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

October 3, 2017

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

Re: Quarterly Update – 3rd Quarter 2017
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 July 1 through September 30, 2017.

Description of Activities

- 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 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.
- Performed monthly post-construction inspections for the Walnut River AOI Interim Measures including riverbank seep monitoring, re-vegetation inspections, and LNAPL recovery.
- In correspondence dated July 12, 2017, submitted the meeting minutes for the June RSP meeting with the agencies.
- In correspondence dated July 12, 2017, submitted a waste determination request to the agencies for the residual wastes in SWMU 12 and SWMU 16.

- On July 20, 2017 collected Walnut River AOI Interim Measures performance samples.
- In correspondence dated August 15, 2017, KDHE approved the waste determination and formally requested the CMS Work Plan by December 1, 2017.

Summary of All Findings

- On July 20, 2017 collected Walnut River AOI Interim Measures performance samples. Results of the monthly inspections, surface water sampling, and evaluation of the PBA capacity are presented in Attachment A.

Summaries of All EPA Approved Changes

- None.

Summaries of All Contacts

- On July 3, 2017, WPS submitted the 2nd quarter 2017 update to the USEPA and KDHE.

Summaries of Problems Encountered

- None.

Actions to Rectify Problems

- None.

Changes in Key Project Entities

- In correspondence dated July 12, 2017, notice of entity name change from CB&I to Aptim was provided to the agencies.

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 Walnut River Interim Measures monitoring.
- Submit the Corrective Measures Study Work Plan to the agencies.

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
Director, Environmental Services CoE

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

Walnut River Area of Interest Interim Corrective Measure 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

Photo documentation of the WRAOI is attached. The observed vegetation within the disturbed area of the WRAOI is thin in places, but is expected to continue to fill in with new grass through next spring. The revegetation of the area will continue to be monitored and will be addressed in the spring of 2018 if additional seeding is needed in the area.

LNAPL Recovery

Two new monitoring wells, WRAOI-16-01 and WRAOI-16-02, were installed as part of the PAB monitoring activities. These monitoring wells are gauged on a monthly basis during other site wide monitoring activities. Monitoring well WRAOI-16-02 has had a trace to as much as 0.04 feet of LNAPL reported, with the LNAPL being removed as needed by bailing or peristaltic pump. 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 Seep-07 and Seep-08 and verification that no seeps are visible at the riverbank along the extent of the PAB. As specified in the Operations and Maintenance Plan, the flow rate of the Walnut River must be less than 50 cubic feet per second (cfs) for collection of representative surface water samples. Due to significant precipitation events in the spring of 2017, the Walnut River flow rate was higher than the 50 cfs threshold and sampling was not performed until July 2017.

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

Each of 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**.

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).

No VOCs or SVOCs were detected in the surface water samples collected during the July 2017 sampling event. 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 inspections of the PAB area did not indicate the presence of any seeps along the length of the PAB. As documented in the inspection forms, there is 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 seep was observed.

PAB Performance Monitoring

The long term PAB monitoring for remaining adsorption capacity calculations are included in **Table 2**. No new benzene data is available since the PAB capacity calculation was performed in June 2016. Trace amounts of LNAPL prevented groundwater sampling of several of the monitoring wells during the 2017 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 recent arsenic data from the 2017 groundwater sampling event of 192 µg/l for monitoring well DG-03D was used in place of the concentration of 212 µg/l used in the June 2016 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 31 (using benzene saturation limit to represent LNAPL) to 504 years (using maximum benzene concentration observed in monitoring well WRFAR10-03S during the 2010 groundwater sampling event) for the AquaGate+Organoclay and 15 years (using most recent highest actual dissolved arsenic concentrations) for the AquaGate+ProvectIRM. The updated estimate of the remaining adsorption capacity of the AquaGate+ProvectIRM did not change from the June 2016 estimate because of the decrease arsenic concentration for 2017.

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.

Table 1
Walnut River Surface Water Sampling
Summary of Analytical Results

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

PERIOD: From 01/01/2017 thru 09/29/2017 - Inclusive
SAMPLE TYPE: Water
Date: 09/29/2017

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	<0.30	<0.30	<0.30	<10	<0.30	<0.75	<0.30
Seep 8	7/20/2017	<0.30	<0.30	<0.30	<10	<0.30	<0.75	<0.30
Upstream	7/20/2017	<0.30	<0.30	<0.30	<10	<0.30	<0.75	<0.30

[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 Advisorie
KDHE Surface Water SL = Domestic Water Supply Screening Levels, Kansas Surface Water Quality Standards: Tables of Numeric Criteria, January 15, 201
(a) = Criterion not available
(b) = US EPA has promulgated criterion for Kansas under the Code of Federal Regulations, Title 40, part 131.3

Table 1
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Summary of Analytical Results

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

PERIOD: From 01/01/2017 thru 09/29/2017 - Inclusive
SAMPLE TYPE: Water
Date: 09/29/2017

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	<0.30	<0.30	<1.3	<0.30	<0.30	<0.30	<0.65
Seep 8	7/20/2017	<0.30	<0.30	<1.3	<0.30	<0.30	<0.30	<0.65
Upstream	7/20/2017	<0.30	<0.30	<1.3	<0.30	<0.30	<0.30	<0.65

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

PERIOD: From 01/01/2017 thru 09/29/2017 - Inclusive
SAMPLE TYPE: Water

Date: 09/29/2017

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	<1.9	<2.0	<3.7	<2.2	<0.026	<0.029	<0.023
Seep 8	7/20/2017	<2.1	<2.3	<4.3	<2.6	<0.029	<0.033	<0.026
Upstream	7/20/2017	<1.9	<2.0	<3.8	<2.3	<0.030	<0.034	<0.027

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Walnut River Surface Water Sampling
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Former Augusta Refinery, Augusta, KS
Williams Petroleum Services, LLC

PERIOD: From 01/01/2017 thru 09/29/2017 - Inclusive
SAMPLE TYPE: Water

Date: 09/29/2017

SITE	DATE	Pyrene (ug/l)	Arsenic (ug/l)	Barium (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Lead (ug/l)	Mercury (ug/l)
Maximum Contaminant Level			10	2000	5	100	15	2
KDHE Surface Water SL		960[(b)]	10	2000	5	100	15	2
Seep 7	7/20/2017	<0.019	[1.6]	[157]	<0.20	<1.0	<1.1	<0.030
Seep 8	7/20/2017	<0.022	<1.3	[155]	<0.20	<1.0	[1.2]	[0.041]
Upstream	7/20/2017	<0.022	[2.0]	[148]	<0.20	<1.0	<1.1	<0.030

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

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Walnut River Surface Water Sampling
Summary of Analytical Results

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

PERIOD: From 01/01/2017 thru 09/29/2017 - Inclusive
SAMPLE TYPE: Water

Date: 09/29/2017

SITE	DATE	Selenium (ug/l)	Silver (ug/l)	Hardness (mg/l)
Maximum Contaminant Level		50		
KDHE Surface Water SL		50	100	
Seep 7	7/20/2017	<2.9	<0.70	216
Seep 8	7/20/2017	<2.9	<0.70	226
Upstream	7/20/2017	<2.9	<0.70	236

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

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Table 2

Permeable Adsorptive Barrier Capacity Calculation
Walnut River AOI ICM Post-Construction Performance Monitoring
July 2016 through June 2017

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	27925.8	504
27709	Benzene[6]	58,000	8.64	0.0204	104	854	26855	31
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]	192	8.64	0.0204	104	2.83	42.67	15.1

[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 ad 140 feet long (Burns&McDonnell, Sept. 13, 2016).

[5]Maximum benzene concentration observed 2010 sampling event (WRFAR10-03S). WRFAR10-03S had LNAPL during the 2017 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 2017 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 Reffinery Routine Site Check Inspection Form

Project # 152561-110 21320
Date : 1-23-17
Weather: Clear 35-45°F
Inspector: Phil Osborn

Check List	Comments
Overhead Line fuses:	Fuses are ok. By the east gate.
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	Ok. Dive site with Mike Benjamin Burns + McDonnell
Sign IN/OUT sheet Check:	OK. New sheets added 1-18-17
SWPP drainage and site ponding water check:	Some water in ditch from recent rains - started west pump @ 11:50.
South Pond Info:	11:50 water level at 1.8'.
North Pond info:	Water level is just up to outfall discharge
Pump House check: East & West Pumps	Started west pump at 11:50. East pump turned off inside Electric Box.
Flood corridor check:	Good, recently mowed.
River Outfall check (Qtrly): (check valve annually)	looks good. Did not check valve because pond water was up to valve
Fence and Gate Breech checks:	None noted.
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	looks good.
Site mowing and growth check:	looks good. Early Bird finished fall mowing east of Ditch and levees
LNAPL containment storage:	looks good. Put new closed top drum w/ liable inside containment
Misc Site Info:	AOI area at Walnut R. Ave looks good.

Former Augusta Refinery Routine Site Check Inspection Form

Project # 152561 - 1102320
Date : 1/24/17
Weather: Warm
Inspector: Michael Lee.

Product and Water Level information for wells that have historically shown LNAPL

	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	14.15	14.15	—
FAR10-6S	8.31	8.31	—
FAR10-7S	6.54	6.54	—
GM-1SR	10.56	11.34	0.4L LNAPL Removed.
GM-2S	13.35	13.57	0.3L LNAPL Removed
GM-3S	4.72	4.72	—
GM-6SR	9.98	9.98	—
GM-9	6.23	6.26	0.1L LNAPL Removed
WRAOI16-02	22.12	22.18	0.5L LNAPL Removed.
WRAOI16-01	23.41	23.41	—

1/24/17

Former Augusta Reffinery Routine Site Check Inspection Form

Project # William AFA
Date : 2-22-17
Weather: Clear 65 °F
Inspector: Phil Osborn + Michael Lee

Check List	Comments
Overhead Line fuses:	OK
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	Inspection completed during Fence security walk. Nustar backhoe operator on-site to
Sign IN/OUT sheet Check:	O/C
SWPP drainage and site ponding water check:	Water level was up slightly in Ditch turned on West Pump @ 850
South Pond Info:	Water level 1-5'
North Pond info:	Water level unmeasurable.
Pump House check: East & West Pumps	pump on west pump - @ 850 East pump dripped out remarks oft
Flood corridor check:	Water level up - turned on west pump. - Turned off west pump.
River Outfall check (Qtrly): (check valve annually)	Checked - looks ok.
Fence and Gate Breech checks:	Inspection completed last Friday
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Inspected, grass coverage good.
Site mowing and growth check:	Site looks good
LNAPL containment storage:	Inspected - ok
Misc Site Info:	Inspected WRAE - Tyre ruts found on muddy grass seeding area. - Needs more grass coverage

Former Augusta Refinery Routine Site Check Inspection Form

Project # 15256.110213320

Date : 2/23/2017

Weather: ~~38°F~~ 71°F

Inspector: Michael Lee

Product and Water Level information for wells that have historically shown LNAPL

	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	14.39	14.39	N/A
FAR10-6S	8.29	8.29	N/A
FAR10-7S	7.05	7.05	N/A
GM-1SR	10.68	~~10.~~ 11.52	Peripumped 1.0L LNAPL 1.0L H_2O
GM-2S	13.95	14.17	Peripumped 0.5L LNAPL 0.3L H_2O
GM-3S	5.31	5.31	N/A
GM-6SR	10.26	10.26	N/A
GM-9	7.31	7.31	N/A
WRAOI16-02	22.58	22.63	Removed 0.3L LNAPL, 0.5L H_2O
WRAOI16-01	23.13	23.13	N/A

Former Augusta Refinery Routine Site Check Inspection Form

Project #
Date : 7-22-17
Weather: Cloudy 72°F
Inspector: Phil Osborn [signature]

Check List	Comments
Overhead Line fuses:	O/C
Locks at, Gate 1: Gate 15: Gate 12: Gate 16: Gate 14: Gate 17:	O/C
Sign IN/OUT sheet Check: O/C	
SWPP drainage and site ponding water check: completed 1/4	inspection log
South Pond Info: 1.2' on staff gauge	
North Pond info: below road but up to outfall	
Pump House check: East & West Pumps	Turned on west lever pump 14:40 turned off @ 17:05. Ran East pump 1-2 min.
Flood corridor check: mowed looks good	
River Outfall check (Qtrly): (check valve annually)	white water River above outfall, OK last month, will check when River is back down –
Fence and Gate Breech checks: O/C	
SWMU 1&2 checks: (ruts, erosion, burrows, etc) OK	
Site mowing and growth check: O/C	
Misc Site Info: River AOI	Walnut River up to lower bank may need to over seed over –

Former Augusta Refinery Routine Site Check Inspection Form

Project #

Date : 3-22-17 & 3-24-17

Weather: cloudy 70°F SW wind 20 mph

Inspector: Phil Osborn

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
3/22 FAR10-5S	—	15.53	Trace LNAPL on probe
3/22 FAR10-6S	—	8.37	
3/22 FAR10-7S	—	9.04	
3/22 GM-1SR	12.28	13.10	Pumped 3 Qts LNAPL DTW 13.72 after
3/22 GM-2S	14.95	15.16	Pumped 7 oz LNAPL 7 oz water DTW 15.44 after
3/24 GM-3S	—	6.98	
3/24 GM-6SR	—	11.55	
3/24 GM-9	8.74	8.77	pumped 20z LNAPL 10 oz water DTW 8.95 after
3/24 WRAOI16-02	—	24.11	
3/24 WRAOI16-01	23.83	23.87	pumped 200 ml water & 10 ml LNAPL 23.94 DTW after

CB&I Wichita, Kansas
Site Visit Form

15256 1 – 1102 1320

Project: Williams FMC	Project Number: ~~149093~~
Task: Site Inspection	Personnel: Phil Osborn
Methodology:	Equipment:
Weather: Clear 70°F	

Date(s): 4-20-17

Time:	Notes:
15:15	Completed inspection. River AOI Walnut River @ up- river stage @ 6.78 ft Photo 1 looking S. along West bank Photo 2 looking ~~at~~ East at dam. No noted seeps —
16:45	Completed Site inspection. Michael Lee had stopped pumping into South pond on 4/19 pm. South pond is full and discharging into N. pond. Cleaned debris from culvert inlet S. pond has some flow ~~from~~ into Summit. Photo 3 S. pond gauge pole ~ 3.5' N. pond gauge pole ~ 1.0' Photo 4 looking West at Road (levee) between South + North ponds — Photo 5 looking N. at S. pond outfall photo 6 S. pond outfall photo 7 looking N along levee on West Side N. pond photo 8 looking NE NW corner S. pond. photo 9 looking S along levee on West side S. pond photo 10 looking N. River outfall to N. pond.
17:30	Offsite

Name (Print): Phil Osborn Signature:

Name (Print): Signature:

Former Augusta Refinery Routine Site Check Inspection Form

Project # 152561-110 21320
Date : 4-20-17
Weather: Clear 70°
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:	Michael Lee has been signing in and out
SWPP drainage and site ponding water check:	Drainage is ok, Michael Lee has been running West levee pump last 3-days
South Pond Info:	South pond is full (3.5') and discharging into N pond.
North Pond info:	water level on rod ~ 1',
Pump House check: East & West Pumps	both pumps operational
Flood corridor check:	looks ok.
River Outfall check (Qtrly): (check valve annually)	River outfall OK
Fence and Gate Breech checks:	No fence breeches noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Michael Noted burrows on SWMU-2
Site mowing and growth check:	Grass is starting to grow
Misc Site Info:	LNAPL Gauge gauge is OK.

Former Augusta Refinery Routine Site Check Inspection Form

Project # 152561 - 11021320
Date : 4/17/17 - 4/18/17
Weather: Warm 76°F
Inspector: Michael Lee

Product and Water Level information for wells that have historically shown LNAPL

	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	—	7.40	—
FAR10-6S	—	7.10	—
FAR10-7S	—	6.47	—
GM-1SR	7.89	8.02	LNAPL + H_2O pumped by peristaltic 0.1L
GM-2S	10.34	10.35	LNAPL + H_2O pumped by peristaltic 0.8L
GM-3S	— ~~4.75~~ mc	4.75	—
GM-6SR	—	6.17	—
GM-9	—	3.77	—
WRAOI16-02	18.60	18.63	LNAPL + H_2O pumped by Peristaltic - 0.2L
WRAOI16-01	—	14.35	—

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561 – 1102320
Date : 5-23-17
Weather: Clear, 60°F
Inspector: Phil Osborn

Check List	Comments
Overhead Line fuses:	O/K Looks like tripped but started west sewer pump –
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:	water levels just up to top of road South of SWMU-17
South Pond Info:	Started west level pump. ATW at Impulse 4.87
North Pond info:	ATW at Impulse 3.96
Pump House check: East & West Pumps	Started west pump @ 8:45 – Bumped East pump OK –
Flood corridor check:	Grass 1-1.5' tall called Early Bird Mow
River Outfall check (Qtrly): (check valve annually)	water at Outfall, inlet over top pipe – checked river outfall OK. No discharge
Fence and Gate Breech checks:	OK none noted
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	OK
Site mowing and growth check:	Grass in 1' on Capl –
Misc Site Info:	LNAPL / Drum Storage OK River AOF OK –

Former Augusta Refinery Monthly Site Inspection Form

Project # 15261-110213.20

Date : 5-23-17

Weather: Clear 60°F

Inspector: Phil Osborn

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S 1420	—	8.54	
FAR10-6S 1425	—	6.79	
FAR10-7S 1445	—	6.28	
GM-1SR 1440	7.23	7.35	20 oz product 5 oz water
GM-2S 1450 ~~1442~~	Trace	9.25	6 oz water & Trace Product
GM-3S 1443	—	4.61	
GM-6SR 1415	—	5.93	
GM-9 11:30	—	2.73	
WRAOI16-02 1550	18.97	18.99	
WRAOI16-01 1545	—	18.70	

Former Augusta Refinery Monthly Site Inspection Form

Project # 152516, 1102320

Date : 6-19 + 6-20-17

Weather: Hot, sunny, windy

Inspector: Jacque Wilson / 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:	water levels up in ditch, will pump down, due to recent rain
South Pond Info:	2.8 ft
North Pond info:	3.5 ft
Pump House check: East & West Pumps	West Pump cylinoid out East Pump OK (operational)
Flood corridor check:	mowed within last 2 weeks
River Outfall check (Qtrly): (check valve annually)	water over outfall
Fence and Gate Breech checks:	None
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	one burrow, noted previously
Site mowing and growth check:	mowed fence within last 2 weeks
Misc Site Info:	LNAPL Storage OK Tree limb over fence west of SWMU 15

Former Augusta Refinery Monthly Site Inspection Form

Project # 152541

Date : 6-20-17

Weather: Hot, Sunny, Windy

Inspector: Jacque Wilson + Phil Osborn

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	NA	11.34'	
FAR10-6S	NA	7.51'	
FAR10-7S	NA	6.55'	
GM-1SR	8.32'	8.35'	Pumped 8oz product + 24oz water. DTP= 8.72' DTW=8.74' after pumping
GM-2S	Trace	11.03'	
GM-3S	NA	4.75'	
GM-6SR	NA	7.62'	
GM-9	NA	5.31'	
WRAOI16-02	19.84'	19.85'	
WRAOI16-01	Trace	21.02'	

CB&I Wichita, Kansas
Site Visit Form

Project: Williams FAR	Project Number: 152561
Task: Site Inspection	Personnel: Jaque Wilson
Methodology:	Equipment: IP, Peri. pump
Weather: Hot, humid, windy 90°-100°	

Date(s): 7-18-17

Time:	Notes:
7-18 950	On-site, sign-in load equipment.
1100	SWMU 1+2 Site Inspect & LNAPL Removal Activities.
	See attached form for details
1200	Finish SWMU 1+2. Resume other LNAPL activities
1430	Resume monthly site inspection
1530	Done w/ Site Inspection, except for River AOI area.
	Resume LNAPL activities
1610	Sign-out, off-site
7-19 ~~7-20~~ 1130	Gauge & LNAPL Removal from River AOI
1230	Cap inspection - good vegetative cover, veg is mainly weeds & needs to be mowed.
	Iron staining at Seep 8 location.
1245	Resume LNAPL activities for remaining wells.

Name (Print): _____ Signature: _____

Name (Print): _____ Signature: _____

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561

Date : 7-18-17

Weather: Hot, Sunny, humid 90-100°

Inspector: Jacque Wilson

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, Dry conditions, still some water in ditch
South Pond Info:	2.9 ft stadia rod 7-18-17 @ 1500 cleaned out drainage 5.18 ft gauge port 7-20-17 @ 1010
North Pond info:	2.65' gauge port 7-20-17 @ 1015 3.8 stadia rod 7-20-17 @ 1020
Pump House check: East & West Pumps	East Pump Operational, pumping at time of Inspection West Pump cylinder out - contacted contract for repairs
Flood corridor check:	Needs to be mowed
River Outfall check (Qtrly): (check valve annually)	Checked in June with SWPPP Inspection
Fence and Gate Breech checks:	None. Tree limb over fence W of SWMU 15 (previously noted)
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	one burrow - noted previously, Grass 1½ - 2 ft tall.
Site mowing and growth check:	Grass is tall, needs to be mowed
River AOI Inspection:	Good vegetative cover, overgrown weeds need to be mowed. Iron staining at seeps. Other areas look good.
Product Storage Unit Inspection:	OK
Other comments:	None.

Former Augusta Refinery Monthly Site Inspection Form

Project # _____

Date : 7-18-17

Weather: hot, humid, sunny

Inspector: Jaqueline Wilson

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	NA	12.41'	
FAR10-6S	Trace	7.67'	
FAR10-7S	NA	8.79'	
GM-1SR	9.46'	9.51'	24oz Product + 360z water DTP= NA DTW= 10.15' - after removal
GM-2S	12.90'	12.91'	
GM-3S	NA	7.00'	
GM-6SR	NA	9.03'	
GM-9	Trace	6.67'	
WRAOI16-02	21.29'	21.31'	Did not pump product
WRAOI16-01	NA	22.49'	

CB&I Wichita, Kansas
Site Visit Form

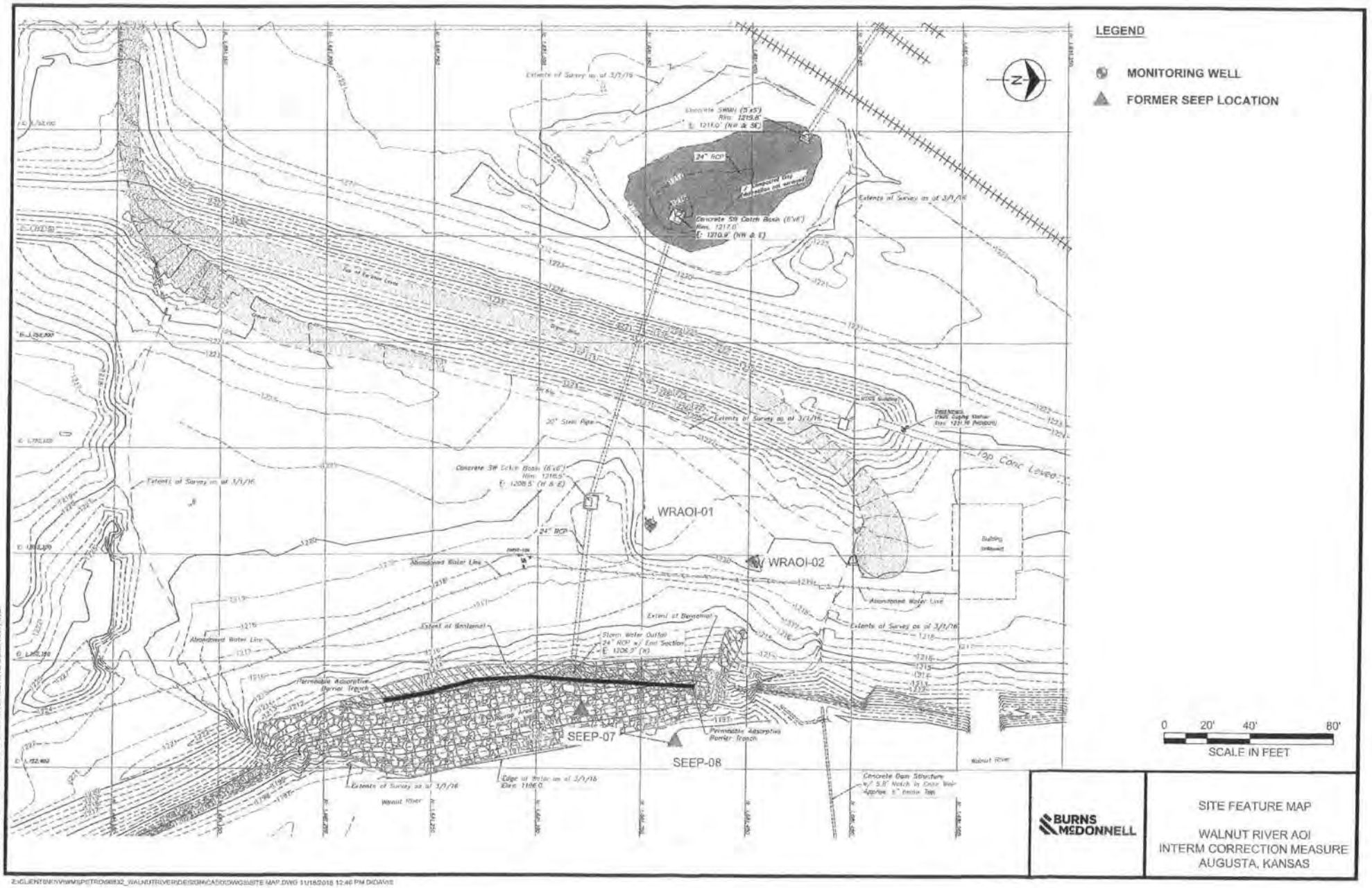
Project: Williams FAR	Project Number: 152561.113213.20
Task: River AOI sampling	Personnel: Jacque Wilson, Phil Osborn
Methodology: SW Sampling - Grab	Equipment: Dip Sampler
Weather: hot - 100°, sunny, windy	

Date(s): 7-20-17

Time:	Notes:
1200	River AOI Sampling. On-site after LNAPL activities to Sampling River seeps. Jacque Wilson + Phil Osborn
	Collect surface water grab samples from Seep 7, Seep 8, Upstream
1240	Collect Seep-7 ~~for~~ using dip sampler ≈ 3ft from shoreline
1255	Collect Seep 8 ≈ 2 ft out from metal guard. Iron staining at seep location
1310	Collect Upstream ≈ 3 ft out, upstream of seep 8
	Collect samples for: VOCs, SVOCs, total + dissolved mets, + hardness (collect in unpres. w/ d. metals)
	Phil took photos of sampling locations
1345	Sign-out, off site
	Ship samples, unload equipment
	Phil checked river flow - River Elevation = 5.55ft. + flow = 50 scfm.

Name (Print): Jacque Wilson Signature: Jacque Wilson

Name (Print): _____ Signature: _____



Z:\CLIENTS\ENV\WMSPETRO\96832_WALNUTRIVER\DESIGN\CAD\DWGS\SITE MAP.DWG 3/18/2016 12:40 PM DKDAVIS

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

PAGE ___ OF ___

FED-EX Tracking # | Bottle Order Control #

Accutest Quote # | Accutest Job #

Client / Reporting Information

Company Name: CB&I

Street Address: 5800 West 29th Street North

City: Wichita | State: KS | Zip: 67205

Project Contact: Phil Osborn | E-mail: Phil.Osborn@cbi.com

Phone # | Fax #

Sampler(s) Name(s): Jacquelyn Wilson | Phone #

Project Information

Project Name: Surface Water

Street | City | State

Project # | Client Purchase Order #

Project Manager

Billing Information (if different from Report to)

Company Name | Street Address | City | State | Zip

Attention:

Requested Analyses

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	Zn/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	VOC 8260 Special List	As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010	**Dissolved As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010	SVOC 8270 Special List	SIM 8270 Special List	Phenanthrene by SIM 8270 (sub to NJ)	Chrysene by SIM 8270 (sub to NJ)	Hardness				LAB USE ONLY
	Seep 7	7-20-17	1240	JW	SW	9	3			1		5							X	X	X	X	X	X	X	X			
	Seep 8	"	1255	"	SW	9	3			1		5							X	X	X	X	X	X	X	X			
	Upstream	"	1310	"	SW	9	3			1		5							X	X	X	X	X	X	X	X			
	Trip Blank	"	—	"	SW	9	3			1		5							X	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~ JW					

Number of preserved Bottles

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day *RUSH*
- [ ] 4 Day *RUSH*
- [ ] 3 Day *RUSH*
- [ ] 2 Day *RUSH*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

8270SL = Bis(2-ethylhexylphthalate), 2-Methylnaphthalene, Benzoic Acid, Pentachlorophenol
SIM SL = Naphthalene, Pyrene
** Dissolved Metals to be filtered in LAB

Metals go to FLORIDA!

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Jacquelyn Wilson	7-20-17 1420	FedEx	2		2
3			3	4		4
5			5			

Custody Seal # | [ ] Intact [ ] Not intact | Preserved where applicable [ ] | On Ice [ ] | Cooler Temp.

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561

Date : 8-22-17

Weather: Cloudy, breezy, 80°

Inspector: Jacque Wilson

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:	Good
SWPP drainage and site ponding water check:	Water in site drainage
South Pond Info:	Staudia Rod = 2 ft. Not flowing into North Pond Gauge Port = 6.06 ft. Pond levels down.
North Pond info:	Gauge Port = 3.38 ft. Pond levels down.
Pump House check: East & West Pumps	OK levee pond down. East Pump operational, west pump has cylindid out.
Flood corridor check:	Needs to be mowed
River Outfall check (Qtrly): (check valve annually)	NA. Checked in June + will check in Sept.
Fence and Gate Breech checks:	OK West fence - long piece of wire in road; fence looked ok in area, not sure where wire came from. moved out of road.
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	Needs to be mowed, grass = 3 ft tall.
Site mowing and growth check:	Site needs to be mowed.
River AOI Inspection:	Good vegetative cover. Needs to be mowed.
Product Storage Unit Inspection:	OK.
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561.
Date : 8-22-17
Weather: Cloudy, breezy, 80°
Inspector: Jacque Wilson

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	Trace	14.52'	
FAR10-6S	Trace	8.30'	
FAR10-7S	—	11.19'	
GM-1SR	11.74'	11.89'	Purged 200z Product & 200z water DTP=12.27' DTW=12.30' after purge
GM-2S	14.61'	14.63'	
GM-3S	—	8.48'	
GM-6SR	—	11.25'	
GM-9	Trace	8.72'	
WRAOI16-~~02~~ 01	—	22.97'	
WRAOI16-~~01~~ 02	21.63'	21.65'	

Former Augusta Refinery Monthly Site Inspection Form

Project # 156521

Date : 9-19 & 9-20-2017

Weather: Hot, sunny, windy

Inspector: Jacque Wilson

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:	Drainage & Ponding down due to dry conditions
South Pond Info:	Water levels down. DTW = 6.55' Gauge Port Stadia Rod = 1.16'
North Pond info:	Took with transducer download on 9-14-17 - DTW = 4.00' Gauge Port
Pump House check: East & West Pumps	West pump - eylinoid out East Pump operational
Flood corridor check:	Good condition. water levels down
River Outfall check (Qtrly): (check valve annually)	Good Condition
Fence and Gate Breech checks:	None
SWMU 1&2 checks: (ruts, erosion, burrows, etc)	One burrow, noted previously
Site mowing and growth check:	Needs to be mowed
River AOI Inspection:	Good condition; part of it has been mowed
Product Storage Unit Inspection:	OK
Other comments:	

Former Augusta Refinery Monthly Site Inspection Form

Project # 152561
Date : 9-19-2017 / 9-20-17
Weather: Hot, Sunny, Windy
Inspector: Jacque Wilson

Product and Water Level Information for wells that historically shown LNAPL

Well	Product Level (TOC)	Water Level (TOC)	Comments/Product Removed
FAR10-5S	Trace	~~16.12~~ 16.12'	
FAR10-6S	—	8.63'	
FAR10-7S	—	13.08'	
GM-1SR	13.75	14.06	Pumped 32oz ~~product~~ + 40 oz water After DTP=14.56' DTW=14.59'
GM-2S	16.13'	16.19' ~~14.54'~~	Pumped 4oz product + 12oz water After DTP=Trace DTW=16.42'
GM-3S	—	11.54'	
GM-6SR	—	13.07'	
GM-9	—	10.29'	
WRAOI16-02	22.61'	22.63'	
WRAOI16-01	—	23.85'	

Photographic Record

Client: Williams Petroleum Services, LLC
Location: Walnut River AOI
Former Augusta Refinery
Augusta, Kansas
Project No. 149093

Photographer: Phil Osborn
Photograph Date:

Photo No: 1 **Picture Direction**: South

Description: 04/21/2017 Across AOI from north end of the Permeable Adsorptive Barrier.

Photo No: 2 **Picture Direction**: South

Description: 07/21/2017 Across AOI from north end of the Permeable Adsorptive Barrier.

Photo No: 3 **Picture Direction**: Southwest

Description: 07/21/2017 Across AOI from north end of the Permeable Adsorptive Barrier.

Photo No: 4 **Picture Direction**: South

Description: 07/21/2017 Vegetation and grass on top of the Walnut River AOI area.

Photographic Record

Client: Williams Petroleum Services, LLC
Location: Walnut River AOI
Former Augusta Refinery
Augusta, Kansas
Project No. 149093

Photographer: Phil Osborn
Photograph Date:

	
Photo No: 5 **Picture Direction**: East	**Photo No:** 6 **Picture Direction**: South
Description: 07/21/2017 East of Former Seep 7 surface water sample location beneath storm water outfall to Walnut River..	**Description**: 07/21/2017 Taken from up gradient surface water sample location looking back towards former Seep 8 location.

Photo No: **Picture Direction**:	**Photo No:** **Picture Direction**:
Description:	**Description**:

e-Hardcopy 2.0
Automated Report

Technical Report for

APTIM

Surface Water

SGS Accutest Job Number: TD6679

Sampling Date: 07/20/17

Report to:

APTIM
1950 S. Florence
Wichita, KS 67209
phil.osborn@shawgrp.com

ATTN: Mr. Phil Osborn

Total number of pages in report: 71

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2016-170) VA (8999)

Sections: 1 2 3 4 5 6 7 8 9 10 11

Table of Contents

Sample Summary

APTIM

Job No: TD6679

Surface Water

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD6679-1	07/20/17	12:40	JW	07/24/17	AQ	Ground Water	SEEP 7
TD6679-1A	07/20/17	12:40	JW	07/24/17	AQ	Ground Water	SEEP 7
TD6679-1F	07/20/17	12:40	JW	07/24/17	AQ	Groundwater Filtered	SEEP 7
TD6679-2	07/20/17	12:55	JW	07/24/17	AQ	Ground Water	SEEP 8
TD6679-2A	07/20/17	12:55	JW	07/24/17	AQ	Ground Water	SEEP 8
TD6679-2F	07/20/17	12:55	JW	07/24/17	AQ	Groundwater Filtered	SEEP 8
TD6679-3	07/20/17	13:10	JW	07/24/17	AQ	Ground Water	UPSTREAM
TD6679-3A	07/20/17	13:10	JW	07/24/17	AQ	Ground Water	UPSTREAM
TD6679-3F	07/20/17	13:10	JW	07/24/17	AQ	Groundwater Filtered	UPSTREAM
TD6679-4	07/20/17	00:00	JW	07/24/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: TD6679
Account: APTIM
Project: Surface Water
Collected: 07/20/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD6679-1	**SEEP 7**					
Arsenic [a]		1.6 B	10	1.3	ug/l	SW846 6010C
Barium [a]		157 B	200	1.0	ug/l	SW846 6010C
Hardness, Total as CaCO3		216	5.0	3.1	mg/l	SM 2340C-2011
TD6679-1A	**SEEP 7**					
No hits reported in this sample.						
TD6679-1F	**SEEP 7**					
Arsenic [a]		1.9 B	10	1.3	ug/l	SW846 6010C
Barium [a]		158 B	200	1.0	ug/l	SW846 6010C
Mercury [a]		0.036 B	0.50	0.030	ug/l	SW846 7470A
TD6679-2	**SEEP 8**					
Barium [a]		155 B	200	1.0	ug/l	SW846 6010C
Lead [a]		1.2 B	5.0	1.1	ug/l	SW846 6010C
Mercury [a]		0.041 B	0.50	0.030	ug/l	SW846 7470A
Hardness, Total as CaCO3		226	5.0	3.1	mg/l	SM 2340C-2011
TD6679-2A	**SEEP 8**					
No hits reported in this sample.						
TD6679-2F	**SEEP 8**					
Arsenic [a]		2.2 B	10	1.3	ug/l	SW846 6010C
Barium [a]		156 B	200	1.0	ug/l	SW846 6010C
Mercury [a]		0.039 B	0.50	0.030	ug/l	SW846 7470A
TD6679-3	**UPSTREAM**					
Arsenic [a]		1.6 B	10	1.3	ug/l	SW846 6010C
Barium [a]		150 B	200	1.0	ug/l	SW846 6010C
Mercury [a]		0.042 B	0.50	0.030	ug/l	SW846 7470A
Hardness, Total as CaCO3		236	5.0	3.1	mg/l	SM 2340C-2011
TD6679-3A	**UPSTREAM**					
No hits reported in this sample.						

Summary of Hits

Job Number: TD6679
Account: APTIM
Project: Surface Water
Collected: 07/20/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD6679-3F	**UPSTREAM**					
Arsenic [a]		2.0 B	10	1.3	ug/l	SW846 6010C
Barium [a]		148 B	200	1.0	ug/l	SW846 6010C
TD6679-4	**TRIP BLANK**					

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SEEP 7		
Lab Sample ID:	TD6679-1	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0061996.D	1	07/26/17 17:47	ZQ	n/a	n/a	VE2753
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

EPA 8260 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.050	0.010	mg/l	
71-43-2	Benzene	ND	0.0010	0.00030	mg/l	
108-90-7	Chlorobenzene	ND	0.0010	0.00030	mg/l	
75-15-0	Carbon disulfide	ND	0.0050	0.00075	mg/l	
75-34-3	1,1-Dichloroethane	ND	0.0010	0.00030	mg/l	
75-35-4	1,1-Dichloroethylene	ND	0.0010	0.00030	mg/l	
100-41-4	Ethylbenzene	ND	0.0010	0.00030	mg/l	
75-09-2	Methylene chloride	ND	0.0050	0.0013	mg/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00030	mg/l	
71-55-6	1,1,1-Trichloroethane	ND	0.0010	0.00030	mg/l	
127-18-4	Tetrachloroethylene	ND	0.0010	0.00030	mg/l	
108-88-3	Toluene	ND	0.0010	0.00030	mg/l	
75-01-4	Vinyl chloride	ND	0.0010	0.00030	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.00065	mg/l	
	m,p-Xylene	ND	0.0020	0.00044	mg/l	
95-47-6	o-Xylene	ND	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		72-122%
17060-07-0	1,2-Dichloroethane-D4	118%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SEEP 7		
Lab Sample ID:	TD6679-1	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P49540.D	1	07/27/17 15:27	SC	07/27/17 05:00	OP44142	EP2391
Run #2							

	Initial Volume	Final Volume
Run #1	860 ml	1.0 ml
Run #2		

EPA 8270 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	0.023	0.0020	mg/l	
87-86-5	Pentachlorophenol	ND	0.029	0.0037	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.0058	0.0022	mg/l	
91-57-6	2-Methylnaphthalene	ND	0.0058	0.0019	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	28%		10-66%
4165-62-2	Phenol-d5	16%		10-63%
118-79-6	2,4,6-Tribromophenol	68%		32-128%
4165-60-0	Nitrobenzene-d5	62%		29-115%
321-60-8	2-Fluorobiphenyl	69%		34-113%
1718-51-0	Terphenyl-d14	70%		23-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SEEP 7
Lab Sample ID: TD6679-1
Matrix: AQ - Ground Water
Project: Surface Water

Date Sampled: 07/20/17
Date Received: 07/24/17
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	1.6 B	10	1.3	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Barium [a]	157 B	200	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Lead [a]	1.1 U	5.0	1.1	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	0.030 U	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [2]	SW846 7470A [4]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: F:MA14253
(2) Instrument QC Batch: F:MA14254
(3) Prep QC Batch: F:MP32504
(4) Prep QC Batch: F:MP32510

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SEEP 7		
Lab Sample ID:	TD6679-1	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
		Percent Solids:	n/a
Project:	Surface Water		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Hardness, Total as CaCO3	216	5.0	3.1	mg/l	1	08/02/17 11:30	PA	SM 2340C-2011

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SEEP 7		
Lab Sample ID:	TD6679-1A	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3P61091.D	1	07/28/17 11:39	ANJ	07/27/17 08:30	N:OP4791A	N:E3P2874
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN Special List by SIM

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	0.00010	0.000026	mg/l	
91-20-3	Naphthalene	ND	0.00010	0.000029	mg/l	
85-01-8	Phenanthrene	ND	0.00010	0.000023	mg/l	
129-00-0	Pyrene	ND	0.00010	0.000019	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		29-124%
321-60-8	2-Fluorobiphenyl	77%		23-122%
1718-51-0	Terphenyl-d14	84%		22-130%

(a) Analysis performed at SGS Accutest, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SEEP 7
Lab Sample ID: TD6679-1F
Matrix: AQ - Groundwater Filtered
Project: Surface Water

Date Sampled: 07/20/17
Date Received: 07/24/17
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	1.9 B	10	1.3	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Barium [a]	158 B	200	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Lead [a]	1.1 U	5.0	1.1	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	0.036 B	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [1]	SW846 7470A [3]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: F:MA14254
(2) Instrument QC Batch: F:MA14256
(3) Prep QC Batch: F:MP32510
(4) Prep QC Batch: F:MP32512

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SEEP 8		
Lab Sample ID:	TD6679-2	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0061997.D	1	07/26/17 18:12	ZQ	n/a	n/a	VE2753
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

EPA 8260 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.050	0.010	mg/l	
71-43-2	Benzene	ND	0.0010	0.00030	mg/l	
108-90-7	Chlorobenzene	ND	0.0010	0.00030	mg/l	
75-15-0	Carbon disulfide	ND	0.0050	0.00075	mg/l	
75-34-3	1,1-Dichloroethane	ND	0.0010	0.00030	mg/l	
75-35-4	1,1-Dichloroethylene	ND	0.0010	0.00030	mg/l	
100-41-4	Ethylbenzene	ND	0.0010	0.00030	mg/l	
75-09-2	Methylene chloride	ND	0.0050	0.0013	mg/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00030	mg/l	
71-55-6	1,1,1-Trichloroethane	ND	0.0010	0.00030	mg/l	
127-18-4	Tetrachloroethylene	ND	0.0010	0.00030	mg/l	
108-88-3	Toluene	ND	0.0010	0.00030	mg/l	
75-01-4	Vinyl chloride	ND	0.0010	0.00030	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.00065	mg/l	
	m,p-Xylene	ND	0.0020	0.00044	mg/l	
95-47-6	o-Xylene	ND	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		72-122%
17060-07-0	1,2-Dichloroethane-D4	116%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SEEP 8		
Lab Sample ID:	TD6679-2	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P49541.D	1	07/27/17 15:55	SC	07/27/17 05:00	OP44142	EP2391
Run #2							

	Initial Volume	Final Volume
Run #1	750 ml	1.0 ml
Run #2		

EPA 8270 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	0.027	0.0023	mg/l	
87-86-5	Pentachlorophenol	ND	0.033	0.0043	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.0067	0.0026	mg/l	
91-57-6	2-Methylnaphthalene	ND	0.0067	0.0021	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		10-66%
4165-62-2	Phenol-d5	26%		10-63%
118-79-6	2,4,6-Tribromophenol	77%		32-128%
4165-60-0	Nitrobenzene-d5	64%		29-115%
321-60-8	2-Fluorobiphenyl	73%		34-113%
1718-51-0	Terphenyl-d14	79%		23-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SEEP 8
Lab Sample ID: TD6679-2
Matrix: AQ - Ground Water
Project: Surface Water

Date Sampled: 07/20/17
Date Received: 07/24/17
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	1.3 U	10	1.3	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Barium [a]	155 B	200	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Lead [a]	1.2 B	5.0	1.1	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	0.041 B	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [2]	SW846 7470A [4]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: F:MA14253
(2) Instrument QC Batch: F:MA14254
(3) Prep QC Batch: F:MP32504
(4) Prep QC Batch: F:MP32510

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SEEP 8		
Lab Sample ID:	TD6679-2	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
		Percent Solids:	n/a
Project:	Surface Water		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Hardness, Total as CaCO3	226	5.0	3.1	mg/l	1	08/02/17 11:30	PA	SM 2340C-2011

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SEEP 8		
Lab Sample ID:	TD6679-2A	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3P61092.D	1	07/28/17 12:09	ANJ	07/27/17 08:30	N:OP4791A	N:E3P2874
Run #2							

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

BN Special List by SIM

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	0.00011	0.000029	mg/l	
91-20-3	Naphthalene	ND	0.00011	0.000033	mg/l	
85-01-8	Phenanthrene	ND	0.00011	0.000026	mg/l	
129-00-0	Pyrene	ND	0.00011	0.000022	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		29-124%
321-60-8	2-Fluorobiphenyl	70%		23-122%
1718-51-0	Terphenyl-d14	78%		22-130%

(a) Analysis performed at SGS Accutest, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SEEP 8
Lab Sample ID: TD6679-2F
Matrix: AQ - Groundwater Filtered
Project: Surface Water

Date Sampled: 07/20/17
Date Received: 07/24/17
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	2.2 B	10	1.3	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Barium [a]	156 B	200	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Lead [a]	1.1 U	5.0	1.1	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	0.039 B	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [1]	SW846 7470A [3]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: F:MA14254
(2) Instrument QC Batch: F:MA14256
(3) Prep QC Batch: F:MP32510
(4) Prep QC Batch: F:MP32512

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	UPSTREAM		
Lab Sample ID:	TD6679-3	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0061998.D	1	07/26/17 18:36	ZQ	n/a	n/a	VE2753
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

EPA 8260 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.050	0.010	mg/l	
71-43-2	Benzene	ND	0.0010	0.00030	mg/l	
108-90-7	Chlorobenzene	ND	0.0010	0.00030	mg/l	
75-15-0	Carbon disulfide	ND	0.0050	0.00075	mg/l	
75-34-3	1,1-Dichloroethane	ND	0.0010	0.00030	mg/l	
75-35-4	1,1-Dichloroethylene	ND	0.0010	0.00030	mg/l	
100-41-4	Ethylbenzene	ND	0.0010	0.00030	mg/l	
75-09-2	Methylene chloride	ND	0.0050	0.0013	mg/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00030	mg/l	
71-55-6	1,1,1-Trichloroethane	ND	0.0010	0.00030	mg/l	
127-18-4	Tetrachloroethylene	ND	0.0010	0.00030	mg/l	
108-88-3	Toluene	ND	0.0010	0.00030	mg/l	
75-01-4	Vinyl chloride	ND	0.0010	0.00030	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.00065	mg/l	
	m,p-Xylene	ND	0.0020	0.00044	mg/l	
95-47-6	o-Xylene	ND	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		72-122%
17060-07-0	1,2-Dichloroethane-D4	118%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	UPSTREAM		
Lab Sample ID:	TD6679-3	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P49542.D	1	07/27/17 16:23	SC	07/27/17 05:00	OP44142	EP2391
Run #2							

	Initial Volume	Final Volume
Run #1	850 ml	1.0 ml
Run #2		

EPA 8270 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	0.024	0.0020	mg/l	
87-86-5	Pentachlorophenol	ND	0.029	0.0038	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.0059	0.0023	mg/l	
91-57-6	2-Methylnaphthalene	ND	0.0059	0.0019	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	29%		10-66%
4165-62-2	Phenol-d5	18%		10-63%
118-79-6	2,4,6-Tribromophenol	71%		32-128%
4165-60-0	Nitrobenzene-d5	57%		29-115%
321-60-8	2-Fluorobiphenyl	66%		34-113%
1718-51-0	Terphenyl-d14	66%		23-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: UPSTREAM
Lab Sample ID: TD6679-3
Matrix: AQ - Ground Water
Project: Surface Water

Date Sampled: 07/20/17
Date Received: 07/24/17
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	1.6 B	10	1.3	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Barium [a]	150 B	200	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Lead [a]	1.1 U	5.0	1.1	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Mercury [a]	0.042 B	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [2]	SW846 7470A [4]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/27/17	07/27/17	AFL	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: F:MA14253
(2) Instrument QC Batch: F:MA14254
(3) Prep QC Batch: F:MP32504
(4) Prep QC Batch: F:MP32510

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	UPSTREAM		
Lab Sample ID:	TD6679-3	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
		Percent Solids:	n/a
Project:	Surface Water		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Hardness, Total as CaCO3	236	5.0	3.1	mg/l	1	08/02/17 11:30	PA	SM 2340C-2011

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	UPSTREAM		
Lab Sample ID:	TD6679-3A	**Date Sampled:**	07/20/17
Matrix:	AQ - Ground Water	**Date Received:**	07/24/17
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	3P61093.D	1	07/28/17 12:40	ANJ	07/27/17 08:30	N:OP4791A	N:E3P2874
Run #2							

	Initial Volume	Final Volume
Run #1	860 ml	1.0 ml
Run #2		

BN Special List by SIM

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	0.00012	0.000030	mg/l	
91-20-3	Naphthalene	ND	0.00012	0.000034	mg/l	
85-01-8	Phenanthrene	ND	0.00012	0.000027	mg/l	
129-00-0	Pyrene	ND	0.00012	0.000022	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		29-124%
321-60-8	2-Fluorobiphenyl	78%		23-122%
1718-51-0	Terphenyl-d14	93%		22-130%

(a) Analysis performed at SGS Accutest, Dayton, NJ.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	UPSTREAM		
Lab Sample ID:	TD6679-3F	**Date Sampled:**	07/20/17
Matrix:	AQ - Groundwater Filtered	**Date Received:**	07/24/17
		Percent Solids:	n/a
Project:	Surface Water		

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	2.0 B	10	1.3	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Barium [a]	148 B	200	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Cadmium [a]	0.20 U	5.0	0.20	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Chromium [a]	1.0 U	10	1.0	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Lead [a]	1.1 U	5.0	1.1	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	0.030 U	0.50	0.030	ug/l	1	07/28/17	07/28/17	AFL	SW846 7470A [1]	SW846 7470A [3]
Selenium [a]	2.9 U	10	2.9	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]
Silver [a]	0.70 U	10	0.70	ug/l	1	07/28/17	07/28/17	AFL	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: F:MA14254
(2) Instrument QC Batch: F:MA14256
(3) Prep QC Batch: F:MP32510
(4) Prep QC Batch: F:MP32512

(a) Analysis performed at SGS Accutest, Orlando, FL.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6679-4	**Date Sampled:**	07/20/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/24/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Surface Water		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0061991.D	1	07/26/17 15:44	ZQ	n/a	n/a	VE2753
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

EPA 8260 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	0.050	0.010	mg/l	
71-43-2	Benzene	ND	0.0010	0.00030	mg/l	
108-90-7	Chlorobenzene	ND	0.0010	0.00030	mg/l	
75-15-0	Carbon disulfide	ND	0.0050	0.00075	mg/l	
75-34-3	1,1-Dichloroethane	ND	0.0010	0.00030	mg/l	
75-35-4	1,1-Dichloroethylene	ND	0.0010	0.00030	mg/l	
100-41-4	Ethylbenzene	ND	0.0010	0.00030	mg/l	
75-09-2	Methylene chloride	ND	0.0050	0.0013	mg/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00030	mg/l	
71-55-6	1,1,1-Trichloroethane	ND	0.0010	0.00030	mg/l	
127-18-4	Tetrachloroethylene	ND	0.0010	0.00030	mg/l	
108-88-3	Toluene	ND	0.0010	0.00030	mg/l	
75-01-4	Vinyl chloride	ND	0.0010	0.00030	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.00065	mg/l	
	m,p-Xylene	ND	0.0020	0.00044	mg/l	
95-47-6	o-Xylene	ND	0.0010	0.00030	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

PAGE ___ OF ___

FED-EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest Job # TD6679

Client / Reporting Information

Company Name: CB&I
Street Address: 5800 West 29th Street North
City: Wichita State: KS Zip: 67205
Project Contact: Phil Osborn
E-mail: jacquelyn.wilson@aptim.com Phil.Osborn@cbi.com
Phone #
Fax #
Sampler(s) Name(s): Jacquelyn Wilson
Phone #

Project Information

Project Name: Surface Water
Street
City State
Project #
Client Purchase Order #
Project Manager

Billing Information (if different from Report to)
Company Name
Street Address
City State Zip
Attention:

Requested Analyses: VOC 8260 Special List; As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010; **Dissolved As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010; SVOC 8270 Special List; SIM 8270 Special List; Phenanthrene by SIM 8270 (sub to NJ); Chrysene by SIM 8270 (sub to NJ); Hardness

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	TSP	NaHSO4	ENCORE	OTHER	VOC 8260 Special List	As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010	**Dissolved As, Ba, Cd, Cr, Pb, Hg, Se, Ag by 6010	SVOC 8270 Special List	SIM 8270 Special List	Phenanthrene by SIM 8270 (sub to NJ)	Chrysene by SIM 8270 (sub to NJ)	Hardness	LAB USE ONLY
1	Seep 7	7-20-17	1240	JW	SW	9	3			1		5							X	X	X	X	X	X	X	X	
2	Seep 8	|	1255	|	SW	9	3			1		5							X	X	X	X	X	X	X	X	
3	Upstream	|	1310	|	SW	9	3			1		5							X	X	X	X	X	X	X	X	
4	Trip Blank	|	—	|	SW	9	3			1		5							X	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~ JW		

TAGGED BY: EC

VERIFIED BY: ST

Turnaround Time (Business days)

- [x] Standard
- [ ] 5 Day RUSH
- [ ] 4 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] FULT1 (Level 3+4)
- [ ] REDT1 (Level 3+4)
- [ ] Commercial "C"
- [ ] TRRP
- [ ] EDD Format
- [ ] Other ________

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Comments / Special Instructions

8270SL = Bis(2-ethylhexylphthalate), 2-Methylnaphthalene, Benzoic Acid, Pentachlorophenol
SIM SL = Naphthalene, Pyrene
** Dissolved Metals to be filtered in LAB
Metals go to FLORIDA!

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Jacquelyn Wilson	7-20-17 1420	1 FedEx	2	7/21/17 950	2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice Cooler Temp. 4.6

TD6679: Chain of Custody
Page 1 of 6

SGS ACCUTEST

COOLER TEMP FORM

TC# TD6679

Delivered by (circle one): (FedEx)/UPS ALGC Driver Client

Date: 7-21-17

Client: CB&I

Cooler Number: 1

Thermometer ID: IR9 CF, °C 0 Corrected Temp, °C 4.6

SAMPLES CONTAINED IN COOLER

ORIGIN ID:SGRA (316) 650-4581
PHL OSBORN
CB& I
500 WEST 29TH STREET NORTH
WICHITA, KS 67205
UNITED STATES US

SHIP DATE: 21JUN17
ACTWGT: 55.0 LB MAN
CAD: 0243296/CAFE2916

BILL SENDER

TO SAMPLE MANAGEMENT
SGS ACCUTEST
10165 HARWIN DRIVE
SUITE 150
HOUSTON TX 77036
(713) 271-4700
REF: 50418

FedEx Express E

FedEx
TRK# 0221 7314 4442 3044

FRI – 21 JUL 10:30A
PRIORITY OVERNIGHT

AB SGRA

77036
TX-US IAH

GULF COAST CUSTODY SEAL
14:20 INITIALS dw

2- Liter Ambers-NP
1- P500ml -HNO3
1- P500 ml - NP
- 40 ml -HCL

Form: SM027-06 Rev 10/24/2016

4.1 4

TD6679: Chain of Custody
Page 2 of 6

SGS Accutest Laboratories Sample Receipt Summary

Job Number: TD6679 **Client:** CB&I **Project:** SURFACE WATER

Date / Time Received: **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (4.6/4.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐		☐	☑	☐	☐
2. Trip Blank listed on COC:	☐		☐	☑		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☐		☐	☑		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☐		☑
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☐		☑	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments Received 7 containers, not 9 as per coc. Missing 2 liter ambers for each sample.
Subsampled from plastic 500 ml container about 150 ml for Hardness test and rest of sample for filter metals for all samples.

Problem Resolution

Job Number: TD6679

CSR: Sylvia Garza **Response Date:** 7/25/2017

Response: Lab received enough volume for 8270 analysis.

Sample Receipt Log

Job #: TD6679 **Date / Time Received:** 7/24/2017 **Initials:** ec

Client: CB&I

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD6679-1	LAG	1	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-1	LAG	2	4Z	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-1	500ml	3	SUB	HNO3	pH < 2	IR9	4.6	0	4.6
1	TD6679-1	500ml	4	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-1	250ml	5	3R	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-2	LAG	1	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-2	LAG	2	4Z	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-2	500ml	3	SUB	HNO3	pH < 2	IR9	4.6	0	4.6
1	TD6679-2	500ml	4	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-2	250ml	5	3R	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-2	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-2	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-3	LAG	1	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-3	LAG	2	4Z	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-3	500ml	3	SUB	HNO3	pH < 2	IR9	4.6	0	4.6
1	TD6679-3	500ml	4	SUB	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-3	250ml	5	3R	N/P	Note #2 - Preservative check not applicable.	IR9	4.6	0	4.6
1	TD6679-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-3	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-3	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6

Sample Receipt Log

Job #: TD6679 **Date / Time Received:** 7/24/2017 **Initials:** ec

Client: CB&I

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD6679-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6
1	TD6679-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	4.6	0	4.6

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2753-MB	E0061981.D	1	07/26/17	ZQ	n/a	n/a	VE2753

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6679-1, TD6679-2, TD6679-3, TD6679-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	
	m,p-Xylene	ND	2.0	0.44	ug/l	
95-47-6	o-Xylene	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	112%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	101%	72-126%

Blank Spike Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2753-BS	E0061979.D	1	07/26/17	ZQ	n/a	n/a	VE2753

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6679-1, TD6679-2, TD6679-3, TD6679-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	104	83	46-129
71-43-2	Benzene	25	25.6	102	68-119
108-90-7	Chlorobenzene	25	24.3	97	74-120
75-15-0	Carbon disulfide	25	22.3	89	55-140
75-34-3	1,1-Dichloroethane	25	24.5	98	72-121
75-35-4	1,1-Dichloroethylene	25	24.1	96	67-140
100-41-4	Ethylbenzene	25	27.5	110	71-117
75-09-2	Methylene chloride	25	22.7	91	60-125
1634-04-4	Methyl Tert Butyl Ether	25	22.5	90	65-119
71-55-6	1,1,1-Trichloroethane	25	25.2	101	72-129
127-18-4	Tetrachloroethylene	25	25.2	101	72-132
108-88-3	Toluene	25	26.2	105	73-119
75-01-4	Vinyl chloride	25	20.7	83	54-126
1330-20-7	Xylene (total)	75	80.6	107	74-119
	m,p-Xylene	50	54.5	109	74-119
95-47-6	o-Xylene	25	26.1	104	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6755-5MS	E0061987.D	5	07/26/17	ZQ	n/a	n/a	VE2753
TD6755-5MSD	E0061988.D	5	07/26/17	ZQ	n/a	n/a	VE2753
TD6755-5	E0061984.D	1	07/26/17	ZQ	n/a	n/a	VE2753
TD6755-5	E0061985.D	5	07/26/17	ZQ	n/a	n/a	VE2753

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6679-1, TD6679-2, TD6679-3, TD6679-4

CAS No.	Compound	TD6755-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50 U		625	496	79	625	455	73	9	46-129/25
71-43-2	Benzene	4.2		125	133	103	125	124	96	7	68-119/12
108-90-7	Chlorobenzene	0.86	J	125	123	98	125	113	90	8	74-120/12
75-15-0	Carbon disulfide	5.0 U		125	115	92	125	108	86	6	55-140/24
75-34-3	1,1-Dichloroethane	1.0 U		125	120	96	125	114	91	5	72-121/14
75-35-4	1,1-Dichloroethylene	1.0 U		125	130	104	125	121	97	7	67-140/18
100-41-4	Ethylbenzene	1.0 U		125	139	111	125	130	104	7	71-117/12
75-09-2	Methylene chloride	5.0 U		125	111	89	125	105	84	6	60-125/16
1634-04-4	Methyl Tert Butyl Ether	1.0 U		125	103	82	125	99.5	80	3	65-119/13
71-55-6	1,1,1-Trichloroethane	1.0 U		125	130	104	125	120	96	8	72-129/14
127-18-4	Tetrachloroethylene	1.0 U		125	136	109	125	126	101	8	72-132/14
108-88-3	Toluene	1.0 U		125	131	105	125	122	98	7	73-119/13
75-01-4	Vinyl chloride	247 [a]		125	367	96	125	388	113	6	54-126/17
1330-20-7	Xylene (total)	3.0 U		375	410	109	375	379	101	8	74-119/13
	m,p-Xylene	2.0 U		250	278	111	250	257	103	8	74-119/13
95-47-6	o-Xylene	1.0 U		125	131	105	125	122	98	7	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD6755-5	TD6755-5	Limits
1868-53-7	Dibromofluoromethane	99%	98%	101%	102%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	110%	115%	116%	68-124%
2037-26-5	Toluene-D8	99%	101%	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	99%	103%	102%	72-126%

(a) Result is from Run #2.

* = Outside of Control Limits.

GC/MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP44142-MB	O22370.D	1	07/27/17	GJ	07/27/17	OP44142	EO1264

The QC reported here applies to the following samples: **Method:** SW846 8270D

TD6679-1, TD6679-2, TD6679-3

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	1.7	ug/l	
87-86-5	Pentachlorophenol	ND	25	3.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	1.9	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	1.6	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	19%	10-66%
4165-62-2	Phenol-d5	13%	10-63%
118-79-6	2,4,6-Tribromophenol	52%	32-128%
4165-60-0	Nitrobenzene-d5	48%	29-115%
321-60-8	2-Fluorobiphenyl	48%	34-113%
1718-51-0	Terphenyl-d14	54%	23-138%

Blank Spike Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP44142-BS	O22371.D	1	07/27/17	GJ	07/27/17	OP44142	EO1264

The QC reported here applies to the following samples: **Method:** SW846 8270D

TD6679-1, TD6679-2, TD6679-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	5.1	10	10-91
87-86-5	Pentachlorophenol	50	30.9	62	28-116
117-81-7	bis(2-Ethylhexyl)phthalate	50	34.3	69	50-123
91-57-6	2-Methylnaphthalene	50	32.8	66	36-104

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	26%	10-66%
4165-62-2	Phenol-d5	19%	10-63%
118-79-6	2,4,6-Tribromophenol	64%	32-128%
4165-60-0	Nitrobenzene-d5	62%	29-115%
321-60-8	2-Fluorobiphenyl	64%	34-113%
1718-51-0	Terphenyl-d14	67%	23-138%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6679
Account: SHAWKSWI APTIM
Project: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP44142-MS	O22373.D	1	07/27/17	GJ	07/27/17	OP44142	EO1264
OP44142-MSD	O22374.D	1	07/27/17	GJ	07/27/17	OP44142	EO1264
TD6628-4	O22372.D	1	07/27/17	GJ	07/27/17	OP44142	EO1264

The QC reported here applies to the following samples: **Method:** SW846 8270D

TD6679-1, TD6679-2, TD6679-3

CAS No.	Compound	TD6628-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	21	U	52.6	13.7	26	52.6	14.0	27	2	10-91/38
87-86-5	Pentachlorophenol	26	U	52.6	32.9	63	52.6	34.6	66	5	28-116/29
117-81-7	bis(2-Ethylhexyl)phthalate	5.3	U	52.6	36.1	69	52.6	37.1	70	3	50-123/29
91-57-6	2-Methylnaphthalene	5.3	U	52.6	30.0	57	52.6	30.5	58	2	36-104/30

CAS No.	Surrogate Recoveries	MS	MSD	TD6628-4	Limits
367-12-4	2-Fluorophenol	29%	31%	23%	10-66%
4165-62-2	Phenol-d5	26%	28%	22%	10-63%
118-79-6	2,4,6-Tribromophenol	63%	65%	64%	32-128%
4165-60-0	Nitrobenzene-d5	55%	57%	58%	29-115%
321-60-8	2-Fluorobiphenyl	54%	56%	55%	34-113%
1718-51-0	Terphenyl-d14	51%	52%	51%	23-138%

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD6679
Account: SHAWKSWI - APTIM
Project: Surface Water

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Hardness, Total as CaCO3	GN83621	5.0	0.0	mg/l	100	100	100.0	98-106%

Associated Samples:
Batch GN83621: TD6679-1, TD6679-2, TD6679-3
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD6679
Account: SHAWKSWI - APTIM
Project: Surface Water

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Hardness, Total as CaCO3	GN83621	LA35704-1	mg/l	100	100	0.0	0-10%

Associated Samples:
Batch GN83621: TD6679-1, TD6679-2, TD6679-3
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD6679
Account: SHAWKSWI - APTIM
Project: Surface Water

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Hardness, Total as CaCO3	GN83621	LA35704-1	mg/l	100	50	150	100.0	81-117%

Associated Samples:
Batch GN83621: TD6679-1, TD6679-2, TD6679-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

Page 1 of 2

FED-EX Tracking # 5642 4621 0273

SGS Accutest Job # TD6679

Client / Reporting Information

Company Name: SGS Accutest

Street Address: 10165 Harwin Drive

City: Houston State: TX Zip: 77036

E-mail: sylvia.garza@sgs.com

Phone #: 713-271-4700

Project Information

Project Name: Surface Water

Billing Information (if different from Report to)

Requested Analysis (see TEST CODE sheet)

Sample #	Field ID / Point of Collection	Date	Time	Matrix	# of bottles			LAB USE ONLY
1A	SEEP 7	7.20.17	12:40:00 PM	AQ	1	X	X	
2A	SEEP 8	7.20.17	12:55:00 PM	AQ	1	X	X	E7b
3A	UPSTREAM	7.20.17	1:10:00 PM	AQ	1	X	X	

INITIAL ASSESSMENT 2 E PM

LABEL VERIFICATION JS

Turnaround Time (Business days)

- Std. 10 Business Days
- 5 Day RUSH
- 3 Day EMERGENCY
- 2 Day EMERGENCY
- 1 Day EMERGENCY
- X other Due 8.3.2017

Data Deliverable Information

- Commercial "A" (Level 1)
- Commercial "B" (Level 2)
- FULLT1 (Level 3+4)
- NJ Reduced
- Commercial "C"
- NYASP Category A
- NYASP Category B
- State Forms
- EDD Format
- X Other COMMB

Comments / Special Instructions

Please carefully pack the ambers. Zip & Bagged with EXTRA ICE to avoid breakage. ONE AMBER per sample.

2 WATCH HOLD PLEASE? "NJ"

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	7/20/17 1630	1 FEDEX	2 FEDEX	7/26/17 1030	2 [signature]
3		3	4		4
5		5	Custody Seal #		

Cooler Temp. 4.2°C

TD6679: Chain of Custody
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SGS Accutest New Jersey

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SGS Accutest Sample Receipt Summary

Job Number: TD6679 **Client:** _____ **Project:** _____

Date / Time Received: 7/26/2017 12:20:00 PM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (5.5);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

SM089-02
Rev. Date 12/1/16

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TD6679: Chain of Custody
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GC/MS Semi-volatiles

QC Data Summaries

(SGS Accutest New Jersey)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6679
Account: ALGC SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4791A-MB1	3P61088.D	1	07/28/17	KM	07/27/17	OP4791A	E3P2874

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

TD6679-1A, TD6679-2A, TD6679-3A

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	0.10	0.026	ug/l	
91-20-3	Naphthalene	ND	0.10	0.029	ug/l	
85-01-8	Phenanthrene	ND	0.10	0.023	ug/l	
129-00-0	Pyrene	ND	0.10	0.019	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	72%	29-124%
321-60-8	2-Fluorobiphenyl	69%	23-122%
1718-51-0	Terphenyl-d14	82%	22-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD6679
Account: ALGC SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4791A-BS12	3P61094.D	1	07/28/17	KM	07/27/17	OP4791A	E3P2874
OP4791A-BSD12	3P61090.D	1	07/28/17	KM	07/27/17	OP4791A	E3P2874

The QC reported here applies to the following samples: **Method:** SW846 8270D BY SIM

TD6679-1A, TD6679-2A, TD6679-3A

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
218-01-9	Chrysene	1	0.793	79	0.747	75	6	43-119/33
91-20-3	Naphthalene	1	0.736	74	0.715	72	3	30-114/40
85-01-8	Phenanthrene	1	0.796	80	0.753	75	6	45-125/31
129-00-0	Pyrene	1	0.861	86	0.854	85	1	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	76%	75%	29-124%
321-60-8	2-Fluorobiphenyl	70%	64%	23-122%
1718-51-0	Terphenyl-d14	93%	72%	22-130%

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #: | Bottle Order Control #:
SGS Accutest Quote #: | SGS Accutest Job #: TD6679

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: sylvia.garza@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Surface Water
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	AG,AS,BA,CD,CR,FILTERMET,HG,PB,SE,	AG,AS,BA,CD,CR,HG,PB,SE,	LAB USE ONLY
1	SEEP 7		7/20/17	12:40:00 PM		AQ	1			X							X	1
1F	SEEP 7		7/20/17	12:40:00 PM		AQ	1					X				X		1
2	SEEP 8		7/20/17	12:55:00 PM		AQ	1			X							X	2
2F	SEEP 8		7/20/17	12:55:00 PM		AQ	1					X				X		2
3	UPSTREAM		7/20/17	1:10:00 PM		AQ	1			X							X	3
3F	UPSTREAM		7/20/17	1:10:00 PM		AQ	1					X				X		3

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
GL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 8/3/2017

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMB

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

6010 - KS CERT
Diss- lab filter "FL"

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	7/25/17 1800	1 FEDEX	2 FEDEX		2 9.15 7-26-17
3		3	4		4
5		5	Custody Seal #	Intact / Not Intact	Preserved where applicable / On Ice / Cooler Temp.

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SGS Accutest Sample Receipt Summary

Job Number: TD6679 **Client:** SGS **Project:** SURFACE WATER

Date / Time Received: 7/26/2017 9:15:00 AM **Delivery Method:** FX **Airbill #'s:** 564246210384

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.9);

Cooler Temps (Corrected) °C: Cooler 1: (2.3);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 7/26/2017 9:15:00 AM Reviewer: JC Date: 7/26/2017

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TD6679: Chain of Custody
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Metals Analysis

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/27/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	14	14		
Antimony	6.0	1	1		
Arsenic	10	1.3	1.3	-1.4	<10
Barium	200	1	1	-0.70	<200
Beryllium	4.0	.2	.2		
Cadmium	5.0	.2	.2	-0.40	<5.0
Calcium	1000	50	50		
Chromium	10	1	1	-0.40	<10
Cobalt	50	.2	.2		
Copper	25	1	1		
Iron	300	17	17		
Lead	5.0	1	1.1	-0.20	<5.0
Magnesium	5000	35	35		
Manganese	15	.5	1		
Molybdenum	50	.3	.3		
Nickel	40	.4	.4		
Potassium	10000	200	200		
Selenium	10	2.4	2.9	-0.90	<10
Silver	10	.7	.7	0.0	<10
Sodium	10000	500	500		
Strontium	10	.5	.5		
Thallium	10	1.1	1.4		
Tin	50	.9	1		
Titanium	10	.5	1		
Vanadium	50	.5	.6		
Zinc	20	3	4.4		

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:			07/27/17					07/27/17	
Metal	TD6679-3 Original	DUP	RPD	QC Limits	TD6679-3 Original	MS	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum	anr								
Antimony	anr								
Arsenic	1.6	0.0	200.0(a)	0-20	1.6	1950	2000	97.4	80-120
Barium	150	149	0.7	0-20	150	2120	2000	98.5	80-120
Beryllium	anr								
Cadmium	0.0	0.0	NC	0-20	0.0	47.5	50	95.0	80-120
Calcium	anr								
Chromium	0.0	0.0	NC	0-20	0.0	198	200	99.0	80-120
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	0.0	1.1	200.0(a)	0-20	0.0	477	500	95.4	80-120
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Potassium	anr								
Selenium	0.0	0.0	NC	0-20	0.0	1940	2000	97.0	80-120
Silver	0.0	0.0	NC	0-20	0.0	47.7	50	95.4	80-120
Sodium	anr								
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Vanadium	anr								
Zinc	anr								

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/27/17

Metal	TD6679-3 Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	1.6	1960	2000	97.9	0.5	20
Barium	150	2130	2000	99.0	0.5	20
Beryllium	anr					
Cadmium	0.0	48.0	50	96.0	1.0	20
Calcium	anr					
Chromium	0.0	199	200	99.5	0.5	20
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	0.0	478	500	95.6	0.2	20
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Potassium	anr					
Selenium	0.0	1950	2000	97.5	0.5	20
Silver	0.0	47.7	50	95.4	0.0	20
Sodium	anr					
Strontium						
Thallium	anr					
Tin	anr					
Titanium						
Vanadium	anr					
Zinc	anr					

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/27/17

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	2060	2000	103.0	80-120
Barium	2100	2000	105.0	80-120
Beryllium	anr			
Cadmium	51.9	50	103.8	80-120
Calcium	anr			
Chromium	212	200	106.0	80-120
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	501	500	100.2	80-120
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Potassium	anr			
Selenium	2060	2000	103.0	80-120
Silver	50.6	50	101.2	80-120
Sodium	anr			
Strontium				
Thallium	anr			
Tin	anr			
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/27/17

Metal	TD6679-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	1.60	0.00	100.0(a)	0-10
Barium	150	149	0.5	0-10
Beryllium	anr			
Cadmium	0.00	0.00	NC	0-10
Calcium	anr			
Chromium	0.00	0.00	NC	0-10
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	0.00	0.00	NC	0-10
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silver	0.00	0.00	NC	0-10
Sodium	anr			
Strontium				
Thallium	anr			
Tin	anr			
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32504
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/27/17

Metal	Sample ml	Final ml	TD6679-3 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium	9.8	10	150.1	147.098	412.7	0.2	12.5	250	106.2	80-120
Beryllium										
Cadmium	9.8	10			52.1	0.2	2.5	50	104.2	80-120
Calcium										
Chromium	9.8	10			52.3	0.2	2.5	50	104.6	80-120
Cobalt										
Copper										
Iron										
Lead	9.8	10			50	0.2	2.5	50	100.0	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium	9.8	10			103.8	0.2	5	100	103.8	80-120
Silver	9.8	10			46.5	0.2	2.5	50	93.0	80-120
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP32504: TD6679-1, TD6679-2, TD6679-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32510
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date:				07/28/17		07/28/17	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Mercury	0.50	.03	.03	0.034	<0.50	0.066	<0.50

Associated samples MP32510: TD6679-1, TD6679-2, TD6679-3, TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32510
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/28/17 07/28/17

Metal	FA46157-1 Original	DUP	RPD	QC Limits	FA46157-1 Original	MS	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.25	0.24	4.1	0-20	0.25	2.9	3	88.3	80-120

Associated samples MP32510: TD6679-1, TD6679-2, TD6679-3, TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32510
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/28/17

Metal	FA46157-1 Original	MSD	Spikelot HGFLWS1	% Rec	MSD RPD	QC Limit
Mercury	0.25	3.0	3	91.7	3.4	20

Associated samples MP32510: TD6679-1, TD6679-2, TD6679-3, TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32510
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/28/17

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	3.0	3	100.0	80-120

Associated samples MP32510: TD6679-1, TD6679-2, TD6679-3, TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32510
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 07/28/17

Metal	FA46157-1 Original	SDL 1:5	%DIF	QC Limits
Mercury	0.248	0.00	100.0(a)	0-10

Associated samples MP32510: TD6679-1, TD6679-2, TD6679-3, TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:				07/28/17		07/28/17	
Metal	RL	IDL	MDL	MB raw	MB final	MB raw	MB final
Aluminum	200	14	14				
Antimony	6.0	1	1				
Arsenic	10	1.3	1.3	-1.6	<10	-0.60	<10
Barium	200	1	1	-0.10	<200	-0.30	<200
Beryllium	4.0	.2	.2				
Cadmium	5.0	.2	.2	-0.20	<5.0	-0.10	<5.0
Calcium	1000	50	50				
Chromium	10	1	1	-0.40	<10	0.90	<10
Cobalt	50	.2	.2				
Copper	25	1	1				
Iron	300	17	17				
Lead	5.0	1	1.1	-0.70	<5.0	-0.30	<5.0
Magnesium	5000	35	35				
Manganese	15	.5	1				
Molybdenum	50	.3	.3				
Nickel	40	.4	.4				
Potassium	10000	200	200				
Selenium	10	2.4	2.9	0.20	<10	0.60	<10
Silver	10	.7	.7	-0.10	<10	-0.30	<10
Sodium	10000	500	500				
Strontium	10	.5	.5				
Thallium	10	1.1	1.4				
Tin	50	.9	1				
Titanium	10	.5	1				
Vanadium	50	.5	.6				
Zinc	20	3	4.4				

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date:			07/28/17					07/28/17	
Metal	FA46162-8F Original	DUP	RPD	QC Limits	FA46162-8F Original	MS	Spikelot MPFLICP2 % Rec		QC Limits
Aluminum									
Antimony									
Arsenic	0.0	0.0	NC	0-20	0.0	1920	2000	96.0	80-120
Barium	79.6	79.7	0.1	0-20	79.6	2000	2000	96.0	80-120
Beryllium									
Cadmium	0.0	0.0	NC	0-20	0.0	50.4	50	100.8	80-120
Calcium									
Chromium	3.6	3.6	0.0	0-20	3.6	221	200	108.7	80-120
Cobalt									
Copper	anr								
Iron	anr								
Lead	0.0	0.0	NC	0-20	0.0	503	500	100.6	80-120
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2.6	0.0	200.0(a)	0-20	2.6	1910	2000	95.4	80-120
Silver	0.0	0.0	NC	0-20	0.0	50.3	50	100.6	80-120
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	anr								

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/28/17

Metal	FA46162-8F Original	MSD	Spikelot MPFLICP2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	1990	2000	99.5	3.6	20
Barium	79.6	2040	2000	98.0	2.0	20
Beryllium						
Cadmium	0.0	51.8	50	103.6	2.7	20
Calcium						
Chromium	3.6	223	200	109.7	0.9	20
Cobalt						
Copper	anr					
Iron	anr					
Lead	0.0	518	500	103.6	2.9	20
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Potassium						
Selenium	2.6	1980	2000	98.9	3.6	20
Silver	0.0	51.9	50	103.8	3.1	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/28/17

Metal	BSP Result	Spikelot MPFLICP2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1980	2000	99.0	80-120
Barium	2100	2000	105.0	80-120
Beryllium				
Cadmium	50.8	50	101.6	80-120
Calcium				
Chromium	208	200	104.0	80-120
Cobalt				
Copper	anr			
Iron	anr			
Lead	488	500	97.6	80-120
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	1970	2000	98.5	80-120
Silver	49.9	50	99.8	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/28/17

Metal	FA46162-8F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	79.6	81.3	2.1	0-10
Beryllium				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	3.60	0.00	100.0(a)	0-10
Cobalt				
Copper	anr			
Iron	anr			
Lead	0.00	0.00	NC	0-10
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	2.60	0.00	100.0(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: TD6679
Account: ALGC - SGS Accutest Gulf Coast
Project: SHAWKSWI: Surface Water

QC Batch ID: MP32512
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/28/17

Metal	Sample ml	Final ml	FA46162-8F Raw	FA46162-8F Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic	9.8	10			105.6	0.2	5	100	105.6	80-120
Barium	9.8	10	79.6	78.008	337.4	0.2	12.5	250	103.8	80-120
Beryllium										
Cadmium	9.8	10			54.1	0.2	2.5	50	108.2	80-120
Calcium										
Chromium	9.8	10	3.6	3.528	61	0.2	2.5	50	114.9	80-120
Cobalt										
Copper										
Iron										
Lead	9.8	10			52.7	0.2	2.5	50	105.4	80-120
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium	9.8	10	2.6	2.548	101.6	0.2	5	100	99.1	80-120
Silver	9.8	10			49.5	0.2	2.5	50	99.0	80-120
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP32512: TD6679-1F, TD6679-2F, TD6679-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested