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JUL 03 2019

SITE ASSESSMENT,
REMEDIATION &
REVITALIZATION

June 26, 2019

Mr. Greg Cassidy
State Voluntary Cleanup Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia SC 29201

Re: Congaree River Project
Fourth Semi-Annual Surface Water Assessment Report
Columbia, South Carolina

Dear Mr. Cassidy:

On behalf of Dominion Energy South Carolina, Inc. (DESC), Apex Companies, LLC (Apex) is submitting one hard copy and one CD of the Fourth Semi-Annual Surface Water Assessment Report for the Congaree River Project located in Columbia, South Carolina. The sampling activities were performed consistent with the Surface Water Sampling and Analysis Plan (SW-SAP) submitted to SCDHEC on June 30, 2017 and approved on July 21, 2017.

Four semi-annual events have been conducted by DESC and the analytical results indicate no detections of constituents of interest. Therefore, consistent with the provisions of the SW-SAP and SCDHEC letter dated November 19, 2018, modification of the sampling program to an annual basis is recommended. If approved, the next surface water monitoring event will be scheduled for June 2020.

Should you have any questions or comments, please feel free to call Paul Biery at (803) 217-5016 or me at (412) 829-9650.

Sincerely,
Apex Companies, LLC

William J. Zeli, P.E.
Senior Program Manager

Enclosure

cc: P. Biery, R. Contrael – DESC

38la

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APEX

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FOURTH SEMI-ANNUAL SURFACE WATER ASSESSMENT REPORT (SWAR)

CONGAREE RIVER PROJECT
COLUMBIA, SOUTH CAROLINA

June 2019

Prepared for:

Dominion Energy South Carolina, Inc.
400 Otarre Parkway
Cayce, South Carolina 29033

Prepared by:

Apex Companies, LLC

Apex Companies, LLC · 1600 Commerce Circle · Trafford, PA 15085 · T 412 829 9650 F 412 349.0350 · apexcos.com

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1.0 INTRODUCTION

This Fourth Semi-Annual Surface Water Assessment Report (SWAR) is being submitted on behalf of Dominion Energy South Carolina, Inc (DESC). The SWAR documents activities completed during implementation of the Surface Water – Sampling and Analysis Plan (SW-SAP) submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) in June 2017 and approved by SCDHEC on July 21, 2017. The sampling is being completed as a component of the ongoing sediment remediation project to address a tar-like material (TLM) located in a portion of the Congaree River in Columbia, South Carolina, as shown on Figure 1.

1.1 Brief Project History/Summary

DESC and SCDHEC have been working on the Congaree River Project since the discovery of the TLM in June of 2010. Based on the delineation work previously completed and available in the project administrative record, the extent of TLM has been well defined. The TLM is commingled with sediment primarily within an area of the river just south of the Gervais Street Bridge, adjacent to the eastern shoreline, as shown on Figure 2. The TLM in the river is thought to have been the result of past operations of the former Huger Street Manufactured Gas Plant (MGP) site located at 1409 Huger Street, Columbia, South Carolina (Figure 2). The former MGP site was operated by predecessor companies to DESC from approximately 1905 thru the mid 1950's. SCDHEC's Administrative Record contains additional details on the environmental history of the site.

1.2 Regulatory Framework

The SCDHEC and DESC have executed a Responsible Party Voluntary Cleanup Contract (VCC) #02-5295-RP for the former MGP site located at 1409 Huger St. in Columbia, South Carolina. After discovery of the TLM in the river in June of 2010, the existing VCC for the Huger Street site was extended to cover the Congaree River Project area. The Huger Street VCC was executed by the Department on August 19, 2002 and all the activities documented within this SWAR are consistent with the VCC.

1.3 Overview of the SW-SAP

The SW-SAP was submitted to SCDHEC on June 30, 2017 and approved on July 21, 2017. It is, by design, intended to replicate the initial SCDHEC surface water sampling event implemented in April 2017. The initial sampling event completed by SCDHEC is now considered the "baseline" for monitoring surface water conditions in the Project area. Results from the baseline event are compared to the results from this event as well as future semi-annual events. Additional information on the SCDHEC baseline work plan is provided in the SW-SAP (Apex, June 2017). Baseline results (all virtually non-detect) are discussed in more detail in the following section.

2.0 BACKGROUND INFORMATION AND BASELINE SAMPLING EVENT

2.1 Surface Water Hydrology

The Congaree River is formed by the confluence of the Broad and Lower Saluda Rivers approximately 6,000 feet above the project area near the Timmerman/State Route 126 Bridge (Figure 1). The flow of the Lower Saluda River is largely influenced by the Saluda River Hydroelectric Dam, which is constructed on Lake Murray and located approximately 12 miles northwest of the site. The Broad River is located to the north east of the project area, with multiple dams constructed upriver from the Gervais Street Bridge. The flow of the Broad River is less regulated (or controlled) than the Lower Saluda and is more runoff dependent. The Lower Saluda is considered a South Carolina Scenic River from approximately 1 mile below the Lake Murray Dam to the confluence with the Broad River, or the beginning of the Congaree River.

Within the project area, the unnamed tributary that extends from the 72-inch culvert pipe located near the intersection of Gist and Gervais Streets (Figure 2) provides a discharge point for stormwater runoff from the City of Columbia. This stormwater conveyance services a large area northeast of the site and exhibits varying flows that are strongly dependent on recent precipitation amounts. Minimal flow is observed during extended dry periods, which suggests some groundwater infiltration into the stormwater system.

A United States Geologic Survey (USGS) river gage is located directly across the river from the project area. According to the USGS, the drainage area for the Congaree River at this gage location is 7,850 square miles and the gage height is 113.02 feet, based on NGVD ’29 (or 112.25 based on NGVD ’88). From the available data, the mean daily discharge rate varies from approximately 5,000 cubic feet to 16,000 cubic feet. The USGS gage height is a key component in the overall approach for this sampling program.

2.2 Findings of the Baseline Event April 2017

A total of 14 surface water samples and one duplicate sample were collected during the April 2017 SCDHEC baseline surface water sampling. The samples were analyzed for volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) via Methods 8260B and 8270D, respectively. Shealy Environmental Services, Inc. (Shealy) located in West Columbia, South Carolina performed the analyses.

The SCDHEC provided the analytical findings to SCANA in a letter dated April 7, 2017. In this letter, the SCDHEC indicated “with the exception of one detection of bis(2-ethylhexyl)phthalate, all other samples yielded no detections. This constituent is a common laboratory contaminant and is suspected to be a false detection”. SCDHEC also indicated that the analytical results for the duplicate sample collected from the same location were non-detect. The surface water sample analytical results were submitted with the SW-SAP (Apex, June 2017).

3.0 THIRD SEMI-ANNUAL SURFACE WATER SAMPLING

3.1 Sampling Locations

A total of nine surface water samples were collected on May 3, 2019 along the Congaree, Saluda, and Broad Rivers, and tributaries discharging to the Congaree River. The gage height recorded at the USGS station located across from the project area averaged 5.38 feet during the sampling event. The sampling locations are described in Table 1 and shown on Figure 3. The locations include:

- **SW-01 through SW-03 and SW-08**: Monitoring surface water quality at upstream locations to establish surface water quality prior to entering the project area;
- **SW-04 and SW-05**: Monitoring surface water quality in the project area;
- **SW-06 and SW-07**: Monitoring surface water quality downstream of the project area; and
- **SW-09**: Monitoring surface water quality at a tributary to the west of the Congaree River to assess other potential contributions.

Sampling locations SW-01 and SW-04 through SW-07 are intended to be located near the SCDHEC surface water sampling locations (Table 1 and Figure 3).

The coordinates of the proposed surface water sampling locations shown on Figure 3 were established prior to sampling and entered into a hand-held GPS unit. The hand-held GPS unit was then used to locate the sampling locations in the field.

Table 2 provides the list of parameters analyzed for each surface water sample, as well as, the corresponding analytical methods and project reporting limits. This parameter list represents the same parameters analyzed in sediment samples collected during delineation activities. Consistent with the SCDHEC Work Plan, Shealy Environmental Services, Inc. (Shealy) located in West Columbia, South Carolina performed the analyses.

3.2 Sampling Procedures

In general, and where possible, the interval at about 1.0 foot above the river or tributary bottom was targeted for sampling. To facilitate sampling this interval, the two different sampling procedures described below were utilized based on surface water depth encountered at the time of sampling. For locations within the river, sampling proceeded in an upstream manner. Where possible, samples were collected by sampling personnel wading into the river or tributary (SW-01, SW-02, SW-03, and SW-09). Samples that were located within the Congaree River and in deeper water (SW-04, SW-05, SW-06, SW-07, and SW-08) were collected utilizing a boat. At each sampling location, depth and color/clarity of the water as well as the sampling method (shallow or deeper) were noted. Table 3 lists the sampling locations along with the sampling method utilized and corresponding observations. Appendix A provides a photographic summary of the typical surface water sampling locations.

3.2.1 Shallow Surface Water Sampling Procedures

Shallow surface water (defined in this report as 1.5 feet or less in depth) sampling procedures were utilized at locations where collecting the sample by submerging the sample bottle, or transfer container, directly into the water column at the correct depth was feasible. The shallow surface water sample was

collected by orienting the sample bottle or clean transfer container with the bottle opening facing upstream and opening the container to allow water from the correct interval to enter. As shown on Table 3, this sampling procedure was utilized at sample locations SW-01, SW-02, SW-03, and SW-09 located within the tributaries and Broad River (Figure 3).

3.2.2 Deeper Surface Water Sampling Procedures

Deeper surface water sampling procedures were utilized at locations where the surface water was deeper than 1.5 feet and prohibited submerging the sample bottle, or transfer container, directly into the water column to collect the sample. This sampling procedure was utilized at sample locations SW-04, SW-05, SW-06, SW-07, and SW-08 located in the Congaree and Saluda Rivers, as shown on Table 3 and Figure 3. For these deeper surface water samples, a Van Dorn sampling device was used, as described below. Similar to SCDHEC's Surface Water Sampling Plan, surface water samples in the project area were collected about 15 to 20 feet from the shoreline.

At these locations, the water column height was measured, and then the Van Dorn sampler was lowered to a distance of approximately one foot above the river or tributary bottom. A weighted "messenger" was sent down the rope supporting the sampler, triggering a mechanism that closed the gaskets sealing the water from the appropriate point in the water column inside the device. The sampler was then raised, and the contents transferred into the appropriate sample containers. A picture showing typical use of a Van Dorn sampling device is provided for reference in Appendix A.

Care was taken when collecting the sample to minimize sediment disturbance and if disturbed, sufficient time was permitted to allow the sediment to clear.

3.3 Decontamination and Materials Management

3.3.1 Decontamination

Dedicated equipment (i.e., transfer bottles, tubing) and materials were used where appropriate. All non-dedicated and/or non-disposable equipment was decontaminated after each use. Equipment and materials were decontaminated with a tap water and Liquinox® (or Alconox) wash followed by a tap and distilled water rinse.

3.3.2 Materials Management

Waste materials generated through the completion of the surface water sampling activities were minimal, but included:

- Decontamination fluids;
- Spent personal protective equipment (PPE); and
- Miscellaneous field supplies (paper towels, etc.) generated from the sampling.

Investigation-derived wastes (IDW) were segregated as appropriate. A minimal amount of decontamination fluid was generated and therefore was absorbed with a paper towel, bagged, and disposed of appropriately with the remaining waste materials at the Calhoun Park Area Site in Charleston, SC.

3.4 Analytical Results

The May 2019 surface water results are discussed in this section, along with a comparison of the results to the baseline results of April 2017 and three rounds of semi-annual results for samples collected in September 2017, March 2018 and October 2018. The May 2019 surface water analytical data report from the laboratory (Shealy) is provided as Appendix B. A summary of surface water results from the past four events is included in Appendix D.

3.4.1 Data Evaluation

Following receipt of the data package from Shealy, the data were evaluated in accordance with the U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review (EPA, January 2017). The analytical data were reviewed with respect to sample preservation, holding times, field duplicate, trip blanks (volatiles only) and other laboratory control samples. The data were determined to be acceptable without qualification and a memorandum discussing the data evaluation is provided in Appendix C.

3.4.2 Trip Blank Analytical Results

A trip blank was included with the samples and analyzed for volatiles only. The results indicate that constituents were not detected. A summary of the results is included in Table 4.

3.4.3 Surface Water Analytical Results

A summary of the analytical results for the surface water samples analyzed during the May 2019 event is provided in Table 4. Similar to the SCDHEC baseline (April 2017) and subsequent events (September 2017, March 2018, and October 2018), all samples collected during the May 2019 event yielded no detections for the analyzed constituents.

4.0 CONCLUSIONS

May 2019 surface water analytical results for samples collected within the Congaree River and tributaries continue to yield no detections. This marks the fifth sampling event, approximately five to seven months apart, where all surface water samples were essentially non-detect.

5.0 RECOMMENDATIONS

Since the baseline event conducted by SCDHEC, four semi-annual events have been conducted and the analytical results indicate no detections of constituents of interest. Consistent with the provision described in the SW-SAP and the attached letter from SCDHEC dated November 19, 2018 (see Appendix E), modification of the sampling program to an annual basis is recommended based on the analytical results. If approved, the next surface water monitoring event will be scheduled for June 2020.

TABLES

TABLE 1

SURFACE WATER SAMPLING LOCATIONS

Congaree River Project
Columbia, South Carolina

DESC Sampling Location	SCDHEC Sampling Location (Baseline)	Description
SW-01	CR-SW-14	Location upstream of Tributary "1", located in Memorial Park and coinciding with the SCDHEC sample location
SW-02	--	Unnamed Tributary "1" outfall
SW-03	--	Just upstream of the confluence of the Broad River and Congaree River
SW-04	CR-SW-13	Just south of the Alluvial Fan and coinciding with SCDHEC sample location
SW-05	CR-SW-06	Approximately 200 feet downstream of SW-04 and coinciding with the SCDHEC sample location
SW-06	CR-SW-08	Approximately 200 feet downstream of SW-05 and coinciding with the SCDHEC sample location
SW-07	CR-SW-10	Approximately 200 feet downstream of SW-06 and coinciding with the SCDHEC sample location
SW-08	--	Just upstream of the confluence of the Saluda River and Congaree River
SW-09	--	Tributary located west of the Congaree River

TABLE 2

SURFACE WATER SAMPLING PARAMETERS AND METHODS

Congaree River Project
Columbia, South Carolina

Constituent	Analytical Method	Reporting Limit (µg/L)
Volatile Organic Compounds		
Benzene	8260B	5
Ethylbenzene	8260B	5
Toluene	8260B	5
Xylenes, Total	8260B	5
PAH Constituents		
Acenaphthene	8270D	10
Acenaphthylene	8270D	10
Anthracene	8270D	10
Benzo(a)anthracene	8270D	10
Benzo(a)pyrene	8270D	10
Benzo(b)fluoranthene	8270D	10
Benzo(g,h,i)perylene	8270D	10
Benzo(k)fluoranthene	8270D	10
Chrysene	8270D	10
Dibenzo(a,h)anthracene	8270D	10
Fluoranthene	8270D	10
Fluorene	8270D	10
Indeno(1,2,3-cd)pyrene	8270D	10
Naphthalene	8270D	10
Phenanthrene	8270D	10
Pyrene	8270D	10

Note:

1. Quality assurance/quality control (QA/QC) samples included one trip blank per sample delivery group (VOCs only) and one blind field duplicate.

TABLE 3

SUMMARY OF SAMPLING METHODS AND FIELD OBSERVATIONS

Congaree River Project
Columbia, South Carolina

DESC Sampling Location	Date Sampled	Water Depth (feet)	Color/Clarity	Sampling Method (Shallow/Deep)
SW-01	May 3, 2019	0.1	Clear	Shallow
SW-02	May 3, 2019	0.1	Clear	Shallow
SW-03	May 3, 2019	1.5	Clear	Shallow
SW-04	May 3, 2019	5.5	Clear	Deep
SW-05	May 3, 2019	4.5	Clear	Deep
SW-06	May 3, 2019	4.5	Clear	Deep
SW-07	May 3, 2019	8	Clear	Deep
SW-08	May 3, 2019	3	Clear	Deep
SW-09	May 3, 2019	0.33	Clear	Shallow

Checked by : KJ
Date Checked: 6/4/2019

TABLE 4

SUMMARY OF SURFACE WATER ANALYTICAL RESULTS

Congaree River Project
Columbia, South Carolina

Constituent	Unit	SW-01 5/3/2019	SW-02 5/3/2019	SW-03 5/3/2019	SW-04 5/3/2019	SW-04 (Dup) 5/3/2019	SW-05 5/3/2019	SW-06 5/3/2019	SW-07 5/3/2019	SW-08 5/3/2019	SW-09 5/3/2019	Trip Blank 5/3/2019
Volatile Organic Compounds												
Benzene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, Total	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PAH Constituents												
Acenaphthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Acenaphthylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(a)anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(a)pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(b)fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(g,h,i)perylene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Benzo(k)fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chrysene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Dibenzo(a,h)anthracene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Fluoranthene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Fluorene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Indeno(1,2,3-cd)pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Naphthalene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Phenanthrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Pyrene	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA

Notes:
(1) NA - not analyzed
(2) U - represents the consituent was not detected above the limit of quantitation.

Checked by : KJ
Date Checked: 5/28/19

FIGURES

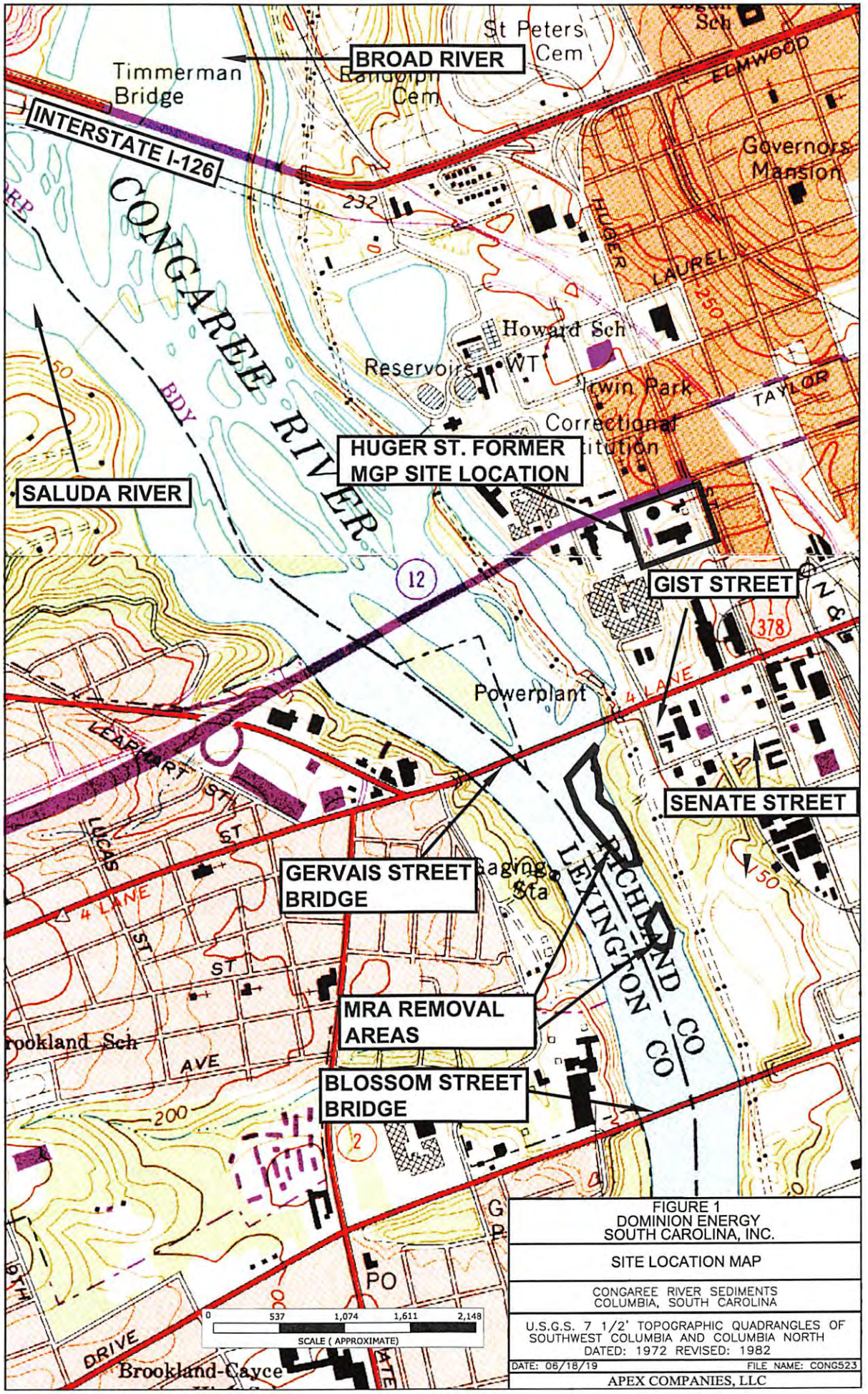


FIGURE 1
DOMINION ENERGY
SOUTH CAROLINA, INC.

SITE LOCATION MAP

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

U.S.G.S. 7 1/2' TOPOGRAPHIC QUADRANGLES OF
SOUTHWEST COLUMBIA AND COLUMBIA NORTH
DATED: 1972 REVISED: 1982

DATE: 06/18/19 FILE NAME: CONG523

APEX COMPANIES, LLC

N

HUGER STREET FORMER MGP SITE
(TLM SOURCE AREA) PARCEL "A"

APPROXIMATE LOCATION OF FORMER
DRAINAGE DITCH
(TLM MIGRATION PATHWAY)

PARCEL "B"

PARCEL "C"

WILLIAMS STREET

Senate Street

Gist Street

Culvert Outfall

Unnamed Tributary #1

Unnamed Tributary #2

Congaree River

Gervais Street Bridge

Note:
1) Aerial photograph from September 12, 2010.

0 150 300 450 600
(Feet Scale)

LEGEND
MRA REMOVAL AREAS
BOULDER FIELD
SANDBAR

FIGURE 2
DOMINION ENERGY
SOUTH CAROLINA, INC.

CONCEPTUAL SITE MODEL

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 6/18/19 FILE NAME: CONG533

APEX COMPANIES, LLC

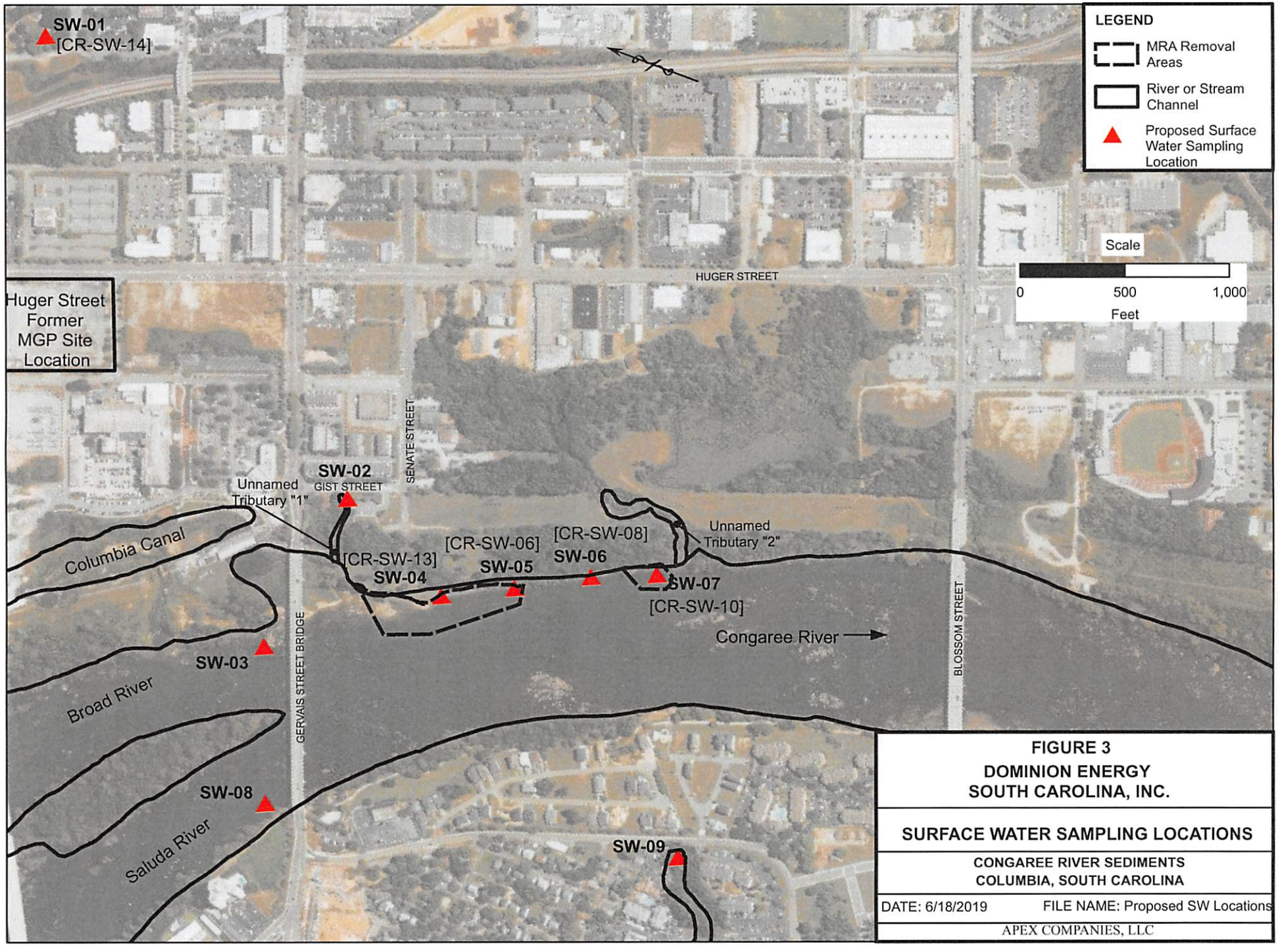


FIGURE 3

DOMINION ENERGY SOUTH CAROLINA, INC.

SURFACE WATER SAMPLING LOCATIONS

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 6/18/2019 FILE NAME: Proposed SW Locations

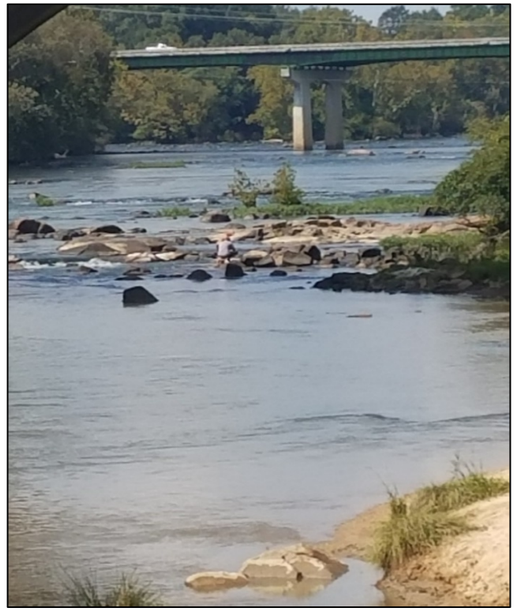
APEX COMPANIES, LLC

APPENDIX A

PHOTOGRAPHIC SUMMARY OF SURFACE WATER SAMPLING

Memorial Park Outfall - SW-01 (Typical)

SW-02 - Unnamed Tributary Outfall (Typical)



SW-03 - Broad River (Typical)

Collecting Samples in Congaree River - Typical of SW-04, SW-05, SW-06 and SW-07

SW-08 - Saluda River (Typical)

SW-09 - West Side of Congaree River (Typical)

Use of Van Dorn Sampling Device (Typical)

FIGURE A-1

DOMINION ENERGY SOUTH CAROLINA, INC.

PHOTOGRAPHIC SUMMARY OF SURFACE WATER SAMPLING LOCATIONS

CONGAREE RIVER SEDIMENTS
COLUMBIA, SOUTH CAROLINA

DATE: 06/13/2019 FILENAME: 052019 SW

APEX COMPANIES, LLC

APPENDIX B

LABORATORY ANALYTICAL RESULTS

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Apex Companies, LLC
1600 Commerce Circle
Trafford, PA 15085
Attention: Kayla Jones

Project Name: Semi Annual River Sampling 5-2019

Lot Number:**UE03032**

Date Completed:05/13/2019

05/15/2019 4:19 PM
Approved and released by:
Project Manager: Nisreen Saikaly

The electronic signature above is the equivalent of a handwritten signature.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
Apex Companies, LLC
Lot Number: UE03032

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Apex Companies, LLC
Lot Number: UE03032

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SW-1	Aqueous	05/03/2019 1200	05/03/2019
002	SW-2	Aqueous	05/03/2019 0850	05/03/2019
003	SW-3	Aqueous	05/03/2019 0925	05/03/2019
004	SW-4	Aqueous	05/03/2019 0935	05/03/2019
005	SW-5	Aqueous	05/03/2019 1000	05/03/2019
006	SW-6	Aqueous	05/03/2019 1025	05/03/2019
007	SW-7	Aqueous	05/03/2019 1045	05/03/2019
008	SW-8	Aqueous	05/03/2019 1115	05/03/2019
009	SW-9	Aqueous	05/03/2019 1140	05/03/2019
010	FD050319	Aqueous	05/03/2019 0935	05/03/2019
011	TB	Aqueous	05/03/2019	05/03/2019

(11 samples)

Detection Summary

Apex Companies, LLC

Lot Number: UE03032

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-001
Description: SW-1
Matrix: Aqueous
Date Sampled: 05/03/2019 1200
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1355	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-001
Description: SW-1
Matrix: Aqueous
Date Sampled: 05/03/2019 1200
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1951	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		66	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		83	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-002
Description: SW-2
Matrix: Aqueous
Date Sampled: 05/03/2019 0850
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1417	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-002
Description: SW-2
Matrix: Aqueous
Date Sampled: 05/03/2019 0850
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1605	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		73	38-127
2-Fluorobiphenyl		75	37-129
Terphenyl-d14		86	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-003
Description: SW-3
Matrix: Aqueous
Date Sampled: 05/03/2019 0925
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1441	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-003
Description: SW-3
Matrix: Aqueous
Date Sampled: 05/03/2019 0925
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1630	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		63	38-127
2-Fluorobiphenyl		63	37-129
Terphenyl-d14		81	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-004
Description: SW-4
Matrix: Aqueous
Date Sampled: 05/03/2019 0935
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1504	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-004
Description: SW-4
Matrix: Aqueous
Date Sampled: 05/03/2019 0935
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1655	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	38-127
2-Fluorobiphenyl		61	37-129
Terphenyl-d14		84	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-005
Description: SW-5
Matrix: Aqueous
Date Sampled: 05/03/2019 1000
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1527	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		96	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-005
Description: SW-5
Matrix: Aqueous
Date Sampled: 05/03/2019 1000
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1720	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		70	38-127
2-Fluorobiphenyl		71	37-129
Terphenyl-d14		82	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-006
Description: SW-6
Matrix: Aqueous
Date Sampled: 05/03/2019 1025
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1550	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		100	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-006
Description: SW-6
Matrix: Aqueous
Date Sampled: 05/03/2019 1025
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1745	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		69	38-127
2-Fluorobiphenyl		70	37-129
Terphenyl-d14		86	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-007
Description: SW-7
Matrix: Aqueous
Date Sampled: 05/03/2019 1045
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1613	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-007
Description: SW-7
Matrix: Aqueous
Date Sampled: 05/03/2019 1045
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1811	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	38-127
2-Fluorobiphenyl		75	37-129
Terphenyl-d14		82	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-008
Description: SW-8
Matrix: Aqueous
Date Sampled: 05/03/2019 1115
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1636	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-008
Description: SW-8
Matrix: Aqueous
Date Sampled: 05/03/2019 1115
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1836	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		67	38-127
2-Fluorobiphenyl		71	37-129
Terphenyl-d14		83	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-009
Description: SW-9
Matrix: Aqueous
Date Sampled: 05/03/2019 1140
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1659	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		100	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-009
Description: SW-9
Matrix: Aqueous
Date Sampled: 05/03/2019 1140
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1901	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	38-127
2-Fluorobiphenyl		68	37-129
Terphenyl-d14		74	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-010
Description: FD050319
Matrix: Aqueous
Date Sampled: 05/03/2019 0935
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1722	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Semivolatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-010
Description: FD050319
Matrix: Aqueous
Date Sampled: 05/03/2019 0935
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	05/10/2019 1926	JCG	05/08/2019 1647	16052

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		10	ug/L	1
Anthracene	120-12-7	8270D	ND		10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		10	ug/L	1
Chrysene	218-01-9	8270D	ND		10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		10	ug/L	1
Fluorene	86-73-7	8270D	ND		10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		10	ug/L	1
Naphthalene	91-20-3	8270D	ND		10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		10	ug/L	1
Pyrene	129-00-0	8270D	ND		10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		70	38-127
2-Fluorobiphenyl		73	37-129
Terphenyl-d14		85	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Volatile Organic Compounds by GC/MS

Client: Apex Companies, LLC
Laboratory ID: UE03032-011
Description: TB
Matrix: Aqueous
Date Sampled: 05/03/2019
Date Received: 05/03/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	05/09/2019 1159	BWS		16192

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		5.0	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		99	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ16192-001
Batch: 16192
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Benzene	ND		1	5.0	ug/L	05/09/2019 1118
Ethylbenzene	ND		1	5.0	ug/L	05/09/2019 1118
Toluene	ND		1	5.0	ug/L	05/09/2019 1118
Xylenes (total)	ND		1	5.0	ug/L	05/09/2019 1118

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		99	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ16192-002
Batch: 16192
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Benzene	50	46		1	92	70-130	05/09/2019 1011
Ethylbenzene	50	47		1	93	70-130	05/09/2019 1011
Toluene	50	45		1	90	70-130	05/09/2019 1011
Xylenes (total)	100	94		1	94	70-130	05/09/2019 1011

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ16052-001
Batch: 16052
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/08/2019 1647

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	10	ug/L	05/10/2019 1128
Acenaphthylene	ND		1	10	ug/L	05/10/2019 1128
Anthracene	ND		1	10	ug/L	05/10/2019 1128
Benzo(a)anthracene	ND		1	10	ug/L	05/10/2019 1128
Benzo(a)pyrene	ND		1	10	ug/L	05/10/2019 1128
Benzo(b)fluoranthene	ND		1	10	ug/L	05/10/2019 1128
Benzo(g,h,i)perylene	ND		1	10	ug/L	05/10/2019 1128
Benzo(k)fluoranthene	ND		1	10	ug/L	05/10/2019 1128
Chrysene	ND		1	10	ug/L	05/10/2019 1128
Dibenzo(a,h)anthracene	ND		1	10	ug/L	05/10/2019 1128
Fluoranthene	ND		1	10	ug/L	05/10/2019 1128
Fluorene	ND		1	10	ug/L	05/10/2019 1128
Indeno(1,2,3-c,d)pyrene	ND		1	10	ug/L	05/10/2019 1128
Naphthalene	ND		1	10	ug/L	05/10/2019 1128
Phenanthrene	ND		1	10	ug/L	05/10/2019 1128
Pyrene	ND		1	10	ug/L	05/10/2019 1128

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		69	38-127
2-Fluorobiphenyl		81	37-129
Terphenyl-d14		100	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ16052-002
Batch: 16052
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/08/2019 1647

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	32		1	79	30-122	05/10/2019 1153
Acenaphthylene	40	29		1	74	30-130	05/10/2019 1153
Anthracene	40	32		1	79	30-123	05/10/2019 1153
Benzo(a)anthracene	40	30		1	76	40-125	05/10/2019 1153
Benzo(a)pyrene	40	24		1	59	40-128	05/10/2019 1153
Benzo(b)fluoranthene	40	33		1	83	30-130	05/10/2019 1153
Benzo(g,h,i)perylene	40	31		1	78	30-130	05/10/2019 1153
Benzo(k)fluoranthene	40	35		1	89	30-130	05/10/2019 1153
Chrysene	40	35		1	87	30-130	05/10/2019 1153
Dibenzo(a,h)anthracene	40	32		1	81	30-130	05/10/2019 1153
Fluoranthene	40	33		1	82	40-128	05/10/2019 1153
Fluorene	40	31		1	76	30-124	05/10/2019 1153
Indeno(1,2,3-c,d)pyrene	40	31		1	76	30-130	05/10/2019 1153
Naphthalene	40	27		1	68	30-130	05/10/2019 1153
Phenanthrene	40	32		1	81	40-123	05/10/2019 1153
Pyrene	40	35		1	88	40-126	05/10/2019 1153

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		67	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		96	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MS

Sample ID: UE03032-001MS
Batch: 16052
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/08/2019 1647

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	52		1	65	30-122	05/10/2019 2016
Acenaphthylene	ND	80	54		1	67	30-130	05/10/2019 2016
Anthracene	ND	80	62		1	77	30-123	05/10/2019 2016
Benzo(a)anthracene	ND	80	54		1	67	40-125	05/10/2019 2016
Benzo(a)pyrene	ND	80	62		1	77	40-128	05/10/2019 2016
Benzo(b)fluoranthene	ND	80	60		1	75	30-130	05/10/2019 2016
Benzo(g,h,i)perylene	ND	80	37		1	46	30-130	05/10/2019 2016
Benzo(k)fluoranthene	ND	80	62		1	78	30-130	05/10/2019 2016
Chrysene	ND	80	61		1	76	30-130	05/10/2019 2016
Dibenzo(a,h)anthracene	ND	80	45		1	56	30-130	05/10/2019 2016
Fluoranthene	ND	80	61		1	76	40-128	05/10/2019 2016
Fluorene	ND	80	54		1	67	30-124	05/10/2019 2016
Indeno(1,2,3-c,d)pyrene	ND	80	42		1	53	30-130	05/10/2019 2016
Naphthalene	ND	80	52		1	65	30-130	05/10/2019 2016
Phenanthrene	ND	80	58		1	72	40-123	05/10/2019 2016
Pyrene	ND	80	56		1	70	40-126	05/10/2019 2016

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		71	38-127
2-Fluorobiphenyl		74	37-129
Terphenyl-d14		83	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: UE03032-001MD
Batch: 16052
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 05/08/2019 1647

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	62		1	77	17	30-122	40	05/10/2019 2041
Acenaphthylene	ND	80	64		1	80	18	30-130	40	05/10/2019 2041
Anthracene	ND	80	66		1	83	6.3	30-123	40	05/10/2019 2041
Benzo(a)anthracene	ND	80	59		1	74	10	40-125	40	05/10/2019 2041
Benzo(a)pyrene	ND	80	73		1	91	16	40-128	40	05/10/2019 2041
Benzo(b)fluoranthene	ND	80	70		1	87	15	30-130	40	05/10/2019 2041
Benzo(g,h,i)perylene	ND	80	45		1	57	20	30-130	40	05/10/2019 2041
Benzo(k)fluoranthene	ND	80	75		1	94	18	30-130	40	05/10/2019 2041
Chrysene	ND	80	67		1	84	9.8	30-130	40	05/10/2019 2041
Dibenzo(a,h)anthracene	ND	80	53		1	66	16	30-130	40	05/10/2019 2041
Fluoranthene	ND	80	69		1	86	13	40-128	40	05/10/2019 2041
Fluorene	ND	80	61		1	77	13	30-124	40	05/10/2019 2041
Indeno(1,2,3-c,d)pyrene	ND	80	51		1	63	18	30-130	40	05/10/2019 2041
Naphthalene	ND	80	66		1	82	24	30-130	40	05/10/2019 2041
Phenanthrene	ND	80	64		1	80	11	40-123	40	05/10/2019 2041
Pyrene	ND	80	65		1	81	16	40-126	40	05/10/2019 2041

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		83	38-127
2-Fluorobiphenyl		85	37-129
Terphenyl-d14		96	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody

and

Miscellaneous Documents

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 94474

Client: Apex
Address: 1600 Commerce Circle
City: Trafford | State: PA | Zip Code: 15085
Project Name: Semi Annual River Sampling 5/2019
Project No.:
Report to Contact:
Sampler's Signature: x G O Toole
Printed Name: Gordon O Toole
P.O. No.:
Telephone No. / E-mail: 412-829-9650
Quote No.:
Analysis (Attach list if more space is needed)
Page ___ of ___

UE03032

NMS

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Soil	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	S2O3 (s)	8260B	8270D	Remarks / Cooler I.D.
SW-1	5-3-19	12:00	G	X			2			3			X	X	
SW-2	5-3-19	~~11:40~~ 9:50	G	X			2			3			X	X	
SW-3	5-3-19	09:25	G	X			2			3			X	X	
SW-4	5-3-19	09:35	G	X			2			3			X	X	
SW-5	5-3-19	10:00	G	X			2			3			X	X	
SW-6	5-3-19	10:25	G	X			2			3			X	X	
SW-7	5-3-19	10:45	G	X			2			3			X	X	
SW-8	5-3-19	11:15	G	X			2			3			X	X	
SW-9	5-3-19	11:40	G	X			2			3			X	X	
FD050319	5-3-19	09:25	G	X			2			3			X	X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished by: G O Toole	5-3-19	1328	1. Received by:		
2. Relinquished by:			2. Received by:		
3. Relinquished by:			3. Received by:		
4. Relinquished by:			4. Laboratory received by:	5/3/19	1328

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): Yes No Ice Pack
Receipt Temp: 1.8 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

SHEALY **Chain of Custody Record**

Number 94475

Client: Apex	Report to Contact: Kayla Jones	Telephone No. / E-mail: 412-829-9650	Quote No.
Address: 1600 Commerce Creek	Sampler's Signature: X [signature]	Analysis (Attach list if more space is needed)	Page ____ of ____
City: Trafford	State: PA	Zip Code: 15085	Printed Name: Gordon O Toole
Project Name: Semi Annual River Sampl. of 5/19			
Project No.	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	# of Containers	Matrix: Aqueous	Matrix: Solid	Matrix: Air	No. of Containers by Preservative Type: Unpres.	HCl/4°C	HNO3	NaOH	H2SO4	Analysis: E260 B	Analysis: E270 D	Remarks / Cooler I.D.
~~FB00~~ TB	5-3-19	—	G/X							2		X		UE03032

NMS

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: [signature]	5-3-19		1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by: [signature]	5/3/19	1328

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) ~~Yes~~ No Ice Pack

Receipt Temp. 1.8 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MB0018C-14

Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: APEX Cooler Inspected by/date: LKH / 05-05-2019 Lot #: UF03032

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.8 / 1.8 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pen-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA _____ were received with bubbles >6 mm in diameter.

Samples(s) NA _____ were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: LKH Date: 05-05-2019

Comments:

APPENDIX C

DATA EVALUATION MEMORANDUM

Apex Companies, LLC

Memo

To: Bill Zeli

From: James Dunmyre

Date: May 24, 2019

Re: Evaluation of Analytical Data for Surface Water Samples Collected in May 2019
Congaree River, Columbia South Carolina

Sample Identification

SW-01	SW-04	SW-07
SW-02	SW-05	SW-08
SW-03	SW-06	SW-09

Overview

Nine surface water samples were collected during the week of April 29, 2019.

The samples collected during the September surface water sampling event were submitted to Shealy Environmental Services, Inc. (Shealy) located in West Columbia, South Carolina for the analyses of polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D and BTEX via EPA Method 8260B. The analytical results were reported in one sample delivery group (SDG) – UE03032. The attached table summarizes the SDG, the samples and analytical parameters. A Level II data package was provided for the SDG.

Two quality assurance/quality control (QA/QC) samples were also collected. The QA/QC samples collected included one blind field duplicate (FD050319 duplicate of SW-04) and one trip blank.

Summary

Quality control (QC) measures associated with the analytical data were reviewed following the U.S. EPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017) to determine the accuracy and precision of the data reported. These QC measures included surrogate recoveries, laboratory and field blank results, field duplicate results, MS/MSD results, and laboratory control sample (LCS) results.

Recommendations for Data Usability

The reviewed QC results did not indicate that any significant problems existed with data precision and accuracy, as reported. All BTEX and PAH data should be considered usable for intended data uses.

APPENDIX D

SUMMARY OF SURFACE WATER QUALITY

TABLE D-1

SUMMARY OF SURFACE WATER QUALITY

Congaree River Project
Columbia, South Carolina

Date Sampled	Entity	Parameters	Sample Locations								
			CR-SW-14			**CR-SW-13**	**CR-SW-06**	**CR-SW-08**	**CR-SW-10**		
3/21/2017	DHEC	BTEX	ND	--	--	ND	ND	ND	ND	--	--
		PAH	ND			ND	ND	ND	ND		
			SW-01	**SW-02**	**SW-03**	**SW-04**	**SW-05**	**SW-06**	**SW-07**	**SW-08**	**SW-09**
9/21/2017	SCE&G	BTEX	ND	ND	ND	ND	ND	ND	ND	ND	ND
		PAH	ND	ND	ND	ND	ND	ND	ND	ND	ND
			SW-01	**SW-02**	**SW-03**	**SW-04**	**SW-05**	**SW-06**	**SW-07**	**SW-08**	**SW-09**
3/20/2018	SCE&G	BTEX	ND	ND	ND	ND	ND	ND	ND	ND	ND
		PAH	ND	ND	ND	ND	ND	ND	ND	ND	ND
			SW-01	**SW-02**	**SW-03**	**SW-04**	**SW-05**	**SW-06**	**SW-07**	**SW-08**	**SW-09**
10/2/2018	SCE&G	BTEX	ND	ND	ND	ND	ND	ND	ND	ND	ND
		PAH	ND	ND	ND	ND	ND	ND	ND	ND	ND
			SW-01	**SW-02**	**SW-03**	**SW-04**	**SW-05**	**SW-06**	**SW-07**	**SW-08**	**SW-09**
5/3/2019	DESC	BTEX	ND	ND	ND	ND	ND	ND	ND	ND	ND
		PAH	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

1. ND - constituents were not detected above the reporting limit.

Checked by: KJ
Date Checked: 6/4/2019

APPENDIX E

SCDHEC CORRESPONDENCE DATED NOVEMBER 19, 2018

dhec
Healthy People. Healthy Communities.

November 19, 2018

Mr. Paul Biery
Senior Project Manager
SCANA
100 SCANA Parkway
Cayce, SC 29033

RE: Third Semi-Annual Surface Water Assessment Report
SCE&G Fleet Maintenance Site (Congaree River)
Columbia, South Carolina

Dear Mr. Biery,

The State Voluntary Cleanup Program received the Third Semi-Annual Surface Water Assessment Report on November 13, 2018. The Department has reviewed the report and approves the report as submitted. The Department would like surface water sampling to continue on a semi-annual basis for one more event and then move to annual sampling if no detections are found. Please give the Department a five-day notice of the start of the sampling event. The next assessment report will be due to the Department by June 1, 2018.

Sincerely,

Greg Cassidy
State Voluntary Cleanup Program
Bureau of Land and Waste Management

cc: File 52561
Lucas Berresford, BLWM
William J Zeli, PE, Apex Companies, LLC, 1600 Commerce Cir, Trafford, PA 15085
Veronica Barringer, Midlands EA Region