.00200**	**mg/L**	1	22-Dec-2020 15:55
Silver	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:55
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**3.38**		**0.400**	**2.00**	**ug/L**	1	21-Dec-2020 21:53
Barium	**126**		**1.90**	**4.00**	**ug/L**	1	21-Dec-2020 21:53
Cadmium	U		0.200	2.00	ug/L	1	21-Dec-2020 21:53
Chromium	U		0.400	4.00	ug/L	1	21-Dec-2020 21:53
Lead	U		0.600	2.00	ug/L	1	21-Dec-2020 21:53
Selenium	**5.73**		**1.10**	**2.00**	**ug/L**	1	21-Dec-2020 21:53
Silver	U		0.200	2.00	ug/L	1	21-Dec-2020 21:53
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 15-Dec-2020		Analyst: JC
Mercury	U		0.0000300	0.000200	mg/L	1	16-Dec-2020 16:59
DISSOLVED MERCURY BY SW7470A		**Method:SW7470 (dissolved)**			Prep:SW7470 / 18-Dec-2020		Analyst: JC
Mercury	U		0.0300	0.200	ug/L	1	18-Dec-2020 18:49

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Up Stream
Collection Date: 11-Dec-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20120645
Lab ID:HS20120645-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
1,1,1-Trichloroethane	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
1,1-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
1,1-Dichloroethene	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
Acetone	U		0.0020	0.0020	mg/L	1	23-Dec-2020 19:24
Benzene	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
Carbon disulfide	U		0.00060	0.0020	mg/L	1	23-Dec-2020 19:24
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Dec-2020 19:24
Ethylbenzene	U		0.00030	0.0010	mg/L	1	23-Dec-2020 19:24
m,p-Xylene	U		0.00050	0.0020	mg/L	1	23-Dec-2020 19:24
Methyl tert-butyl ether	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Dec-2020 19:24
o-Xylene	U		0.00030	0.0010	mg/L	1	23-Dec-2020 19:24
Tetrachloroethene	U		0.00030	0.0010	mg/L	1	23-Dec-2020 19:24
Toluene	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
Vinyl chloride	U		0.00020	0.0010	mg/L	1	23-Dec-2020 19:24
Xylenes, Total	U		0.00030	0.0010	mg/L	1	23-Dec-2020 19:24
Surr: 1,2-Dichloroethane-d4	*96.6*			*70-126*	*%REC*	*1*	*23-Dec-2020 19:24*
Surr: 4-Bromofluorobenzene	*97.7*			*81-113*	*%REC*	*1*	*23-Dec-2020 19:24*
Surr: Dibromofluoromethane	*96.0*			*77-123*	*%REC*	*1*	*23-Dec-2020 19:24*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*23-Dec-2020 19:24*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Dec-2020		Analyst: GEY
2-Methylnaphthalene	U		0.019	0.10	ug/L	1	23-Dec-2020 15:17
Benzoic acid	U		0.022	0.20	ug/L	1	23-Dec-2020 15:17
Bis(2-ethylhexyl)phthalate	**0.064**	**J**	**0.037**	**0.20**	**ug/L**	**1**	23-Dec-2020 15:17
Chrysene	U		0.021	0.10	ug/L	1	23-Dec-2020 15:17
Naphthalene	U		0.020	0.10	ug/L	1	23-Dec-2020 15:17
Pentachlorophenol	U		0.079	0.20	ug/L	1	23-Dec-2020 15:17
Phenanthrene	U		0.021	0.10	ug/L	1	23-Dec-2020 15:17
Pyrene	U		0.019	0.10	ug/L	1	23-Dec-2020 15:17
Surr: 2,4,6-Tribromophenol	*53.0*			*34-129*	*%REC*	*1*	*23-Dec-2020 15:17*
Surr: 2-Fluorobiphenyl	*58.1*			*40-125*	*%REC*	*1*	*23-Dec-2020 15:17*
Surr: 2-Fluorophenol	*49.3*			*20-120*	*%REC*	*1*	*23-Dec-2020 15:17*
Surr: 4-Terphenyl-d14	*73.7*			*40-135*	*%REC*	*1*	*23-Dec-2020 15:17*
Surr: Nitrobenzene-d5	*60.2*			*41-120*	*%REC*	*1*	*23-Dec-2020 15:17*
Surr: Phenol-d6	*49.5*			*20-120*	*%REC*	*1*	*23-Dec-2020 15:17*
HARDNESS, TOTAL AS CACO3 BY SM2340B		**Method:M2340 B**					Analyst: RPM
Hardness (As CaCO3)	**239**		**2.00**	**2.00**	**mg/L**	1	31-Dec-2020 13:13

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision: 1**

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
Sample ID: Up Stream
Collection Date: 11-Dec-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20120645
Lab ID:HS20120645-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**0.00236**		**0.000400**	**0.00200**	**mg/L**	1	22-Dec-2020 15:57
Barium	**0.122**		**0.00190**	**0.00400**	**mg/L**	1	22-Dec-2020 15:57
Cadmium	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:57
Calcium	**73.6**		**0.0340**	**0.500**	**mg/L**	1	22-Dec-2020 15:57
Chromium	U		0.000400	0.00400	mg/L	1	22-Dec-2020 15:57
Lead	U		0.000600	0.00200	mg/L	1	22-Dec-2020 15:57
Magnesium	**13.3**		**0.0100**	**0.200**	**mg/L**	1	22-Dec-2020 15:57
Selenium	**0.00640**		**0.00110**	**0.00200**	**mg/L**	1	22-Dec-2020 15:57
Silver	U		0.000200	0.00200	mg/L	1	22-Dec-2020 15:57
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 19-Dec-2020		Analyst: JHD
Arsenic	**2.46**		**0.400**	**2.00**	**ug/L**	1	21-Dec-2020 21:55
Barium	**136**		**1.90**	**4.00**	**ug/L**	1	21-Dec-2020 21:55
Cadmium	U		0.200	2.00	ug/L	1	21-Dec-2020 21:55
Chromium	U		0.400	4.00	ug/L	1	21-Dec-2020 21:55
Lead	U		0.600	2.00	ug/L	1	21-Dec-2020 21:55
Selenium	**6.82**		**1.10**	**2.00**	**ug/L**	1	21-Dec-2020 21:55
Silver	U		0.200	2.00	ug/L	1	21-Dec-2020 21:55
MERCURY BY SW7470A	**Method:SW7470**				Prep:SW7470 / 15-Dec-2020		Analyst: JC
Mercury	U		0.0000300	0.000200	mg/L	1	16-Dec-2020 17:01
DISSOLVED MERCURY BY SW7470A	**Method:SW7470 (dissolved)**				Prep:SW7470 / 18-Dec-2020		Analyst: JC
Mercury	U		0.0300	0.200	ug/L	1	18-Dec-2020 18:51

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Weight / Prep Log

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

Batch ID: 160693 **Start Date:** 16 Dec 2020 08:00 **End Date:** 16 Dec 2020 10:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20120645-01		10 (mL)	10 (mL)	1
HS20120645-02		10 (mL)	10 (mL)	1
HS20120645-03		10 (mL)	10 (mL)	1

Batch ID: 160703 **Start Date:** 15 Dec 2020 07:00 **End Date:** 15 Dec 2020 13:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20120645-01	1	1000 (mL)	1 (mL)	0.001
HS20120645-02	1	1000 (mL)	1 (mL)	0.001
HS20120645-03	1	1000 (mL)	1 (mL)	0.001

Batch ID: 160853 **Start Date:** 18 Dec 2020 09:00 **End Date:** 18 Dec 2020 11:00
Method: MERCURY PREP BY 7470A - DISSOLVED **Prep Code:** HG_W_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20120645-01		10 (mL)	10 (mL)	1
HS20120645-02		10 (mL)	10 (mL)	1
HS20120645-03		10 (mL)	10 (mL)	1

Batch ID: 160885 **Start Date:** 19 Dec 2020 09:00 **End Date:** 19 Dec 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20120645-01		10 (mL)	10 (mL)	1
HS20120645-02		10 (mL)	10 (mL)	1
HS20120645-03		10 (mL)	10 (mL)	1

Batch ID: 160886 **Start Date:** 19 Dec 2020 09:00 **End Date:** 19 Dec 2020 13:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20120645-01		10 (mL)	10 (mL)	1
HS20120645-02		10 (mL)	10 (mL)	1
HS20120645-03		10 (mL)	10 (mL)	1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 160693 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30		15 Dec 2020 10:30	16 Dec 2020 16:57	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45		15 Dec 2020 10:30	16 Dec 2020 16:59	1
HS20120645-03	Up Stream	11 Dec 2020 13:00		15 Dec 2020 10:30	16 Dec 2020 17:01	1
Batch ID: 160703 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30		15 Dec 2020 13:19	23 Dec 2020 14:38	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45		15 Dec 2020 13:19	23 Dec 2020 14:57	1
HS20120645-03	Up Stream	11 Dec 2020 13:00		15 Dec 2020 13:19	23 Dec 2020 15:17	1
Batch ID: 160853 (0)	**Test Name :** DISSOLVED MERCURY BY SW7470A				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30		18 Dec 2020 09:00	18 Dec 2020 18:30	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45		18 Dec 2020 09:00	18 Dec 2020 18:49	1
HS20120645-03	Up Stream	11 Dec 2020 13:00		18 Dec 2020 09:00	18 Dec 2020 18:51	1
Batch ID: 160885 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30		19 Dec 2020 13:00	22 Dec 2020 15:37	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45		19 Dec 2020 13:00	22 Dec 2020 15:55	1
HS20120645-03	Up Stream	11 Dec 2020 13:00		19 Dec 2020 13:00	22 Dec 2020 15:57	1
Batch ID: 160886 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30		19 Dec 2020 13:00	21 Dec 2020 21:51	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45		19 Dec 2020 13:00	21 Dec 2020 21:53	1
HS20120645-03	Up Stream	11 Dec 2020 13:00		19 Dec 2020 13:00	21 Dec 2020 21:55	1
Batch ID: R375341 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30			23 Dec 2020 18:42	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45			23 Dec 2020 19:03	1
HS20120645-03	Up Stream	11 Dec 2020 13:00			23 Dec 2020 19:24	1
Batch ID: R375719 (0)	**Test Name :** HARDNESS, TOTAL AS CACO3 BY SM2340B				**Matrix:** Water	
HS20120645-01	Former Seep 7	11 Dec 2020 12:30			31 Dec 2020 13:13	1
HS20120645-02	Former Seep 8	11 Dec 2020 12:45			31 Dec 2020 13:13	1
HS20120645-03	Up Stream	11 Dec 2020 13:00			31 Dec 2020 13:13	1

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160693 (0) **Instrument:** HG03 **Method:** MERCURY BY SW7470A

MBLK Sample ID: **MBLK-160693** Units: **mg/L** Analysis Date: **16-Dec-2020 16:17**
Client ID: Run ID: **HG03_374793** SeqNo: **5884118** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-160693** Units: **mg/L** Analysis Date: **16-Dec-2020 16:22**
Client ID: Run ID: **HG03_374793** SeqNo: **5884119** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00471	0.000200	0.005	0	94.2	80 - 120				

MS Sample ID: **HS20120318-01MS** Units: **mg/L** Analysis Date: **16-Dec-2020 16:28**
Client ID: Run ID: **HG03_374793** SeqNo: **5884121** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.003	0.000200	0.005	0.000129	57.4	75 - 125				S

MSD Sample ID: **HS20120318-01MSD** Units: **mg/L** Analysis Date: **16-Dec-2020 16:30**
Client ID: Run ID: **HG03_374793** SeqNo: **5884122** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00333	0.000200	0.005	0.000129	64.0	75 - 125	0.003	10.4	20	S

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160853 (0) **Instrument:** HG03 **Method:** DISSOLVED MERCURY BY SW7470A (DISSOLVED)

MBLK Sample ID: **MBLK-160853** Units: **mg/L** Analysis Date: **18-Dec-2020 18:20**
Client ID: Run ID: **HG03_374971** SeqNo: **5888937** PrepDate: **18-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-160853** Units: **mg/L** Analysis Date: **18-Dec-2020 18:29**
Client ID: Run ID: **HG03_374971** SeqNo: **5888938** PrepDate: **18-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00457	0.000200	0.005	0	91.4	80 - 120				

MS Sample ID: **HS20120645-01MS** Units: **mg/L** Analysis Date: **18-Dec-2020 18:32**
Client ID: **Former Seep 7** Run ID: **HG03_374971** SeqNo: **5888940** PrepDate: **18-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00466	0.000200	0.005	0	93.2	80 - 120				

MSD Sample ID: **HS20120645-01MSD** Units: **mg/L** Analysis Date: **18-Dec-2020 18:47**
Client ID: **Former Seep 7** Run ID: **HG03_374971** SeqNo: **5888942** PrepDate: **18-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.000200	0.005	0	102	80 - 120	0.00466	9.41	20	

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160885 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

MBLK Sample ID: **MBLK-160885** Units: **mg/L** Analysis Date: **22-Dec-2020 15:20**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893749** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Lead	U	0.00200								
Magnesium	U	0.200								
Selenium	U	0.00200								
Silver	U	0.00200								

LCS Sample ID: **LCS-160885** Units: **mg/L** Analysis Date: **22-Dec-2020 15:22**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893750** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05369	0.00200	0.05	0	107	80 - 120				
Barium	0.04694	0.00400	0.05	0	93.9	80 - 120				
Cadmium	0.04978	0.00200	0.05	0	99.6	80 - 120				
Calcium	4.807	0.500	5	0	96.1	80 - 120				
Chromium	0.04758	0.00400	0.05	0	95.2	80 - 120				
Lead	0.04508	0.00200	0.05	0	90.2	80 - 120				
Magnesium	4.956	0.200	5	0	99.1	80 - 120				
Selenium	0.05743	0.00200	0.05	0	115	80 - 120				
Silver	0.04466	0.00200	0.05	0	89.3	80 - 120				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160886 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

MS Sample ID: **HS20120757-09MS** Units: **mg/L** Analysis Date: **22-Dec-2020 15:43**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893759** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05976	0.00200	0.05	0.003089	113	80 - 120				
Barium	0.1388	0.00400	0.05	0.08437	109	80 - 120				
Cadmium	0.0545	0.00200	0.05	0.000019	109	80 - 120				
Calcium	32.63	0.500	5	28.33	86.2	80 - 120				O
Chromium	0.05312	0.00400	0.05	0.001985	102	80 - 120				
Lead	0.05211	0.00200	0.05	0.0011	102	80 - 120				
Magnesium	10.08	0.200	5	5.128	99.1	80 - 120				
Selenium	0.05743	0.00200	0.05	0.000519	114	80 - 120				
Silver	0.05212	0.00200	0.05	0.000007	104	80 - 120				

MSD Sample ID: **HS20120757-09MSD** Units: **mg/L** Analysis Date: **22-Dec-2020 15:45**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893760** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05975	0.00200	0.05	0.003089	113	80 - 120	0.05976	0.0167	20	
Barium	0.1298	0.00400	0.05	0.08437	90.8	80 - 120	0.1388	6.67	20	
Cadmium	0.05216	0.00200	0.05	0.000019	104	80 - 120	0.0545	4.38	20	
Calcium	32.28	0.500	5	28.33	79.1	80 - 120	32.63	1.09	20	SO
Chromium	0.05255	0.00400	0.05	0.001985	101	80 - 120	0.05312	1.07	20	
Lead	0.04929	0.00200	0.05	0.0011	96.4	80 - 120	0.05211	5.55	20	
Magnesium	9.94	0.200	5	5.128	96.2	80 - 120	10.08	1.41	20	
Selenium	0.05802	0.00200	0.05	0.000519	115	80 - 120	0.05743	1.03	20	
Silver	0.04894	0.00200	0.05	0.000007	97.9	80 - 120	0.05212	6.28	20	

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160885 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

PDS Sample ID: **HS20120757-09PDS** Units: **mg/L** Analysis Date: **22-Dec-2020 15:47**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893761** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1236	0.00200	0.1	0.003089	120	75 - 125				
Barium	0.1944	0.00400	0.1	0.08437	110	75 - 125				
Cadmium	0.1134	0.00200	0.1	0.000019	113	75 - 125				
Calcium	37.82	0.500	10	28.33	94.9	75 - 125				
Chromium	0.1119	0.00400	0.1	0.001985	110	75 - 125				
Lead	0.1077	0.00200	0.1	0.0011	107	75 - 125				
Magnesium	15.71	0.200	10	5.128	106	75 - 125				
Selenium	0.1243	0.00200	0.1	0.000519	124	75 - 125				
Silver	0.1077	0.00200	0.1	0.000007	108	75 - 125				

SD Sample ID: **HS20120757-09SD** Units: **mg/L** Analysis Date: **22-Dec-2020 15:41**
Client ID: Run ID: **ICPMS05_375169** SeqNo: **5893758** PrepDate: **19-Dec-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002996	0.0100					0.003089	0	10	J
Barium	0.08251	0.0200					0.08437	2.21	10	
Cadmium	U	0.0100					0.000019	0	10	
Calcium	27.07	2.50					28.33	4.44	10	
Chromium	0.002094	0.0200					0.001985	0	10	J
Lead	U	0.0100					0.0011	0	10	
Magnesium	4.989	1.00					5.128	2.72	10	
Selenium	U	0.0100					0.000519	0	10	
Silver	U	0.0100					0.000007	0	10	

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160886 (0) **Instrument:** ICPMS05 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-160886** Units: **mg/L** Analysis Date: **21-Dec-2020 21:31**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891670** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Chromium	U	0.00400								
Lead	U	0.00200								
Selenium	U	0.00200								
Silver	U	0.00200								

LCS Sample ID: **LCS-160886** Units: **mg/L** Analysis Date: **21-Dec-2020 21:33**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891671** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05118	0.00200	0.05	0	102	80 - 120				
Barium	0.04623	0.00400	0.05	0	92.5	80 - 120				
Cadmium	0.04962	0.00200	0.05	0	99.2	80 - 120				
Chromium	0.04459	0.00400	0.05	0	89.2	80 - 120				
Lead	0.04334	0.00200	0.05	0	86.7	80 - 120				
Selenium	0.05589	0.00200	0.05	0	112	80 - 120				
Silver	0.04591	0.00200	0.05	0	91.8	80 - 120				

MS Sample ID: **HS20120317-01MS** Units: **mg/L** Analysis Date: **21-Dec-2020 21:39**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891674** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05686	0.00200	0.05	0.002181	109	75 - 125				
Barium	0.2147	0.00400	0.05	0.1534	123	75 - 125				
Cadmium	0.05081	0.00200	0.05	0.000121	101	75 - 125				
Chromium	0.04944	0.00400	0.05	0.000059	98.8	75 - 125				
Lead	0.04728	0.00200	0.05	0.000104	94.3	75 - 125				
Selenium	0.05541	0.00200	0.05	0.000975	109	75 - 125				
Silver	0.04753	0.00200	0.05	0.000055	95.0	75 - 125				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160886 (0) **Instrument:** ICPMS05 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS20120317-01MSD** Units: **mg/L** Analysis Date: **21-Dec-2020 21:41**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891675** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05571	0.00200	0.05	0.002181	107	75 - 125	0.05686	2.05	20	
Barium	0.2044	0.00400	0.05	0.1534	102	75 - 125	0.2147	4.9	20	
Cadmium	0.04824	0.00200	0.05	0.000121	96.2	75 - 125	0.05081	5.19	20	
Chromium	0.04718	0.00400	0.05	0.000059	94.2	75 - 125	0.04944	4.67	20	
Lead	0.04593	0.00200	0.05	0.000104	91.7	75 - 125	0.04728	2.89	20	
Selenium	0.05518	0.00200	0.05	0.000975	108	75 - 125	0.05541	0.403	20	
Silver	0.04558	0.00200	0.05	0.000055	91.0	75 - 125	0.04753	4.2	20	

PDS Sample ID: **HS20120317-01PDS** Units: **mg/L** Analysis Date: **21-Dec-2020 21:43**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891676** PrepDate: **19-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.2746	0.00400	0.1	0.1534	121	75 - 125				
Cadmium	0.114	0.00200	0.1	0.000121	114	75 - 125				
Chromium	0.1139	0.00400	0.1	0.000059	114	75 - 125				
Lead	0.1108	0.00200	0.1	0.000104	111	75 - 125				
Silver	0.1078	0.00200	0.1	0.000055	108	75 - 125				

SD Sample ID: **HS20120317-01SD** Units: **mg/L** Analysis Date: **21-Dec-2020 21:37**
Client ID: Run ID: **ICPMS05_375066** SeqNo: **5891673** PrepDate: **19-Dec-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002258	0.0100					0.002181	0	10	J
Barium	0.1525	0.0200					0.1534	0.572	10	
Cadmium	U	0.0100					0.000121	0	10	
Chromium	U	0.0200					0.000059	0	10	
Lead	U	0.0100					0.000104	0	10	
Selenium	U	0.0100					0.000975	0	10	
Silver	U	0.0100					0.000055	0	10	

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160703 (0) **Instrument:** SV-7 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D

MBLK Sample ID: **MBLK-160703** Units: **ug/L** Analysis Date: **23-Dec-2020 18:33**
Client ID: Run ID: **SV-7_375286** SeqNo: **5897629** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	U	0.10								
Benzoic acid	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Naphthalene	U	0.10								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.339*	*0.20*	*5*	*0*	*66.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.772*	*0.20*	*5*	*0*	*95.4*	*40 - 125*				
Surr: 2-Fluorophenol	*4.088*	*0.20*	*5*	*0*	*81.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*6.085*	*0.20*	*5*	*0*	*122*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.271*	*0.20*	*5*	*0*	*105*	*41 - 120*				
Surr: Phenol-d6	*3.98*	*0.20*	*5*	*0*	*79.6*	*20 - 120*				

LCS Sample ID: **LCS-160703** Units: **ug/L** Analysis Date: **23-Dec-2020 18:53**
Client ID: Run ID: **SV-7_375286** SeqNo: **5897630** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	3.521	0.10	5	0	70.4	50 - 120				
Benzoic acid	1.755	0.20	5	0	35.1	10 - 110				
Bis(2-ethylhexyl)phthalate	3.898	0.20	5	0	78.0	40 - 139				
Chrysene	3.623	0.10	5	0	72.5	43 - 120				
Naphthalene	3.537	0.10	5	0	70.7	45 - 120				
Pentachlorophenol	2.253	0.20	5	0	45.1	19 - 121				
Phenanthrene	3.735	0.10	5	0	74.7	45 - 121				
Pyrene	3.839	0.10	5	0	76.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.475*	*0.20*	*5*	*0*	*69.5*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.053*	*0.20*	*5*	*0*	*81.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.576*	*0.20*	*5*	*0*	*71.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.513*	*0.20*	*5*	*0*	*90.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.394*	*0.20*	*5*	*0*	*87.9*	*41 - 120*				
Surr: Phenol-d6	*3.542*	*0.20*	*5*	*0*	*70.8*	*20 - 120*				

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: 160703 (0) **Instrument:** SV-7 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D

MS Sample ID: **HS20120572-36MS** Units: **ug/L** Analysis Date: **22-Dec-2020 20:20**
Client ID: Run ID: **SV-7_375134** SeqNo: **5898256** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	5.042	0.10	5	0	101	50 - 120				
Benzoic acid	5.518	0.20	5	0	110	10 - 110				S
Bis(2-ethylhexyl)phthalate	5.804	0.20	5	0	116	40 - 139				
Chrysene	5.983	0.10	5	0	120	43 - 120				
Naphthalene	4.9	0.10	5	0	98.0	45 - 120				
Pentachlorophenol	5.508	0.20	5	0	110	19 - 121				
Phenanthrene	5.092	0.10	5	0	102	45 - 121				
Pyrene	4.715	0.10	5	0.02598	93.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*6.245*	*0.20*	*10*	*0*	*62.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*6.157*	*0.20*	*10*	*0*	*61.6*	*40 - 125*				
Surr: 2-Fluorophenol	*5.442*	*0.20*	*10*	*0*	*54.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*6.717*	*0.20*	*10*	*0*	*67.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*6.237*	*0.20*	*10*	*0*	*62.4*	*41 - 120*				
Surr: Phenol-d6	*5.312*	*0.20*	*10*	*0*	*53.1*	*20 - 120*				

MSD Sample ID: **HS20120572-36MSD** Units: **ug/L** Analysis Date: **22-Dec-2020 20:40**
Client ID: Run ID: **SV-7_375134** SeqNo: **5898257** PrepDate: **15-Dec-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	5.625	0.10	5	0	112	50 - 120	5.042	10.9	20	
Benzoic acid	1.378	0.20	5	0	27.6	10 - 110	5.518	120	20	R
Bis(2-ethylhexyl)phthalate	5.573	0.20	5	0	111	40 - 139	5.804	4.06	20	
Chrysene	4.941	0.10	5	0	98.8	43 - 120	5.983	19.1	20	
Naphthalene	5.611	0.10	5	0	112	45 - 120	4.9	13.5	20	
Pentachlorophenol	6.068	0.20	5	0	121	19 - 121	5.508	9.66	20	S
Phenanthrene	5.922	0.10	5	0	118	45 - 121	5.092	15.1	20	
Pyrene	5.575	0.10	5	0.02598	111	40 - 130	4.715	16.7	20	
Surr: 2,4,6-Tribromophenol	*6.705*	*0.20*	*10*	*0*	*67.0*	*34 - 129*	*6.245*	*7.1*	*20*	
Surr: 2-Fluorobiphenyl	*6.979*	*0.20*	*10*	*0*	*69.8*	*40 - 125*	*6.157*	*12.5*	*20*	
Surr: 2-Fluorophenol	*5.714*	*0.20*	*10*	*0*	*57.1*	*20 - 120*	*5.442*	*4.88*	*20*	
Surr: 4-Terphenyl-d14	*7.504*	*0.20*	*10*	*0*	*75.0*	*40 - 135*	*6.717*	*11.1*	*20*	
Surr: Nitrobenzene-d5	*6.854*	*0.20*	*10*	*0*	*68.5*	*41 - 120*	*6.237*	*9.42*	*20*	
Surr: Phenol-d6	*5.178*	*0.20*	*10*	*0*	*51.8*	*20 - 120*	*5.312*	*2.54*	*20*	

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: R375341 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLK-122320** Units: **ug/L** Analysis Date: **23-Dec-2020 14:28**
Client ID: Run ID: **VOA4_375341** SeqNo: **5897483** PrepDate: DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U		1.0								
1,1-Dichloroethane	U		1.0								
1,1-Dichloroethene	U		1.0								
Acetone	U		2.0								
Benzene	U		1.0								
Carbon disulfide	U		2.0								
Chlorobenzene	U		1.0								
Ethylbenzene	U		1.0								
m,p-Xylene	U		2.0								
Methyl tert-butyl ether	U		1.0								
Methylene chloride	U		2.0								
o-Xylene	U		1.0								
Tetrachloroethene	U		1.0								
Toluene	U		1.0								
Vinyl chloride	U		1.0								
Xylenes, Total	U		1.0								
Surr: 1,2-Dichloroethane-d4	*49.04*		*1.0*	*50*	*0*	*98.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.72*		*1.0*	*50*	*0*	*97.4*	*82 - 115*				
Surr: Dibromofluoromethane	*48.89*		*1.0*	*50*	*0*	*97.8*	*73 - 126*				
Surr: Toluene-d8	*49.84*		*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: R375341 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

LCS Sample ID: **VLCSW-122223** Units: **ug/L** Analysis Date: **23-Dec-2020 13:46**
Client ID: Run ID: **VOA4_375341** SeqNo: **5897514** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1-Trichloroethane	21.1	1.0	20	0	106	70 - 130				
1,1-Dichloroethane	21.06	1.0	20	0	105	71 - 122				
1,1-Dichloroethene	20.98	1.0	20	0	105	70 - 130				
Acetone	39.34	2.0	40	0	98.4	70 - 130				
Benzene	21.17	1.0	20	0	106	74 - 120				
Carbon disulfide	42.33	2.0	40	0	106	70 - 130				
Chlorobenzene	20.77	1.0	20	0	104	76 - 113				
Ethylbenzene	21.63	1.0	20	0	108	77 - 117				
m,p-Xylene	44.06	2.0	40	0	110	77 - 122				
Methyl tert-butyl ether	19.72	1.0	20	0	98.6	70 - 130				
Methylene chloride	21.9	2.0	20	0	109	70 - 127				
o-Xylene	22.41	1.0	20	0	112	75 - 119				
Tetrachloroethene	21.06	1.0	20	0	105	76 - 119				
Toluene	21.2	1.0	20	0	106	77 - 118				
Vinyl chloride	21.03	1.0	20	0	105	70 - 130				
Xylenes, Total	66.47	1.0	60	0	111	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.2*	*1.0*	*50*	*0*	*94.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.99*	*1.0*	*50*	*0*	*100.0*	*82 - 115*				
Surr: Dibromofluoromethane	*49.68*	*1.0*	*50*	*0*	*99.4*	*73 - 126*				
Surr: Toluene-d8	*49.42*	*1.0*	*50*	*0*	*98.8*	*81 - 120*				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: R375341 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS20120616-03MS** Units: **ug/L** Analysis Date: **23-Dec-2020 16:36**
Client ID: Run ID: **VOA4_375341** SeqNo: **5897489** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.32	1.0	20	0	96.6	70 - 130				
1,1-Dichloroethane	20.38	1.0	20	0	102	70 - 127				
1,1-Dichloroethene	18.73	1.0	20	0	93.6	70 - 130				
Acetone	41.36	2.0	40	0	103	70 - 130				
Benzene	21.52	1.0	20	0	108	70 - 127				
Carbon disulfide	41.67	2.0	40	0	104	70 - 130				
Chlorobenzene	21.34	1.0	20	0	107	70 - 114				
Ethylbenzene	20.9	1.0	20	0	105	70 - 124				
m,p-Xylene	43.81	2.0	40	0	110	70 - 130				
Methyl tert-butyl ether	20.29	1.0	20	0	101	70 - 130				
Methylene chloride	23.04	2.0	20	0	115	70 - 128				
o-Xylene	22.9	1.0	20	0	114	70 - 124				
Tetrachloroethene	18.97	1.0	20	0	94.9	70 - 130				
Toluene	20.47	1.0	20	0	102	70 - 123				
Vinyl chloride	19.93	1.0	20	0	99.6	70 - 130				
Xylenes, Total	66.71	1.0	60	0	111	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.28*	*1.0*	*50*	*0*	*98.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.29*	*1.0*	*50*	*0*	*96.6*	*81 - 113*				
Surr: Dibromofluoromethane	*50.11*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*48.86*	*1.0*	*50*	*0*	*97.7*	*82 - 127*				

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QC BATCH REPORT

Batch ID: R375341 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS20120616-03MSD** Units: **ug/L** Analysis Date: **23-Dec-2020 16:57**
Client ID: Run ID: **VOA4_375341** SeqNo: **5897490** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.19	1.0	20	0	95.9	70 - 130	19.32	0.673	20	
1,1-Dichloroethane	21.07	1.0	20	0	105	70 - 127	20.38	3.3	20	
1,1-Dichloroethene	18.52	1.0	20	0	92.6	70 - 130	18.73	1.14	20	
Acetone	43.91	2.0	40	0	110	70 - 130	41.36	5.99	20	
Benzene	20.7	1.0	20	0	104	70 - 127	21.52	3.89	20	
Carbon disulfide	41.82	2.0	40	0	105	70 - 130	41.67	0.371	20	
Chlorobenzene	20.92	1.0	20	0	105	70 - 114	21.34	1.97	20	
Ethylbenzene	21.41	1.0	20	0	107	70 - 124	20.9	2.4	20	
m,p-Xylene	44.3	2.0	40	0	111	70 - 130	43.81	1.13	20	
Methyl tert-butyl ether	20.61	1.0	20	0	103	70 - 130	20.29	1.55	20	
Methylene chloride	22.88	2.0	20	0	114	70 - 128	23.04	0.722	20	
o-Xylene	22.6	1.0	20	0	113	70 - 124	22.9	1.33	20	
Tetrachloroethene	19.42	1.0	20	0	97.1	70 - 130	18.97	2.32	20	
Toluene	20.72	1.0	20	0	104	70 - 123	20.47	1.25	20	
Vinyl chloride	19.28	1.0	20	0	96.4	70 - 130	19.93	3.28	20	
Xylenes, Total	66.9	1.0	60	0	111	70 - 130	66.71	0.289	20	
Surr: 1,2-Dichloroethane-d4	*48.7*	*1.0*	*50*	*0*	*97.4*	*70 - 126*	*49.28*	*1.19*	*20*	
Surr: 4-Bromofluorobenzene	*48.52*	*1.0*	*50*	*0*	*97.0*	*81 - 113*	*48.29*	*0.474*	*20*	
Surr: Dibromofluoromethane	*50.37*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.11*	*0.527*	*20*	
Surr: Toluene-d8	*49.46*	*1.0*	*50*	*0*	*98.9*	*82 - 127*	*48.86*	*1.23*	*20*	

The following samples were analyzed in this batch: HS20120645-01 HS20120645-02 HS20120645-03

Revision: 1

Client: Aptim Environmental & Infrastructure
Project: William FAR Surface Water
WorkOrder: HS20120645

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20120645 **Date/Time Received:** 12-Dec-2020 10:20

Client Name: CBI-Wichita **Received by:** Paul Matta

Completed By: /S/ Jared R. Makan (eSignature) 12-Dec-2020 14:01 (Date/Time) **Reviewed by:** /S/ RJ Modashia (eSignature) 14-Dec-2020 09:25 (Date/Time)

Matrices: Water Carrier name: FedEx Priority Overnight

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:232447
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.0°C/1.0°C UC/C	IR31
Cooler(s)/Kit(s):	46138	
Date/Time sample(s) sent to storage:	12/12/2020 14:05	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Trip blank received, not listed on COC. Placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 232447

HS20120645

Aptim Environmental & Infrastructure
William FAR Surface Water

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	213809 OS	Project Name	William FAR Surface Water	A	8260_LL_W (VOC 8260 Select List)
Work Order		Project Number		B	8270_LOW_W (Williams FAR sel list)
Company Name	Aptim Environmental & Infrastruct	Bill To Company	Aptim Environmental and Infrastru	C	ICP_DISS (RCRA 8 Metals (Add Hg))
Send Report To	Phil Osborn	Invoice Attn	AP	D	ICP_TW (RCRA 8 Metals (Add Hg))
Address	2872 N Ridge Rd, Suite 102B	Address	7330 W 33rd St. North Suite 106	E	HARD (Add Ca and Mg)
				F	
City/State/Zip	Wichita, KS 67205	City/State/Zip	Wichita KS 67205	G	
Phone	(316) 220-8020	Phone		H	
Fax		Fax		I	
e-Mail Address	phil.osborn@aptim.com	e-Mail Address	accountspayable@aptim.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Former Seep 7	12/11	1230	W		7	3	2	1	1	1						
2	Former Seep 8	12/11	1245	W		7	3	2	1	1	1						
3	Up Stream	12/11	1300	W		7	3	2	1	1	1						
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Phil Osborn

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other ____ Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	12/11/20	1600	FedEx overnight
Relinquished by:	Date:	Time:	Received by (Laboratory):
	12/12/20	0720	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: CBI William FAR TRK# 189688834190

Cooler ID	Cooler Temp.
46138	1.0
	IR#31

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☒ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other ____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.