VIA ELECTRONIC MAIL

August 21, 2018

Richelle Hanson, Project Manager
Voluntary Cleanup Program
Maryland Department of the Environment
Land and Materials Administration
1800 Washington Blvd., Suite 625
Baltimore, Maryland 21230

Subject: **Quarterly Status Report No. 7 - Offsite Area**
Former Kop-Flex Facility Site, Hanover, Maryland

Dear Richelle:

On behalf of EMERSUB 16 LLC, a subsidiary of Emerson Electric Co., WSP USA Inc. (WSP) is submitting this quarterly status report describing the investigation and remediation activities conducted in the second quarter 2018 in the offsite portion of the Former Kop-Flex Facility Site in Hanover, Maryland. The report also describes the activities planned for the third quarter of 2018.

If you have any questions, please do not hesitate to contact us at 703-709-6500.

Kind regards,

Robert E. Johnson
Senior Technical Manager
Water & Environment

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k:\emerson\kop-flex\reporting\status reports\mde reports\2018\offsite area\july 2018

Encl.

cc: Mr. Erich Weissbart, U.S. Environmental Protection Agency, Region III
Mr. Stephen Clarke, Emerson Electric Co.
Sheila Harvey, Esquire, Pillsbury Winthrop Shaw Pittman

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QUARTERLY STATUS REPORT NO. 7 – OFFSITE AREA

FORMER KOP-FLEX FACILITY SITE

APRIL 2018 THROUGH JUNE 2018

Site Name:	Former Kop-Flex Facility
Site Address:	7565 Harmans Road Hanover, Maryland 21076
Consultant:	WSP USA Inc.
Address:	13530 Dulles Technology Drive, Suite 300 Herndon, Virginia 20171
Phone No.:	(703) 709-6500
Project Coordinator:	Eric Johnson, WSP USA
Alternate:	Lisa Bryda**,** WSP USA

1.0 Offsite Activities Conducted During April 2018 through June 2018

1.1 Residential Well Activities

General

- On June 21, 2018, representatives of WSP and MDE visited a small number of homes that had been unresponsive to previous mailings in an attempt to obtain the homeowner's permission to collect a water sample from the potable well on the property. The selected residences included in this in-person outreach effort were the following:
  - 1241 Old Camp Meade Road
  - 1248 Old Camp Meade Road
  - 1251 Old Camp Meade Road
  - 913 Reece Road
  - 845 Reece Road
  - 1397 Teaberry Lane

  The locations of these residential properties are shown in Figure 1. Overall, WSP was unsuccessful in obtaining either definitive (written) or verbal assurance of access for any of the visited properties. Based on discussions during the community outreach effort, MDE agreed to provide follow-up information to the owner/occupants of the residence at 1241 Old Camp Meade Road, while WSP would provide follow-up information to the homeowner at 1397 Teaberry Lane.

1.2 Residential Well Monitoring

- Pursuant to MDE's request, water samples were collected from the residential well at 1227 Old Camp Meade Road (Figure 1) on the following dates during the reporting period:
  - April 17, 2018
  - May 8, 2018
  - June 28, 2018

  Historical analytical results, including those for the second quarter 2018 samples, are summarized in Table 1. Copies of the certified laboratory analytical reports for the April 2018 through June 2018 sampling events are included in Enclosure A.

  As an overview of the sampling results for the review period, site-related VOCs were detected in both the untreated and treated water samples, with 1,1-dichloroethene (DCE) and 1,4-dioxane present at the highest levels. In the pre-treatment samples, concentrations of 1,1-DCE ranged from 5.6 micrograms per liter (µg/l) to 8.8 µg/l, while 1,4-dioxane was

present at levels between 2.5 µg/l and 3.4 µg/l. While the June sample concentration for 1,1-DCE was below the comparative groundwater quality criterion of 7 µg/l, the concentrations in the April and May samples of the untreated water exceeded the criterion (Table 1). The post-treatment water samples for the three events had 1,1-DCE concentrations ranging from below the reporting limit of 0.5 µg/l to 2.6 µg/l, with all levels below the comparative criterion of 7 µg/l. The concentrations of 1,4-dioxane in the treated water samples range from 1.8 µg/l to 2.7 µg/l, and were either similar to or slightly lower than the levels detected in the untreated water. EMERSUB 16 and WSP communicated the analytical results for these water samples in writing to the homeowner and MDE.

- Quarterly sampling of the residential well at 7742 Twin Oaks Road continued in accordance with the sampling plan approved by MDE in early 2018. (The location of this residential property in the Severn area is shown in Figure 1.)

  A water sample was collected from this residential well on May 31, 2018. Table 2 summarizes the analytical results for this and previous water samples collected from the well. The certified analytical results for the well sample are included in the corresponding laboratory report in Enclosure A. The data indicate lower concentrations of 1,1-DCE (0.98 µg/l) and 1,4-dioxane (0.94 µg/l) compared to recent water samples from this well, with neither value exceeding the respective groundwater comparative criteria. A trace level of 1,1,1-trichloroethane (TCA) was also detected in the sample. The analytical results for this well water sample have been provided in a letter to the homeowner and MDE.

1.3 Offsite Monitoring Well Installation

- Offsite monitoring well installation activities continued in the offsite area south of the former Kop-Flex facility through April 2018. During the reporting period, monitoring wells were installed at the MW-30 and MW-34 drilling sites in the public road right-of-ways. The locations for all new and previously installed offsite monitoring wells are shown in the enclosed Figure 2. Construction information for all of the new wells, including those installed during the first quarter 2018, is provided below. Additional information on the drilling and installation of the new monitoring wells is provided in the Offsite Monitoring Well Installation Summary in Enclosure B.

Well ID	Screen Interval (FT BGS)	Screen Interval (FT MSL)	Hydrologic Unit
MW-29D	141 - 151	-8.6 to -18.6	Confined Lower Patapsco Aquifer
MW-30D-273	263 - 273	-109.5 to -119.5	Confined Lower Patapsco Aquifer
MW-30D-413	403 - 413	-250 to -260	Patuxent Aquifer
MW-32D	226 - 236	-69.5 to -79.5	Confined Lower Patapsco Aquifer
MW-34D	375 - 385	--190.5 to -200.5	Confined Lower Patapsco Aquifer
MW-36D	350 - 360	-190.9 to -200.9	Patuxent Aquifer

FT = feet; BGS = below ground surface; MSL = mean sea level

- During installation of the well boreholes, groundwater profiling was conducted to provide data to assess the vertical distribution of site-related VOCs and guide construction of the monitoring well(s) at each location. Samples were field screened for 1,1-DCE using compound-specific colorimetric tubes and submitted to an offsite laboratory for analysis of the full VOC target compound list on an expedited (less than 24-hour) turn-around time.

  The analytical results for the depth-discrete groundwater samples collected from the MW-30 and MW-34 boreholes are provided in Tables 3 and 4; copies of the laboratory reports are included in the Enclosure B summary report. At the MW-30 drilling location, very low concentrations (<10 µg/l) of 1,1-DCE were detected in several groundwater samples collected from the lower portion of the confined Lower Patapsco aquifer and sand layers comprising the gradational transition to the underlying Arundel Clay. None of the detected 1,1-DCE concentrations exceeded the groundwater quality standard of 7 µg/l. Groundwater samples collected from the Patuxent aquifer at depths of greater than 400 feet at

the MW-30D location had no detections of site-related VOCs (Table 3). No site-related VOCs were detected in any of the depth-discrete groundwater samples from the MW-34 location. (Detailed information on the groundwater profiling activities and results is provided in the summary report [Enclosure B].)

1.4 Quarterly Offsite Groundwater Sampling

- The new and previously installed offsite monitoring wells located south of the Site were sampled on May 30-31, 2018, using a passive sampling device (HydraSleeve™). For the new monitoring wells, HydraSleeve™ samplers were deployed on May 8th following the completion of the well development activities. As with the other offsite monitoring wells, a 2.5-foot long sampler was attached to a weighted, nylon suspension tether and set at a depth roughly in the middle of the screen interval. After equilibration of the deployed sampler, the Hydrasleeve™ was carefully removed from the well and the groundwater sample immediately collected in the appropriate containers to minimize the diffusive loss of VOCs from the sampler. The sample retrieval depths for all of the wells are provided in the table below.

Well ID	Hydrologic Unit	Depth To Water (Ft BGS)	Well Depth (Ft BGS)	Well Screen Interval (Ft BGS)	Sample Interval (Ft BGS)
MW-25	Unconfined Lower Patapsco	13.10	40	30 - 40	35 – 37.5
MW-25D-130	Confined Lower Patapsco	58.23	130	120 - 130	125 – 127.5
MW-25D-190	Confined Lower Patapsco	57.40	192	180 - 190	185 – 187.5
MW-28	Unconfined Lower Patapsco	27.42	45	35 – 45	40 – 42.5
MW-28D	Confined Lower Patapsco	88.75	210	200 – 210	205 – 207.5
MW-29D	Confined Lower Patapsco	64.94	151	141 - 151	146 – 148.5
MW-30D-273	Confined Lower Patapsco	98.66	273	263 - 273	267 – 269.5
MW-30D-413	Patuxent	138.10	413	403 - 413	407 – 409.5
MW-31D	Confined Lower Patapsco	106.80	280	270 - 280	275 – 277.5

WELL ID	HYDROLOGIC UNIT	DEPTH TO WATER (FT BGS)	WELL DEPTH (FT BGS)	WELL SCREEN INTERVAL (FT BGS)	SAMPLE INTERVAL (FT BGS)
MW-32D	**Confined Lower Patapsco**	**97.90**	**236**	**226 - 236**	**233 – 235.5**
MW-33D-235	**Confined Lower Patapsco**	**124.00**	**235**	**225 – 235**	**230 – 232.5**
MW-33D-295	**Confined Lower Patapsco**	**123.85**	**295**	**285 – 295**	**290 – 292.5**
MW-34D	**Confined Lower Patapsco**	**132.70**	**385**	**375 - 385**	**379 – 381.5**
MW-35D	**Confined Lower Patapsco**	**124.27**	**298**	**288 – 298**	**293 – 295.5**
MW-36D	**Patuxent**	**141.75**	**360**	**350 -360**	**357 – 359.5**

FT = feet; BGS = below ground surface

As part of the May 2018 sampling event, WSP obtained water level measurements from the new and previously installed offsite monitoring wells along with the deep monitoring wells onsite. A contour map of the potentiometric surface for the confined portion of the Lower Patapsco aquifer based on the contouring of the water level data from the deep wells screened in this unit is provided in Figure 3. Evaluation of the hydraulic head data indicates a generally south-southeast flow direction for groundwater in this portion of the aquifer system, which is consistent with potentiometric surface maps generated from historical water level measurements. The slightly lower potentiometric head for well MW-30D-273 compared with other wells in the area (*e.g.*, MW-32D) probably reflects the heterogeneity associated with the transition from the Patapsco Formation to the underlying Arundel Clay. Potentiometric heads for the wells MW-30D-413 and MW-36D screened in the Patuxent aquifer are more than 30 FT lower than values for wells in the Lower Patapsco aquifer, indicating significant hydraulic separation across the Arundel Clay confining unit.

The May 2018 analytical results for samples from the offsite monitoring wells are summarized in Table 5. A copy of the certified laboratory analytical report for these samples is provided in Enclosure C. Historical groundwater sampling data for the offsite monitoring wells can be found in Table 6. The following paragraphs provide a summary of the May 2018 groundwater monitoring results.

No site-related constituents of concern – chlorinated VOCs and 1,4-dioxane - were detected in the samples from the shallow wells (MW-25 and MW-28) screened in the unconfined portion of the Lower Patapsco aquifer.

Concentrations of the primary site-related VOCs in the confined Lower Patapsco aquifer south of Maryland Route 100 are provided in Figure 4. For the monitoring wells installed in 2014, the concentrations of the site-related VOCs and 1,4-dioxane in the May 2018 groundwater samples are similar to the levels detected in samples collected during previous monitoring events (Table 6). At the MW-25 location, the total concentration of site-related VOCs and 1,4-dioxane in the MW-25D-130 sample (208.2 µg/l), which is screened from 120-130 feet BGS, is higher than the concentrations of the sample (127.1 µg/l) and duplicate for the deeper well (MW-25D-190). The difference in the VOC levels primarily reflects the variation in the 1,1-DCE concentrations between the well samples (see Table 6). The lower VOC concentrations in the sample from MW-25D-190 are consistent with the vertical distribution of contaminants in deep wells on and a short distance downgradient of the former Kop-Flex facility, although the levels detected in the MW-25D-190 sample indicate some downward transport and/or dispersion of site-related constituents along the groundwater flow paths. The sampling data for the confined Lower Patapsco monitoring wells located further downgradient indicate non-detect to low

concentrations of site-related VOCs and 1,4-dioxane (Figure 3). The highest total concentration (43.8 µg/l) was detected in the sample from the well screened in the lower portion of the aquifer at the MW-30 location (MW-30D-273). The analytical results indicate levels of 1,1-DCE (27.4 µg/l) and 1,4-dioxane (16.4 µg/l) above the applicable Groundwater Quality Standards. The only other sample collected from the confined Lower Patapsco wells with site-related constituents exceeding the water quality was MW-33D-295, which had a 1,4-dioxane concentration of 6.9 µg/l. Sample results for new wells MW-29D, MW-32D and MW-34D, together with the previously installed wells, further delineate the width and downgradient extent of the VOC plume in the confined Lower Patapsco aquifer. Updated iso-concentration maps depicting the inferred extents of the 1,1-DCE and 1,4-dioxane plumes, based on the results obtained at monitoring wells screened in the confined portion of the Lower Patapsco aquifer, are provided in Figures 5 and 6, respectively.

Groundwater samples collected from the new wells screened in the Patuxent aquifer – MW-30D-413 and MW-36D – had no detections of site-related VOCs found at other offsite monitoring well locations. These sampling results suggest dissolved VOCs comprising the plume in the Lower Patapsco aquifer have not migrated through the Arundel Clay to the underlying water-bearing unit. A very low detection of tetrachloroethene, or PCE (2.3 µg/l), which is below the Groundwater Quality Standard of 5 µg/l, was detected in the MW-36D sample (Table 5). Historically, PCE has only been detected at a concentration of 1.1 µg/l in a 2014 sample from the confined Lower Patapsco aquifer well MW-25D-130. The consistent lack of PCE detections in the offsite monitoring data suggests that the isolated hit in the 2014 samples not related to the release from the former Kop-Flex facility. WSP will evaluate future sampling results to further assess the presence of PCE in this portion of the Patuxent aquifer.

2.0 Planned Offsite Activities for Next Reporting Period (July 2018 Through September 2018)

- Perform quarterly sampling of the newly installed offsite groundwater monitoring wells in late August 2018.
- Conduct monthly monitoring of the untreated and treated water from the residential well at 1227 Old Camp Meade Road, and quarterly sampling of the well at 7742 Twin Oaks Road.
- Initiate planning and preparations for the public water service connection to the residence at 1227 Old Camp Meade Road, including the installation of a meter box and associated piping that taps into the existing water main.

3.0 Key Personnel/Facility Changes

During the reporting period, there were no changes to either key project personnel or conditions relevant to the performance of the ongoing work at the site.

FIGURES

MW-36D
MW-28/MW-28D
MW-32D
MW-30D
MW-33D
MW-31D
MINNETONKA
TUCKERMAN DRIVE
FAIRBANKS DRIVE
WISP COURT
RICKER ROAD
SEVERN STATION ROAD
SCATTERED PINES COURT
SEVERN ROAD
HALL CONE COURT
LIGHT PINES COURT
HERALD LANE
REECE ROAD
OLD CAMP MEADE ROAD
TWIN OAKS ROAD
SEVERN ELEMENTARY SCHOOL
BARNHILL CIRCLE
ANDORICK DRIVE
GREEN MOSS QUEEN
TEABERRY LANE
BITTERSWEET ROAD
THYSTLE FRIEND PLACE
PRIDE TREE CIRCLE
REDMORE COURT
REDMORE DRIVE
REDBRIDGE DRIVE
NEW DISNEY ROAD
SWIFT WATER COURT
LARCH ROAD
GREENTREE ROAD
FOSTER AVE
VALLEY CREEK ROAD
NORCROSS LANE
ROUTE 100
CHARLES CAROLL BOWIE
Graham KOP-FLEX

LOCATION MAP
SCALE: 1"=1200'

LEGEND
- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- 7836 STREET NUMBER (FROM PROPERTY ADDRESS)
- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- PATUXENT AQUIFER MONITORING WELLS
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- PROPERTY VISITED FOR OUT-REACH EFFORT
- PROPERTY WITH POTABLE WELL IDENTIFIED FOR REGULAR MONITORING

N
0 200 400 750
SCALE IN FEET

REFERENCE:
PARCEL INFORMATION OBTAINED FROM ANNE ARUNDEL COUNTY, DEPARTMENT OF PUBLIC WORKS
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REVISIONS

REV	DESCRIPTION	Chkd:	Appr:
1	Revised:	Chkd:	Appr:
2	Revised:	Chkd:	Appr:
3	Revised:	Chkd:	Appr:

DRAWN BY ECC
CHECKED KM 7/27/2018
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SEAL

DATE

PROPERTIES IDENTIFIED FOR RESIDENTIAL WELL SAMPLING ACTIVITIES

FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

PREPARED FOR
EMERSUB 16 LLC
ST. LOUIS, MISSOURI

WSP USA Inc.
13530 DULLES TECHNOLOGY DR. SUITE 300
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FIGURE 1

Drawing Number
314V0390-108



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LEGEND

- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- PATUXENT AQUIFER MONITORING WELLS
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- RECOVERY WELL

N

0 800 1600

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Drawn By: EGC 8/8/2018
Checked: MML
Approved: RJ
DWG Name: 314V0390-110

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 2

OFFSITE GROUNDWATER MONITORING WELLS
LOWER PATAPSCO AQUIFER
AND PATUXENT AQUIFER

WSP USA Inc.
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- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- 78.16 GROUNDWATER SURFACE ELEVATION (FEET MSL)
- GROUNDWATER SURFACE CONTOUR
- INERRED GROUNDWATER FLOW

REFERENCE:
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Figure 3

POTENTIOMETRIC SURFACE CONTOUR MAP
FOR CONFINED ZONE IN THE LOWER
PATAPSCO AQUIFER – MAY 2018

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TEL: +1 703.709.6500

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MW-25D	120' - 130'	180' - 190'
1,1-DCA	5	10.8
1,2-DCA	1.4	ND
1,1-DCE	144	58.3
1,4-Dioxane	53.9	50.8
1,1,1-TCA	5.3	7.2

MW-29D	141-151'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-36D	350-360'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND
PCE	2.3

MW-28D	200' - 210'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	6.1
1,4-Dioxane	2.4
1,1,1-TCA	ND

MW-30D	263-273'	403-413'
1,1-DCA	ND	ND
1,2-DCA	ND	ND
1,1-DCE	27.4	ND
1,4-Dioxane	16.4	ND
1,1,1-TCA	ND	ND

MW-35D	288' - 298'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-33D	225' - 235'	285' - 295'
1,1-DCA	ND	ND
1,2-DCA	ND	ND
1,1-DCE	ND	4.6
1,4-Dioxane	ND	6.9
1,1,1-TCA	ND	ND

MW-32D	226-236'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-31D	270' - 280'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

MW-34D	375-385'
1,1-DCA	ND
1,2-DCA	ND
1,1-DCE	ND
1,4-Dioxane	ND
1,1,1-TCA	ND

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LEGEND

- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- PATUXENT AQUIFER MONITORING WELLS
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- RECOVERY WELL

MW-25D	120' - 130'	180' - 190'
1,1-DCA	5	10.8
1,2-DCA	1.4	ND
1,1-DCE	144	58.3
1,4-Dioxane	53.9	50.8
1,1,1-TCA	5,3	7.2

- WELL IDENTIFICATION
- SCREENED INTERVAL (FT–BGS)
- SAMPLE RESULTS IN ppb (RED INDICATE RESULTS ABOVE MDE CLEANUP STANDARDS)
- CONSTITUENTS

DCA DICHLOROETHANE
DCE DICHLOROETHENE
TCA TRICHLOROETHANE
ND NOT DETECTED

WELL SCREENED IN THE PATUXENT AQUIFER

N

0 800 1600
SCALE IN FEET

REFERENCE:
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DWG Name: 314V0390-110

FORMER KOP-FLEX FACILITY
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Figure 4

GROUNDWATER MONITORING RESULTS
LOWER PATAPSCO AQUIFER AND PATUXENTAQUIFER
OFFSITE MONITORING WELLS – MAY 2018

WSP USA Inc.
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- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- PATUXENT AQUIFER MONITORING WELLS
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- ND NOT DETECTED
- 29.4 1,1-DCE CONCENTRATION (ppb)
- 1,1-DCE ISO-CONCENTRATION CONTOUR (ppb)

MW-27D ND
MW-46D 29.4
MW-23D 172
MW-16D 180
MW-40D 2.9
MW-22D 13.1
MW-21D 38.8
71.4
MW-17D
MW-24D 529
MW-25/MW-25D 144
MW-29D ND
MW-36D ND
MW-28/MW-28D 6.1
MW-30D 27.4
MW-32D ND
MW-33D-295 4.6
MW-31D ND
MW-35D ND
MW-34D ND
100
1

STONY RUN
PENN CENTRAL RAILROAD TRACKS
WILLIAMS SCOTSMAN, INC.
ROUTE 100
OLD VICTORIA ROAD
ELVARON ROAD
MINNETONKA ROAD
MORGAN STATION DRIVE
FERRARIS DRIVE
RIVER ROAD
SEVERN ELEMENTARY SCHOOL
OLD CAMP MEADE ROAD
REESE ROAD
ROUTE 175
SEVERN POST OFFICE
ROBINSON AVENUE
OLD DONALDSON AVE.
BITTERSWEET ROAD
FAIRFIRST LANE
PRICE RUN DRIVE
ANNE ROAD
VALLEY CREEK ROAD
NORTHOVER LANE
HOOKING WAY
PATAPSCO AVENUE

REFERENCE:
PARCEL INFORMATION OBTAINED FROM ANNE ARUNDEL COUNTY, DEPARTMENT OF PUBLIC WORKS http://gis-world2.aacounty.org/DPWcounter/countermap.html

0 800 1600
SCALE IN FEET

Drawn By: EGC 8/8/2018
Checked: MML
Approved: RG
DWG Name: 314V0390-111

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 5

INFERRED 1,1-DCE DISTRIBUTION IN CONFINED ZONE OF LOWER PATAPSCO AQUIFER

WSP USA Inc.
13530 DULLES TECHNOLOGY DR
SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

B

R:\ACAD\CADD_CLIENT\Emerson\MD_Hanover\314O0390-Kopflex\CAD\314V0390-111.dwg 8/8/2018 4:04 PM USEC01012

NOTICE: THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECTION OF A PROFESSIONAL. DO NOT ALTER THIS DOCUMENT IN ANY WAY WITHOUT THE WRITTEN CONSENT OF WSP USA INC.

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK AND WHITE COPIES MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

LEGEND

- PROPERTY LINE
- WATER MAIN
- STREAM
- WATER BODY
- UNCONFINED AND CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER MONITORING WELL
- CONFINED LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFER MONITORING WELLS
- ND NOT DETECTED
- 187 1,4-DIOXANE CONCENTRATION (ppb)
- 1,4-DIOXANE ISO-CONCENTRATION CONTOUR (ppb)

Drawn By: EGC 8/8/2018
Checked: MML
Approved: RG
DWG Name: 314V0390-112

FORMER KOP-FLEX FACILITY
HANOVER, MARYLAND
PREPARED FOR
EMERSON
ST. LOUIS, MISSOURI

Figure 6

INFERRED 1,4-DIOXANE DISTRIBUTION IN CONFINED ZONE OF LOWER PATAPSCO AQUIFER

0 800 1600
SCALE IN FEET

REFERENCE:
PARCEL INFORMATION OBTAINED FROM ANNE ARUNDEL COUNTY, DEPARTMENT OF PUBLIC WORKS http://gis-world2.aacounty.org/DPWcounter/countermap.html

WSP USA Inc.
13530 DULLES TECHNOLOGY DR
SUITE 300
HERNDON, VA 20171
TEL: +1 703.709.6500

R:\ACAD\CADD_CLIENT\Emerson\MD_Hanover\314V0390-Kopflex\CAD\314V0390-112.dwg 8/9/2018 7:58 AM USEC01012

TABLES

Table 1

Historical Water Sampling Results
Residential Well - 1227 Old Camp Meade Road
Former Kop-Flex Facility Site
Hanover, Maryland

	Parameter	**Acetone**	**Bromoform**	**Carbon Disulfide**	**Chloroform**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**Methyl Tert Butyl Ether**	**Toluene**	**1,1,1-Trichloroethane**	**1,4-Dioxane**
	Units	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	MCL	550 (a)	80 (a)	100 (a)	80 (a)	90 (a)	7	20 (a)	1,000	200	4.6 (b)
Sample Type	**Date**										
Pre-Treatment	2/13/2013	5 U	0.5 U	0.18 J	0.5 U	0.5 U	0.55	0.25 J	0.18 J	0.091 J	2 U
Post-Treatment	2/13/2013	5 U	0.5 U	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.081 J	2 U
Pre-Treatment	7/9/2013	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.11 J	2.3
Pre-Treatment	2/12/2014	5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	2 U
Pre-Treatment	5/29/2014	5 U	0.5 U	0.5 U	0.5 U	0.051 J	1.3	0.5 U	0.5 U	0.15 J	2 U
Post-Treatment	5/29/2014	5 U	0.5 U	0.5 U	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	2 U
Pre-Treatment	9/12/2014	5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	0.5 U	0.5 U	0.21 J	2 U
Post-Treatment	9/12/2014	5 U	0.28 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.18 J	2 U
Pre-Treatment	12/8/2014	0.99 J	0.5 U	0.5 U	0.5 U	0.5 U	0.43 J	0.5 U	0.5 U	0.20 J	2 U
Post-Treatment	12/8/2014	5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.4	0.5 U	0.5 U	0.24 J	2 U
Pre-Treatment	11/3/2016	5 U	0.5 U	0.5 U	0.5 U	0.19 J	**8.8**	0.5 U	0.5 U	0.48 J	2.9
Post-Treatment	11/3/2016	5 U	0.5 U	0.5 U	0.095 J	0.16 J	0.5 U	0.5 U	0.5 U	0.42 J	2.7
Post-Treatment	3/28/2017	5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	0.41 J	3.4
Pre-Treatment	7/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.15 J	6.7	0.5 U	0.5 U	0.33 J	3.8
Post-Treatment	7/25/2017	5 U	0.55	0.5 U	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U	0.42 J	3.1
Pre-Treatment	9/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.18 J	**7.8**	0.5 U	0.5 U	0.41 J	4.6
Post-Treatment	9/25/2017	5 U	0.5 U	0.5 U	0.5 U	0.15 J	1.7	0.5 U	0.5 U	0.37 J	3.5
Pre-Treatment	10/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.24 J	**11.5**	0.5 U	0.5 U	0.5	2.6
Post-Treatment	10/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.53	2.6
Pre-Treatment	11/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.16 J	6	0.5 U	0.5 U	0.3 J	2.3
Post-Treatment	11/30/2017	5 U	0.5 U	0.5 U	0.5 U	0.17 J	1.9	0.5 U	0.5 U	0.34 J	2.4
Pre-Treatment	12/15/2017	5 U	0.5 U	0.5 U	0.5 U	0.5 U	7	0.5 U	0.5 U	0.36 J	2.0
Post-Treatment	12/15/2017	5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.8	0.5 U	0.5 U	0.39 J	2.1
Pre-Treatment	1/11/2018	5 U	0.5 U	0.5 U	0.5 U	0.15 J	5.3	0.5 U	0.5 U	0.27 J	1.1
Post-Treatment	1/11/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	1.5	0.5 U	0.5 U	0.32 J	1.4
Pre-Treatment	2/13/2018	5 U	0.5 U	0.5 U	0.5 U	0.16 J	**9.5**	0.5 U	0.5 U	0.44 J	2.7
Post-Treatment	2/13/2018	5 U	0.5 U	0.5 U	0.5 U	0.16 J	0.39 J	0.5 U	0.5 U	0.38 J	2.6
Pre-Treatment	3/29/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	**7.5**	0.5 U	0.5 U	0.35 J	1.6
Post-Treatment	3/29/2018	5 U	0.5 U	0.5 U	0.5 U	0.14 J	3.1	0.5 U	0.5 U	0.34 J	1.9
Pre-Treatment	4/17/2018	5 U	0.5 U	0.5 U	0.5 U	0.18 J	**8.8**	0.5 U	0.5 U	0.45 J	3.0
Post-Treatment	4/17/2018	5 U	0.5 U	0.5 U	0.5 U	0.15 J	2.6	0.5 U	0.5 U	0.37 J	1.8
Pre-Treatment	5/8/2018	5 U	0.5 U	0.5 U	0.5 U	0.18 J	**8.7**	0.5 U	0.5 U	0.48 J	3.4
Post-Treatment	5/8/2018	5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	0.42 J	2.7
Pre-Treatment	6/28/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.6	0.5 U	0.5 U	0.28 J	2.5
Post-Treatment	6/28/2018	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.28 J	2.4

(a) Maryland Department of Environment Action Level
(b) Maryland Risk Based Action Level
Notes:
MCL - US Environmental Protection Agency Maximum Contaminant Level
U - Undetected, value reported is the laboratory reporting limit
J = Indicates an estimated value between method detection limit and reporting limit
Bold value indicates concentration above the comparative criterion.
Gray shaded rows represent pre-treatment water samples.

Table 2

Historical Water Sampling Results
Residential Well - 7742 Twin Oaks Road
Former Kop-Flex Facility Site
Hanover, Maryland

Parameter	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	1,4-Dioxane
Units	µg/l	µg/l	ug/L	ug/L
Sample Date MCL	90 (a)	7 (a)	200 (a)	4.6 (b)
1/9/2013	0.5 U	0.32 J	0.072 J	2 U
7/9/2013	0.5 U	0.25 J	0.15 J	2 U
2/12/2014	0.5 U	1.6	0.14 J	2 U
5/29/2014	0.5 U	0.89	0.15 J	2 U
9/11/2014	0.5 U	0.62	0.13 J	2 U
12/18/2014	0.5 U	0.57	0.18 J	2 U
10/18/2017	0.5 U	2.8	0.18 J	1.3
2/13/2018	0.5 U	2.8	0.21 J	1.7
5/31/2018	0.5 U	0.97	0.14 J	0.94

(a) Maryland Department of Environment Action Level

(b) Maryland Risk Based Level

Notes:

MCL - US Environmental Protection Agency Maximum Contaminant Level

U - Undetected, value reported is the laboratory reporting limit

J - Indicates an estimated value between method detection limit and reporting limit

Table 3

Groundwater Profiling Results - MW-30D Location
Former Kop Flex Facility Site
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-30D 211-216 3/29/2018	MW-30D 221-226 3/29/2018	MW-30D 241-246 3/29/2018	MW-30D 271-276 3/30/2018	MW-30D 281-286 3/30/2018	MW-30D 291-296 4/2/2018	MW-30D 311-316 4/2/2018	MW-30D 401-406 4/5/2018	MW-30D 411-416 4/5/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.1	1.0 U	6.3	1.0 U	2.4	3.1	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Temperature (°C)	NA		19.86	18.09	19.49	16.93	18.74	15.52	16.3	15.27	16.5
pH (s.u.)	NA		6.14	5.80	6.01	5.98	6.24	4.83	5.89	6.30	6.34
Conductivity (mS/cm)	NA		0.083	0.071	0.074	0.050	0.072	0.076	0.041	0.050	0.041
ORP (mV)	NA		-64	-446	-313	-554	-534	-441	17	35	-48

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
N/A = not applicable
b/ All concentrations in micrograms per liter (µg/l)

Table 4

Groundwater Profiling Results - MW-34D Location
Former Kop Flex Facility Site
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-34D 320-325 4/16/2018	MW-34D 330-335 4/16/2018	MW-34D 360-365 4/17/2018	MW-34D 380-385 4/18/2018	MW-34D 400-405 4/18/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Temperature (°C)	NA		19.63	19.41	16.12	15.52	16.15
pH (s.u.)	NA		5.97	6.88	6.56	6.11	6.40
Conductivity (mS/cm)	NA		0.106	0.113	0.216	0.242	0.225
ORP (mV)	NA		-2.0	-192	-160	-40	7.0

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
N/A = not applicable
b/ All concentrations in micrograms per liter (µg/l)

Table 5

Offsite Monitoring Well Sample Results
Former Kop-Flex Facility Site
Hanover, Maryland
May 2018

Parameters (a)	Groundwater Quality Standards (µg/L) (b)	Well ID: / Sampling Date:	UNCONFINED LOWER PATAPSCO AQUIFER		CONFINED LOWER PATAPSCO AQUIFER								
			MW-25 30-May-18	MW-28 30-May-18	MW-25D-130 30-May-18	MW-25D-190 30-May-18	Dup053018 (d) 30-May-18	MW-28D 30-May-18	MW-29D 31-May-18	MW-30D-273 31-May-18	MW-31D 31-May-18	MW-32D 31-May-18	MW-33D-235 31-May-18
1,1-Dichloroethane	90		1.0 U	1.0 U	5.0	10.8	11.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.0 U	**144**	**58.3**	**54.6**	6.1	1.0 U	**27.4**	1.0 U	1.0 U	1.0 U
1,4-Dioxane	4.6 (c)		2.0 U	2.0 U	**53.9**	**50.8**	**51.0**	2.4	2.0 U	**16.4**	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	5.3	7.2	6.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Total CVOCs & 1,4-Dioxane		-	-	208.2	127.1	123.7	8.5	-	43.8	-	-	-

a/ U = not detected above the method detection limit; CVOC = chlorinated volatile organic compound.
Bolded values indicate an exceedence of the Groundwater Quality Standards
All sample concentrations in micrograms per liter (µg/l)
b/ Source: http://www.mde.maryland.gov/assets/document/Final%20Update%20No%202.1%20dated%205-20-08(1).pdf
c/ Value represents the new MDE risk-based action level. The previous value was 6.7 µg/l.
d/ Field duplicate of sample from well MW-25-190.

Table 5

Offsite Monitoring Well Sample Results
Former Kop-Flex Facility Site
Hanover, Maryland
May 2018

Parameters (a)	Groundwater Quality Standards (µg/L) (b)	Well ID: / Sampling Date:	MW-33D-295 31-May-18	MW-34D 31-May-18	MW-35D 31-May-18	PATUXENT AQUIFER MW-30D-413 31-May-18	MW-36D 30-May-18
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		4.6	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	4.6 (c)		**6.9**	2.0 U	2.0 U	2.0 U	2.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	2.3
	Total CVOCs & 1,4-Dioxane		11.5	-	-	-	2.3

a/ U = not detected above the method detection limit; CVOC = chlorinated v
Bolded values indicate an exceedence of the Groundwater Quality Sta
All sample concentrations in micrograms per liter (µg/l)
b/ Source: http://www.mde.maryland.gov/assets/document/Final%20Update
c/ Value represents the new MDE risk-based action level. The previous valu
d/ Field duplicate of sample from well MW-25-190.

Table 6

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
	Sample Date											
Unconfined Zone Wells												
MW-25	3/19/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/24/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	1.0 U	1.0 U	1.5	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/20/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	**11.7**	1.0 U	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-28	3/17/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/5/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/22/2016	1.0 U	1.0 U	1.0 U	6.2	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 6

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
Confined Zone Wells												
MW-25D-130	3/19/2015	10.0 U	38.6	**10.8**	**854**	10.0 U	**446**	200 U	**8,930**	100 U	100 U	100 U
	6/24/2015	1.0 U	37.1	**8.9**	**1,030**	4.6	**303**	2.0 U	46.3	1.2	**6.8**	1.0 U
	9/23/2015	10.0 U	29.7	10.0 U	**697**	10.0 U	**295**	20.0 U	32.3	10.0 U	**14.2**	10.0 U
	1/7/2016	5.0 U	33.4	**9.7**	**800**	5.0 U	**398**	10.0 U	5.0 U	5.0 U	**6.1**	5.0 U
	3/23/2016	5.0 U	24.5	**8.0**	**676**	5.0 U	**302**	10.0 U	26.2	5.0 U	**5.0**	5.0 U
	7/19/2016	10.0 U	39.3	**10.2**	**1,090**	4.9 J	**367**	14.3 J	37.0	10.0 U	**6.5** J	10.0 U
	9/9/2016	5.0 U	27.9	**6.4**	**661**	5.0 U	**241**	**12.0**	25.0	5.0 U	5.0 U	5.0 U
	12/8/2016	1.0 U	6.7	1.5	**171**	1.0 U	**13.6**	2.0 U	6.9	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	7.2	1.7	**194**	1.0 U	**69.1**	2.0 U	7.0	1.0 U	1.2	1.0 U
	5/2/2017	2.0 U	6.5	2.0 U	**174**	2.0 U	**61.0**	4.0 U	5.0	2.0 U	2.0 U	2.0 U
	8/31/2017	2.0 U	7.4	1.7	**193**	2.0 U	**57.9**	4.0 U	6.9	2.0 U	2.0 U	2.0 U
	11/14/2017	2.0 U	5.1	1.3	**151**	0.57 J	**58.5**	5.0 U	6.4	1.0 U	1.1	1.0 U
	2/13/2018	2.0 U	6.3	2.0 U	**154**	2.0 U	**67.1**	5.0 U	6.4	1.0 U	1.0 U	1.0 U
	5/30/2018	2.0 U	5.0	1.4	**144**	2.0 U	**53.9**	5.0 U	5.3	1.0 U	1.0 U	1.0 U
MW-25D-192	3/19/2015	1.0 U	11.7	1.0 U	**53.0**	1.0 U	**49.4**	2.0 U	13.7	1.0 U	1.0 U	1.0 U
	6/25/2015	1.0 U	11.9	1.0 U	**59.4**	1.0 U	**39.8**	2.0 U	14.2	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	13.9	1.0 U	**51.4**	1.0 U	**45.0**	2.0 U	12.9	1.0 U	1.3	1.0 U
	1/7/2016	1.0 U	11.7	1.0 U	**47.2**	1.0 U	**41.7**	2.0 U	12.5	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	10.3	1.0 U	**43.3**	1.0 U	**42.2**	2.0 U	11.3	1.0 U	1.0 U	1.0 U
	7/20/2016	1.0 U	11.7	0.73 J	**54.9**	1.0 U	**54.4**	2.0 U	11.1	1.0 U	1.0 U	1.0 U
	9/8/2016	1.0 U	12.9	1.0 U	**56.8**	1.0 U	**39.3**	2.0 U	12.6	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	16.1	1.0 U	**64.6**	1.0 U	**51.3**	2.0 U	13.3	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	14.0	1.0 U	**63.3**	1.0 U	**52.1**	2.0 U	11.6	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	16.9	1.0 U	**81.0**	1.0 U	**53.1**	2.0 U	13.5	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	15.7	1.0 U	**62.5**	1.0 U	**44.3**	2.0 U	13.1	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	13.6	0.67 J	**67.2**	1.0 U	**56.7**	5.0 U	13.6	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	13.7	1.0 U	**69.2**	1.0 U	**42.7**	5.0 U	11.0	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	10.8	1.0 U	**58.3**	1.0 U	**50.8**	5.0 U	7.2	1.0 U	1.0 U	1.0 U

Table 6

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
MW-28D	3/17/2015	1.0 U	1.0 U	1.0 U	**10.6**	1.0 U	**5.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	**12.8**	1.0 U	4.5	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	**14.3**	1.0 U	4.4	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/5/2016	1.0 U	1.0 U	1.0 U	**11.5**	1.0 U	**5.5**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/23/2016	1.0 U	1.0 U	1.0 U	**9.1**	1.0 U	4.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	0.25 J	**10.1**	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	**12.0**	1.0 U	**5.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	6.3	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	4.6	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	5.8	1.0 U	2.7	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	5.0	1.0 U	2.7	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	5.5	1.0 U	3.5	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	4.3	1.0 U	2.8	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/30/2018	5.0 U	1.0 U	1.0 U	6.1	1.0 U	2.4	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-29D	5/21/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-30D-273	5/31/2018	5.0 U	1.0 U	1.0 U	**27.4**	1.0 U	**16.4**	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-30D-413	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-31D	3/17/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/24/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/19/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 6

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
MW-32D	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-33D-235	3/18/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/4/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.0	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.3	**12.0**	1.0 U	1.0 U	1.0 U	1.0 U
	2/13/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-33D-295	3/18/2015	1.0 U	1.0 U	1.0 U	4.6	1.0 U	**8.0**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/23/2015	1.0 U	1.0 U	1.0 U	3.3	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	4.8	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/4/2016	1.0 U	1.0 U	1.0 U	3.7	1.0 U	**7.6**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	3/21/2016	1.0 U	1.0 U	1.0 U	3.9	1.0 U	**7.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	0.36 J	3.2	1.0 U	**5.1**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/7/2016	1.0 U	1.0 U	1.0 U	3.8	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	5.4	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	4.0	1.0 U	**6.8**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	5.3	1.0 U	**7.4**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	5.6	1.0 U	**6.3**	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	3.4	1.0 U	**9.7**	**11.5**	0.49 J	1.0 U	1.0 U	1.0 U
	2/13/2018	5.0 U	1.0 U	1.0 U	4.6	1.0 U	**6.9**	2.0 U	0.49 J	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	4.6	1.0 U	**6.9**	2.0 U	0.49 J	1.0 U	1.0 U	1.0 U
MW-34D	5/31/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 6

Historical Offsite Groundwater Sampling Results (2015 to Present)
Former Kop-Flex Facility Site
Hanover, Maryland

Well ID		Chloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	1,4-Dioxane	Methylene Chloride	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
Groundwater Quality Standard (µg/L)		3.6	90	5	7	70	4.6	5	200	5	5	2
MW-35D	3/18/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	6/22/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/21/2015	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	4/15/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	7/18/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	9/6/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	12/8/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/21/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/2/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	8/31/2017	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	11/14/2017	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2/14/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	5/31/2018	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U
MW-36D	5/30/2018	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U

a/ U = not detected above the method detection limit; jJ = estimated concentration between the reporting limit and method detection limit.
Bolded values indicate an exceedence of the Groundwater Quality Standards
All sample concentrations in micrograms per liter (µg/l)

ENCLOSURE A – LABORATORY ANALYTICAL REPORTS FOR RESIDENTIAL WELL SAMPLES

APRIL 2018

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31400389-07

SGS Job Number: JC64559



Sampling Date: 04/17/18

Report to:

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Total number of pages in report: 47

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.

Nancy Cole
Laboratory Director

Client Service contact: Rocus Peters 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC64559

Kop-Flex, Hanover, VA
Project No: 31400389-07

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC64559-1	04/17/18	10:05	NK	04/19/18	AQ	Water	RW-12270CM-041718
JC64559-2	04/17/18	10:00	NK	04/19/18	AQ	Water	RW-12270CM-041718-F
JC64559-3	04/17/18	10:05	NK	04/19/18	AQ	Trip Blank Water	TB-041718

Summary of Hits

Job Number: JC64559
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 04/17/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC64559-1	**RW-12270CM-041718**					
1,1-Dichloroethane [a]		0.18 J	0.50	0.13	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene [a]		8.8	0.50	0.23	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.45 J	0.50	0.12	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		3.0	0.40	0.29	ug/l	SW846 8260C BY SIM
JC64559-2	**RW-12270CM-041718-F**					
1,1-Dichloroethane [a]		0.15 J	0.50	0.13	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene [a]		2.6	0.50	0.23	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.37 J	0.50	0.12	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		1.8	0.40	0.29	ug/l	SW846 8260C BY SIM
JC64559-3	**TB-041718**					

No hits reported in this sample.

(a) EPA 524.2 is not a certified method for non-potable water samples.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-12270CM-041718		
Lab Sample ID:	JC64559-1	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B114700.D	1	04/27/18 16:36	CSF	n/a	n/a	V1B5503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	0.18	0.50	0.13	ug/l	J
75-35-4	1,1-Dichloroethylene	8.8	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	

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:	RW-12270CM-041718		
Lab Sample ID:	JC64559-1	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	0.45	0.50	0.12	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	89%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

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:	RW-12270CM-041718		
Lab Sample ID:	JC64559-1	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	RW-12270CM-041718		
Lab Sample ID:	JC64559-1	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159536.D	1	04/24/18 21:27	HT	n/a	n/a	V3A6878
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.0	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	136%		51-175%

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:	RW-12270CM-041718-F		
Lab Sample ID:	JC64559-2	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B114701.D	1	04/27/18 17:09	CSF	n/a	n/a	V1B5503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	0.15	0.50	0.13	ug/l	J
75-35-4	1,1-Dichloroethylene	2.6	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	

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:	RW-12270CM-041718-F		
Lab Sample ID:	JC64559-2	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	0.37	0.50	0.12	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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:	RW-12270CM-041718-F		
Lab Sample ID:	JC64559-2	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	RW-12270CM-041718-F		
Lab Sample ID:	JC64559-2	**Date Sampled:**	04/17/18
Matrix:	AQ - Water	**Date Received:**	04/19/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159624.D	1	05/01/18 11:48	HT	n/a	n/a	V3A6882
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.8	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	93%		51-175%

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:	TB-041718		
Lab Sample ID:	JC64559-3	**Date Sampled:**	04/17/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B114706.D	1	04/27/18 19:52	CSF	n/a	n/a	V1B5503
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	

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:	TB-041718		
Lab Sample ID:	JC64559-3	**Date Sampled:**	04/17/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	86%		70-130%
460-00-4	4-Bromofluorobenzene	85%		70-130%

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:	TB-041718		
Lab Sample ID:	JC64559-3	**Date Sampled:**	04/17/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/19/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	TB-041718		
Lab Sample ID:	JC64559-3	**Date Sampled:**	04/17/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/19/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159625.D	1	05/01/18 12:15	HT	n/a	n/a	V3A6882
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	82%		51-175%

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

WW, WTB SW-04318-29

CHAIN-OF-CUSTODY RECORD

JC64559 Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Drive St 300 Herndon VA

Project Name: Kapflex

WSP USA Contact Name: Eric Johnson

Project Location: Hanover MD

WSP USA Contact E-mail: eric.johnson@wsp.com

Project Number & Task: [redacted] 31400389-07

WSP USA Contact Phone: (703) 709-6500

Sampler(s) Name(s): Maya Kaplan, Ben Langer

Sampler(s) Signature(s):

Requested Analyses & Preservatives: VOCs (524), 1,4 Dioxane (8260 SIM)

No. 008204

Laboratory Name & Location: Pace NJ

Laboratory Project Manager: Ross Peters

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

	Sample Identification	Matrix	Collection Start Date	Collection Start Time	Collection Stop Date	Collection Stop Time	Number of Containers	VOCs (524)	1,4 Dioxane (8260 SIM)	Sample Comments
1	RW-1270CM-041718	AQ	4/17/18		1005		6	X	X	
2	RW-1270CM-041718-F	AQ	4/17/18		1000		6	X	X	
3	TB-041718	AQ	—		—		4	X	X	V237

4/17/18

INITIAL ASSESSMENT 24 hours

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	4/17/18	1200	Fedex				7250 6932 9573
FX	4/19/18	950		4/19/18	950	Number of Packages	Custody Seal Number(s)

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

FX#3127 8179 4251

ICE 2.6°

SGS Sample Receipt Summary

Job Number: JC64559 **Client:** WSP **Project:** KOP-FLEX, HANOVER, VA

Date / Time Received: 4/19/2018 9:30:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (4.1);

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:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 216017 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JC64559: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5503-MB	1B114698.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	

Method Blank Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5503-MB	1B114698.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

Method Blank Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5503-MB	1B114698.D	1	04/27/18	CSF	n/a	n/a	V1B5503

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

JC64559-1, JC64559-2, JC64559-3

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6878-MB	3A159517.D	1	04/24/18	HT	n/a	n/a	V3A6878

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

JC64559-1

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	92%	51-175%

Method Blank Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6882-MB	3A159621.D	1	05/01/18	HT	n/a	n/a	V3A6882

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

JC64559-2, JC64559-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.30	0.29	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	95%	51-175%

Blank Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5503-BS	1B114697.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	18.5	93	70-130
78-93-3	2-Butanone	20	18.5	93	70-130
71-43-2	Benzene	5	4.8	96	70-130
108-86-1	Bromobenzene	5	4.8	96	70-130
74-97-5	Bromochloromethane	5	5.1	102	70-130
75-27-4	Bromodichloromethane	5	5.1	102	70-130
75-25-2	Bromoform	5	5.3	106	70-130
74-83-9	Bromomethane	5	4.3	86	70-130
104-51-8	n-Butylbenzene	5	3.8	76	70-130
135-98-8	sec-Butylbenzene	5	4.5	90	70-130
98-06-6	tert-Butylbenzene	5	4.2	84	70-130
75-15-0	Carbon disulfide	5	4.8	96	70-130
108-90-7	Chlorobenzene	5	4.9	98	70-130
75-00-3	Chloroethane	5	4.1	82	70-130
67-66-3	Chloroform	5	5.0	100	70-130
74-87-3	Chloromethane	5	4.1	82	70-130
95-49-8	o-Chlorotoluene	5	4.7	94	70-130
106-43-4	p-Chlorotoluene	5	4.9	98	70-130
56-23-5	Carbon tetrachloride	5	6.2	124	70-130
75-34-3	1,1-Dichloroethane	5	5.0	100	70-130
75-35-4	1,1-Dichloroethylene	5	4.8	96	70-130
563-58-6	1,1-Dichloropropene	5	4.4	88	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	5.0	100	70-130
106-93-4	1,2-Dibromoethane	5	5.0	100	70-130
107-06-2	1,2-Dichloroethane	5	5.4	108	70-130
78-87-5	1,2-Dichloropropane	5	5.0	100	70-130
142-28-9	1,3-Dichloropropane	5	5.3	106	70-130
594-20-7	2,2-Dichloropropane	5	5.3	106	70-130
124-48-1	Dibromochloromethane	5	5.1	102	70-130
74-95-3	Dibromomethane	5	5.1	102	70-130
75-71-8	Dichlorodifluoromethane	5	4.5	90	70-130
541-73-1	m-Dichlorobenzene	5	4.9	98	70-130
95-50-1	o-Dichlorobenzene	5	4.8	96	70-130
106-46-7	p-Dichlorobenzene	5	4.8	96	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.7	94	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.5	90	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5503-BS	1B114697.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	5.0	100	70-130
10061-02-6	trans-1,3-Dichloropropene	5	5.1	102	70-130
100-41-4	Ethylbenzene	5	4.7	94	70-130
87-68-3	Hexachlorobutadiene	5	4.1	82	70-130
591-78-6	2-Hexanone	20	17.3	87	70-130
98-82-8	Isopropylbenzene	5	4.2	84	70-130
99-87-6	p-Isopropyltoluene	5	4.0	80	70-130
75-09-2	Methylene chloride	5	5.0	100	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.6	92	70-130
108-10-1	4-Methyl-2-pentanone	20	20.4	102	70-130
91-20-3	Naphthalene	5	3.7	74	70-130
103-65-1	n-Propylbenzene	5	4.7	94	70-130
100-42-5	Styrene	5	4.2	84	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.2	104	70-130
71-55-6	1,1,1-Trichloroethane	5	5.1	102	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.0	100	70-130
79-00-5	1,1,2-Trichloroethane	5	5.0	100	70-130
87-61-6	1,2,3-Trichlorobenzene	5	3.8	76	70-130
96-18-4	1,2,3-Trichloropropane	5	5.3	106	70-130
120-82-1	1,2,4-Trichlorobenzene	5	3.8	76	70-130
95-63-6	1,2,4-Trimethylbenzene	5	4.3	86	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.7	94	70-130
127-18-4	Tetrachloroethylene	5	4.5	90	70-130
108-88-3	Toluene	5	4.7	94	70-130
79-01-6	Trichloroethylene	5	4.8	96	70-130
75-69-4	Trichlorofluoromethane	5	4.4	88	70-130
75-01-4	Vinyl chloride	5	4.1	82	70-130
	m,p-Xylene	10	9.7	97	70-130
95-47-6	o-Xylene	5	4.5	90	70-130
1330-20-7	Xylenes (total)	15	14.2	95	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%	70-130%
460-00-4	4-Bromofluorobenzene	99%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6878-BS	3A159515.D	1	04/24/18	HT	n/a	n/a	V3A6878

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

JC64559-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	14.8	74	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	86%	51-175%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6882-BS	3A159618.D	1	05/01/18	HT	n/a	n/a	V3A6882
V3A6882-BSD	3A159619.D	1	05/01/18	HT	n/a	n/a	V3A6882

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

JC64559-2, JC64559-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	20	22.0	110	17.5	88	23* [a]	58-138/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17647-74-4	1,4-Dioxane-d8	119%	103%	51-175%

(a) Outside in house control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64672-1MS	1B114703.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64672-1 [a]	1B114699.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	JC64672-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	15.8	79	41-142
78-93-3	2-Butanone	ND		20	15.2	76	55-129
71-43-2	Benzene	ND		5	4.6	92	53-138
108-86-1	Bromobenzene	ND		5	4.3	86	54-138
74-97-5	Bromochloromethane	ND		5	4.6	92	55-140
75-27-4	Bromodichloromethane	ND		5	4.9	98	57-147
75-25-2	Bromoform	ND		5	4.6	92	47-137
74-83-9	Bromomethane	ND		5	5.3	106	40-162
104-51-8	n-Butylbenzene	ND		5	3.4	68	45-144
135-98-8	sec-Butylbenzene	ND		5	4.1	82	46-145
98-06-6	tert-Butylbenzene	ND		5	3.7	74	48-141
75-15-0	Carbon disulfide	ND		5	4.7	94	35-127
108-90-7	Chlorobenzene	ND		5	4.5	90	54-135
75-00-3	Chloroethane	ND		5	5.3	106	38-153
67-66-3	Chloroform	ND		5	4.7	94	57-151
74-87-3	Chloromethane	ND		5	5.2	104	39-165
95-49-8	o-Chlorotoluene	ND		5	4.3	86	55-142
106-43-4	p-Chlorotoluene	ND		5	4.4	88	55-139
56-23-5	Carbon tetrachloride	0.24	J	5	6.1	117	49-170
75-34-3	1,1-Dichloroethane	ND		5	4.7	94	55-149
75-35-4	1,1-Dichloroethylene	0.33	J	5	5.1	95	42-142
563-58-6	1,1-Dichloropropene	ND		5	4.3	86	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.2	84	48-141
106-93-4	1,2-Dibromoethane	ND		5	4.5	90	57-135
107-06-2	1,2-Dichloroethane	ND		5	5.0	100	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.7	94	53-142
142-28-9	1,3-Dichloropropane	ND		5	4.9	98	58-143
594-20-7	2,2-Dichloropropane	ND		5	5.1	102	38-165
124-48-1	Dibromochloromethane	ND		5	4.8	96	55-138
74-95-3	Dibromomethane	ND		5	4.7	94	61-144
75-71-8	Dichlorodifluoromethane	ND		5	6.0	120	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.4	88	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.2	84	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.2	84	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.4	88	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.3	86	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64672-1MS	1B114703.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64672-1 [a]	1B114699.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	JC64672-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.1	82	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.4	88	54-142
100-41-4	Ethylbenzene	ND		5	4.3	86	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.1	82	40-154
591-78-6	2-Hexanone	ND		20	13.7	69	53-128
98-82-8	Isopropylbenzene	ND		5	3.8	76	49-139
99-87-6	p-Isopropyltoluene	ND		5	3.6	72	45-141
75-09-2	Methylene chloride	ND		5	4.6	92	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	3.9	78	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	16.7	84	58-127
91-20-3	Naphthalene	ND		5	3.1	62	44-140
103-65-1	n-Propylbenzene	ND		5	4.2	84	50-142
100-42-5	Styrene	ND		5	3.8	76	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.7	94	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	4.9	98	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.5	90	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	4.6	92	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	3.5	70	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.3	86	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	3.3	66	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	3.7	74	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.2	84	45-138
127-18-4	Tetrachloroethylene	0.14	J	5	4.4	85	45-145
108-88-3	Toluene	ND		5	4.4	88	52-134
79-01-6	Trichloroethylene	1.2		5	5.6	88	54-143
75-69-4	Trichlorofluoromethane	ND		5	5.5	110	36-167
75-01-4	Vinyl chloride	ND		5	5.4	108	35-162
	m,p-Xylene	ND		10	8.8	88	49-135
95-47-6	o-Xylene	ND		5	4.2	84	49-134
1330-20-7	Xylenes (total)	ND		15	13.0	87	50-134

CAS No.	Surrogate Recoveries	MS	JC64672-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%	86%	70-130%
460-00-4	4-Bromofluorobenzene	98%	85%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64672-1MS	1B114703.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64672-1 [a]	1B114699.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

(a) EPA 524.2 is not a certified method for non-potable water samples.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64541-3MS	3A159524.D	1	04/24/18	HT	n/a	n/a	V3A6878
JC64541-3MSD	3A159525.D	1	04/24/18	HT	n/a	n/a	V3A6878
JC64541-3	3A159520.D	1	04/24/18	HT	n/a	n/a	V3A6878

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

JC64559-1

CAS No.	Compound	JC64541-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	23.7	119	20	18.7	94	24	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC64541-3	Limits
17647-74-4	1,4-Dioxane-d8	145%	107%	79%	51-175%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65120-9MS	3A159629.D	1	05/01/18	HT	n/a	n/a	V3A6882
JC65120-9MSD	3A159640.D	1	05/01/18	HT	n/a	n/a	V3A6882
JC65120-9	3A159626.D	1	05/01/18	HT	n/a	n/a	V3A6882

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

JC64559-2, JC64559-3

CAS No.	Compound	JC65120-9 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	5.3		20	26.6	107	20	23.6	92	12	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC65120-9	Limits
17647-74-4	1,4-Dioxane-d8	121%	108%	82%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64559-1DUP	1B114704.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64559-1 [a]	1B114700.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	JC64559-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	0.18	J	0.19	J	5	10
75-35-4	1,1-Dichloroethylene	8.8		8.9		1	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64559-1DUP	1B114704.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64559-1 [a]	1B114700.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

CAS No.	Compound	JC64559-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	0.45	J	0.43	J	5	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC64559-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	86%	89%	70-130%
460-00-4	4-Bromofluorobenzene	81%	86%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC64559-1DUP	1B114704.D	1	04/27/18	CSF	n/a	n/a	V1B5503
JC64559-1 [a]	1B114700.D	1	04/27/18	CSF	n/a	n/a	V1B5503

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC64559-1, JC64559-2, JC64559-3

(a) EPA 524.2 is not a certified method for non-potable water samples.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5496-BFB
Lab File ID: 1B114577.D
Instrument ID: GCMS1B
Injection Date: 04/20/18
Injection Time: 20:52

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2511	18.2		Pass
75	30.0 - 80.0% of mass 95	6629	48.0		Pass
95	Base peak, 100% relative abundance	13808	100.0		Pass
96	5.0 - 9.0% of mass 95	940	6.81		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	10876	78.8		Pass
175	5.0 - 9.0% of mass 174	781	5.66	(7.18) [a]	Pass
176	95.0 - 101.0% of mass 174	10473	75.8	(96.3) [a]	Pass
177	5.0 - 9.0% of mass 176	727	5.27	(6.94) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5496-IC5496	1B114578.D	04/20/18	21:40	00:48	Initial cal 0.2
V1B5496-IC5496	1B114579.D	04/20/18	22:12	01:20	Initial cal 0.5
V1B5496-IC5496	1B114580.D	04/20/18	22:45	01:53	Initial cal 1
V1B5496-IC5496	1B114581.D	04/20/18	23:17	02:25	Initial cal 2
V1B5496-IC5496	1B114582.D	04/20/18	23:50	02:58	Initial cal 5
V1B5496-ICC5496	1B114583.D	04/21/18	00:22	03:30	Initial cal 10
V1B5496-IC5496	1B114584.D	04/21/18	00:55	04:03	Initial cal 20
V1B5496-IC5496	1B114585.D	04/21/18	01:27	04:35	Initial cal 40
V1B5496-IC5496	1B114586.D	04/21/18	01:59	05:07	Initial cal 80
V1B5496-ICV5496	1B114589.D	04/21/18	03:36	06:44	Initial cal verification 10
V1B5496-ICV5496	1B114590.D	04/21/18	04:09	07:17	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5496-BFB2	**Injection Date:**	04/23/18
Lab File ID:	1B114594.D	**Injection Time:**	10:00
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3365	18.0		Pass
75	30.0 - 80.0% of mass 95	9114	48.7		Pass
95	Base peak, 100% relative abundance	18717	100.0		Pass
96	5.0 - 9.0% of mass 95	1332	7.12		Pass
173	Less than 2.0% of mass 174	84	0.45	(0.56) [a]	Pass
174	50.0 - 120.0% of mass 95	14906	79.6		Pass
175	5.0 - 9.0% of mass 174	1094	5.84	(7.34) [a]	Pass
176	95.0 - 101.0% of mass 174	14344	76.6	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	953	5.09	(6.64) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5496-ICV5496	1B114595.D	04/23/18	10:33	00:33	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5503-BFB
Lab File ID: 1B114696.D
Instrument ID: GCMS1B
Injection Date: 04/27/18
Injection Time: 14:11

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3001	21.9		Pass
75	30.0 - 80.0% of mass 95	7044	51.4		Pass
95	Base peak, 100% relative abundance	13699	100.0		Pass
96	5.0 - 9.0% of mass 95	956	6.98		Pass
173	Less than 2.0% of mass 174	111	0.81	(1.03) [a]	Pass
174	50.0 - 120.0% of mass 95	10746	78.4		Pass
175	5.0 - 9.0% of mass 174	836	6.10	(7.78) [a]	Pass
176	95.0 - 101.0% of mass 174	10473	76.5	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	764	5.58	(7.29) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5503-CC5496	1B114697.D	04/27/18	14:49	00:38	Continuing cal 5
V1B5503-BS	1B114697.D	04/27/18	14:49	00:38	Blank Spike
V1B5503-MB	1B114698.D	04/27/18	15:31	01:20	Method Blank
JC64672-1	1B114699.D	04/27/18	16:04	01:53	(used for QC only; not part of job JC64559)
JC64559-1	1B114700.D	04/27/18	16:36	02:25	RW-12270CM-041718
JC64559-2	1B114701.D	04/27/18	17:09	02:58	RW-12270CM-041718-F
ZZZZZZ	1B114702.D	04/27/18	17:42	03:31	(unrelated sample)
JC64672-1MS	1B114703.D	04/27/18	18:14	04:03	Matrix Spike
JC64559-1DUP	1B114704.D	04/27/18	18:46	04:35	Duplicate
ZZZZZZ	1B114705.D	04/27/18	19:19	05:08	(unrelated sample)
JC64559-3	1B114706.D	04/27/18	19:52	05:41	TB-041718
ZZZZZZ	1B114707.D	04/27/18	20:24	06:13	(unrelated sample)
ZZZZZZ	1B114708.D	04/27/18	20:56	06:45	(unrelated sample)
ZZZZZZ	1B114709.D	04/27/18	21:29	07:18	(unrelated sample)
ZZZZZZ	1B114710.D	04/27/18	22:01	07:50	(unrelated sample)
ZZZZZZ	1B114711.D	04/27/18	22:34	08:23	(unrelated sample)
ZZZZZZ	1B114712.D	04/27/18	23:06	08:55	(unrelated sample)
ZZZZZZ	1B114713.D	04/27/18	23:39	09:28	(unrelated sample)
ZZZZZZ	1B114714.D	04/28/18	00:11	10:00	(unrelated sample)
ZZZZZZ	1B114715.D	04/28/18	00:44	10:33	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6845-BFB	**Injection Date:**	02/26/18
Lab File ID:	3A158978.D	**Injection Time:**	10:39
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	12675	20.0		Pass
75	30.0 - 60.0% of mass 95	30581	48.1		Pass
95	Base peak, 100% relative abundance	63517	100.0		Pass
96	5.0 - 9.0% of mass 95	3746	5.90		Pass
173	Less than 2.0% of mass 174	364	0.57	(0.68) [a]	Pass
174	50.0 - 120.0% of mass 95	53424	84.1		Pass
175	5.0 - 9.0% of mass 174	4094	6.45	(7.66) [a]	Pass
176	95.0 - 101.0% of mass 174	52872	83.2	(99.0) [a]	Pass
177	5.0 - 9.0% of mass 176	3577	5.63	(6.77) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6845-IC6845	3A158982.D	02/26/18	12:27	01:48	Initial cal 2
V3A6845-IC6845	3A158983.D	02/26/18	12:53	02:14	Initial cal 5
V3A6845-ICC6845	3A158984.D	02/26/18	13:19	02:40	Initial cal 20
V3A6845-IC6845	3A158985.D	02/26/18	13:46	03:07	Initial cal 50
V3A6845-IC6845	3A158986.D	02/26/18	14:13	03:34	Initial cal 100
V3A6845-IC6845	3A158987.D	02/26/18	14:39	04:00	Initial cal 200
V3A6845-IC6845	3A158993.D	02/26/18	18:57	08:18	Initial cal 1
V3A6845-IC6845	3A158994.D	02/26/18	19:24	08:45	Initial cal 0.4
V3A6845-IC6845	3A158995.D	02/26/18	19:50	09:11	Initial cal 0.25
V3A6845-ICV6845	3A158996.D	02/26/18	20:17	09:38	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6878-BFB	**Injection Date:**	04/24/18
Lab File ID:	3A159512.D	**Injection Time:**	10:06
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	30493	19.3		Pass
75	30.0 - 60.0% of mass 95	76357	48.2		Pass
95	Base peak, 100% relative abundance	158357	100.0		Pass
96	5.0 - 9.0% of mass 95	10976	6.93		Pass
173	Less than 2.0% of mass 174	1797	1.13	(1.26) [a]	Pass
174	50.0 - 120.0% of mass 95	142626	90.1		Pass
175	5.0 - 9.0% of mass 174	10870	6.86	(7.62) [a]	Pass
176	95.0 - 101.0% of mass 174	137136	86.6	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	8694	5.49	(6.34) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6878-CC6845	3A159514.D	04/24/18	11:31	01:25	Continuing cal 5
V3A6878-BS	3A159515.D	04/24/18	12:05	01:59	Blank Spike
V3A6877-BS2	3A159515A.D	04/24/18	12:05	01:59	Blank Spike
V3A6877-MB2	3A159517A.D	04/24/18	12:59	02:53	Method Blank
V3A6878-MB	3A159517.D	04/24/18	12:59	02:53	Method Blank
JC64490-5DUP	3A159518.D	04/24/18	13:31	03:25	Duplicate
ZZZZZZ	3A159519.D	04/24/18	13:57	03:51	(unrelated sample)
JC64541-3	3A159520.D	04/24/18	14:24	04:18	(used for QC only; not part of job JC64559)
ZZZZZZ	3A159521.D	04/24/18	14:51	04:45	(unrelated sample)
ZZZZZZ	3A159522.D	04/24/18	15:17	05:11	(unrelated sample)
JC64541-3MS	3A159524.D	04/24/18	16:09	06:03	Matrix Spike
JC64541-3MSD	3A159525.D	04/24/18	16:36	06:30	Matrix Spike Duplicate
ZZZZZZ	3A159527.D	04/24/18	17:28	07:22	(unrelated sample)
ZZZZZZ	3A159528.D	04/24/18	17:55	07:49	(unrelated sample)
ZZZZZZ	3A159529.D	04/24/18	18:22	08:16	(unrelated sample)
ZZZZZZ	3A159530.D	04/24/18	18:49	08:43	(unrelated sample)
ZZZZZZ	3A159531.D	04/24/18	19:15	09:09	(unrelated sample)
ZZZZZZ	3A159532.D	04/24/18	19:41	09:35	(unrelated sample)
ZZZZZZ	3A159533.D	04/24/18	20:07	10:01	(unrelated sample)
ZZZZZZ	3A159534.D	04/24/18	20:34	10:28	(unrelated sample)
ZZZZZZ	3A159535.D	04/24/18	21:01	10:55	(unrelated sample)
JC64559-1	3A159536.D	04/24/18	21:27	11:21	RW-12270CM-041718

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6881-BFB
Lab File ID: 3A159599.D
Instrument ID: GCMS3A
Injection Date: 04/30/18
Injection Time: 10:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	31056	18.4		Pass
75	30.0 - 60.0% of mass 95	80757	48.0		Pass
95	Base peak, 100% relative abundance	168405	100.0		Pass
96	5.0 - 9.0% of mass 95	11061	6.57		Pass
173	Less than 2.0% of mass 174	1121	0.67	(0.76) [a]	Pass
174	50.0 - 120.0% of mass 95	148106	87.9		Pass
175	5.0 - 9.0% of mass 174	11306	6.71	(7.63) [a]	Pass
176	95.0 - 101.0% of mass 174	144549	85.8	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	9290	5.52	(6.43) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6881-IC6881	3A159600.D	04/30/18	11:59	01:29	Initial cal 0.25
V3A6881-IC6881	3A159601.D	04/30/18	12:26	01:56	Initial cal 0.4
V3A6881-IC6881	3A159602.D	04/30/18	12:52	02:22	Initial cal 1
V3A6881-IC6881	3A159603.D	04/30/18	13:19	02:49	Initial cal 2
V3A6881-IC6881	3A159604.D	04/30/18	13:45	03:15	Initial cal 5
V3A6881-ICC6881	3A159605.D	04/30/18	14:12	03:42	Initial cal 20
V3A6881-IC6881	3A159606.D	04/30/18	14:38	04:08	Initial cal 50
V3A6881-IC6881	3A159607.D	04/30/18	15:05	04:35	Initial cal 100
V3A6881-IC6881	3A159608.D	04/30/18	15:32	05:02	Initial cal 200
V3A6881-ICV6881	3A159614.D	04/30/18	18:11	07:41	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6882-BFB
Lab File ID: 3A159616.D
Instrument ID: GCMS3A
Injection Date: 05/01/18
Injection Time: 07:54

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	19594	17.9		Pass
75	30.0 - 60.0% of mass 95	54456	49.9		Pass
95	Base peak, 100% relative abundance	109173	100.0		Pass
96	5.0 - 9.0% of mass 95	6990	6.40		Pass
173	Less than 2.0% of mass 174	1358	1.24	(1.28) [a]	Pass
174	50.0 - 120.0% of mass 95	105858	97.0		Pass
175	5.0 - 9.0% of mass 174	7695	7.05	(7.27) [a]	Pass
176	95.0 - 101.0% of mass 174	103981	95.2	(98.2) [a]	Pass
177	5.0 - 9.0% of mass 176	6558	6.01	(6.31) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6882-CC6881	3A159617.D	05/01/18	08:25	00:31	Continuing cal 20
V3A6882-BS	3A159618.D	05/01/18	09:03	01:09	Blank Spike
V3A6882-BSD	3A159619.D	05/01/18	09:30	01:36	Blank Spike Duplicate
V3A6882-MB	3A159621.D	05/01/18	10:23	02:29	Method Blank
ZZZZZZ	3A159622.D	05/01/18	10:56	03:02	(unrelated sample)
ZZZZZZ	3A159623.D	05/01/18	11:22	03:28	(unrelated sample)
JC64559-2	3A159624.D	05/01/18	11:48	03:54	RW-12270CM-041718-F
JC64559-3	3A159625.D	05/01/18	12:15	04:21	TB-041718
JC65120-9	3A159626.D	05/01/18	12:41	04:47	(used for QC only; not part of job JC64559)
ZZZZZZ	3A159627.D	05/01/18	13:07	05:13	(unrelated sample)
ZZZZZZ	3A159628.D	05/01/18	13:34	05:40	(unrelated sample)
JC65120-9MS	3A159629.D	05/01/18	14:00	06:06	Matrix Spike
ZZZZZZ	3A159632.D	05/01/18	15:19	07:25	(unrelated sample)
ZZZZZZ	3A159633.D	05/01/18	15:46	07:52	(unrelated sample)
ZZZZZZ	3A159634.D	05/01/18	16:12	08:18	(unrelated sample)
ZZZZZZ	3A159635.D	05/01/18	16:39	08:45	(unrelated sample)
ZZZZZZ	3A159636.D	05/01/18	17:06	09:12	(unrelated sample)
ZZZZZZ	3A159637.D	05/01/18	17:32	09:38	(unrelated sample)
ZZZZZZ	3A159638.D	05/01/18	17:59	10:05	(unrelated sample)
JC65120-9MSD	3A159640.D	05/01/18	18:52	10:58	Matrix Spike Duplicate

Surrogate Recovery Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JC64559-1	1B114700.D	89	86
JC64559-2	1B114701.D	90	85
JC64559-3	1B114706.D	86	85
JC64559-1DUP	1B114704.D	86	81
JC64672-1MS	1B114703.D	101	98
V1B5503-BS	1B114697.D	101	99
V1B5503-MB	1B114698.D	90	86

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JC64559
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JC64559-1	3A159536.D	136
JC64559-2	3A159624.D	93
JC64559-3	3A159625.D	82
JC64541-3MS	3A159524.D	145
JC64541-3MSD	3A159525.D	107
JC65120-9MS	3A159629.D	121
JC65120-9MSD	3A159640.D	108
V3A6878-BS	3A159515.D	86
V3A6878-MB	3A159517.D	92
V3A6882-BS	3A159618.D	119
V3A6882-BSD	3A159619.D	103
V3A6882-MB	3A159621.D	95

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

MAY 2018

The results set forth herein are provided by SGS North America Inc.

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Automated Report



Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31400389-07

SGS Job Number: JC65805

Sampling Date: 05/08/18

Report to:

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Total number of pages in report: 42

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.

Nancy Cole
Laboratory Director

Client Service contact: Rocus Peters 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC65805

Kop-Flex, Hanover, VA
Project No: 31400389-07

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC65805-1	05/08/18	11:15	MK/MD	05/09/18	DW	Drinking Water	RW-1227OCM-050817
JC65805-2	05/08/18	11:10	MK/MD	05/09/18	DW	Drinking Water	RW-1227OCM-050817-F
JC65805-3	05/08/18	11:15	MK/MD	05/09/18	DW	Drinking Water TB	TB-050818

Summary of Hits

Job Number: JC65805
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 05/08/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC65805-1	**RW-1227OCM-050817**					
1,1-Dichloroethane		0.18 J	0.50	0.13	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene		8.7	0.50	0.23	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.48 J	0.50	0.12	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		3.4	0.40	0.29	ug/l	SW846 8260C BY SIM
JC65805-2	**RW-1227OCM-050817-F**					
1,1-Dichloroethane		0.17 J	0.50	0.13	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane		0.42 J	0.50	0.12	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.7	0.40	0.29	ug/l	SW846 8260C BY SIM
JC65805-3	**TB-050818**					

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-1227OCM-050817		
Lab Sample ID:	JC65805-1	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D87773.D	1	05/11/18 21:26	CSF	n/a	n/a	V4D3802
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	ND		5.0	3.8	ug/l	
78-93-3	2-Butanone	ND		5.0	2.5	ug/l	
71-43-2	Benzene	ND	5.0	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.36	ug/l	
75-25-2	Bromoform	ND		0.50	0.40	ug/l	
74-83-9	Bromomethane	ND		0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND		0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND		0.50	0.071	ug/l	
67-66-3	Chloroform	ND		0.50	0.33	ug/l	
74-87-3	Chloromethane	ND		0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	0.18		0.50	0.13	ug/l	J
75-35-4	1,1-Dichloroethylene	8.7	7.0	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND		0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.28	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817		
Lab Sample ID:	JC65805-1	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND		2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND		0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND		2.0	1.5	ug/l	
91-20-3	Naphthalene	ND		0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.26	ug/l	
100-42-5	Styrene	ND	100	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	0.48	200	0.50	0.12	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.12	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane [a]	ND		1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.056	ug/l	
	m,p-Xylene	ND		0.50	0.26	ug/l	
95-47-6	o-Xylene	ND		0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	108%		70-130%
460-00-4	4-Bromofluorobenzene	88%		70-130%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817		
Lab Sample ID:	JC65805-1	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817		
Lab Sample ID:	JC65805-1	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159761.D	1	05/11/18 13:41	HT	n/a	n/a	V3A6888
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.4		0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	163%		51-175%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817-F		
Lab Sample ID:	JC65805-2	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D87774.D	1	05/11/18 21:58	CSF	n/a	n/a	V4D3802
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	ND		5.0	3.8	ug/l	
78-93-3	2-Butanone	ND		5.0	2.5	ug/l	
71-43-2	Benzene	ND	5.0	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.36	ug/l	
75-25-2	Bromoform	ND		0.50	0.40	ug/l	
74-83-9	Bromomethane	ND		0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND		0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND		0.50	0.071	ug/l	
67-66-3	Chloroform	ND		0.50	0.33	ug/l	
74-87-3	Chloromethane	ND		0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	0.17		0.50	0.13	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	7.0	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND		0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.28	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817-F		
Lab Sample ID:	JC65805-2	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND		2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND		0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND		2.0	1.5	ug/l	
91-20-3	Naphthalene	ND		0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.26	ug/l	
100-42-5	Styrene	ND	100	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	0.42	200	0.50	0.12	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.12	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane [a]	ND		1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.056	ug/l	
	m,p-Xylene	ND		0.50	0.26	ug/l	
95-47-6	o-Xylene	ND		0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	106%		70-130%
460-00-4	4-Bromofluorobenzene	88%		70-130%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817-F		
Lab Sample ID:	JC65805-2	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	RW-1227OCM-050817-F		
Lab Sample ID:	JC65805-2	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water	**Date Received:**	05/09/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159760.D	1	05/11/18 13:15	HT	n/a	n/a	V3A6888
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.7		0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	128%		51-175%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	TB-050818		
Lab Sample ID:	JC65805-3	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water TB	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D87775.D	1	05/11/18 22:30	CSF	n/a	n/a	V4D3802
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	ND		5.0	3.8	ug/l	
78-93-3	2-Butanone	ND		5.0	2.5	ug/l	
71-43-2	Benzene	ND	5.0	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.36	ug/l	
75-25-2	Bromoform	ND		0.50	0.40	ug/l	
74-83-9	Bromomethane	ND		0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND		0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND		0.50	0.071	ug/l	
67-66-3	Chloroform	ND		0.50	0.33	ug/l	
74-87-3	Chloromethane	ND		0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND		0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND		0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	7.0	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND		0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.28	ug/l	

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	TB-050818		
Lab Sample ID:	JC65805-3	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water TB	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND		0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND		2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND		0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND		2.0	1.5	ug/l	
91-20-3	Naphthalene	ND		0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.26	ug/l	
100-42-5	Styrene	ND	100	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	200	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.12	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane [a]	ND		1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.056	ug/l	
	m,p-Xylene	ND		0.50	0.26	ug/l	
95-47-6	o-Xylene	ND		0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	104%		70-130%
460-00-4	4-Bromofluorobenzene	86%		70-130%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	TB-050818		
Lab Sample ID:	JC65805-3	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water TB	**Date Received:**	05/09/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q

(a) Associated CCV and BS outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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:	TB-050818		
Lab Sample ID:	JC65805-3	**Date Sampled:**	05/08/18
Matrix:	DW - Drinking Water TB	**Date Received:**	05/09/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A159759.D	1	05/11/18 12:48	HT	n/a	n/a	V3A6888
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND		0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	151%		51-175%

ND = Not detected MDL = Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
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

DW DTB 4357 6344 4889 JC65805

CHAIN-OF-CUSTODY RECORD Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Drive St 300 Herndon VA

Project Name: Kapflex

Project Location: Hanover MD

Project Number & Task: 31400389-07

Sampler(s) Name(s): Maria Kaplan, Molly Long

WSP USA Contact Name: Eric Johnson

WSP USA Contact E-mail: eric.johnson@wsp.com

WSP USA Contact Phone: (703) 709-6500

Sampler(s) Signature(s):

Requested Analyses & Preservatives

No. 008179

Laboratory Name & Location: SGS Accutest, NJ

Laboratory Project Manager: Rocus Peters

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs (524)	1,4 Dioxane (8260 SIM)	Sample Comments
1	RW-12270CM-050817	DW	5/8/18	11[illegible]			6	X	X	
2	RW-12270CM-050817-F	DW	5/8/18	1110			6	X	X	
3	TD-050818	DW	—	—	—	—	4	X	X	

V402

INITIAL ASSESSMENT 6/3A

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	5/8/18	1400	FedEx			Fed ex	4357 - 6344 - 4889
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
				5/9/18	9:50		08017

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

JC65805: Chain of Custody

Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC65805 **Client:** _____ **Project:** _____

Date / Time Received: 5/9/2018 9:50:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);

Cooler Temps (Corrected) °C: Cooler 1: (3.6);

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:	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:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 216017 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JC65805: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-MB	4D87762.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	

Method Blank Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-MB	4D87762.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	108%	70-130%
460-00-4	4-Bromofluorobenzene	92%	70-130%

Method Blank Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-MB	4D87762.D	1	05/11/18	CSF	n/a	n/a	V4D3802

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

JC65805-1, JC65805-2, JC65805-3

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	13.37	1.5	ug/l	J
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6888-MB	3A159758.D	1	05/11/18	HT	n/a	n/a	V3A6888

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

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	140%	51-175%

Blank Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-BS	4D87761.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	17.0	85	70-130
78-93-3	2-Butanone	20	18.0	90	70-130
71-43-2	Benzene	5	4.3	86	70-130
108-86-1	Bromobenzene	5	5.0	100	70-130
74-97-5	Bromochloromethane	5	5.2	104	70-130
75-27-4	Bromodichloromethane	5	5.2	104	70-130
75-25-2	Bromoform	5	5.8	116	70-130
74-83-9	Bromomethane	5	3.6	72	70-130
104-51-8	n-Butylbenzene	5	4.5	90	70-130
135-98-8	sec-Butylbenzene	5	4.5	90	70-130
98-06-6	tert-Butylbenzene	5	4.4	88	70-130
75-15-0	Carbon disulfide	5	4.9	98	70-130
108-90-7	Chlorobenzene	5	4.7	94	70-130
75-00-3	Chloroethane	5	4.8	96	70-130
67-66-3	Chloroform	5	5.1	102	70-130
74-87-3	Chloromethane	5	5.2	104	70-130
95-49-8	o-Chlorotoluene	5	4.6	92	70-130
106-43-4	p-Chlorotoluene	5	5.0	100	70-130
56-23-5	Carbon tetrachloride	5	6.0	120	70-130
75-34-3	1,1-Dichloroethane	5	4.6	92	70-130
75-35-4	1,1-Dichloroethylene	5	4.8	96	70-130
563-58-6	1,1-Dichloropropene	5	4.6	92	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	5.0	100	70-130
106-93-4	1,2-Dibromoethane	5	5.0	100	70-130
107-06-2	1,2-Dichloroethane	5	5.7	114	70-130
78-87-5	1,2-Dichloropropane	5	4.2	84	70-130
142-28-9	1,3-Dichloropropane	5	4.5	90	70-130
594-20-7	2,2-Dichloropropane	5	5.3	106	70-130
124-48-1	Dibromochloromethane	5	5.6	112	70-130
74-95-3	Dibromomethane	5	5.1	102	70-130
75-71-8	Dichlorodifluoromethane	5	7.9	158* [a]	70-130
541-73-1	m-Dichlorobenzene	5	5.0	100	70-130
95-50-1	o-Dichlorobenzene	5	5.0	100	70-130
106-46-7	p-Dichlorobenzene	5	4.9	98	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.5	90	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.4	88	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-BS	4D87761.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	4.5	90	70-130
10061-02-6	trans-1,3-Dichloropropene	5	4.7	94	70-130
100-41-4	Ethylbenzene	5	4.3	86	70-130
87-68-3	Hexachlorobutadiene	5	6.1	122	70-130
591-78-6	2-Hexanone	20	16.3	82	70-130
98-82-8	Isopropylbenzene	5	4.4	88	70-130
99-87-6	p-Isopropyltoluene	5	4.6	92	70-130
75-09-2	Methylene chloride	5	4.8	96	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.4	88	70-130
108-10-1	4-Methyl-2-pentanone	20	17.1	86	70-130
91-20-3	Naphthalene	5	4.5	90	70-130
103-65-1	n-Propylbenzene	5	4.5	90	70-130
100-42-5	Styrene	5	4.2	84	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.2	104	70-130
71-55-6	1,1,1-Trichloroethane	5	5.4	108	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	4.6	92	70-130
79-00-5	1,1,2-Trichloroethane	5	4.5	90	70-130
87-61-6	1,2,3-Trichlorobenzene	5	5.1	102	70-130
96-18-4	1,2,3-Trichloropropane	5	5.1	102	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.9	98	70-130
95-63-6	1,2,4-Trimethylbenzene	5	4.6	92	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.6	92	70-130
127-18-4	Tetrachloroethylene	5	5.2	104	70-130
108-88-3	Toluene	5	4.4	88	70-130
79-01-6	Trichloroethylene	5	4.5	90	70-130
75-69-4	Trichlorofluoromethane	5	7.9	158* [a]	70-130
75-01-4	Vinyl chloride	5	4.7	94	70-130
	m,p-Xylene	10	8.7	87	70-130
95-47-6	o-Xylene	5	4.2	84	70-130
1330-20-7	Xylenes (total)	15	12.9	86	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	112%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D3802-BS	4D87761.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

(a) High percent recoveries and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6888-BS	3A159756.D	1	05/11/18	HT	n/a	n/a	V3A6888

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

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	23.3	117	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	119%	51-175%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65811-1MS	4D87766.D	1	05/11/18	CSF	n/a	n/a	V4D3802
JC65811-1	4D87763.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65811-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	19.2	96	41-142
78-93-3	2-Butanone	ND		20	17.8	89	55-129
71-43-2	Benzene	ND		5	5.0	100	53-138
108-86-1	Bromobenzene	ND		5	5.6	112	54-138
74-97-5	Bromochloromethane	ND		5	5.8	116	55-140
75-27-4	Bromodichloromethane	ND		5	6.0	120	57-147
75-25-2	Bromoform	ND		5	6.3	126	47-137
74-83-9	Bromomethane	ND		5	4.7	94	40-162
104-51-8	n-Butylbenzene	ND		5	5.4	108	45-144
135-98-8	sec-Butylbenzene	ND		5	5.3	106	46-145
98-06-6	tert-Butylbenzene	ND		5	5.3	106	48-141
75-15-0	Carbon disulfide	ND		5	5.9	118	35-127
108-90-7	Chlorobenzene	ND		5	5.4	108	54-135
75-00-3	Chloroethane	ND		5	5.7	114	38-153
67-66-3	Chloroform	ND		5	6.0	120	57-151
74-87-3	Chloromethane	ND		5	5.9	118	39-165
95-49-8	o-Chlorotoluene	ND		5	5.4	108	55-142
106-43-4	p-Chlorotoluene	ND		5	5.6	112	55-139
56-23-5	Carbon tetrachloride	ND		5	7.7	154	49-170
75-34-3	1,1-Dichloroethane	ND		5	5.6	112	55-149
75-35-4	1,1-Dichloroethylene	ND		5	5.7	114	42-142
563-58-6	1,1-Dichloropropene	ND		5	5.8	116	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	5.5	110	48-141
106-93-4	1,2-Dibromoethane	ND		5	5.5	110	57-135
107-06-2	1,2-Dichloroethane	ND		5	6.4	128	59-166
78-87-5	1,2-Dichloropropane	ND		5	5.1	102	53-142
142-28-9	1,3-Dichloropropane	ND		5	5.1	102	58-143
594-20-7	2,2-Dichloropropane	ND		5	6.5	130	38-165
124-48-1	Dibromochloromethane	ND		5	6.0	120	55-138
74-95-3	Dibromomethane	ND		5	5.8	116	61-144
75-71-8	Dichlorodifluoromethane	ND		5	9.6	192* [a]	23-172
541-73-1	m-Dichlorobenzene	ND		5	5.8	116	53-138
95-50-1	o-Dichlorobenzene	ND		5	5.6	112	54-140
106-46-7	p-Dichlorobenzene	ND		5	5.7	114	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	5.6	112	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	5.1	102	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65811-1MS	4D87766.D	1	05/11/18	CSF	n/a	n/a	V4D3802
JC65811-1	4D87763.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65811-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.9	98	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	5.1	102	54-142
100-41-4	Ethylbenzene	ND		5	5.1	102	51-138
87-68-3	Hexachlorobutadiene	ND		5	7.6	152	40-154
591-78-6	2-Hexanone	ND		20	16.9	85	53-128
98-82-8	Isopropylbenzene	ND		5	5.0	100	49-139
99-87-6	p-Isopropyltoluene	ND		5	5.2	104	45-141
75-09-2	Methylene chloride	ND		5	5.6	112	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.7	94	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	18.1	91	58-127
91-20-3	Naphthalene	ND		5	5.0	100	44-140
103-65-1	n-Propylbenzene	ND		5	5.3	106	50-142
100-42-5	Styrene	ND		5	4.9	98	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.9	118	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	6.7	134	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	5.2	104	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	5.2	104	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	5.7	114	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	6.1	122	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	5.7	114	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	5.3	106	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	5.2	104	45-138
127-18-4	Tetrachloroethylene	ND		5	6.1	122	45-145
108-88-3	Toluene	ND		5	5.1	102	52-134
79-01-6	Trichloroethylene	ND		5	5.5	110	54-143
75-69-4	Trichlorofluoromethane	ND		5	9.3	186* [a]	36-167
75-01-4	Vinyl chloride	ND		5	5.8	116	35-162
	m,p-Xylene	ND		10	10.4	104	49-135
95-47-6	o-Xylene	ND		5	5.0	100	49-134
1330-20-7	Xylenes (total)	ND		15	15.4	103	50-134

CAS No.	Surrogate Recoveries	MS	JC65811-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	117%	105%	70-130%
460-00-4	4-Bromofluorobenzene	99%	93%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65811-1MS	4D87766.D	1	05/11/18	CSF	n/a	n/a	V4D3802
JC65811-1	4D87763.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

(a) Outside control limits.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65805-2MS	3A159762.D	1	05/11/18	HT	n/a	n/a	V3A6888
JC65805-2	3A159760.D	1	05/11/18	HT	n/a	n/a	V3A6888

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

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65805-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	2.7		20	23.9	106	36-166

CAS No.	Surrogate Recoveries	MS	JC65805-2	Limits
17647-74-4	1,4-Dioxane-d8	140%	128%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65853-1DUP	4D87767.D	1	05/11/18	CSF	n/a	n/a	V4D3802
JC65853-1	4D87764.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65853-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		ND		nc	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65853-1DUP	4D87767.D	1	05/11/18	CSF	n/a	n/a	V4D3802
JC65853-1	4D87764.D	1	05/11/18	CSF	n/a	n/a	V4D3802

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65853-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC65853-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	113%	111%	70-130%
460-00-4	4-Bromofluorobenzene	98%	97%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC65805-1DUP	3A159764.D	1	05/11/18	HT	n/a	n/a	V3A6888
JC65805-1	3A159761.D	1	05/11/18	HT	n/a	n/a	V3A6888

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

JC65805-1, JC65805-2, JC65805-3

CAS No.	Compound	JC65805-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	3.4		2.6		27	37

CAS No.	Surrogate Recoveries	DUP	JC65805-1	Limits
17647-74-4	1,4-Dioxane-d8	124%	163%	51-175%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6881-BFB
Lab File ID: 3A159599.D
Instrument ID: GCMS3A
Injection Date: 04/30/18
Injection Time: 10:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	31056	18.4		Pass
75	30.0 - 60.0% of mass 95	80757	48.0		Pass
95	Base peak, 100% relative abundance	168405	100.0		Pass
96	5.0 - 9.0% of mass 95	11061	6.57		Pass
173	Less than 2.0% of mass 174	1121	0.67	(0.76) [a]	Pass
174	50.0 - 120.0% of mass 95	148106	87.9		Pass
175	5.0 - 9.0% of mass 174	11306	6.71	(7.63) [a]	Pass
176	95.0 - 101.0% of mass 174	144549	85.8	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	9290	5.52	(6.43) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6881-IC6881	3A159600.D	04/30/18	11:59	01:29	Initial cal 0.25
V3A6881-IC6881	3A159601.D	04/30/18	12:26	01:56	Initial cal 0.4
V3A6881-IC6881	3A159602.D	04/30/18	12:52	02:22	Initial cal 1
V3A6881-IC6881	3A159603.D	04/30/18	13:19	02:49	Initial cal 2
V3A6881-IC6881	3A159604.D	04/30/18	13:45	03:15	Initial cal 5
V3A6881-ICC6881	3A159605.D	04/30/18	14:12	03:42	Initial cal 20
V3A6881-IC6881	3A159606.D	04/30/18	14:38	04:08	Initial cal 50
V3A6881-IC6881	3A159607.D	04/30/18	15:05	04:35	Initial cal 100
V3A6881-IC6881	3A159608.D	04/30/18	15:32	05:02	Initial cal 200
V3A6881-ICV6881	3A159614.D	04/30/18	18:11	07:41	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6888-BFB
Lab File ID: 3A159753.D
Instrument ID: GCMS3A
Injection Date: 05/11/18
Injection Time: 10:00

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	24842	19.4		Pass
75	30.0 - 60.0% of mass 95	64997	50.7		Pass
95	Base peak, 100% relative abundance	128309	100.0		Pass
96	5.0 - 9.0% of mass 95	8594	6.70		Pass
173	Less than 2.0% of mass 174	1696	1.32	(1.38) [a]	Pass
174	50.0 - 120.0% of mass 95	122637	95.6		Pass
175	5.0 - 9.0% of mass 174	8826	6.88	(7.20) [a]	Pass
176	95.0 - 101.0% of mass 174	117853	91.9	(96.1) [a]	Pass
177	5.0 - 9.0% of mass 176	8286	6.46	(7.03) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6888-CC6881	3A159755.D	05/11/18	10:55	00:55	Continuing cal 20
V3A6888-BS	3A159756.D	05/11/18	11:25	01:25	Blank Spike
V3A6888-MB	3A159758.D	05/11/18	12:19	02:19	Method Blank
JC65805-3	3A159759.D	05/11/18	12:48	02:48	TB-050818
JC65805-2	3A159760.D	05/11/18	13:15	03:15	RW-1227OCM-050817-F
JC65805-1	3A159761.D	05/11/18	13:41	03:41	RW-1227OCM-050817
JC65805-2MS	3A159762.D	05/11/18	14:16	04:16	Matrix Spike
JC65805-1DUP	3A159764.D	05/11/18	15:10	05:10	Duplicate

Instrument Performance Check (BFB)

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V4D3796-BFB	**Injection Date:**	05/02/18
Lab File ID:	4D87676.D	**Injection Time:**	16:23
Instrument ID:	GCMS4D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	2778	15.8		Pass
75	30.0 - 80.0% of mass 95	7813	44.4		Pass
95	Base peak, 100% relative abundance	17597	100.0		Pass
96	5.0 - 9.0% of mass 95	1027	5.84		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	15767	89.6		Pass
175	5.0 - 9.0% of mass 174	1351	7.68	(8.57) [a]	Pass
176	95.01 - 101.0% of mass 174	15831	90.0	(100.4) [a]	Pass
177	5.0 - 9.0% of mass 176	968	5.50	(6.11) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V4D3796-IC3796	4D87677.D	05/02/18	17:10	00:47	Initial cal 0.2
V4D3796-IC3796	4D87678.D	05/02/18	17:42	01:19	Initial cal 0.5
V4D3796-IC3796	4D87679.D	05/02/18	18:14	01:51	Initial cal 1
V4D3796-IC3796	4D87680.D	05/02/18	18:46	02:23	Initial cal 2
V4D3796-IC3796	4D87681.D	05/02/18	19:18	02:55	Initial cal 5
V4D3796-ICC3796	4D87682.D	05/02/18	19:50	03:27	Initial cal 10
V4D3796-IC3796	4D87683.D	05/02/18	20:22	03:59	Initial cal 20
V4D3796-IC3796	4D87684.D	05/02/18	20:54	04:31	Initial cal 40
V4D3796-IC3796	4D87685.D	05/02/18	21:26	05:03	Initial cal 80
V4D3796-ICV3796	4D87688.D	05/02/18	23:02	06:39	Initial cal verification 10
V4D3796-ICV3796	4D87689.D	05/02/18	23:34	07:11	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V4D3802-BFB
Lab File ID: 4D87760.D
Instrument ID: GCMS4D
Injection Date: 05/11/18
Injection Time: 12:28

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	2973	18.0		Pass
75	30.0 - 80.0% of mass 95	7903	47.8		Pass
95	Base peak, 100% relative abundance	16532	100.0		Pass
96	5.0 - 9.0% of mass 95	1144	6.92		Pass
173	Less than 2.0% of mass 174	202	1.22	(1.25) [a]	Pass
174	50.0 - 120.0% of mass 95	16100	97.4		Pass
175	5.0 - 9.0% of mass 174	1233	7.46	(7.66) [a]	Pass
176	95.01 - 101.0% of mass 174	16070	97.2	(99.8) [a]	Pass
177	5.0 - 9.0% of mass 176	955	5.78	(5.94) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V4D3802-CC3796	4D87761.D	05/11/18	14:53	02:25	Continuing cal 5
V4D3802-BS	4D87761.D	05/11/18	14:53	02:25	Blank Spike
V4D3802-MB	4D87762.D	05/11/18	15:25	02:57	Method Blank
JC65811-1	4D87763.D	05/11/18	16:06	03:38	(used for QC only; not part of job JC65805)
JC65853-1	4D87764.D	05/11/18	16:38	04:10	(used for QC only; not part of job JC65805)
ZZZZZZ	4D87765.D	05/11/18	17:10	04:42	(unrelated sample)
JC65811-1MS	4D87766.D	05/11/18	17:42	05:14	Matrix Spike
JC65853-1DUP	4D87767.D	05/11/18	18:14	05:46	Duplicate
ZZZZZZ	4D87768.D	05/11/18	18:46	06:18	(unrelated sample)
ZZZZZZ	4D87769.D	05/11/18	19:18	06:50	(unrelated sample)
ZZZZZZ	4D87770.D	05/11/18	19:50	07:22	(unrelated sample)
ZZZZZZ	4D87771.D	05/11/18	20:22	07:54	(unrelated sample)
ZZZZZZ	4D87772.D	05/11/18	20:54	08:26	(unrelated sample)
JC65805-1	4D87773.D	05/11/18	21:26	08:58	RW-1227OCM-050817
JC65805-2	4D87774.D	05/11/18	21:58	09:30	RW-1227OCM-050817-F
JC65805-3	4D87775.D	05/11/18	22:30	10:02	TB-050818

Surrogate Recovery Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JC65805-1	4D87773.D	108	88
JC65805-2	4D87774.D	106	88
JC65805-3	4D87775.D	104	86
JC65811-1MS	4D87766.D	117	99
JC65853-1DUP	4D87767.D	113	98
V4D3802-BS	4D87761.D	112	103
V4D3802-MB	4D87762.D	108	92

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JC65805
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JC65805-1	3A159761.D	163
JC65805-2	3A159760.D	128
JC65805-3	3A159759.D	151
JC65805-1DUP	3A159764.D	124
JC65805-2MS	3A159762.D	140
V3A6888-BS	3A159756.D	119
V3A6888-MB	3A159758.D	140

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31400389/9

SGS Job Number: JC67241



Sampling Date: 05/31/18

Report to:

WSP
11190 Sunrise Valley Drive Suite 300
Reston, VA 20190
eric.johnson@wspgroup.com

ATTN: Eric Johnson

Total number of pages in report: 50

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.

Nancy Cole
Laboratory Director

Client Service contact: Rocus Peters 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC67241

Kop-Flex, Hanover, VA
Project No: 31400389/9

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC67241-1	05/31/18	10:00	ML/CC	06/02/18	AQ	Ground Water	RW-7742TO-053118
JC67241-2	05/31/18	10:00	ML/CC	06/02/18	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: JC67241
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 05/31/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC67241-1	**RW-7742TO-053118**					
1,1-Dichloroethylene [a]		0.97	0.50	0.23	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.14 J	0.50	0.12	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		0.94	0.40	0.29	ug/l	SW846 8260C BY SIM
JC67241-2	**TRIP BLANK**					
Acetone [a]		7.3	5.0	3.8	ug/l	EPA 524.2 REV 4.1
Methylene chloride [a]		6.4	0.50	0.37	ug/l	EPA 524.2 REV 4.1

(a) EPA 524.2 is not a certified method for non-potable water samples.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-7742TO-053118		
Lab Sample ID:	JC67241-1	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B115327.D	1	06/13/18 16:15	CSF	n/a	n/a	V1B5538
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	0.97	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	

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:	RW-7742TO-053118		
Lab Sample ID:	JC67241-1	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	0.14	0.50	0.12	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%		70-130%
460-00-4	4-Bromofluorobenzene	84%		70-130%

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:	RW-7742TO-053118		
Lab Sample ID:	JC67241-1	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	RW-7742TO-053118		
Lab Sample ID:	JC67241-1	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	06/02/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A160161.D	1	06/07/18 02:52	HT	n/a	n/a	V3A6908
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.94	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	77%		51-175%

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:	TRIP BLANK		
Lab Sample ID:	JC67241-2	**Date Sampled:**	05/31/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B115247.D	1	06/08/18 02:03	CSF	n/a	n/a	V1B5533
Run #2 [b]	1B115332.D	1	06/13/18 18:57	CSF	n/a	n/a	V1B5538

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	7.3	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND [c]	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	

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:	TRIP BLANK		
Lab Sample ID:	JC67241-2	**Date Sampled:**	05/31/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND [c]	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	6.4	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND [c]	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%	97%	70-130%
460-00-4	4-Bromofluorobenzene	73%	85%	70-130%

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:	TRIP BLANK		
Lab Sample ID:	JC67241-2	**Date Sampled:**	05/31/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/02/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) EPA 524.2 is not a certified method for non-potable water samples. Sample analyzed with headspace due to only one vial received.
(c) Result is from Run# 2

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:	TRIP BLANK		
Lab Sample ID:	JC67241-2	**Date Sampled:**	05/31/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/02/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A160159.D	1	06/07/18 02:00	HT	n/a	n/a	V3A6908
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	84%		51-175%

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

GW WTB Residential JC67241

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CHAIN-OF-CUSTODY RECORD

| | | |

SGS Sample Receipt Summary

Job Number: JC67241 **Client:** _____ **Project:** _____

Date / Time Received: 6/2/2018 10:00:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.3);

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

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:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 216017 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

JC67241: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5533-MB	1B115243.D	1	06/07/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5533-MB	1B115243.D	1	06/07/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%	70-130%
460-00-4	4-Bromofluorobenzene	74%	70-130%

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5538-MB	1B115321.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.8	ug/l	
78-93-3	2-Butanone	ND	5.0	2.5	ug/l	
71-43-2	Benzene	ND	0.50	0.26	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.25	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.42	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.36	ug/l	
75-25-2	Bromoform	ND	0.50	0.40	ug/l	
74-83-9	Bromomethane	ND	0.50	0.081	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.22	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.26	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.25	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.39	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.27	ug/l	
75-00-3	Chloroethane	ND	0.50	0.071	ug/l	
67-66-3	Chloroform	ND	0.50	0.33	ug/l	
74-87-3	Chloromethane	ND	0.50	0.39	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.27	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.13	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.13	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.23	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.21	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.25	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.29	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.28	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.29	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.24	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.24	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.094	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.085	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.44	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.28	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.26	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.28	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.098	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.26	ug/l	

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5538-MB	1B115321.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.14	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.26	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.32	ug/l	
591-78-6	2-Hexanone	ND	2.0	1.3	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.25	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.23	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.080	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	1.5	ug/l	
91-20-3	Naphthalene	ND	0.50	0.18	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.26	ug/l	
100-42-5	Styrene	ND	0.50	0.21	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.12	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.099	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.11	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.24	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.24	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.12	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.11	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.48	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.056	ug/l	
	m,p-Xylene	ND	0.50	0.26	ug/l	
95-47-6	o-Xylene	ND	0.50	0.24	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.24	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%	70-130%
460-00-4	4-Bromofluorobenzene	90%	70-130%

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5538-MB	1B115321.D	1	06/13/18	CSF	n/a	n/a	V1B5538

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

JC67241-1, JC67241-2

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6908-MB	3A160151.D	1	06/06/18	HT	n/a	n/a	V3A6908

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

JC67241-1, JC67241-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	91%	51-175%

Method Blank Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6908-MB2	3A160181A.D	1	06/07/18	HT	n/a	n/a	V3A6908

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

JC67210-19DUP

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.29	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	125%	51-175%

Blank Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5533-BS	1B115242.D	1	06/07/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	19.6	98	70-130
78-93-3	2-Butanone	20	15.7	79	70-130
71-43-2	Benzene	5	4.8	96	70-130
108-86-1	Bromobenzene	5	4.5	90	70-130
74-97-5	Bromochloromethane	5	5.2	104	70-130
75-27-4	Bromodichloromethane	5	5.2	104	70-130
75-25-2	Bromoform	5	5.8	116	70-130
74-83-9	Bromomethane	5	5.4	108	70-130
135-98-8	sec-Butylbenzene	5	3.9	78	70-130
98-06-6	tert-Butylbenzene	5	3.6	72	70-130
75-15-0	Carbon disulfide	5	5.8	116	70-130
108-90-7	Chlorobenzene	5	4.6	92	70-130
75-00-3	Chloroethane	5	5.0	100	70-130
67-66-3	Chloroform	5	5.0	100	70-130
74-87-3	Chloromethane	5	4.9	98	70-130
95-49-8	o-Chlorotoluene	5	4.2	84	70-130
106-43-4	p-Chlorotoluene	5	4.1	82	70-130
56-23-5	Carbon tetrachloride	5	5.7	114	70-130
75-34-3	1,1-Dichloroethane	5	5.1	102	70-130
75-35-4	1,1-Dichloroethylene	5	5.5	110	70-130
563-58-6	1,1-Dichloropropene	5	4.3	86	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.5	90	70-130
106-93-4	1,2-Dibromoethane	5	4.6	92	70-130
107-06-2	1,2-Dichloroethane	5	5.1	102	70-130
78-87-5	1,2-Dichloropropane	5	4.8	96	70-130
142-28-9	1,3-Dichloropropane	5	4.7	94	70-130
594-20-7	2,2-Dichloropropane	5	4.8	96	70-130
124-48-1	Dibromochloromethane	5	5.3	106	70-130
74-95-3	Dibromomethane	5	5.3	106	70-130
75-71-8	Dichlorodifluoromethane	5	5.5	110	70-130
541-73-1	m-Dichlorobenzene	5	4.9	98	70-130
95-50-1	o-Dichlorobenzene	5	4.8	96	70-130
106-46-7	p-Dichlorobenzene	5	4.5	90	70-130
156-60-5	trans-1,2-Dichloroethylene	5	5.0	100	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.6	92	70-130
10061-02-6	trans-1,3-Dichloropropene	5	4.3	86	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5533-BS	1B115242.D	1	06/07/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	3.8	76	70-130
100-41-4	Ethylbenzene	5	4.0	80	70-130
87-68-3	Hexachlorobutadiene	5	4.6	92	70-130
98-82-8	Isopropylbenzene	5	3.6	72	70-130
99-87-6	p-Isopropyltoluene	5	3.6	72	70-130
75-09-2	Methylene chloride	5	5.4	108	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.1	82	70-130
108-10-1	4-Methyl-2-pentanone	20	15.8	79	70-130
103-65-1	n-Propylbenzene	5	4.1	82	70-130
100-42-5	Styrene	5	3.9	78	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	5.3	106	70-130
71-55-6	1,1,1-Trichloroethane	5	5.1	102	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	5.0	100	70-130
79-00-5	1,1,2-Trichloroethane	5	4.9	98	70-130
87-61-6	1,2,3-Trichlorobenzene	5	3.8	76	70-130
96-18-4	1,2,3-Trichloropropane	5	4.9	98	70-130
120-82-1	1,2,4-Trichlorobenzene	5	3.6	72	70-130
95-63-6	1,2,4-Trimethylbenzene	5	3.9	78	70-130
108-67-8	1,3,5-Trimethylbenzene	5	3.9	78	70-130
127-18-4	Tetrachloroethylene	5	4.8	96	70-130
108-88-3	Toluene	5	4.2	84	70-130
79-01-6	Trichloroethylene	5	4.7	94	70-130
75-69-4	Trichlorofluoromethane	5	5.9	118	70-130
75-01-4	Vinyl chloride	5	5.4	108	70-130
	m,p-Xylene	10	8.2	82	70-130
95-47-6	o-Xylene	5	4.0	80	70-130
1330-20-7	Xylenes (total)	15	12.1	81	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	105%	70-130%
460-00-4	4-Bromofluorobenzene	88%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6908-BS	3A160149.D	1	06/06/18	HT	n/a	n/a	V3A6908

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

JC67241-1, JC67241-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	17.1	86	58-138

CAS No.	Surrogate Recoveries	BSP	Limits
17647-74-4	1,4-Dioxane-d8	87%	51-175%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5538-BS	1B115319.D	1	06/13/18	CSF	n/a	n/a	V1B5538
V1B5538-BSD	1B115320.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	20	17.0	85	18.0	90	6	70-130/30
78-93-3	2-Butanone	20	19.9	100	18.5	93	7	70-130/30
71-43-2	Benzene	5	4.6	92	4.3	86	7	70-130/30
108-86-1	Bromobenzene	5	4.7	94	4.5	90	4	70-130/30
74-97-5	Bromochloromethane	5	4.4	88	4.3	86	2	70-130/30
75-27-4	Bromodichloromethane	5	4.3	86	4.1	82	5	70-130/30
75-25-2	Bromoform	5	4.5	90	4.3	86	5	70-130/30
74-83-9	Bromomethane	5	5.0	100	4.8	96	4	70-130/30
104-51-8	n-Butylbenzene	5	4.0	80	3.8	76	5	70-130/30
135-98-8	sec-Butylbenzene	5	4.4	88	4.1	82	7	70-130/30
98-06-6	tert-Butylbenzene	5	4.2	84	3.9	78	7	70-130/30
75-15-0	Carbon disulfide	5	4.3	86	4.1	82	5	70-130/30
108-90-7	Chlorobenzene	5	4.8	96	4.5	90	6	70-130/30
75-00-3	Chloroethane	5	4.7	94	4.5	90	4	70-130/30
67-66-3	Chloroform	5	4.4	88	4.3	86	2	70-130/30
74-87-3	Chloromethane	5	5.0	100	4.7	94	6	70-130/30
95-49-8	o-Chlorotoluene	5	5.1	102	4.8	96	6	70-130/30
106-43-4	p-Chlorotoluene	5	5.0	100	4.7	94	6	70-130/30
56-23-5	Carbon tetrachloride	5	4.6	92	4.2	84	9	70-130/30
75-34-3	1,1-Dichloroethane	5	4.5	90	4.3	86	5	70-130/30
75-35-4	1,1-Dichloroethylene	5	4.2	84	4.0	80	5	70-130/30
563-58-6	1,1-Dichloropropene	5	4.8	96	4.4	88	9	70-130/30
96-12-8	1,2-Dibromo-3-chloropropane	5	4.3	86	4.3	86	0	70-130/30
106-93-4	1,2-Dibromoethane	5	4.6	92	4.4	88	4	70-130/30
107-06-2	1,2-Dichloroethane	5	4.4	88	4.2	84	5	70-130/30
78-87-5	1,2-Dichloropropane	5	4.4	88	4.2	84	5	70-130/30
142-28-9	1,3-Dichloropropane	5	4.6	92	4.4	88	4	70-130/30
594-20-7	2,2-Dichloropropane	5	4.8	96	4.5	90	6	70-130/30
124-48-1	Dibromochloromethane	5	4.7	94	4.3	86	9	70-130/30
74-95-3	Dibromomethane	5	4.4	88	4.3	86	2	70-130/30
75-71-8	Dichlorodifluoromethane	5	4.7	94	4.5	90	4	70-130/30
541-73-1	m-Dichlorobenzene	5	4.7	94	4.5	90	4	70-130/30
95-50-1	o-Dichlorobenzene	5	4.6	92	4.5	90	2	70-130/30
106-46-7	p-Dichlorobenzene	5	4.8	96	4.5	90	6	70-130/30
156-60-5	trans-1,2-Dichloroethylene	5	4.6	92	4.3	86	7	70-130/30
156-59-2	cis-1,2-Dichloroethylene	5	4.7	94	4.5	90	4	70-130/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5538-BS	1B115319.D	1	06/13/18	CSF	n/a	n/a	V1B5538
V1B5538-BSD	1B115320.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	5	4.8	96	4.5	90	6	70-130/30
10061-02-6	trans-1,3-Dichloropropene	5	4.8	96	4.5	90	6	70-130/30
100-41-4	Ethylbenzene	5	5.2	104	4.8	96	8	70-130/30
87-68-3	Hexachlorobutadiene	5	4.2	84	4.1	82	2	70-130/30
591-78-6	2-Hexanone	20	19.5	98	18.6	93	5	70-130/30
98-82-8	Isopropylbenzene	5	4.3	86	4.0	80	7	70-130/30
99-87-6	p-Isopropyltoluene	5	4.3	86	4.0	80	7	70-130/30
75-09-2	Methylene chloride	5	4.3	86	4.1	82	5	70-130/30
1634-04-4	Methyl Tert Butyl Ether	5	4.8	96	4.3	86	11	70-130/30
108-10-1	4-Methyl-2-pentanone	20	19.7	99	19.2	96	3	70-130/30
91-20-3	Naphthalene	5	4.7	94	4.8	96	2	70-130/30
103-65-1	n-Propylbenzene	5	5.0	100	4.7	94	6	70-130/30
100-42-5	Styrene	5	4.6	92	4.3	86	7	70-130/30
630-20-6	1,1,1,2-Tetrachloroethane	5	4.6	92	4.3	86	7	70-130/30
71-55-6	1,1,1-Trichloroethane	5	4.4	88	4.0	80	10	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	5	4.4	88	4.3	86	2	70-130/30
79-00-5	1,1,2-Trichloroethane	5	4.5	90	4.3	86	5	70-130/30
87-61-6	1,2,3-Trichlorobenzene	5	4.5	90	4.7	94	4	70-130/30
96-18-4	1,2,3-Trichloropropane	5	4.6	92	4.4	88	4	70-130/30
120-82-1	1,2,4-Trichlorobenzene	5	4.5	90	4.6	92	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	5	4.5	90	4.2	84	7	70-130/30
108-67-8	1,3,5-Trimethylbenzene	5	4.5	90	4.2	84	7	70-130/30
127-18-4	Tetrachloroethylene	5	4.6	92	4.3	86	7	70-130/30
108-88-3	Toluene	5	4.9	98	4.5	90	9	70-130/30
79-01-6	Trichloroethylene	5	4.5	90	4.3	86	5	70-130/30
75-69-4	Trichlorofluoromethane	5	4.6	92	4.4	88	4	70-130/30
75-01-4	Vinyl chloride	5	4.9	98	4.6	92	6	70-130/30
	m,p-Xylene	10	10.5	105	9.8	98	7	70-130/30
95-47-6	o-Xylene	5	5.2	104	4.8	96	8	70-130/30
1330-20-7	Xylenes (total)	15	15.7	105	14.6	97	7	70-130/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%	101%	70-130%
460-00-4	4-Bromofluorobenzene	105%	105%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67182-1MS [a]	1B115328.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67182-1	1B115326.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	JC67182-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	ND		20	17.0	85	41-142
78-93-3	2-Butanone	ND		20	16.4	82	55-129
71-43-2	Benzene	ND		5	4.7	94	53-138
108-86-1	Bromobenzene	ND		5	4.5	90	54-138
74-97-5	Bromochloromethane	ND		5	4.6	92	55-140
75-27-4	Bromodichloromethane	ND		5	4.5	90	57-147
75-25-2	Bromoform	ND		5	3.8	76	47-137
74-83-9	Bromomethane	ND		5	4.4	88	40-162
104-51-8	n-Butylbenzene	ND		5	3.7	74	45-144
135-98-8	sec-Butylbenzene	ND		5	4.1	82	46-145
98-06-6	tert-Butylbenzene	ND		5	3.7	74	48-141
75-15-0	Carbon disulfide	ND		5	4.7	94	35-127
108-90-7	Chlorobenzene	ND		5	4.7	94	54-135
75-00-3	Chloroethane	ND		5	4.4	88	38-153
67-66-3	Chloroform	ND		5	4.6	92	57-151
74-87-3	Chloromethane	ND		5	4.3	86	39-165
95-49-8	o-Chlorotoluene	ND		5	4.7	94	55-142
106-43-4	p-Chlorotoluene	ND		5	4.7	94	55-139
56-23-5	Carbon tetrachloride	ND		5	5.7	114	49-170
75-34-3	1,1-Dichloroethane	0.21	J	5	4.8	92	55-149
75-35-4	1,1-Dichloroethylene	0.43	J	5	4.8	87	42-142
563-58-6	1,1-Dichloropropene	ND		5	4.5	90	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	3.7	74	48-141
106-93-4	1,2-Dibromoethane	ND		5	4.3	86	57-135
107-06-2	1,2-Dichloroethane	ND		5	4.6	92	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.6	92	53-142
142-28-9	1,3-Dichloropropane	ND		5	4.7	94	58-143
594-20-7	2,2-Dichloropropane	ND		5	4.8	96	38-165
124-48-1	Dibromochloromethane	ND		5	4.5	90	55-138
74-95-3	Dibromomethane	ND		5	4.5	90	61-144
75-71-8	Dichlorodifluoromethane	ND		5	4.7	94	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.7	94	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.7	94	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.6	92	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.6	92	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.5	90	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67182-1MS [a]	1B115328.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67182-1	1B115326.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	JC67182-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.5	90	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.4	88	54-142
100-41-4	Ethylbenzene	ND		5	4.8	96	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.5	90	40-154
591-78-6	2-Hexanone	ND		20	15.8	79	53-128
98-82-8	Isopropylbenzene	ND		5	3.7	74	49-139
99-87-6	p-Isopropyltoluene	ND		5	3.8	76	45-141
75-09-2	Methylene chloride	ND		5	4.5	90	54-137
1634-04-4	Methyl Tert Butyl Ether	ND		5	3.8	76	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	17.1	86	58-127
91-20-3	Naphthalene	ND		5	3.8	76	44-140
103-65-1	n-Propylbenzene	ND		5	4.7	94	50-142
100-42-5	Styrene	ND		5	4.2	84	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.6	92	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	4.7	94	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.3	86	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	4.6	92	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.3	86	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.3	86	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.1	82	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.1	82	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.2	84	45-138
127-18-4	Tetrachloroethylene	ND		5	4.7	94	45-145
108-88-3	Toluene	ND		5	4.6	92	52-134
79-01-6	Trichloroethylene	0.51		5	4.9	88	54-143
75-69-4	Trichlorofluoromethane	ND		5	4.5	90	36-167
75-01-4	Vinyl chloride	ND		5	4.4	88	35-162
	m,p-Xylene	ND		10	9.8	98	49-135
95-47-6	o-Xylene	ND		5	4.6	92	49-134
1330-20-7	Xylenes (total)	ND		15	14.4	96	50-134

CAS No.	Surrogate Recoveries	MS	JC67182-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%	88%	70-130%
460-00-4	4-Bromofluorobenzene	98%	84%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67182-1MS [a]	1B115328.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67182-1	1B115326.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

(a) (pH = 7)Sample pH did not satisfy field preservation criteria.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67210-6MS	3A160169.D	1	06/07/18	HT	n/a	n/a	V3A6908
JC67210-6	3A160152.D	1	06/06/18	HT	n/a	n/a	V3A6908

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

JC67241-1, JC67241-2

CAS No.	Compound	JC67210-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
123-91-1	1,4-Dioxane	11.3		20	30.5	96	36-166

CAS No.	Surrogate Recoveries	MS	JC67210-6	Limits
17647-74-4	1,4-Dioxane-d8	118%	142%	51-175%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67109-17MS	1B115249.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17MSD	1B115250.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17 [a]	1B115248.D	1	06/08/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	JC67109-17 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	ND		20	23.6	118	20	23.7	119	0	41-142/24
78-93-3	2-Butanone	ND		20	19.7	99	20	19.9	100	1	55-129/31
71-43-2	Benzene	ND		5	5.6	112	5	4.9	98	13	53-138/16
108-86-1	Bromobenzene	ND		5	5.2	104	5	4.6	92	12	54-138/17
74-97-5	Bromochloromethane	ND		5	5.9	118	5	5.5	110	7	55-140/13
75-27-4	Bromodichloromethane	ND		5	5.9	118	5	5.3	106	11	57-147/11
75-25-2	Bromoform	ND		5	6.5	130	5	5.8	116	11	47-137/13
74-83-9	Bromomethane	ND		5	6.4	128	5	6.9	138	8	40-162/27
135-98-8	sec-Butylbenzene	ND		5	4.7	94	5	3.9	78	19	46-145/20
98-06-6	tert-Butylbenzene	ND		5	4.3	86	5	3.5	70	21* [b]	48-141/17
75-15-0	Carbon disulfide	ND		5	6.8	136* [b]	5	6.1	122	11	35-127/32
108-90-7	Chlorobenzene	ND		5	5.4	108	5	4.6	92	16* [b]	54-135/15
75-00-3	Chloroethane	ND		5	6.1	122	5	6.6	132	8	38-153/43
67-66-3	Chloroform	ND		5	5.6	112	5	5.0	100	11	57-151/13
74-87-3	Chloromethane	ND		5	6.0	120	5	6.3	126	5	39-165/35
95-49-8	o-Chlorotoluene	ND		5	4.9	98	5	4.1	82	18* [b]	55-142/15
106-43-4	p-Chlorotoluene	ND		5	4.8	96	5	4.0	80	18	55-139/20
56-23-5	Carbon tetrachloride	ND		5	6.5	130	5	5.7	114	13	49-170/24
75-34-3	1,1-Dichloroethane	ND		5	5.8	116	5	5.2	104	11	55-149/13
75-35-4	1,1-Dichloroethylene	ND		5	6.4	128	5	5.6	112	13	42-142/20
563-58-6	1,1-Dichloropropene	ND		5	5.2	104	5	4.5	90	14	46-151/21
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	5.3	106	5	5.3	106	0	48-141/27
106-93-4	1,2-Dibromoethane	ND		5	5.3	106	5	5.0	100	6	57-135/10
107-06-2	1,2-Dichloroethane	0.35	J	5	6.1	115	5	5.7	107	7	59-166/15
78-87-5	1,2-Dichloropropane	ND		5	5.7	114	5	5.0	100	13* [b]	53-142/11
142-28-9	1,3-Dichloropropane	ND		5	5.6	112	5	5.1	102	9	58-143/13
594-20-7	2,2-Dichloropropane	ND		5	5.2	104	5	4.6	92	12	38-165/19
124-48-1	Dibromochloromethane	ND		5	5.9	118	5	5.3	106	11	55-138/15
74-95-3	Dibromomethane	ND		5	6.1	122	5	5.6	112	9	61-144/10
75-71-8	Dichlorodifluoromethane	ND		5	6.8	136	5	6.9	138	1	23-172/30
541-73-1	m-Dichlorobenzene	ND		5	5.6	112	5	4.8	96	15	53-138/17
95-50-1	o-Dichlorobenzene	ND		5	5.5	110	5	4.9	98	12* [b]	54-140/11
106-46-7	p-Dichlorobenzene	ND		5	5.2	104	5	4.5	90	14	53-137/14
156-60-5	trans-1,2-Dichloroethylene	ND		5	5.7	114	5	5.1	102	11	47-148/22
156-59-2	cis-1,2-Dichloroethylene	29.3		5	31.2	38* [c]	5	30.3	20* [c]	3	51-146/14
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.9	98	5	4.5	90	9	54-142/10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67109-17MS	1B115249.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17MSD	1B115250.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17 [a]	1B115248.D	1	06/08/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

CAS No.	Compound	JC67109-17 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.4	88	5	4.0	80	10	51-136/11
100-41-4	Ethylbenzene	ND		5	4.8	96	5	4.0	80	18	51-138/18
87-68-3	Hexachlorobutadiene	ND		5	6.1	122	5	5.1	102	18	40-154/21
98-82-8	Isopropylbenzene	ND		5	4.2	84	5	3.5	70	18* [b]	49-139/16
99-87-6	p-Isopropyltoluene	ND		5	4.4	88	5	3.6	72	20* [b]	45-141/17
75-09-2	Methylene chloride	ND		5	6.0	120	5	5.4	108	11	54-137/14
1634-04-4	Methyl Tert Butyl Ether	ND		5	4.3	86	5	4.2	84	2	53-143/10
108-10-1	4-Methyl-2-pentanone	ND		20	18.3	92	20	18.4	92	1	58-127/32
103-65-1	n-Propylbenzene	ND		5	4.8	96	5	3.9	78	21* [b]	50-142/20
100-42-5	Styrene	ND		5	4.6	92	5	3.9	78	16	23-130/20
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	5.8	116	5	5.3	106	9	57-144/11
71-55-6	1,1,1-Trichloroethane	ND		5	6.0	120	5	5.3	106	12	52-164/13
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	5.7	114	5	5.5	110	4	58-138/10
79-00-5	1,1,2-Trichloroethane	ND		5	5.7	114	5	5.2	104	9	59-139/11
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.8	96	5	4.4	88	9	47-141/17
96-18-4	1,2,3-Trichloropropane	ND		5	5.6	112	5	5.3	106	6	56-148/15
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.4	88	5	4.0	80	10	46-137/17
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.6	92	5	3.9	78	16	41-138/16
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.7	94	5	3.8	76	21* [b]	45-138/16
127-18-4	Tetrachloroethylene	ND		5	5.7	114	5	4.7	94	19	45-145/19
108-88-3	Toluene	ND		5	4.9	98	5	4.2	84	15	52-134/19
79-01-6	Trichloroethylene	9.2		5	13.6	88	5	13.2	80	3	54-143/15
75-69-4	Trichlorofluoromethane	ND		5	7.1	142	5	7.5	150	5	36-167/28
75-01-4	Vinyl chloride	ND		5	6.5	130	5	6.9	138	6	35-162/30
	m,p-Xylene	ND		10	9.8	98	10	8.1	81	19* [b]	49-135/18
95-47-6	o-Xylene	ND		5	4.6	92	5	3.8	76	19	49-134/19
1330-20-7	Xylenes (total)	ND		15	14.3	95	15	11.9	79	18	50-134/18

CAS No.	Surrogate Recoveries	MS	MSD	JC67109-17	Limits
2199-69-1	1,2-Dichlorobenzene-d4	108%	104%		70-130%
460-00-4	4-Bromofluorobenzene	88%	88%		70-130%

(a) Sample used for QC purposes only.
(b) Outside in house control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67109-17MS	1B115249.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17MSD	1B115250.D	1	06/08/18	CSF	n/a	n/a	V1B5533
JC67109-17 [a]	1B115248.D	1	06/08/18	CSF	n/a	n/a	V1B5533

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-2

(c) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67241-1DUP	1B115329.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67241-1 [a]	1B115327.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	JC67241-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	ND		ND		nc	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	0.97		2.0		69* [b]	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67241-1DUP	1B115329.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67241-1 [a]	1B115327.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

CAS No.	Compound	JC67241-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	0.14	J	0.14	J	0	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC67241-1	Limits
2199-69-1	1,2-Dichlorobenzene-d4	89%	91%	70-130%
460-00-4	4-Bromofluorobenzene	84%	84%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67241-1DUP	1B115329.D	1	06/13/18	CSF	n/a	n/a	V1B5538
JC67241-1 [a]	1B115327.D	1	06/13/18	CSF	n/a	n/a	V1B5538

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC67241-1, JC67241-2

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) RPD acceptable due to low DUP and sample concentrations.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC67210-19DUP	3A160182.D	1	06/07/18	HT	n/a	n/a	V3A6908
JC67210-19	3A160154.D	1	06/06/18	HT	n/a	n/a	V3A6908

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

JC67241-1, JC67241-2

CAS No.	Compound	JC67210-19 ug/l	Q	DUP ug/l	Q	RPD	Limits
123-91-1	1,4-Dioxane	0.45		0.54		18	37

CAS No.	Surrogate Recoveries	DUP	JC67210-19	Limits
17647-74-4	1,4-Dioxane-d8	149%	114%	51-175%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5527-BFB
Lab File ID: 1B115124.D
Instrument ID: GCMS1B
Injection Date: 05/31/18
Injection Time: 09:44

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	3241	19.1		Pass
75	30.0 - 80.0% of mass 95	8518	50.2		Pass
95	Base peak, 100% relative abundance	16975	100.0		Pass
96	5.0 - 9.0% of mass 95	1215	7.16		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	14309	84.3		Pass
175	5.0 - 9.0% of mass 174	1076	6.34	(7.52) [a]	Pass
176	95.0 - 101.0% of mass 174	14252	84.0	(99.6) [a]	Pass
177	5.0 - 9.0% of mass 176	924	5.44	(6.48) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5527-IC5527	1B115125.D	05/31/18	10:31	00:47	Initial cal 0.2
V1B5527-IC5527	1B115126.D	05/31/18	11:03	01:19	Initial cal 0.5
V1B5527-IC5527	1B115127.D	05/31/18	11:36	01:52	Initial cal 1
V1B5527-IC5527	1B115128.D	05/31/18	12:09	02:25	Initial cal 2
V1B5527-IC5527	1B115129.D	05/31/18	12:41	02:57	Initial cal 5
V1B5527-ICC5527	1B115130.D	05/31/18	13:13	03:29	Initial cal 10
V1B5527-IC5527	1B115131.D	05/31/18	13:46	04:02	Initial cal 20
V1B5527-IC5527	1B115132.D	05/31/18	14:19	04:35	Initial cal 40
V1B5527-IC5527	1B115133.D	05/31/18	14:51	05:07	Initial cal 80
V1B5527-ICV5527	1B115136.D	05/31/18	16:28	06:44	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5533-BFB
Lab File ID: 1B115241.D
Instrument ID: GCMS1B
Injection Date: 06/07/18
Injection Time: 22:48

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	1597	18.6		Pass
75	30.0 - 80.0% of mass 95	4287	50.1		Pass
95	Base peak, 100% relative abundance	8565	100.0		Pass
96	5.0 - 9.0% of mass 95	575	6.71		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	7554	88.2		Pass
175	5.0 - 9.0% of mass 174	601	7.02	(7.96) [a]	Pass
176	95.0 - 101.0% of mass 174	7275	84.9	(96.3) [a]	Pass
177	5.0 - 9.0% of mass 176	489	5.71	(6.72) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5533-BS	1B115242.D	06/07/18	23:20	00:32	Blank Spike
V1B5533-CC5527	1B115242.D	06/07/18	23:20	00:32	Continuing cal 5
V1B5533-MB	1B115243.D	06/07/18	23:53	01:05	Method Blank
ZZZZZZ	1B115246.D	06/08/18	01:30	02:42	(unrelated sample)
JC67241-2	1B115247.D	06/08/18	02:03	03:15	TRIP BLANK
JC67109-17	1B115248.D	06/08/18	02:35	03:47	(used for QC only; not part of job JC67241)
JC67109-17MS	1B115249.D	06/08/18	03:08	04:20	Matrix Spike
JC67109-17MSD	1B115250.D	06/08/18	03:40	04:52	Matrix Spike Duplicate
ZZZZZZ	1B115253.D	06/08/18	05:17	06:29	(unrelated sample)
ZZZZZZ	1B115254.D	06/08/18	05:49	07:01	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5537-BFB	**Injection Date:**	06/12/18
Lab File ID:	1B115302.D	**Injection Time:**	19:51
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2072	18.9		Pass
75	30.0 - 80.0% of mass 95	5501	50.1		Pass
95	Base peak, 100% relative abundance	10978	100.0		Pass
96	5.0 - 9.0% of mass 95	849	7.73		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	9662	88.0		Pass
175	5.0 - 9.0% of mass 174	713	6.49	(7.38) [a]	Pass
176	95.0 - 101.0% of mass 174	9243	84.2	(95.7) [a]	Pass
177	5.0 - 9.0% of mass 176	621	5.66	(6.72) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5537-IC5537	1B115303.D	06/12/18	21:26	01:35	Initial cal 0.2
V1B5537-IC5537	1B115304.D	06/12/18	21:59	02:08	Initial cal 0.5
V1B5537-IC5537	1B115305.D	06/12/18	22:32	02:41	Initial cal 1
V1B5537-IC5537	1B115306.D	06/12/18	23:04	03:13	Initial cal 2
V1B5537-IC5537	1B115307.D	06/12/18	23:37	03:46	Initial cal 5
V1B5537-ICC5537	1B115308.D	06/13/18	00:10	04:19	Initial cal 10
V1B5537-IC5537	1B115309.D	06/13/18	00:42	04:51	Initial cal 20
V1B5537-IC5537	1B115310.D	06/13/18	01:15	05:24	Initial cal 40
V1B5537-IC5537	1B115311.D	06/13/18	01:48	05:57	Initial cal 80

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5537-BFB2	**Injection Date:**	06/13/18
Lab File ID:	1B115315.D	**Injection Time:**	08:29
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2557	19.4		Pass
75	30.0 - 80.0% of mass 95	6444	49.0		Pass
95	Base peak, 100% relative abundance	13152	100.0		Pass
96	5.0 - 9.0% of mass 95	923	7.02		Pass
173	Less than 2.0% of mass 174	67	0.51	(0.56) [a]	Pass
174	50.0 - 120.0% of mass 95	11868	90.2		Pass
175	5.0 - 9.0% of mass 174	858	6.52	(7.23) [a]	Pass
176	95.0 - 101.0% of mass 174	11491	87.4	(96.8) [a]	Pass
177	5.0 - 9.0% of mass 176	688	5.23	(5.99) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5537-ICV5537	1B115316.D	06/13/18	09:09	00:40	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V1B5538-BFB	**Injection Date:**	06/13/18
Lab File ID:	1B115317.D	**Injection Time:**	09:56
Instrument ID:	GCMS1B		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2622	20.3		Pass
75	30.0 - 80.0% of mass 95	6494	50.4		Pass
95	Base peak, 100% relative abundance	12897	100.0		Pass
96	5.0 - 9.0% of mass 95	1068	8.28		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	11012	85.4		Pass
175	5.0 - 9.0% of mass 174	826	6.40	(7.50) [a]	Pass
176	95.0 - 101.0% of mass 174	10593	82.1	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	751	5.82	(7.09) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5538-BS	1B115319.D	06/13/18	11:37	01:41	Blank Spike
V1B5538-CC5537	1B115319.D	06/13/18	11:37	01:41	Continuing cal 5
V1B5538-BSD	1B115320.D	06/13/18	12:14	02:18	Blank Spike Duplicate
V1B5538-MB	1B115321.D	06/13/18	12:54	02:58	Method Blank
ZZZZZZ	1B115322.D	06/13/18	13:26	03:30	(unrelated sample)
ZZZZZZ	1B115323.D	06/13/18	13:59	04:03	(unrelated sample)
ZZZZZZ	1B115324.D	06/13/18	14:37	04:41	(unrelated sample)
ZZZZZZ	1B115325.D	06/13/18	15:10	05:14	(unrelated sample)
JC67182-1	1B115326.D	06/13/18	15:42	05:46	(used for QC only; not part of job JC67241)
JC67241-1	1B115327.D	06/13/18	16:15	06:19	RW-7742TO-053118
JC67182-1MS	1B115328.D	06/13/18	16:47	06:51	Matrix Spike
JC67241-1DUP	1B115329.D	06/13/18	17:20	07:24	Duplicate
ZZZZZZ	1B115330.D	06/13/18	17:52	07:56	(unrelated sample)
ZZZZZZ	1B115331.D	06/13/18	18:25	08:29	(unrelated sample)
JC67241-2	1B115332.D	06/13/18	18:57	09:01	TRIP BLANK
ZZZZZZ	1B115333.D	06/13/18	19:30	09:34	(unrelated sample)
ZZZZZZ	1B115334.D	06/13/18	20:02	10:06	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6904-BFB
Lab File ID: 3A160056.D
Instrument ID: GCMS3A
Injection Date: 06/02/18
Injection Time: 15:09

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	15680	20.2		Pass
75	30.0 - 60.0% of mass 95	39842	51.4		Pass
95	Base peak, 100% relative abundance	77501	100.0		Pass
96	5.0 - 9.0% of mass 95	5231	6.75		Pass
173	Less than 2.0% of mass 174	249	0.32	(0.37) [a]	Pass
174	50.0 - 120.0% of mass 95	66717	86.1		Pass
175	5.0 - 9.0% of mass 174	5285	6.82	(7.92) [a]	Pass
176	95.0 - 101.0% of mass 174	66208	85.4	(99.2) [a]	Pass
177	5.0 - 9.0% of mass 176	4250	5.48	(6.42) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6904-IC6904	3A160057.D	06/02/18	15:42	00:33	Initial cal 0.25
V3A6904-IC6904	3A160058.D	06/02/18	16:09	01:00	Initial cal 0.4
V3A6904-IC6904	3A160059.D	06/02/18	16:35	01:26	Initial cal 1
V3A6904-IC6904	3A160060.D	06/02/18	17:01	01:52	Initial cal 2
V3A6904-IC6904	3A160061.D	06/02/18	17:27	02:18	Initial cal 5
V3A6904-ICC6904	3A160062.D	06/02/18	17:53	02:44	Initial cal 20
V3A6904-IC6904	3A160063.D	06/02/18	18:19	03:10	Initial cal 50
V3A6904-IC6904	3A160064.D	06/02/18	18:45	03:36	Initial cal 100
V3A6904-IC6904	3A160065.D	06/02/18	19:11	04:02	Initial cal 200
V3A6904-ICV6904	3A160070.D	06/02/18	21:22	06:13	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6908-BFB	**Injection Date:**	06/06/18
Lab File ID:	3A160146.D	**Injection Time:**	20:14
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	14031	20.1		Pass
75	30.0 - 60.0% of mass 95	34882	50.0		Pass
95	Base peak, 100% relative abundance	69746	100.0		Pass
96	5.0 - 9.0% of mass 95	4791	6.87		Pass
173	Less than 2.0% of mass 174	446	0.64	(0.73) [a]	Pass
174	50.0 - 120.0% of mass 95	60784	87.2		Pass
175	5.0 - 9.0% of mass 174	4937	7.08	(8.12) [a]	Pass
176	95.0 - 101.0% of mass 174	58216	83.5	(95.8) [a]	Pass
177	5.0 - 9.0% of mass 176	3857	5.53	(6.63) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6908-CC6904	3A160148.D	06/06/18	21:13	00:59	Continuing cal 20
V3A6908-BS	3A160149.D	06/06/18	21:42	01:28	Blank Spike
V3A6908-MB	3A160151.D	06/06/18	22:34	02:20	Method Blank
JC67210-6	3A160152.D	06/06/18	22:59	02:45	(used for QC only; not part of job JC67241)
JC67210-17	3A160153.D	06/06/18	23:25	03:11	(used for QC only; not part of job JC67241)
JC67210-19	3A160154.D	06/06/18	23:51	03:37	(used for QC only; not part of job JC67241)
ZZZZZZ	3A160155.D	06/07/18	00:17	04:03	(unrelated sample)
ZZZZZZ	3A160156.D	06/07/18	00:43	04:29	(unrelated sample)
ZZZZZZ	3A160157.D	06/07/18	01:09	04:55	(unrelated sample)
ZZZZZZ	3A160158.D	06/07/18	01:35	05:21	(unrelated sample)
JC67241-2	3A160159.D	06/07/18	02:00	05:46	TRIP BLANK
ZZZZZZ	3A160160.D	06/07/18	02:26	06:12	(unrelated sample)
JC67241-1	3A160161.D	06/07/18	02:52	06:38	RW-7742TO-053118
ZZZZZZ	3A160162.D	06/07/18	03:18	07:04	(unrelated sample)
ZZZZZZ	3A160163.D	06/07/18	03:44	07:30	(unrelated sample)
ZZZZZZ	3A160164.D	06/07/18	04:10	07:56	(unrelated sample)
ZZZZZZ	3A160165.D	06/07/18	04:36	08:22	(unrelated sample)
ZZZZZZ	3A160166.D	06/07/18	05:01	08:47	(unrelated sample)
ZZZZZZ	3A160167.D	06/07/18	05:27	09:13	(unrelated sample)
ZZZZZZ	3A160168.D	06/07/18	05:53	09:39	(unrelated sample)
JC67210-6MS	3A160169.D	06/07/18	06:19	10:05	Matrix Spike

Instrument Performance Check (BFB)

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6909-BFB
Lab File ID: 3A160175.D
Instrument ID: GCMS3A
Injection Date: 06/07/18
Injection Time: 13:12

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	27565	20.0		Pass
75	30.0 - 60.0% of mass 95	71130	51.7		Pass
95	Base peak, 100% relative abundance	137714	100.0		Pass
96	5.0 - 9.0% of mass 95	9459	6.87		Pass
173	Less than 2.0% of mass 174	1539	1.12	(1.25) [a]	Pass
174	50.0 - 120.0% of mass 95	122816	89.2		Pass
175	5.0 - 9.0% of mass 174	9204	6.68	(7.49) [a]	Pass
176	95.0 - 101.0% of mass 174	118208	85.8	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	7825	5.68	(6.62) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6909-CC6904	3A160178.D	06/07/18	15:09	01:57	Continuing cal 5
V3A6908-BS2	3A160179A.D	06/07/18	15:41	02:29	Blank Spike
V3A6909-BS	3A160179.D	06/07/18	15:41	02:29	Blank Spike
V3A6909-MB	3A160181.D	06/07/18	16:32	03:20	Method Blank
V3A6908-MB2	3A160181A.D	06/07/18	16:32	03:20	Method Blank
JC67210-19DUP	3A160182.D	06/07/18	17:08	03:56	Duplicate
JC67174-10	3A160187.D	06/07/18	19:18	06:06	(used for QC only; not part of job JC67241)
JC67174-13	3A160188.D	06/07/18	19:44	06:32	(used for QC only; not part of job JC67241)
JC67210-27	3A160189.D	06/07/18	20:09	06:57	(used for QC only; not part of job JC67241)
ZZZZZZ	3A160190.D	06/07/18	20:35	07:23	(unrelated sample)
JC67174-13DUP	3A160198.D	06/08/18	00:01	10:49	Duplicate

Surrogate Recovery Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JC67241-1	1B115327.D	91	84
JC67241-2	1B115247.D	91	73
JC67241-2	1B115332.D	97	85
JC67109-17MS	1B115249.D	108	88
JC67109-17MSD	1B115250.D	104	88
JC67182-1MS	1B115328.D	101	98
JC67241-1DUP	1B115329.D	89	84
V1B5533-BS	1B115242.D	105	88
V1B5533-MB	1B115243.D	90	74
V1B5538-BS	1B115319.D	98	105
V1B5538-BSD	1B115320.D	101	105
V1B5538-MB	1B115321.D	91	90

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JC67241
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JC67241-1	3A160161.D	77
JC67241-2	3A160159.D	84
JC67210-19DUP	3A160182.D	149
JC67210-6MS	3A160169.D	118
V3A6908-BS	3A160149.D	87
V3A6908-MB	3A160151.D	91
V3A6908-MB2	3A160181A.D	125

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

JUNE 2018

The results set forth herein are provided by SGS North America Inc.

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Automated Report



Technical Report for

WSP Environment & Energy

Kop-Flex, Hanover, VA

31400389

SGS Job Number: JC69085

Sampling Date: 06/28/18

Report to:

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Total number of pages in report: 40

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.

A. Paul Ioannidis
General Manager

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Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JC69085

Kop-Flex, Hanover, VA
Project No: 31400389

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC69085-1	06/28/18	09:45	SB/CC	06/29/18	AQ	Ground Water	RW-12270CM-062818
JC69085-2	06/28/18	09:40	SB/CC	06/29/18	AQ	Ground Water	RW-12270CM-062818-F
JC69085-3	06/28/18	09:45	SB/CC	06/29/18	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: JC69085
Account: WSP Environment & Energy
Project: Kop-Flex, Hanover, VA
Collected: 06/28/18

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC69085-1	**RW-12270CM-062818**					
Acetone [a]		1.5 J	5.0	0.80	ug/l	EPA 524.2 REV 4.1
1,1-Dichloroethylene [a]		5.6	0.50	0.19	ug/l	EPA 524.2 REV 4.1
1,1,1-Trichloroethane [a]		0.28 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.5	0.40	0.095	ug/l	SW846 8260C BY SIM
JC69085-2	**RW-12270CM-062818-F**					
1,1,1-Trichloroethane [a]		0.28 J	0.50	0.22	ug/l	EPA 524.2 REV 4.1
1,4-Dioxane		2.4	0.40	0.095	ug/l	SW846 8260C BY SIM
JC69085-3	**TRIP BLANK**					

No hits reported in this sample.

(a) EPA 524.2 is not a certified method for non-potable water samples.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	RW-12270CM-062818		
Lab Sample ID:	JC69085-1	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B115685.D	1	07/10/18 16:49	CSF	n/a	n/a	V1B5559
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.5	5.0	0.80	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	5.6	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

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:	RW-12270CM-062818		
Lab Sample ID:	JC69085-1	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.28	0.50	0.22	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	92%		70-130%
460-00-4	4-Bromofluorobenzene	83%		70-130%

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:	RW-12270CM-062818		
Lab Sample ID:	JC69085-1	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	RW-12270CM-062818		
Lab Sample ID:	JC69085-1	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A160354.D	1	07/03/18 19:16	HT	n/a	n/a	V3A6918
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.5	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	117%		51-175%

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:	RW-12270CM-062818-F		
Lab Sample ID:	JC69085-2	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B115686.D	1	07/10/18 17:21	CSF	n/a	n/a	V1B5559
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.80	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

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:	RW-12270CM-062818-F		
Lab Sample ID:	JC69085-2	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	0.28	0.50	0.22	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	89%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%

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:	RW-12270CM-062818-F		
Lab Sample ID:	JC69085-2	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	RW-12270CM-062818-F		
Lab Sample ID:	JC69085-2	**Date Sampled:**	06/28/18
Matrix:	AQ - Ground Water	**Date Received:**	06/29/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A160355.D	1	07/03/18 19:43	HT	n/a	n/a	V3A6918
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.4	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	110%		51-175%

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:	TRIP BLANK		
Lab Sample ID:	JC69085-3	**Date Sampled:**	06/28/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B115689.D	1	07/10/18 18:56	CSF	n/a	n/a	V1B5559
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.80	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	

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:	TRIP BLANK		
Lab Sample ID:	JC69085-3	**Date Sampled:**	06/28/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	91%		70-130%
460-00-4	4-Bromofluorobenzene	81%		70-130%

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:	TRIP BLANK		
Lab Sample ID:	JC69085-3	**Date Sampled:**	06/28/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/29/18
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

VOA List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	TRIP BLANK		
Lab Sample ID:	JC69085-3	**Date Sampled:**	06/28/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	06/29/18
Method:	SW846 8260C BY SIM	**Percent Solids:**	n/a
Project:	Kop-Flex, Hanover, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A160353.D	1	07/03/18 18:50	HT	n/a	n/a	V3A6918
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17647-74-4	1,4-Dioxane-d8	101%		51-175%

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

GW, WB

RP-08417-133

CHAIN-OF-CUSTODY RECORD 7150 6932 9367

JC69085 Page 1 of 1

WSP USA Office Address	Requested Analyses & Preservatives	No. 009914 WSP
13530 Dulles Technology Dr Suite 300, Herndon, VA		
Project Name: Kop Flex	WSP USA Contact Name: Eric Johnson	Laboratory Name & Location: Accutest, NJ
Project Location: Hanover, MD	WSP USA Contact E-mail: eric.johnson @wsp.com	Laboratory Project Manager: Rocus Peters
Project Number & Task: 31400389	WSP USA Contact Phone: 703-709-6500	Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR
Sampler(s) Name(s): Shannon Burke, Chris Cresci	Sampler(s) Signature(s):	

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260	1,4 dioxane	Sample Comments
1	RW-122270CM-062818	GW	6/28/18		0945		6	X	X	
2	RW-122270CM-062818-F	GW	6/28/18		0940		6	X	X	
3	Trip Blank						4	X	X	V926

INITIAL ASESSMENT GEB

LABEL VERIFICATION

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
Shannon Burke	6/28/18	1045		6/29/18	10:00		
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
FEDX	6/29/18	0000		6/29/18	0000		3.0

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

4.1 4

JC69085: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC69085 **Client:** WSP **Project:** KOP-FLEX

Date / Time Received: 6/29/2018 10:00:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

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:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 216017 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JC69085: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5559-MB	1B115680.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.80	ug/l	
78-93-3	2-Butanone	ND	5.0	0.43	ug/l	
71-43-2	Benzene	ND	0.50	0.16	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.12	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.17	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.13	ug/l	
75-25-2	Bromoform	ND	0.50	0.27	ug/l	
74-83-9	Bromomethane	ND	0.50	0.18	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.068	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.43	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.057	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.18	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.093	ug/l	
75-00-3	Chloroethane	ND	0.50	0.080	ug/l	
67-66-3	Chloroform	ND	0.50	0.17	ug/l	
74-87-3	Chloromethane	ND	0.50	0.13	ug/l	
95-49-8	o-Chlorotoluene	ND	0.50	0.098	ug/l	
106-43-4	p-Chlorotoluene	ND	0.50	0.075	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.24	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.22	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.19	ug/l	
563-58-6	1,1-Dichloropropene	ND	0.50	0.14	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	0.14	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.15	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.19	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.17	ug/l	
594-20-7	2,2-Dichloropropane	ND	0.50	0.31	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.14	ug/l	
74-95-3	Dibromomethane	ND	0.50	0.23	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.40	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.14	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.14	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.10	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.21	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.14	ug/l	

Method Blank Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5559-MB	1B115680.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.16	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.18	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.24	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.054	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.43	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.37	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.11	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.22	ug/l	
91-20-3	Naphthalene	ND	0.50	0.28	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.066	ug/l	
100-42-5	Styrene	ND	0.50	0.069	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.22	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.13	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.19	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.091	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.13	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.055	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.40	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.057	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.23	ug/l	
108-88-3	Toluene	ND	0.50	0.11	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.20	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.19	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.15	ug/l	
	m,p-Xylene	ND	0.50	0.14	ug/l	
95-47-6	o-Xylene	ND	0.50	0.076	ug/l	
1330-20-7	Xylenes (total)	ND	0.50	0.076	ug/l	

CAS No.	Surrogate Recoveries		Limits
2199-69-1	1,2-Dichlorobenzene-d4	93%	70-130%
460-00-4	4-Bromofluorobenzene	86%	70-130%

Method Blank Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5559-MB	1B115680.D	1	07/10/18	CSF	n/a	n/a	V1B5559

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

JC69085-1, JC69085-2, JC69085-3

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6918-MB	3A160345.D	1	07/03/18	HT	n/a	n/a	V3A6918

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

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.40	0.095	ug/l	

CAS No.	Surrogate Recoveries		Limits
17647-74-4	1,4-Dioxane-d8	116%	51-175%

Blank Spike Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5559-BS	1B115679.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	20	17.9	90	70-130
78-93-3	2-Butanone	20	18.1	91	70-130
71-43-2	Benzene	5	4.5	90	70-130
108-86-1	Bromobenzene	5	4.7	94	70-130
74-97-5	Bromochloromethane	5	4.6	92	70-130
75-27-4	Bromodichloromethane	5	4.5	90	70-130
75-25-2	Bromoform	5	4.6	92	70-130
74-83-9	Bromomethane	5	4.9	98	70-130
104-51-8	n-Butylbenzene	5	4.6	92	70-130
135-98-8	sec-Butylbenzene	5	4.2	84	70-130
98-06-6	tert-Butylbenzene	5	4.5	90	70-130
75-15-0	Carbon disulfide	5	4.5	90	70-130
108-90-7	Chlorobenzene	5	4.6	92	70-130
75-00-3	Chloroethane	5	4.7	94	70-130
67-66-3	Chloroform	5	4.3	86	70-130
74-87-3	Chloromethane	5	4.7	94	70-130
95-49-8	o-Chlorotoluene	5	4.5	90	70-130
106-43-4	p-Chlorotoluene	5	4.6	92	70-130
56-23-5	Carbon tetrachloride	5	5.2	104	70-130
75-34-3	1,1-Dichloroethane	5	4.4	88	70-130
75-35-4	1,1-Dichloroethylene	5	4.6	92	70-130
563-58-6	1,1-Dichloropropene	5	4.6	92	70-130
96-12-8	1,2-Dibromo-3-chloropropane	5	4.3	86	70-130
106-93-4	1,2-Dibromoethane	5	4.5	90	70-130
107-06-2	1,2-Dichloroethane	5	4.4	88	70-130
78-87-5	1,2-Dichloropropane	5	4.4	88	70-130
142-28-9	1,3-Dichloropropane	5	4.5	90	70-130
594-20-7	2,2-Dichloropropane	5	4.8	96	70-130
124-48-1	Dibromochloromethane	5	4.4	88	70-130
74-95-3	Dibromomethane	5	4.6	92	70-130
75-71-8	Dichlorodifluoromethane	5	6.1	122	70-130
541-73-1	m-Dichlorobenzene	5	4.6	92	70-130
95-50-1	o-Dichlorobenzene	5	4.5	90	70-130
106-46-7	p-Dichlorobenzene	5	4.6	92	70-130
156-60-5	trans-1,2-Dichloroethylene	5	4.6	92	70-130
156-59-2	cis-1,2-Dichloroethylene	5	4.6	92	70-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1B5559-BS	1B115679.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
10061-01-5	cis-1,3-Dichloropropene	5	4.3	86	70-130
10061-02-6	trans-1,3-Dichloropropene	5	4.4	88	70-130
100-41-4	Ethylbenzene	5	4.6	92	70-130
87-68-3	Hexachlorobutadiene	5	4.6	92	70-130
591-78-6	2-Hexanone	20	16.2	81	70-130
98-82-8	Isopropylbenzene	5	4.5	90	70-130
99-87-6	p-Isopropyltoluene	5	4.6	92	70-130
75-09-2	Methylene chloride	5	4.5	90	70-130
1634-04-4	Methyl Tert Butyl Ether	5	4.2	84	70-130
108-10-1	4-Methyl-2-pentanone	20	18.2	91	70-130
91-20-3	Naphthalene	5	4.1	82	70-130
103-65-1	n-Propylbenzene	5	4.6	92	70-130
100-42-5	Styrene	5	4.1	82	70-130
630-20-6	1,1,1,2-Tetrachloroethane	5	4.5	90	70-130
71-55-6	1,1,1-Trichloroethane	5	4.6	92	70-130
79-34-5	1,1,2,2-Tetrachloroethane	5	4.4	88	70-130
79-00-5	1,1,2-Trichloroethane	5	4.4	88	70-130
87-61-6	1,2,3-Trichlorobenzene	5	4.3	86	70-130
96-18-4	1,2,3-Trichloropropane	5	4.6	92	70-130
120-82-1	1,2,4-Trichlorobenzene	5	4.2	84	70-130
95-63-6	1,2,4-Trimethylbenzene	5	4.1	82	70-130
108-67-8	1,3,5-Trimethylbenzene	5	4.2	84	70-130
127-18-4	Tetrachloroethylene	5	4.4	88	70-130
108-88-3	Toluene	5	4.6	92	70-130
79-01-6	Trichloroethylene	5	4.5	90	70-130
75-69-4	Trichlorofluoromethane	5	5.9	118	70-130
75-01-4	Vinyl chloride	5	5.1	102	70-130
	m,p-Xylene	10	9.2	92	70-130
95-47-6	o-Xylene	5	4.6	92	70-130
1330-20-7	Xylenes (total)	15	13.8	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3A6918-BS	3A160342.D	1	07/03/18	HT	n/a	n/a	V3A6918
V3A6918-BSD	3A160343.D	1	07/03/18	HT	n/a	n/a	V3A6918

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

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	20	21.9	110	22.2	111	1	58-138/20

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17647-74-4	1,4-Dioxane-d8	113%	112%	51-175%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69420-3MS	1B115687.D	1	07/10/18	CSF	n/a	n/a	V1B5559
JC69420-3	1B115684.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	JC69420-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone	1.3	J	20	21.0	99	41-142
78-93-3	2-Butanone	0.51	J	20	22.0	107	55-129
71-43-2	Benzene	ND		5	4.8	96	53-138
108-86-1	Bromobenzene	ND		5	4.7	94	54-138
74-97-5	Bromochloromethane	ND		5	4.9	98	55-140
75-27-4	Bromodichloromethane	0.29	J	5	5.2	98	57-147
75-25-2	Bromoform	ND		5	4.8	96	47-137
74-83-9	Bromomethane	ND		5	5.9	118	40-162
104-51-8	n-Butylbenzene	ND		5	4.5	90	45-144
135-98-8	sec-Butylbenzene	ND		5	4.2	84	46-145
98-06-6	tert-Butylbenzene	ND		5	4.5	90	48-141
75-15-0	Carbon disulfide	ND		5	5.0	100	35-127
108-90-7	Chlorobenzene	ND		5	4.7	94	54-135
75-00-3	Chloroethane	ND		5	5.7	114	38-153
67-66-3	Chloroform	2.5		5	6.8	86	57-151
74-87-3	Chloromethane	0.32	J	5	5.8	110	39-165
95-49-8	o-Chlorotoluene	ND		5	4.4	88	55-142
106-43-4	p-Chlorotoluene	ND		5	4.5	90	55-139
56-23-5	Carbon tetrachloride	ND		5	5.9	118	49-170
75-34-3	1,1-Dichloroethane	ND		5	4.7	94	55-149
75-35-4	1,1-Dichloroethylene	ND		5	4.9	98	42-142
563-58-6	1,1-Dichloropropene	ND		5	4.9	98	46-151
96-12-8	1,2-Dibromo-3-chloropropane	ND		5	4.6	92	48-141
106-93-4	1,2-Dibromoethane	ND		5	4.8	96	57-135
107-06-2	1,2-Dichloroethane	ND		5	4.7	94	59-166
78-87-5	1,2-Dichloropropane	ND		5	4.7	94	53-142
142-28-9	1,3-Dichloropropane	ND		5	4.9	98	58-143
594-20-7	2,2-Dichloropropane	ND		5	4.7	94	38-165
124-48-1	Dibromochloromethane	ND		5	4.9	98	55-138
74-95-3	Dibromomethane	ND		5	4.8	96	61-144
75-71-8	Dichlorodifluoromethane	ND		5	7.3	146	23-172
541-73-1	m-Dichlorobenzene	ND		5	4.6	92	53-138
95-50-1	o-Dichlorobenzene	ND		5	4.5	90	54-140
106-46-7	p-Dichlorobenzene	ND		5	4.6	92	53-137
156-60-5	trans-1,2-Dichloroethylene	ND		5	4.9	98	47-148
156-59-2	cis-1,2-Dichloroethylene	ND		5	4.8	96	51-146

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69420-3MS	1B115687.D	1	07/10/18	CSF	n/a	n/a	V1B5559
JC69420-3	1B115684.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	JC69420-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		5	4.4	88	51-136
10061-02-6	trans-1,3-Dichloropropene	ND		5	4.5	90	54-142
100-41-4	Ethylbenzene	ND		5	4.7	94	51-138
87-68-3	Hexachlorobutadiene	ND		5	4.8	96	40-154
591-78-6	2-Hexanone	ND		20	17.8	89	53-128
98-82-8	Isopropylbenzene	ND		5	4.4	88	49-139
99-87-6	p-Isopropyltoluene	ND		5	4.5	90	45-141
75-09-2	Methylene chloride	ND		5	4.7	94	54-137
1634-04-4	Methyl Tert Butyl Ether	2.1		5	6.6	90	53-143
108-10-1	4-Methyl-2-pentanone	ND		20	20.2	101	58-127
91-20-3	Naphthalene	ND		5	3.9	78	44-140
103-65-1	n-Propylbenzene	ND		5	4.6	92	50-142
100-42-5	Styrene	ND		5	4.1	82	23-130
630-20-6	1,1,1,2-Tetrachloroethane	ND		5	4.7	94	57-144
71-55-6	1,1,1-Trichloroethane	ND		5	4.8	96	52-164
79-34-5	1,1,2,2-Tetrachloroethane	ND		5	4.7	94	58-138
79-00-5	1,1,2-Trichloroethane	ND		5	4.8	96	59-139
87-61-6	1,2,3-Trichlorobenzene	ND		5	4.3	86	47-141
96-18-4	1,2,3-Trichloropropane	ND		5	4.9	98	56-148
120-82-1	1,2,4-Trichlorobenzene	ND		5	4.1	82	46-137
95-63-6	1,2,4-Trimethylbenzene	ND		5	4.1	82	41-138
108-67-8	1,3,5-Trimethylbenzene	ND		5	4.1	82	45-138
127-18-4	Tetrachloroethylene	ND		5	4.6	92	45-145
108-88-3	Toluene	ND		5	4.8	96	52-134
79-01-6	Trichloroethylene	ND		5	4.6	92	54-143
75-69-4	Trichlorofluoromethane	ND		5	6.8	136	36-167
75-01-4	Vinyl chloride	ND		5	6.2	124	35-162
	m,p-Xylene	ND		10	9.3	93	49-135
95-47-6	o-Xylene	ND		5	4.6	92	49-134
1330-20-7	Xylenes (total)	ND		15	13.8	92	50-134

CAS No.	Surrogate Recoveries	MS	JC69420-3	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%	90%	70-130%
460-00-4	4-Bromofluorobenzene	96%	83%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69097-1MS	3A160350.D	1	07/03/18	HT	n/a	n/a	V3A6918
JC69097-1MSD	3A160351.D	1	07/03/18	HT	n/a	n/a	V3A6918
JC69097-1	3A160346.D	1	07/03/18	HT	n/a	n/a	V3A6918

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

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	JC69097-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	18.4	92	20	21.6	108	16	36-166/26

CAS No.	Surrogate Recoveries	MS	MSD	JC69097-1	Limits
17647-74-4	1,4-Dioxane-d8	117%	126%	143%	51-175%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69420-2DUP	1B115688.D	1	07/10/18	CSF	n/a	n/a	V1B5559
JC69420-2	1B115683.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	JC69420-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
67-64-1	Acetone	ND		ND		nc	10
78-93-3	2-Butanone	ND		ND		nc	12
71-43-2	Benzene	ND		ND		nc	10
108-86-1	Bromobenzene	ND		ND		nc	10
74-97-5	Bromochloromethane	ND		ND		nc	10
75-27-4	Bromodichloromethane	ND		ND		nc	10
75-25-2	Bromoform	ND		ND		nc	10
74-83-9	Bromomethane	ND		ND		nc	10
104-51-8	n-Butylbenzene	ND		ND		nc	10
135-98-8	sec-Butylbenzene	ND		ND		nc	10
98-06-6	tert-Butylbenzene	ND		ND		nc	10
75-15-0	Carbon disulfide	0.19	J	0.24	J	23* [a]	19
108-90-7	Chlorobenzene	ND		ND		nc	10
75-00-3	Chloroethane	ND		ND		nc	10
67-66-3	Chloroform	ND		ND		nc	12
74-87-3	Chloromethane	ND		ND		nc	10
95-49-8	o-Chlorotoluene	ND		ND		nc	10
106-43-4	p-Chlorotoluene	ND		ND		nc	10
56-23-5	Carbon tetrachloride	ND		ND		nc	10
75-34-3	1,1-Dichloroethane	ND		ND		nc	10
75-35-4	1,1-Dichloroethylene	ND		ND		nc	10
563-58-6	1,1-Dichloropropene	ND		ND		nc	10
96-12-8	1,2-Dibromo-3-chloropropane	ND		ND		nc	10
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
78-87-5	1,2-Dichloropropane	ND		ND		nc	10
142-28-9	1,3-Dichloropropane	ND		ND		nc	10
594-20-7	2,2-Dichloropropane	ND		ND		nc	10
124-48-1	Dibromochloromethane	ND		ND		nc	10
74-95-3	Dibromomethane	ND		ND		nc	10
75-71-8	Dichlorodifluoromethane	ND		ND		nc	10
541-73-1	m-Dichlorobenzene	ND		ND		nc	10
95-50-1	o-Dichlorobenzene	ND		ND		nc	10
106-46-7	p-Dichlorobenzene	ND		ND		nc	10
156-60-5	trans-1,2-Dichloroethylene	ND		ND		nc	10
156-59-2	cis-1,2-Dichloroethylene	ND		ND		nc	10

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69420-2DUP	1B115688.D	1	07/10/18	CSF	n/a	n/a	V1B5559
JC69420-2	1B115683.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

CAS No.	Compound	JC69420-2 ug/l	Q	DUP ug/l	Q	RPD	Limits
10061-01-5	cis-1,3-Dichloropropene	ND		ND		nc	10
10061-02-6	trans-1,3-Dichloropropene	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	10
87-68-3	Hexachlorobutadiene	ND		ND		nc	10
591-78-6	2-Hexanone	ND		ND		nc	10
98-82-8	Isopropylbenzene	ND		ND		nc	10
99-87-6	p-Isopropyltoluene	ND		ND		nc	10
75-09-2	Methylene chloride	ND		ND		nc	10
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	10
108-10-1	4-Methyl-2-pentanone	ND		ND		nc	10
91-20-3	Naphthalene	ND		ND		nc	10
103-65-1	n-Propylbenzene	ND		ND		nc	10
100-42-5	Styrene	ND		ND		nc	10
630-20-6	1,1,1,2-Tetrachloroethane	ND		ND		nc	10
71-55-6	1,1,1-Trichloroethane	ND		ND		nc	10
79-34-5	1,1,2,2-Tetrachloroethane	ND		ND		nc	10
79-00-5	1,1,2-Trichloroethane	ND		ND		nc	10
87-61-6	1,2,3-Trichlorobenzene	ND		ND		nc	10
96-18-4	1,2,3-Trichloropropane	ND		ND		nc	10
120-82-1	1,2,4-Trichlorobenzene	ND		ND		nc	10
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
127-18-4	Tetrachloroethylene	ND		ND		nc	10
108-88-3	Toluene	ND		ND		nc	10
79-01-6	Trichloroethylene	ND		ND		nc	10
75-69-4	Trichlorofluoromethane	ND		ND		nc	10
75-01-4	Vinyl chloride	ND		ND		nc	10
	m,p-Xylene	ND		ND		nc	10
95-47-6	o-Xylene	ND		ND		nc	10
1330-20-7	Xylenes (total)	ND		ND		nc	10

CAS No.	Surrogate Recoveries	DUP	JC69420-2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	90%	89%	70-130%
460-00-4	4-Bromofluorobenzene	82%	83%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC69420-2DUP	1B115688.D	1	07/10/18	CSF	n/a	n/a	V1B5559
JC69420-2	1B115683.D	1	07/10/18	CSF	n/a	n/a	V1B5559

The QC reported here applies to the following samples: **Method:** EPA 524.2 REV 4.1

JC69085-1, JC69085-2, JC69085-3

(a) High RPD due to low concentration of hit

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5558-BFB
Lab File ID: 1B115659.D
Instrument ID: GCMS1B
Injection Date: 07/09/18
Injection Time: 17:13

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2361	19.7		Pass
75	30.0 - 80.0% of mass 95	6090	50.7		Pass
95	Base peak, 100% relative abundance	12013	100.0		Pass
96	5.0 - 9.0% of mass 95	805	6.70		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	10556	87.9		Pass
175	5.0 - 9.0% of mass 174	777	6.47	(7.36) [a]	Pass
176	95.0 - 101.0% of mass 174	10115	84.2	(95.8) [a]	Pass
177	5.0 - 9.0% of mass 176	670	5.58	(6.62) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5558-IC5558	1B115660.D	07/09/18	17:48	00:35	Initial cal 0.2
V1B5558-IC5558	1B115661.D	07/09/18	18:19	01:06	Initial cal 0.5
V1B5558-IC5558	1B115662.D	07/09/18	18:51	01:38	Initial cal 1
V1B5558-IC5558	1B115663.D	07/09/18	19:23	02:10	Initial cal 2
V1B5558-IC5558	1B115664.D	07/09/18	19:55	02:42	Initial cal 5
V1B5558-ICC5558	1B115665.D	07/09/18	20:26	03:13	Initial cal 10
V1B5558-IC5558	1B115666.D	07/09/18	20:58	03:45	Initial cal 20
V1B5558-IC5558	1B115667.D	07/09/18	21:29	04:16	Initial cal 40
V1B5558-IC5558	1B115668.D	07/09/18	22:01	04:48	Initial cal 80
V1B5558-ICV5558	1B115671.D	07/09/18	23:36	06:23	Initial cal verification 10

Instrument Performance Check (BFB)

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V1B5559-BFB
Lab File ID: 1B115678.D
Instrument ID: GCMS1B
Injection Date: 07/10/18
Injection Time: 12:31

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	2496	18.2		Pass
75	30.0 - 80.0% of mass 95	7022	51.2		Pass
95	Base peak, 100% relative abundance	13704	100.0		Pass
96	5.0 - 9.0% of mass 95	900	6.57		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	12118	88.4		Pass
175	5.0 - 9.0% of mass 174	821	5.99	(6.78) [a]	Pass
176	95.0 - 101.0% of mass 174	11653	85.0	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	794	5.79	(6.81) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1B5559-BS	1B115679.D	07/10/18	13:15	00:44	Blank Spike
V1B5559-CC5558	1B115679.D	07/10/18	13:15	00:44	Continuing cal 5
V1B5559-MB	1B115680.D	07/10/18	13:47	01:16	Method Blank
ZZZZZZ	1B115681.D	07/10/18	14:43	02:12	(unrelated sample)
ZZZZZZ	1B115682.D	07/10/18	15:14	02:43	(unrelated sample)
JC69420-2	1B115683.D	07/10/18	15:46	03:15	(used for QC only; not part of job JC69085)
JC69420-3	1B115684.D	07/10/18	16:18	03:47	(used for QC only; not part of job JC69085)
JC69085-1	1B115685.D	07/10/18	16:49	04:18	RW-12270CM-062818
JC69085-2	1B115686.D	07/10/18	17:21	04:50	RW-12270CM-062818-F
JC69420-3MS	1B115687.D	07/10/18	17:53	05:22	Matrix Spike
JC69420-2DUP	1B115688.D	07/10/18	18:24	05:53	Duplicate
JC69085-3	1B115689.D	07/10/18	18:56	06:25	TRIP BLANK
ZZZZZZ	1B115690.D	07/10/18	19:27	06:56	(unrelated sample)
ZZZZZZ	1B115691.D	07/10/18	19:59	07:28	(unrelated sample)
ZZZZZZ	1B115692.D	07/10/18	20:31	08:00	(unrelated sample)
ZZZZZZ	1B115693.D	07/10/18	21:03	08:32	(unrelated sample)
ZZZZZZ	1B115694.D	07/10/18	21:34	09:03	(unrelated sample)
ZZZZZZ	1B115695.D	07/10/18	22:06	09:35	(unrelated sample)
ZZZZZZ	1B115696.D	07/10/18	22:37	10:06	(unrelated sample)
ZZZZZZ	1B115697.D	07/10/18	23:09	10:38	(unrelated sample)
ZZZZZZ	1B115698.D	07/10/18	23:40	11:09	(unrelated sample)
ZZZZZZ	1B115699.D	07/11/18	00:11	11:40	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample:	V3A6904-BFB	**Injection Date:**	06/02/18
Lab File ID:	3A160056.D	**Injection Time:**	15:09
Instrument ID:	GCMS3A		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	15680	20.2		Pass
75	30.0 - 60.0% of mass 95	39842	51.4		Pass
95	Base peak, 100% relative abundance	77501	100.0		Pass
96	5.0 - 9.0% of mass 95	5231	6.75		Pass
173	Less than 2.0% of mass 174	249	0.32	(0.37) [a]	Pass
174	50.0 - 120.0% of mass 95	66717	86.1		Pass
175	5.0 - 9.0% of mass 174	5285	6.82	(7.92) [a]	Pass
176	95.0 - 101.0% of mass 174	66208	85.4	(99.2) [a]	Pass
177	5.0 - 9.0% of mass 176	4250	5.48	(6.42) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6904-IC6904	3A160057.D	06/02/18	15:42	00:33	Initial cal 0.25
V3A6904-IC6904	3A160058.D	06/02/18	16:09	01:00	Initial cal 0.4
V3A6904-IC6904	3A160059.D	06/02/18	16:35	01:26	Initial cal 1
V3A6904-IC6904	3A160060.D	06/02/18	17:01	01:52	Initial cal 2
V3A6904-IC6904	3A160061.D	06/02/18	17:27	02:18	Initial cal 5
V3A6904-ICC6904	3A160062.D	06/02/18	17:53	02:44	Initial cal 20
V3A6904-IC6904	3A160063.D	06/02/18	18:19	03:10	Initial cal 50
V3A6904-IC6904	3A160064.D	06/02/18	18:45	03:36	Initial cal 100
V3A6904-IC6904	3A160065.D	06/02/18	19:11	04:02	Initial cal 200
V3A6904-ICV6904	3A160070.D	06/02/18	21:22	06:13	Initial cal verification 20

Instrument Performance Check (BFB)

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Sample: V3A6918-BFB
Lab File ID: 3A160340.D
Instrument ID: GCMS3A
Injection Date: 07/03/18
Injection Time: 11:53

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	30669	20.1		Pass
75	30.0 - 60.0% of mass 95	74968	49.2		Pass
95	Base peak, 100% relative abundance	152469	100.0		Pass
96	5.0 - 9.0% of mass 95	10430	6.84		Pass
173	Less than 2.0% of mass 174	1243	0.82	(0.95) [a]	Pass
174	50.0 - 120.0% of mass 95	130272	85.4		Pass
175	5.0 - 9.0% of mass 174	9756	6.40	(7.49) [a]	Pass
176	95.0 - 101.0% of mass 174	124866	81.9	(95.9) [a]	Pass
177	5.0 - 9.0% of mass 176	9065	5.95	(7.26) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3A6918-CC6904	3A160341.D	07/03/18	12:26	00:33	Continuing cal 5
V3A6918-BS	3A160342.D	07/03/18	13:50	01:57	Blank Spike
V3A6918-BSD	3A160343.D	07/03/18	14:18	02:25	Blank Spike Duplicate
V3A6918-MB	3A160345.D	07/03/18	15:11	03:18	Method Blank
JC69097-1	3A160346.D	07/03/18	15:46	03:53	(used for QC only; not part of job JC69085)
ZZZZZZ	3A160347.D	07/03/18	16:12	04:19	(unrelated sample)
ZZZZZZ	3A160348.D	07/03/18	16:39	04:46	(unrelated sample)
ZZZZZZ	3A160349.D	07/03/18	17:05	05:12	(unrelated sample)
JC69097-1MS	3A160350.D	07/03/18	17:31	05:38	Matrix Spike
JC69097-1MSD	3A160351.D	07/03/18	17:57	06:04	Matrix Spike Duplicate
JC69085-3	3A160353.D	07/03/18	18:50	06:57	TRIP BLANK
JC69085-1	3A160354.D	07/03/18	19:16	07:23	RW-12270CM-062818
JC69085-2	3A160355.D	07/03/18	19:43	07:50	RW-12270CM-062818-F
ZZZZZZ	3A160357.D	07/03/18	20:35	08:42	(unrelated sample)
ZZZZZZ	3A160358.D	07/03/18	21:01	09:08	(unrelated sample)
ZZZZZZ	3A160359.D	07/03/18	21:28	09:35	(unrelated sample)
ZZZZZZ	3A160360.D	07/03/18	21:54	10:01	(unrelated sample)

Surrogate Recovery Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: EPA 524.2 REV 4.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
JC69085-1	1B115685.D	92	83
JC69085-2	1B115686.D	89	81
JC69085-3	1B115689.D	91	81
JC69420-2DUP	1B115688.D	90	82
JC69420-3MS	1B115687.D	97	96
V1B5559-BS	1B115679.D	100	100
V1B5559-MB	1B115680.D	93	86

Surrogate Compounds	Recovery Limits
S1 = 1,2-Dichlorobenzene-d4	70-130%
S2 = 4-Bromofluorobenzene	70-130%

Surrogate Recovery Summary

Job Number: JC69085
Account: ESCVAR WSP Environment & Energy
Project: Kop-Flex, Hanover, VA

Method: SW846 8260C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1
JC69085-1	3A160354.D	117
JC69085-2	3A160355.D	110
JC69085-3	3A160353.D	101
JC69097-1MS	3A160350.D	117
JC69097-1MSD	3A160351.D	126
V3A6918-BS	3A160342.D	113
V3A6918-BSD	3A160343.D	112
V3A6918-MB	3A160345.D	116

Surrogate Compounds	Recovery Limits
S1 = 1,4-Dioxane-d8	51-175%

ENCLOSURE B – SUMMARY OF OFFSITE MONITORING WELL INSTALLATION

SUMMARY OF OFFSITE MONITORING WELL INSTALLATION ACTIVITIES
FORMER KOP-FLEX FACILITY SITE
HANOVER, MARYLAND

OVERVIEW

Results of previous groundwater investigations indicated that contaminants associated with the Former Kop-Flex Facility Site (Site) had migrated offsite to the south and southeast in the deeper confined portion of the local aquifer system. The primary contaminants of concern in the offsite groundwater system include chlorinated volatile organic compounds (VOCs), particularly 1,1,1-trichloroethane (TCA) and its degradation products (*e.g.*, 1,1-dichloroethane [DCA] and 1,1-dichloroethene [1,1-DCE]), and the solvent additive 1,4-dioxane. Given the presence of VOC-affected groundwater in the offsite area, a groundwater monitoring program has been developed in conjunction with the onsite response actions, which included the installation of additional monitoring wells to better characterize and monitor the groundwater quality hydraulically downgradient of the Site. The sampling data provided by the augmented offsite monitoring well network would be evaluated to assess temporal changes in VOC concentrations in groundwater and the aquifer system and detect impacts to portions of the aquifer system utilized as a potable water source by residents in the Severn area.

In March and April 2018, six additional wells (MW-29D, MW-30-273, MW-30D-413, MW-32D, MW-34D, and MW-36D) were installed in accordance with the Offsite Groundwater Monitoring Plan (September 2015) approved by the MDE and USEPA. The locations for the new monitoring wells are shown in Figure B-1. Four of the six wells – MW-29D, MW-30D-273, MW-32D, and MW-34D – were completed in the confined portion of the Lower Patapsco aquifer. The deeper well at the MW-30 location (MW-30D-413) and MW-36D were screened in the underlying Patuxent aquifer. The intended purposes of each well location are summarized below:

- MW-29D – delineate the eastern boundary of the site-related VOC plume in the area north of Minnetonka Road and west of Twin Oaks Road.
- MW-30D well pair – characterize groundwater quality in the Lower Patapsco and Patuxent aquifers within the downgradient portion of the VOC plume and the area hydraulically upgradient of the residential neighborhoods along Old Camp Meade Road and the Andorick Acres sub-division.
- MW-32D – further define the western boundary of the site-related VOC plume in the area around Severn Station Road.
- MW-34D – obtain groundwater quality data to help constrain the downgradient limit of the site-related VOC plume in the Lower Patapsco aquifer.
- MW-36D – evaluate groundwater quality in the Patuxent aquifer in the portion of the Harmans Woods sub-division where the site-related VOC plume is present in the overlying Lower Patapsco aquifer.

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As with the previously installed (2014) monitoring wells, all new wells were located in the right-of-way (ROW) areas of public roads in Severn, Maryland.

WELL INSTALLATION ACTIVITIES

PERMITTING

The field activities required the issuance of the following permits by Anne Arundel County for each location:

- Well installation permit (Department of Health)
- ROW permits (Department of Public Works)

The well installation permits were obtained by the Maryland-licensed drilling contractor – Cascade Drilling LLC. WSP applied for the ROW permit for all locations, and the Anne Arundel County of Public Works issued Permit 51590 for the work on February 1, 2018. The ROW permit included the implementation of county-approved traffic control plans for each location and the distribution of drilling notification letters to local residents to inform them of the upcoming work.

DRILLING AND BOREHOLE LOGGING

For each new monitoring well, the roto-sonic drilling method was used to advance a nominal 6-inch-diameter borehole at the easement location designated in the ROW permit. During borehole advancement, continuous, 10-foot (FT) or 20-FT long cores of the unconsolidated aquifer materials were obtained using a 4-inch-diameter coring system. The recovered material from each core run was logged by a WSP Geologist, and the descriptive information recorded in a bound field notebook. Lithologic logs for each well borehole are included in Appendix A.

For the boreholes completed into the Patuxent aquifer at the MW-30 and MW-36 locations, borehole advancement was halted once the dark-colored, carbonaceous clayey sediments indicative of the Arundel Clay were encountered to allow for the setting of a temporary casing to hydraulically seal off the overlying Lower Patapsco aquifer. The installation of the temporary casing involved over-drilling of the 6-inch diameter borehole using nominal 7-inch diameter steel casing and then seating this casing a minimum of 2 FT into the clayey deposits. After placement of the 7-inch temporary casing, the drilling of the 6-inch diameter borehole continued to the final termination depth.

DEPTH-DISCRETE GROUNDWATER SAMPLING

FIELD METHODS

During the advancement of each well borehole, groundwater profiling was conducted over selected intervals within the confined portion of the aquifer system. The profiling involved the collection, field screening, and laboratory analysis of depth-discrete groundwater samples from sand zones within the hydrogeologic units. No samples were collected from the predominately fine-grained (clay) deposits in the Lower Patapsco aquifer or Arundel Clay confining unit. When a thick layer of clayey sediments was encountered during the profiling activities in the Lower Patapsco aquifer, the profiling activities were temporarily suspended to determine whether to continue advancing the borehole, or halt the drilling and sampling activities and determine the appropriate depth to install the well. Information on the borehole depths and profiling intervals at each drilling location, in total feet below ground surface (BGS), are provided in the table on Page 4. For the MW-30 location, depth-discrete groundwater samples were only collected from the deeper well borehole that was drilled into the upper portion of the Patuxent aquifer; no groundwater profiling was conducted while drilling the MW-30D-273 well borehole.

Upon reaching a suitable sampling point within the depth interval of interest, a 5-foot long screen point sampler was placed down-hole and isolated from the drilling fluid inside the 6-inch over-ride casing using a K-packer. The over-ride casing was pulled back 5 FT to expose the screen point to the surrounding aquifer material. A Grundfos Redi-Flo2® submersible sampling pump with dedicated

polyethylene water discharge tubing was then lowered down the drill rods and set in the upper portion of the exposed screen point. The discharge tubing was connected to a flow-thru cell fitted with a Horiba U-52 multi-parameter water quality meter at the drilling platform. Water was continuously purged from the sampler to ensure the collection of groundwater representative of the natural aquifer conditions and free of fluid used during the drilling activities. During sampler purging, field parameters, including temperature, pH, specific conductance, oxidation-reduction potential (ORP), and turbidity, were monitored at 5 to 10-minute intervals, and the measurements recorded in the field notebook. Groundwater samples were collected for field screening and laboratory analysis after stabilization of the field parameters and the water pH was at slightly acidic values indicative of the hydrogeochemical system.

Groundwater samples were screened in the field for 1,1-DCE using the Color-Tec screening procedure. A description of this field screening procedure is provided in Appendix B. The 1,1-DCE Color-Tec screening results for each sample are included in Tables B-1 through B-5. Additionally, each depth-discrete sample was submitted to a local analytical laboratory – Phase Separation Science – for VOC analysis using U.S. Environmental Protection Agency (EPA) SW-846 Test Method 8260B. All samples and associated trip blanks were analyzed on a less than 24-hour turn-around time.

SAMPLING RESULTS

The laboratory analytical results for the depth-discrete groundwater samples from the well boreholes are summarized in Tables B-1 through B-5. Copies of the certified laboratory reports are included in Appendix C.

Chlorinated VOCs were detected in groundwater samples from the Lower Patapsco aquifer at the MW-30 and MW-36 drilling locations. No site-related VOCs were found at concentrations above the method detection limits in the samples from the MW-29, MW-32, and MW-34 locations.

The maximum concentrations of site-related VOCs were found in the Lower Patapsco aquifer samples collected from 201-206 FT BGS and 211-216 FT BGS from the MW-36 well borehole (Table B-5). Various chlorinated ethanes and ethenes were detected in these samples, with 1,1-DCE present at concentrations of 110 µg/l in the 201 to 206-foot sample and 130 µg/l in the 211 to 216-foot sample. These levels are above the Groundwater Quality Standard for this compound of 7 µg/l. VOC concentrations showed a noticeable decrease in the deeper sample from the Lower Patapsco aquifer, which was collected from 231-236 FT BGS. For this depth-discrete sample, the only chlorinated VOC detected was 1,1-DCE at a concentration of 7 µg/l (Table B-5). No VOCs were detected in the 281 to 286-foot sample, which was collected from an isolated sand layer within the Arundel Clay. At the MW-30 location, very low concentrations of 1,1-DCE, ranging from 1.1 micrograms per liter (µg/l) to 6.3 µg/l, were found in 4 of the 7 Lower Patapsco aquifer samples, with the highest level present in the 271 to 276-foot sample (Table B-2). The samples collected from 291-296 FT BGS and 311-216 FT BGS, which had 1,1-DCE concentrations of less than 3.5 µg/l, were collected from sandy layers within a gradational (transition) zone between the more sand-rich deposits of the Lower Patapsco hydrogeologic unit and the fine-grained sediments of the underlying Arundel Clay. None of the 1,1-DCE concentrations detected in the depth-discrete samples from the MW-30 location exceeded the applicable Groundwater Quality Standard.

The two deepest groundwater samples from both the MW-30 and MW-36 locations were collected from the permeable sand deposits comprising the Patuxent aquifer. As indicated in Tables B-2 and B-5, no site-related VOCs were detected above the method detection limits in these samples.

WELL DESIGN AND CONSTRUCTION

SELECTION OF WELL SCREEN INTERVAL

After completion of the drilling and depth-discrete sampling, WSP reviewed the lithologic and groundwater profiling data to determine the screen interval for the monitoring well at each location. For wells completed in the Lower Patapsco aquifer, placement of the well screen was guided by the the depth-discrete groundwater sample results. Given the lack of VOC detections in the depth-discrete groundwater samples from the MW-29, MW-32, and MW-34 locations, historical groundwater quality data from existing

monitoring wells and private (residential) wells in the area was reviewed in determining the screen depths. For the Patuxent aquifer wells at the MW-30 and MW-36 locations, the screen interval was set in the upper 20 FT of the sand deposits underlying the Arundel Clay. The selected well screen intervals determined from evaluation of the available hydrostratigraphic and groundwater quality data are provided in the table below.

Well Location	Borehole Depth (feet BGS)	Depth-Discrete Groundwater Sample Interval (feet BGS)	Screen Interval for Monitoring Well (feet BGS)
MW-29	216	140 – 205 (LPA)	141-151
MW-30	416	210 – 315 (LPA → AC) 400-415 (PA)	263-273 403-413
MW-32	266	170 – 265 (LPA)	226-236
MW-34	425	320 – 405 (LPA → AC)	375-385
MW-36	366	200 -235 (LPA) 280-285 (AC) 350 -365 (PA)	350-360

LPA = Lower Patapsco aquifer; AC = Arundel Clay; PA = Patuxent aquifer

BGS = below ground surface

INSTALLATION AND SEALING

After determining the appropriate screen depth(s) at a given location, the borehole was completed as a groundwater monitoring well. Since the wells were installed above the borehole termination depth, each borehole was backfilled with bentonite chips to allow for setting the well screen at the designated depth. Since the wells comprising the MW-30D well pair would be installed separately to ensure the collection of representative hydrologic and hydrogeochemical information, the deeper borehole was initially drilled and profiled to gather the necessary lithologic and groundwater quality data over the entire portion of the aquifer system of interest. After installing the well in the Patuxent aquifer, the borehole for the Lower Patapsco aquifer well was advanced to the selected completion depth, which was determined after reviewing the data from the deeper well boring. As indicated above, no depth-discrete groundwater sampling was conducted while drilling the borehole for the well completed in the Lower Patapsco aquifer.

Each monitoring well was constructed of threaded, flush-joint, 2.5-inch inside diameter, Schedule 80 polyvinyl chloride (PVC) casing. The well screen was 10 feet in length and comprised of 0.020-inch horizontal slots. A filter pack consisting of clean quartz sand (20 grade) was placed in the annular space from the top of the bentonite hole plug to a minimum of at least 5 feet above the top of the well screen. A minimum 3-foot-thick bentonite seal was then placed above the sand filter pack. The remainder of the annular space was tremie-grouted using a cement-bentonite mixture prepared in accordance with the requirements specified in the Maryland well construction standards (COMAR 26.04.04.07.G[4][a]). Each monitoring well was secured at the surface with a removable locking cap and covered with a traffic-rated protective steel cover set in a 2-foot square, flush-grade concrete pad. Schematic as-built construction diagrams of each monitoring well are included with the boring logs in Enclosure A.

WELL DEVELOPMENT

All monitoring wells were developed by either removing water using a submersible pump (MW-29D, MW-30D-273, and MW-32D) or pumping and surging with an air-lift system (MW-30-413, MW-34D, and MW-36D). Groundwater geochemical parameters and turbidity were monitored every 5-10 minutes during the development activities, and the measurements were recorded in a field notebook. The pumping of water continued until a relatively clear, low turbidity discharge was obtained from the well and

geochemical parameter measurements for the well discharge exhibited generally stable values representative of the aquifer conditions. Copies of the well development logs can be found in Appendix D.

MANAGEMENT OF DRILLING WASTE

WASTE CONTAINMENT AND STORAGE

Three types of waste were generated during the drilling and well installation activities:

- Soil material from the roto-sonic coring system
- High solids content drilling water
- Low solids content groundwater from the depth-discrete groundwater sampling and well development

All soil material and development water were placed into Department of Transportation (DOT)-compliant 55 gallon steel drums. The drilling water and purge water from the depth-discrete sampling were contained in 275-gallon polyethylene totes. Each waste container was labeled as "NON-HAZARDOUS WASTE" at the time of generation at the drilling site. The containers were temporarily stored at the respective drilling location and later moved to a secure public storage facility in the area.

WASTE CHARACTERIZATION AND DISPOSAL

Representative grab samples of the soil material and high solids drilling water were collected during advancement of each well borehole through the confined portion of the Lower Patapsco aquifer to characterize these waste streams for disposal. Each sample was analyzed for VOCs using USEPA SW-846 Test Method 8260B. The analytical results for the depth-discrete groundwater samples were used to characterize the VOC concentrations in the low solids purge water and development water.

Based on laboratory analytical results, all waste streams were classified as non-hazardous. (Copies of the laboratory analytical reports are included in Appendix E.) After finalizing the appropriate classification for the wastes from a given location, WSP coordinated with Clean Harbors, an Emerson-approved waste disposal contractor, for the pickup and transport of the waste from the public storage units. Waste manifests and other shipping documents for each pickup were prepared by Clean Harbors, and reviewed and approved by WSP. All soil and water was managed as non-hazardous waste at a Clean Harbor's treatment, storage, and disposal facility. Copies of the completed waste manifests can be found in Appendix F.

WELL SURVEYING

In early May 2018, a surveyor licensed in the State of Maryland surveyed the locations and elevations of the newly installed monitoring wells. The elevations of the ground surface and top of the PVC well casing was surveyed to the nearest 0.01 foot at each well. The horizontal locations of the wells were determined to the nearest 0.1 foot. The location and elevation data referenced the Maryland State Plane coordinate system and NAVD1988 datum, respectively.

FIGURES


MW-27D
MW-46D
MW-23D
MW-16D
MW-40D
MW-41D
RW-2D
MW-22D
MW-21D
RW-1D
MW-1D
WILLIAMS SCOTSMAN, INC.
MW-24D
STONY RUN
ROUTE 100
PENN CENTRAL RAILROAD TRACKS
OLD VICTORIA LANE
MW-25/MW-25D
MW-29D
MW-36D
MW-28/MW-28D
MW-30D
MW-32D
MW-33D
MW-31D
MW-35D
MW-34D
MANNAKEE ROAD
MORGAN STATION DRIVE
MARYLAND ROAD
HARDWICK DRIVE
RIDGE ROAD
SEVERN ELEMENTARY SCHOOL
OLD CAMP MEADE ROAD
SEVERN SIMON ROAD
SEVERN POST OFFICE
PIEDMONT AVENUE
ELKRIDGE ROAD - ROUTE 170
OLD DONALDSON AVE
PIECE ROAD - ROUTE 713
TEABERRY LANE
BUTLERSFIELD ROAD
PRICE VIEW DRIVE
ANDY ROAD
HENDRICKS CIRCLE
COMMA AVE
NEW DISNEY ROAD
RITHERDON DRIVE
SEVERN ROAD
SEVERN GREEN ROAD
SEVERN CROSSING
SEVERN RUN COURT
SEVERN RUN ROAD
SEVERN RUN CIRCLE
SEVERN RUN DRIVE
SEVERN RUN TERRACE
SEVERN RUN WAY
SEVERN RUN PLACE
SEVERN RUN LANE

TABLES

Table B-1

Groundwater Profiling Results
Monitoring Well MW-29 Borehole
Former Kop Flex Facility
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-29 141-146 3/6/2018	MW-29 151-156 3/6/2018	MW-29 181-184 3/6/2018	MW-29 201-206 3/7/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE Color-Tec Result (ppm)			<0.4	<0.4	<0.4	<0.4
Temperature (°C)			17.25	16.33	5.83	5.95
pH (s.u.)			5.50	5.51	5.57	6.63
Conductivity (mS/cm)			0.09	0.016	0.054	0.137
ORP (mV)			49	82	18	-482

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
b/ All concentrations in micrograms per liter (µg/l)
c/ **Bold** and highlighted values indicate an exceedence of the Groundwater Quality Standards

Table B-2

Groundwater Profiling Results
Monitoring Well MW-30D-413 Borehole
Former Kop Flex Facility
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-30D-413 211-216 3/29/2018	MW-30D-413 221-226 3/29/2018	MW-30D-413 241-246 3/29/2018	MW-30D-413 271-276 3/30/2018	MW-30D-413 281-286 3/30/2018	MW-30D-413 291-296 4/2/2018	MW-30D-413 311-316 4/2/2018	MW-30D-413 401-406 4/5/2018	MW-30D-413 411-416 4/5/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.1	1.0 U	6.3	1.0 U	2.4	3.1	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE Color-Tec Result (ppm)			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Temperature (°C)			19.86	18.09	19.49	16.93	18.74	15.52	16.3	15.27	16.5
pH (s.u.)			6.14	5.80	6.01	5.98	6.24	4.83	5.89	6.30	6.34
Conductivity (mS/cm)			0.083	0.071	0.074	0.050	0.072	0.076	0.041	0.050	0.041
ORP (mV)			-64	-446	-313	-554	-534	-441	17	35	-48

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
b/ All concentrations in micrograms per liter (µg/l)
c/ **Bold** and highlighted values indicate an exceedence of the Groundwater Quality Standards

Table B-3

Groundwater Profiling Results
Monitoring Well MW-32 Borehole
Former Kop Flex Facility
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-32 171-176 3/13/2018	MW-32 191-196 3/13/2018	MW-32 201-206 3/13/2018	MW-32 211-216 3/14/2018	MW-32 221-226 3/14/2018	MW-32 231-236 3/14/2018	MW-32 261-266 3/15/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE Color-Tec Result (ppm)			<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4
Temperature (°C)			15.64	16.1	16	14.73	14.52	14.5	14.99
pH (s.u.)			6.80	5.62	5.58	6.64	6.47	5.99	6.52
Conductivity (mS/cm)			0.066	0.044	0.041	0.048	0.038	0.037	0.046
ORP (mV)			-212	75	-56	-80	27	18	74

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
b/ All concentrations in micrograms per liter (µg/l)
c/ **Bold** and highlighted values indicate an exceedence of the Groundwater Quality Standards

Table B-4

Groundwater Profiling Results
Monitoring Well MW-34 Borehole
Former Kop Flex Facility
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-34 320-325 4/16/2018	MW-34 330-335 4/16/2018	MW-34 360-365 4/17/2018	MW-34 380-385 4/18/2018	MW-34 400-405 4/18/2018
1,1-Dichloroethane	90		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE Color-Tec Result (ppm)			<0.4	<0.4	<0.4	<0.4	<0.4
Temperature (°C)			19.63	19.41	16.12	15.52	16.15
pH (s.u.)			5.97	6.88	6.56	6.11	6.40
Conductivity (mS/cm)			0.106	0.113	0.216	0.242	0.225
ORP (mV)			-2.0	-192	-160	-40	7.0

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
b/ All concentrations in micrograms per liter (µg/l)
c/ **Bold** and highlighted values indicate an exceedence of the Groundwater Quality Standards

Table B-5

Groundwater Profiling Results
Monitoring Well MW-36 Borehole
Former Kop Flex Facility
Hanover, Maryland

Analyte	Groundwater Quality Standards	Well Location Depth (ft bgs) Sample Date	MW-36 201-206 3/20/2018	MW-36 211-216 3/20/2018	MW-36 231-236 3/21/2018	MW-36 281-286 3/23/2018	MW-36 351-356 3/26/2018	MW-36 361-366 3/26/2018
1,1-Dichloroethane	90		5.5	5.0	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	5		1.4	1.4	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	7		**110**	**130**	7.0	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	200		2.1	2.8	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5		1.0 U	1.2	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE Color-Tec Result (ppm)			0.5	0.5	<0.4	<0.4	<0.4	<0.4
Temperature (°C)			17.11	16.37	15.4	15.83	16.11	15.21
pH (s.u.)			7.32	6.39	6.76	5.700	7.17	6.93
Conductivity (mS/cm)			0.103	0.058	0.064	0.034	0.090	0.093
ORP (mV)			-209	-173	-288	7.0	21	16

a/ ft = feet, bgs = below ground surface, °C = degrees Celsius, s.u. = standard units,
mS/cm = millisiemens per centimeter, mV = millivolts
b/ All concentrations in micrograms per liter (µg/l)
c/ **Bold** and highlighted values indicate an exceedence of the Groundwater Quality Standards

APPENDIX A – BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

Project Name: Kop-Flex	**Client:** Emerson	**Location:** Hanover, Maryland	**Boring Log:** *MW-29D*
Drilled By: Cascade Drilling/Josh Sigler	**Drill Start Date:** 3/5/2018	**Drill End Date:** 3/9/2018	**Drill Method:** Rotosonic
Logged By: Chris Cresci	**Total Depth (ft):** 216	**Bore Diameter (in):** 6	**Ground Surface (ft):** 132.44

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN — Parameter — MAX)	Well
					Ground Surface		
					0.3 ***ASPHALT*** Asphalt Top		
					LEAN CLAY WITH SAND (CL) 5YR-4/4 lean clay with silt and trace fine sand; firm; low plasticity; low density; dry; slight white mottling.		
					7		
10	122				***LEAN CLAY (CL)*** 2.5YR-4/8 Red lean clay; slight white and dark red mottling; hard; dense; dry.		
20	112						
					24		
					POORLY-GRADED SAND (SP) 7.5YR-8/2 Poorly graded; fine to medium grained; loose; moist.		
30	102						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-29D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
50	82				***POORLY-GRADED SAND (SP)*** 7.5YR-8/2 Poorly graded; fine to medium grained; loose; moist. *(continued)*		
					57		
60	72				***LEAN CLAY WITH SAND (CL)*** 7.5YR-4/6 medium clay with trace sand; firm; medium plasticity; moist.		
					62		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 lean clay with sand; hard, medium to high density; some mottling; dry.		
					69		
70	62				***LEAN CLAY (CL)*** 2.5YR-4/6 lean clay; very hard; very dense; white mottling; dry.		
					72		
					LEAN CLAY WITH SAND (CL) 2.5YR-4/4 lean clay with sand; firm; medium plasticity; moist.		
80	52				80		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-29D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					SANDY LEAN CLAY (CL) 7.5YR-4/6 sandy lean clay; sand fine; soft; low density; no plasticity; wet. *(continued)*	85	
					LEAN CLAY (CL) 5YR-4/4 lean clay; very hard; very dense; some gray mottling; moist.		
90	42						
100	32						
						109	
110	22				***LEAN CLAY (CL)*** 10YR-5/1 and red lean clay; very hard; dense; dry.		
						113	
					SANDY LEAN CLAY (CL) 10YR-6/6 sandy lean clay with red mottling; soft; moist.		
						116	
					SANDY LEAN CLAY (CL) 2.5YR-4/8 sandy lean clay; sand fine; hard; very dense; dry.		
						119	
120	12				***LEAN CLAY WITH SAND (CL)*** 2.5-5/8 lean clay with fine sand; abundance of gray mottling; hard; very dense; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-29D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					127		
130	2				***SANDY LEAN CLAY (CL)*** 7.5YR-5/4 sandy lean clay; sand fine; loose; dry.		
					134		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 7.5YR-4/4 poorly graded fine sand with lean clay; loose; moist.		
					139		
140	-8				***POORLY-GRADED SAND (SP)*** 10YR-6/3 fine sand with rounded gravel; loose; moist.		
					142		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 lean clay with fine sand; firm; low density; low plasticty; dry-slightly moist. 144		
					WELL-GRADED SAND (SW) 7.5YR-6/3 fine to medium grained sand with rounded gravel; loose; moist.		
150	-18				151		
					CLAYEY SAND (SC) 10YR-8/2 fine grained clayey sand with trace gravel; firm; dense; wet.		
					157		
					LEAN CLAY (CL) 2.5YR-4/8 lean clay with trace fine sand and white mottling; hard; no plasticity; dry.		
160	-28						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-29D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
170	-38				***LEAN CLAY (CL)*** 2.5YR-4/8 lean clay with trace fine sand and white mottling; hard; no plasticity; dry. *(continued)*		
					174		
					WELL-GRADED SAND (SW) 5YR-7/2 fine to medium grained sand; soft; moist.		
					179		
180	-48				***LEAN CLAY WITH SAND (CL)*** 10YR-8/1 lean clay with fine sand and red mottling; firm; moist.		
					186		
					POORLY-GRADED SAND (SP) 2.5YR-4/8 fine to medium well sorted sand; trace clay; loose; moist.		
					189		
190	-58				***LEAN CLAY WITH SAND (CL)*** 10YR-7/2 lean clay with red mottling; trace fine sand; firm; low density; dry.		
					193		
					LEAN CLAY (CL) 2.5YR-4/8 lean clay; white mottling; low-medium plasticity; firm; dry 93-95, wet 95-96.		
					196		
					POORLY-GRADED SAND (SP) 7.5YR-4/4 fine to medium sand; loose; moist to wet.		
200	-68						
					204		
					LEAN CLAY (CL) 10YR-4/1 lean clay; trace fine sand; hard; dense; dry.		
					208		
210	-78				***POORLY-GRADED SAND (SP)*** 2.5YR-6/8 fine to medium well sorted sand; loose; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-29D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					212		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 lean clay with fine sand; hard; medium density; dry.		
					Bottom of Boring at 216 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.		
220	-88						
230	-98						
240	-108						
250	-118						

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Project Name: Kop-Flex	**Client:** Emerson	**Location:** Hanover, Maryland	**Boring Log:** *MW-30D-273*
Drilled By: Cascade Drilling/Josh Sigler	**Drill Start Date:** 4/9/2018	**Drill End Date:** 4/11/2018	**Drill Method:** Rotosonic
Logged By: Chris Cresci	**Total Depth (ft):** 276	**Bore Diameter (in):** 6	**Ground Surface (ft):** 153.54

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					Ground Surface		
					0.5 — ***ASPHALT TOP*** Asphalt		
					2 — ***WELL-GRADED GRAVEL (GW)*** Well graded gravel fill.		
					SANDY LEAN CLAY (CL) 10YR-6/6 Sandy lean clay; sand fine; firm, low plasticity; dry.		
					8		
10	144				***POORLY-GRADED SAND WITH CLAY (SP-SC)*** 10YR-6/8 Fine to medium sand wit lean clay; loose; dry.		
					19		
20	134				***LEAN CLAY WITH SAND (CL)*** 10YR-8/2 Lean clay with trace fine sand; hard; low to medium plasticity; dry.		
					29		
30	124				30 — ***WELL-GRADED SAND (SW)*** 10YR-6/6 Well graded sand; trace clay; loose; dry to slightly moist.		
					32 — ***LEAN CLAY (CL)*** 5YR-7/2 Lean clay with trace sand; hard; low plasticity; dense; dry.		
					35 — ***SANDY LEAN CLAY (CL)*** 10YR-6/8 Sandy lean clay; firm; low density; moist.		
					POORLY-GRADED SAND (SP) 10YR-6/8 Fine to medium sand; loose; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					40		
					LEAN CLAY (CL) 5YR-4/4 Lean clay; firm; low to medium plasticity; dense; dry.		
					44		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; some white mottling; broken up and loose; no placticity; dry.		
50	104						
					52		
					GRAVELLY LEAN CLAY WITH SAND (CL) 2.5YR-7/1 Lean clay with trace fine sand; red mottling; firm; low plasticity; medium density; dry.		
					55		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay with trace white mottling; hard, very dense; low to medium plasticity; moist.		
60	94						
					61		
					LEAN CLAY (CL) 5YR-4/2 Lean clay; very hard; very dense; low to medium plasticity; dry to slightly moist.		
70	84						
					77		
					LEAN CLAY WITH SAND (CL) 10YR-3/1 Dark lean clay with trace fine sand; hard, dense; low plasticity; dry.		
80	74						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Depth (ft) | Elevation (ft) | Type | Lab Sample | Graphic Log | Notes: | Physical Description | *In Situ* Testing Log (MIN / Parameter / MAX) | Well

LEAN CLAY WITH SAND (CL)
10YR-3/1 Dark lean clay with trace fine sand; hard, dense; low plasticity; dry. *(continued)*

90 — 64

95

LEAN CLAY (CL)
2.5YR-4/8 Lean clay; hard; dense; low plasticity; wet.

98

100 — 54

GRAVELLY LEAN CLAY WITH SAND (CL)
Lean clay with fine sand; hard; no plasticity; dry.

102

WELL-GRADED SAND WITH GRAVEL (SW)
10YR-6/6 Poorly sorted sand with trace rounded gravel; loose; dry.

107

WELL-GRADED GRAVEL (GW)
7.5YR-8/2 Poorly sorted gravel; loose; moist.

110 — 44

110

GRAVELLY LEAN CLAY (CL)
10YR-6/2 Gravelly lean clay; gravel rounded; loose; no plasticity; red mottling; dry.

114

POORLY-GRADED SAND WITH CLAY (SP-SC)
10YR-6/4 Fine sand with trace clay; loose; dry.

116

LEAN CLAY (CL)
2.5YR-4/8 Lean clay; hard; no plasticity; very dense; white mottling 129-131; dry.

120 — 34

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
130	24				***LEAN CLAY (CL)*** 2.5YR-4/8 Lean clay; hard; no plasticity; very dense; white mottling 129-131; dry. *(continued)*		
					138		
140	14				***LEAN CLAY WITH SAND (CL)*** 5YR-5/6 Lean clay with fine sand; trace gray mottling; firm; low-medium plasticity; medium density; moist.		
150	4						
					157		
160	-6				***SANDY LEAN CLAY (CL)*** 5YR-5/1 Sandy lean clay; sand fine; soft to firm; no to low plasticity; dry.		
					165		
					LEAN CLAY (CL) 5YR-3/1 Lean clay; very hard; very dense; no plasticity; dry.		

Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
170	-16				***LEAN CLAY (CL)*** 5YR-3/1 Lean clay; very hard; very dense; no plasticity; dry. *(continued)*		
					175		
					LEAN CLAY WITH SAND (CL) 2.5YR-5/8 Lean clay with trace fine sand; white mottling; hard; dense; no plasticity; dry.		
180	-26						
					184		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-6/6 Gravelly fine to medium sand with trace clay; gravel rounded; loose; dry to slightly moist.		
					187		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with fine sand; red mottling; hard; no plasticity; dry.		
190	-36						
200	-46						
					208		
210	-56				***WELL-GRADED SAND (SW)*** 10YR-7/6 Well sorted sand; loose; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					WELL-GRADED SAND (SW) 10YR-7/6 Well sorted sand; loose; moist. *(continued)*		
					215		
					POORLY-GRADED SAND (SP) 10YR-6/4 Poorly sorted fine sand; loose; moist.		
220	-66						
					223		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; white mottling; very hard; dense; no plasticity; moist.		
					228		
230	-76				***LEAN CLAY WITH SAND (CL)*** 10YR-7/2 Lean clay with trace fine sand; red mottling; hard; dense; no plasticity; dry.		
					232		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; some white mottling; hard; no plasticity; dry.		
					238		
240	-86				***POORLY-GRADED SAND (SP)*** 5YR-7/6 Poorly sorted sand; loose; dry to slightly moist.		
					246		
					SANDY LEAN CLAY (CL) 7.5YR-7/3 Sandy lean clay; sand fine; slight red mottling; firm; low-medium plasticity; dry. 248		
250	-96				***LEAN CLAY WITH SAND (CL)*** 10YR-7/1 Lean clay with trace fine sand; slight red mottling; hard; no to low plasticity; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-273*

Notes:

In Situ Testing Log (MIN / Parameter / MAX)

Well

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with trace fine sand; slight red mottling; hard; no to low plasticity; dry. *(continued)*
					257
					SANDY LEAN CLAY (CL) 10YR-7/1 Sandy lean clay; low plasticity; firm; moist.
260	-106				
					263
					CLAYEY SAND (SC) 10YR-7/3 Clayey sand; loose; dry to slightly moist.
					266
					POORLY-GRADED SAND (SP) 5YR-5/8 Poorly sorted sand; loose; wet.
					269
270	-116				***CLAYEY SAND (SC)*** 10YR-7/4 Clayey fine sand; loose; mottled; moist.
					274
					LEAN CLAY (CL) 5YR-5/8 Lean clay; hard; no plasticity; dry.
					Bottom of Boring at 276 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.
280	-126				
290	-136				

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*
Drilled By: Cascade Drilling/Josh Sigler	Drill Start Date: 3/28/2018	Drill End Date: 4/9/2018	Drill Method: Rotosonic
Logged By: Chris Cresci	Total Depth (ft): 416	Bore Diameter (in): 6	Ground Surface (ft): 153.13

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Ground Surface		
					0.5 — ***ASPHALT TOP*** Asphalt		
					2 — ***WELL-GRADED GRAVEL (GW)*** Well Graded gravel fill.		
					SANDY LEAN CLAY (CL) 10YR-6/6 Sandy lean clay; sand fine; firm, low plasticity; dry.		
					8		
10	143				***POORLY-GRADED SAND WITH CLAY (SP-SC)*** 10YR-6/8 Fine to medium grained sand wit lean clay; loose; dry.		
					19		
20	133				***LEAN CLAY WITH SAND (CL)*** 10YR-8/2 Lean clay with trace fine sand; hard; low-medium plasticity; dry.		
					29		
30	123				30 — ***WELL-GRADED SAND (SW)*** 10YR-6/6 Well graded sand; trace clay; loose; dry to slightly moist.		
					32 — ***LEAN CLAY (CL)*** 5YR-7/2 Lean clay with trace sand; hard; low plasticity; dense; dry.		
					35 — ***SANDY LEAN CLAY (CL)*** 10YR-6/8 Sandy lean clay; firm; low density; moist.		
					POORLY-GRADED SAND (SP) 10YR-6/8 Fine to medium grained sand; loose; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					40		
					LEAN CLAY (CL) 5YR-4/4 Lean clay; firm; low to medium plasticity; dense; dry.		
					44		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; some white mottling; broken up and loose; no placticity; dry.		
50	103						
					52		
					GRAVELLY LEAN CLAY WITH SAND (CL) 2.5YR-7/1 Lean clay with trace fine sand; red mottling; firm; low plasticity; medium density; dry.		
					55		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay with trace white mottling; Hard, very dense; low to medium plasticity; moist.		
60	93						
					61		
					LEAN CLAY (CL) 5YR-4/2 Lean clay; very hard; very dense; low to medium plasticity; dry to slightly moist.		
70	83						
					77		
					LEAN CLAY WITH SAND (CL) 10YR-3/1 Dark lean clay with trace fine sand; hard, dense; low plasticity; dry.		
80	73						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
90	63				***LEAN CLAY WITH SAND (CL)*** 10YR-3/1 Dark lean clay with trace fine sand; hard, dense; low plasticity; dry. *(continued)*		
					95		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; hard; dense; low plasticity; wet.		
					98		
100	53				***GRAVELLY LEAN CLAY WITH SAND (CL)*** Lean clay with fine sand; hard; no plasticity; dry.		
					102		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-6/6 Poorly sorted sand with trace rounded gravel; loose; dry.		
					107		
					WELL-GRADED GRAVEL (GW) 7.5YR-8/2 Poorly sorted gravel; loose; moist.		
110	43				110		
					GRAVELLY LEAN CLAY (CL) 10YR-6/2 Gravelly lean clay; gravel rounded; loose; no plasticity; red mottling; dry.		
					114		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 10YR-6/4 Fine sand with trace clay; loose; dry.		
					116		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; hard; no plasticity; very dense; white mottling 129-131; dry.		
120	33						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
130	23				***LEAN CLAY (CL)*** 2.5YR-4/8 Lean clay; hard; no plasticity; very dense; white mottling 129-131; dry. *(continued)*		
					138		
140	13				***LEAN CLAY WITH SAND (CL)*** 5YR-5/6 lean clay with fine sand; trace gray mottling; firm; low-medium plasticity; medium density; moist.		
150	3						
					157		
160	-7				***SANDY LEAN CLAY (CL)*** 5YR-5/1 Sandy lean clay; sand fine; soft to firm; no-low plasticity; dry.		
					165		
					LEAN CLAY (CL) 5YR-3/1 Lean clay; very hard; very dense; no plasticity; dry.		

Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN — Parameter — MAX)	Well
170	-17				***LEAN CLAY (CL)*** 5YR-3/1 Lean clay; very hard; very dense; no plasticity; dry. *(continued)*		
					175		
					LEAN CLAY WITH SAND (CL) 2.5YR-5/8 Lean clay with trace fine sand; white mottling; hard; dense; no plasticity; dry.		
180	-27						
					184		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-6/6 Gravelly fine to medium sand with trace clay; gravel rounded; loose; dry to slightly moist.		
					187		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with fine sand; red mottling; hard; no plasticity; dry.		
190	-37						
200	-47						
					208		
210	-57				***WELL-GRADED SAND (SW)*** 10YR-7/6 Well sorted sand; loose; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN — Parameter — MAX)	Well
					WELL-GRADED SAND (SW) 10YR-7/6 Well sorted sand; loose; moist. *(continued)*		
					215		
					POORLY-GRADED SAND (SP) 10YR-6/4 Poorly sorted fine sand; loose; moist.		
220	-67						
					223		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; white mottling; very hard; dense; no plasticity; moist.		
					228		
230	-77				***LEAN CLAY WITH SAND (CL)*** 10YR-7/2 Lean clay with trace fine sand; red mottling; hard; dense; no plasticity; dry.		
					232		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; some white mottling; hard; no plasticity; dry.		
					238		
240	-87				***POORLY-GRADED SAND (SP)*** 5YR-7/6 Poorly sorted sand; loose; dry to slightly moist.		
					246		
					SANDY LEAN CLAY (CL) 7.5YR-7/3 Sandy lean clay; sand fine; slight red mottling; firm; low-medium plasticity; dry. 248		
250	-97				***LEAN CLAY WITH SAND (CL)*** 10YR-7/1 Lean clay with trace fine sand; slight red mottling; hard; no to low plasticity; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with trace fine sand; slight red mottling; hard; no to low plasticity; dry. *(continued)*		
					257		
					SANDY LEAN CLAY (CL) 10YR-7/1 Sandy lean clay; low plasticity; firm; moist.		
260	-107						
					263		
					CLAYEY SAND (SC) 10YR-7/3 Clayey sand; loose; dry to slightly moist.		
					266		
					POORLY-GRADED SAND (SP) 5YR-5/8 Poorly sorted sand; loose; wet.		
					269		
270	-117				***CLAYEY SAND (SC)*** 10YR-7/4 Clayey fine sand; loose; mottled; moist.		
					274		
					LEAN CLAY (CL) 5YR-5/8 Lean clay; hard; no plasticity; dry.		
					277		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 7.5YR-5/8 Fine sand with trace clay; loose; wet.		
280	-127				280		
					CLAYEY SAND (SC) 10YR-8/1 Clayey fine sand; lean clay; firm; moist.		
					284		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with fine sand; hard; dry.		
					286		
					WELL-GRADED SAND (SW) 2.5YR-6/6 Fine to medium sand; trace clay; loose; wet.		
					288		
290	-137				290		
					LEAN CLAY (CL) 10YR-7/1 lean clay; trace fine sand; no plasticity, moist.		
					WELL-GRADED SAND (SW) 10YR-6/8 Fine to medium sand; loose; wet.		
					296		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
300	-147				***WELL-GRADED SAND (SW)*** 10YR-8/1 Fine to medium grained sand; loose; wet. *(continued)*		
					309		
310	-157				***WELL-GRADED SAND WITH CLAY (SW-SC)*** 10YR-6/8 - 10YR-4/6 Fine to medium sand; trace clay; loose; wet.		
					317		
320	-167				***LEAN CLAY WITH SAND (CL)*** 10YR-4/6 Lean clay, trace fine sand; medium plasticity; few gravel 0.2-32" diameter and sub angular; wet.		
					319.5		
					FAT CLAY (CH) 10YR-7/2 Fat clay; 10R-6/6 mottling; extremely hard; high plasticity; moist.		
					325		
					326		
					POORLY-GRADED SAND WITH CLAY AND GRAVEL (SP-SC) 10R-4/6 Medium sand with clay and gravel 0.2-2" diameter; loose; wet.		
					329		
330	-177				***LEAN CLAY WITH SAND (CL)*** 10YR-5/8 Lean clay with trace fine sand; hard, low plasticity; moist.		
					LEAN CLAY WITH SAND (CL) 10YR-7/2, 7/3 and 7/8 Lean clay with trace fine grained sand and organics; no-low plasticity; hard; moist.		

Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
340	-187				341		
					LEAN CLAY (CL) 10R-4/4, 6/6, 8/1 Lean clay, brittle; very hard; no plasticity; moist.		
350	-197						
360	-207						
370	-217				370		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with some fine grained sand; stiff; no plasticity; moist.		
					372		
					373		
					LEAN CLAY (CL) 10YR-7/3 Mottled and 6/6 red clay; hard; no plasticity; moist.		
					LEAN CLAY WITH SAND (CL) 10YR-5/4 Lean clay; little fine grained sand; hard; no plasticity; moist.		
380	-227						

Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-30D-413*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					383		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 10YR-7/1 Fine sand; trace clay; slightly stiff; moist.		
390	-237				391		
					392		
					LEAN CLAY WITH SAND (CL) 10YR-4/6 Lean clay with trace fine sand; hard; no plasticity; moist.		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 10YR-7/1 and 5/1 Fine sand with trace clay; stiff; no plasticity; moist.		
					396		
					POORLY-GRADED SAND (SP) 10YR-5/8 Fine sand with trace clay; slightly stiff; moist.		
400	-247				403		
					403.5		
					LEAN CLAY (CL) 10YR-6/1 Lean clay; hard; no platsicity; moist.		
					WELL-GRADED SAND (SW) 10YR-7/2 and 10YR-5/8 Medium to coarse sand; loose; wet.		
410	-257						
					Bottom of Boring at 416 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.		
420	-267						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*
Drilled By: Cascade Drilling/Josh Siegler	Drill Start Date: 3/12/2018	Drill End Date: 3/15/2018	Drill Method: Rotosonic
Logged By: Molly Long	Total Depth (ft): 266	Bore Diameter (in): 6	Ground Surface (ft): 156.55

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Ground Surface		
					SILT (ML) Asphalt/ 10YR-2/1 silt; fine; dry.	1	
					LEAN CLAY (CL) 10YR-4/2 Lean clay; firm; dense; medium plastcisity; dry.	3	
					WELL-GRADED SAND (SW) 10YR-7/6 Medium to coarse sand; trace clay; loose; moist.		
10	147					10	
					WELL-GRADED SAND WITH CLAY (SW-SC) 10YR-4/2 Medium to coarse sand with trace clay; loose; low plasticity; moist.		
						16	
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-4/2 Fine to coarse sand with trace gravel, less than 0.5" diameter; rounded; loose; moist.		
20	137						
30	127					30	
					LEAN CLAY (CL) 10YR-8/2 Lean clay; trace fine sand; hard; low to medium plasticity; moist.		
						36	
					POORLY-GRADED SAND WITH SILT (SP-SM) 10YR-8/2 Fine sand with trace silt and clay; loose; soft; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
50	107				***POORLY-GRADED SAND WITH SILT (SP-SM)*** 10YR-8/2 Fine sand with trace silt and clay; loose; soft; moist. *(continued)*		
					54		
					LEAN CLAY (CL) 10YR-7/3 Clay; 10YR-7/6 mottling; low to medium plasticity; medium density; dry.		
					56		
60	97				***GRAVELLY LEAN CLAY WITH SAND (CL)*** 10YR-7/3 Lean clay; 10R-3/6 mottling; trace fine sand; hard; low plasticity; dry.		
					62		
					WELL-GRADED SAND (SW) 10YR-8/4 and 10YR-7/6 Fine to coarse sand; loose; dry to moist.		
70	87						
80	77				80		
					LEAN CLAY (CL) 10YR-7/1 Lean clay; hard; dense; low plasticity; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Notes:

In Situ Testing Log (MIN / Parameter / MAX)

Well

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description
					83
					WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC) 10YR-7/6 Medium to coarse sand with trace clay and gravel; gravel less than 1" diameter and rounded; hard; low plasticity; dense; moist.
					85
					LEAN CLAY (CL) 10YR-5/6 Lean clay; stiff and brittle; low plasticity; dry.
90	67				
					96
					LEAN CLAY (CL) 10YR-3/3 and 10R-5/2 Lean clay; hard; dense; low plasticity; wet.
100	57				
110	47				
120	37				

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
130	27				***LEAN CLAY (CL)*** 10YR-3/3 and 10R-5/2 Lean clay; hard; dense; low plasticity; wet. *(continued)*		
					136		
140	17				***LEAN CLAY WITH SAND (CL)*** 10YR-5/1 Clay; stiff; medium plasticity; trace fine grained sand; moist.		
150	7				150 ***POORLY-GRADED SAND (SP)*** 10YR-6/1 Fine sand; trace clay; soft; dense; moist.		
					156		
160	-3				***WELL-GRADED SAND (SW)*** 10YR-8/2 Fine to coarse sand/ 5YR-5/8 mottling; loose; medium density; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
170	-13				170		
					WELL-GRADED SAND (SW) 10YR-6/8 Fine to medium sand; loose; moist.		
					179		
180	-23				***LEAN CLAY (CL)*** 10YR-7/1 Lean clay; hard; brittle; low plasticity; dense; moist.		
					184		
					POORLY-GRADED SAND WITH GRAVEL (SP) 10YR-7/2 and 10YR-7/6 medium to coarse sand; trace gravel less than 0.1" diameter; hard; moist. 186		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with trace fine sand; hard; low plasticity; moist.		
190	-33				192		
					WELL-GRADED SAND (SW) 10YR-6/6 and 10YR-7/3 Medium to coarse sand; loose; wet.		
200	-43				201		
					LEAN CLAY (CL) 10YR-7/2 Lean clay; hard; red mottling; wet.		
					206		
					POORLY-GRADED SAND (SP) 10YR-7/3 Medium sand; loose; trace clay; low plasticity; wet. 208		
					209		
210	-53				***LEAN CLAY (CL)***		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					10YR-7/1 Clay; stiff; low to medium plasticity; trace fine sand; wet.		
					WELL-GRADED SAND (SW) 10YR-7/3 and 10YR-7/8 Medium to coarse sand; loose; trace clay; low plasticity; soft; wet. *(continued)*		
					LEAN CLAY (CL) 10YR-5/2 Clay; hard; low plasticity; trace fine sand; wet.		
220	-63				***WELL-GRADED SAND (SW)*** 10YR-7/2 Medium to coarse sand; little clay; medium plasticity; stiff; wet.		
					WELL-GRADED SAND (SW) 10YR-6/2 and 10YR-8/4 Medium to coarse sand; loose; wet.		
					LEAN CLAY (CL) 10YR-6/8 and 10YR 8/2 Clay; hard; mottling; low plasticity; trace fine sand; moist to dry.		
					POORLY-GRADED SAND (SP) 10YR-7/1 Medium sand; loose; moist to wet.		
230	-73				***LEAN CLAY (CL)*** 10YR-8/2 Clay; mottled pink; hard; low plasticity; moist.		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-7/4 Medium to coarse sand; loose; moist to wet.		
					LEAN CLAY 10YR-7/1 to 10YR-6/8 Clay; mottled; hard to stiff; low plasticity; trace fine sand; moist.		
240	-83				***CLAYEY SAND*** 10YR-4/4 Fine sand; loose; trace to little clay; low plasticity; moist.		
					LEAN CLAY 10YR-7/2 to 10YR-4/6 Clay; mottled; hard to stiff; low plasticity; brittle near 246; trace fine sand; slightly moist.		
250	-93				***POORLY-GRADED SAND*** 10YR-5/8 Fine sand; loose; wet.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-32D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
260	-103				***LEAN CLAY*** 10YR-8/2 to 10YR-5/8 Clay; mottled; hard; low plasticity; trace fine sand; moist. *(continued)* 256 ***POORLY-GRADED SAND*** 10YR-7/2 to 10YR7/6 Fine sand; loose; trace clay; soft; low plasticity; moist.		
270	-113				Bottom of Boring at 266 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.		
280	-123						
290	-133						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*
Drilled By: Cascade Drilling/Josh Sigler	Drill Start Date: 4/12/2018	Drill End Date: 4/19/2018	Drill Method: Rotosonic
Logged By: Chris Cresci	Total Depth (ft): 425	Bore Diameter (in): 6	Ground Surface (ft): 184.50

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					Ground Surface		
					0.5		
					ASPHALT Asphalt top		
					2		
					WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) 10YR-3/1 Gravelly sand fill with silt, loose, dry.		
					WELL-GRADED SAND (SW) 10YR-5/3 Fine to medium sand with trace rounded gravel, loose, dry.		
					7		
10	175				***WELL-GRADED SAND WITH CLAY (SW-SC)*** 10YR-5/8 Well sorted sand with trace clay; loose; moist.		
					10		
					LEAN CLAY WITH SAND (CL) 10YR-8/2 Lean clay with fine sand; firm; low to medium plasticity; medium density; dry.		
					16		
					WELL-GRADED SAND (SW) 10YR-5/8 Fine to medium sand; loose; moist.		
20	165				21		
					SANDY LEAN CLAY (CL) 10YR-7/2 Sandy lean clay; fine sand; firm; no to low plasticity; moist.		
30	155				31		
					WELL-GRADED SAND WITH CLAY (SW-SC) 10YR-6/3 Fine to medium sand with trace lean clay; loose; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN — Parameter — MAX)	Well
					40		
					WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC) 7.5YR-6/8 Fine to medium sand with some clay and trace rounded gravel; loose; dry.		
50	135						
					53		
					CLAYEY SAND (SC) 10YR-5/8 Clayey poorly sorted sand; stiff; slightly moist.		
60	125						
					62		
					LEAN CLAY WITH SAND (CL) 10YR-8/2 Lean clay with fine sand; some yellow and gray mottling; stiff; no-low plasticity; dry.		
70	115						
					76		
					CLAYEY SAND (SC) 10YR-7/1 Clayey well sorted sand; clay lean; loose to firm; moist to wet.		
80	105						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Notes:

In Situ Testing Log (MIN / Parameter / MAX)

Well

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description
90	95				***CLAYEY SAND (SC)*** 10YR-7/1 Clayey well sorted sand; clay lean; loose to firm; moist to wet. *(continued)*
					93
					SANDY LEAN CLAY (CL) 10YR-7/2 Sandy lean clay; firm; low plasticity; moist.
					97
100	85				***POORLY-GRADED SAND WITH CLAY (SP-SC)*** 10YR-7/3 Fine to medium sand with trace lean clay; loose; slightly moist.
110	75				
					116
					LEAN CLAY (CL) 10YR-8/2 Lean clay; some red mottling; hard; low plasticity; dry.
120	65				

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
130	55				***LEAN CLAY (CL)*** 10YR-8/2 Lean clay; some red mottling; hard; low plasticity; dry. *(continued)*		
					131		
					WELL-GRADED SAND (SW) 10YR-6/6 Well sorted sand; trace clay; loose; moist.		
					135		
					LEAN CLAY WITH SAND (CL) 10YR-8/1 Lean clay with trace fine sand; some mottling; hard; dense; no plasticity; dry.		
140	45				141		
					SANDY LEAN CLAY (CL) 10YR-7/1 Sandy lean clay; sand fine; some mottling; firm; low plasticity; moist.		
					149		
150	35				***WELL-GRADED SAND WITH CLAY (SW-SC)*** 10YR-7/3 Fine to medium sand with lean clay; loose; slightly moist.		
160	25				160		
					LEAN CLAY (CL) 10YR-8/1 Lean clay; some mottling; hard; medium density; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
170	15				***LEAN CLAY (CL)*** 10YR-8/1 Lean clay; some mottling; hard; medium density; dry. *(continued)*	171	
					SANDY LEAN CLAY (CL) 10YR-Sandy lean clay; firm; no-low plasticity; wet.	174	
					WELL-GRADED SAND (SW) 7.5YR-6/3 Fine to medium sand; loose; dry.	178	
180	5				***LEAN CLAY WITH SAND (CL)*** 10YR-8/1 Lean clay with fine sand; firm; low plasticity; wet.	180	
					WELL-GRADED SAND (SW) 10YR-5/8 Well sorted sand; loose; slightly moist.	183	
					SANDY LEAN CLAY (CL) 10YR-5/2 Sandy lean clay; soft; low plasticity; wet.	185	
190	-6				***LEAN CLAY (CL)*** 2.5YR-4/6 Lean clay; trace white mottling; hard; dense; no to low plasticity; dry.		
						199	
200	-16				***LEAN CLAY WITH SAND (CL)*** 5YR-5/6 Reddish brown lean clay with trace fine sand; some white mottling; firm; low to medium plasticity; slightly moist.		
210	-26						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
220	-36				***LEAN CLAY WITH SAND (CL)*** 5YR-5/6 Reddish brown lean clay with trace fine sand; some white mottling; firm; low to medium plasticity; slightly moist. *(continued)*		
					220		
					SANDY LEAN CLAY (CL) 10YR-7/2 Sandy lean clay; fine to medium sand; firm; mottled; moist.		
230	-46						
					232		
					CLAYEY SAND (SC) 10YR-6/8 Clayey fine to medium sand; loose; moist.		
					237		
					SANDY LEAN CLAY (CL) 10YR-8/2 Sandy lean clay; fine to medium sand; firm to soft; mottled; no plasticity; moist.		
240	-56						
					246		
					WELL-GRADED SAND WITH CLAY (SW-SC) 10YR-7/2 and 7.5YR-6/8 Fine to medium sand with lean clay; mottled; loose; moist.		
250	-66						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					256		
					LEAN CLAY WITH SAND (CL) 10YR-7/2 Lean clay with trace fine sand; abundance of red mottling; hard; low plasticity; dry.		
260	-76				260		
					LEAN CLAY (CL) 10YR-3/1 Lean clay; hard; very dense; no plasticity; dry.		
					267		
					LEAN CLAY (CL) 2.5YR-4/8 Lean clay; trace fine sand; hard; very dense; low plasticity; moist.		
270	-86				271		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with sand; strong red mottling; hard; dense; no plastcity; dry. 273		
					POORLY-GRADED SAND (SP) 5YR-4/4 Poorly sorted sand; loose; moist.		
					278		
280	-96				***LEAN CLAY WITH SAND (CL)*** 10YR-8/1 Lean clay with trace fine sand; hard; dense; no-low plastcity; dry.		
					286		
					WELL-GRADED SAND (SW) 10YR-4/6 Fine to medium sand; loose; slightly moist.		
290	-106						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
300	-116				***WELL-GRADED SAND (SW)*** 10YR-4/6 Fine to medium sand; loose; slightly moist. *(continued)*		
					307		
310	-126				***LEAN CLAY (CL)*** 10YR-7/1 Lean clay with fine sand; firm; low plasticity; dry.		
					316		
					SANDY LEAN CLAY (CL) 10YR-6/6 Sandy lean clay; fine to medium sand; firm; moist.		
					319		
320	-136				***WELL-GRADED SAND (SW)*** 7.5YR-6/8 Well sorted sand; loose; moist.		
					329		
330	-146				***CLAYEY SAND (SC)*** 10YR-8/1 Clayey fine to medium sand; firm; wet.		
					331		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay with fine sand; red mottling; firm; no plasticity; slightly moist.		
					336		
					WELL-GRADED SAND (SW) 10YR-6/6 Fine to medium sand; loose; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
340	-156				340 — ***LEAN CLAY (CL)*** 2.5YR-4/8 Lean clay; white mottling; hard; no plasticity; dry.		
350	-166				353 — ***SANDY LEAN CLAY (CL)*** 10YR-8/1 Sandy lean clay; fine to medium sand; soft; no plasticity; moist.		
360	-176				359 — ***WELL-GRADED SAND WITH CLAY (SW-SC)*** 7.5YR-5/8 Fine to medium sand with lean clay; loose to firm; mottled; wet.		
370	-186				367 — ***SANDY LEAN CLAY (CL)*** 10YR-7/1 Sandy lean clay; mottled; firm; no plasticity; moist.		
					373 — ***WELL-GRADED SAND WITH CLAY (SW-SC)*** 7.5YR-7/2 Fine to medium sand with trace clay; loose; moist.		
380	-196				379 — ***WELL-GRADED SAND (SW)*** 10YR-6/6 Well sorted sand; loose; moist.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Notes:

In Situ Testing Log (MIN / Parameter / MAX)

Well

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description
					WELL-GRADED SAND (SW) 10YR-6/6 Well sorted sand; loose; moist. *(continued)*
					387
					LEAN CLAY WITH SAND (CL) 2.5YR-4/8 Lean clay with fine sand; low-medium plastcity; firm; wet.
390	-206				390
					WELL-GRADED SAND (SW) 2.5YR-7/8 Fine to medium sand; loose; moist.
					398
400	-216				***WELL-GRADED SAND (SW)*** 10YR-6/8 Fine to medium sand; loose; moist.
					403
					SANDY LEAN CLAY (CL) 10YR-7/6 Sandy lean clay; soft; low plasticity; wet.
					407
					WELL-GRADED SAND WITH CLAY (SW-SC) 7.5YR-4/1 Fine to medium sand with trace lean clay; loose; dry.
410	-226				411
					LEAN CLAY (CL) 10YR-3/1 Lean clay; hard; dense; low to medium plastcity; dry.
420	-236				

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-34D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Bottom of Boring at 425 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.		
430	-246						
440	-256						
450	-266						
460	-276						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*
Drilled By: Cascade Drilling/Josh Sigler	Drill Start Date: 3/19/2018	Drill End Date: 3/28/2018	Drill Method: Rotosonic
Logged By: Molly Long	Total Depth (ft): 366	Bore Diameter (in): 6	Ground Surface (ft): 159.11

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
					Ground Surface		
					0.5 ***ASPHALT*** Asphalt top.		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-6/8 Medium to coarse sand with little gravel; subangular; loose; dry.		
					7 ***POORLY-GRADED GRAVEL WITH SAND (GP)*** 10YR-6/6 Gravel less than 1" diameter; subangular; loose; moist.		
10	149				10 ***GRAVELLY LEAN CLAY WITH SAND (CL)*** 10YR-7/6 Lean clay with fine to medium sand; loose; low plasticity; moist.		
					17 ***LEAN CLAY (CL)*** 10R 5/8 Lean clay with 10R 8/2 mottling; hard; brittle; no to low plasticity; dry.		
20	139				26 ***LEAN CLAY (CL)*** 10R 4/8 Lean clay; hard; no to low plasticity; wet.		
30	129				33 ***LEAN CLAY WITH SAND (CL)*** 10Yr-6/1 Lean clay; hard and brittle; no plasticity; slightly mottled; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					41		
					LEAN CLAY (CL) 10YR-5/6 Lean clay; hard, brittle; no plasticity; slightly mottled; dry.		
					46		
					LEAN CLAY WITH SAND (CL) 10R 6/6 Lean clay; 10R 8/2 mottling; trace fine sand; stiff; low plasticity; moist.		
50	109				52		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-7/6 Medium to coarse sand; litle gravel 0.1-2" diameter and sub angular; loose; moist.		
60	99				61		
					POORLY-GRADED SAND (SP) 10YR-7/4 Medium sand; loose; moist.		
					66		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-7/4 Medium to coarse sand with little gravel 0.1-2" diameter and sub angular; loose; moist.		
70	89				78		
					LEAN CLAY WITH SAND (CL) 7.5YR 5/4 Lean clay with trace fine sand; hard; no plasticity; dense; mottled; dry.		
80	79						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
90	69				***LEAN CLAY WITH SAND (CL)*** 7.5YR 5/4 Lean clay with trace fine sand; hard; no plasticity; dense; mottled; dry. *(continued)* 86 ***FAT CLAY (CH)*** 10R-5/6 Clay; Hard; high plasticity; moist to wet.		
100	59						
110	49						
120	39						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log MIN Parameter MAX	Well
					FAT CLAY (CH) 10R-5/6 Clay; Hard; high plasticity; moist to wet. *(continued)*		
					128		
130	29				***LEAN CLAY WITH SAND (CL)*** 10YR-5/1 Lan clay; hard; brittle; trace fine sand; low to no plasticity; dry.		
140	19						
					143		
					WELL-GRADED SAND (SW) 7.5 YR-8/2 Medium to coarse sand; trace grave; less than 1" diameter and rounded; loose; moist.		
150	9						
					156		
					WELL-GRADED SAND WITH GRAVEL (SW) 10YR-7/1 to 10YR-8/4 medium to coarse sand with few gravel 0.1-0.25" gravel; loose; moist.		
160	-1						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN — Parameter — MAX)	Well
170	-11				***WELL-GRADED SAND WITH GRAVEL (SW)*** 10YR-7/1 to 10YR-8/4 medium to coarse sand with few gravel 0.1-0.25" gravel; loose; moist. *(continued)*		
180	-21						
					184		
					POORLY-GRADED SAND WITH GRAVEL (SP) 10YR-6/6 Sand with gravel 0.1-3" diameter and sub rounded; loose; wet.		
					189		
190	-31				***WELL-GRADED GRAVEL WITH SAND (GW)*** 10YR-7/1 Gravel; 0.1-3" diameter with trace medium to coarse sand; loose; wet.		
					191		
					LEAN CLAY WITH SAND (CL) 10YR-7/1 Lean clay; stiff; trace fine sand; no-low plasticity; moist.		
					196		
					LEAN CLAY WITH GRAVEL (CL) 10YR-7/3 Lean clay with trace gravel 0.5-2" diameter and sub-rounded; medium plasticity; stiff.		
200	-41						
					200		
					WELL-GRADED SAND (SW) 10YR-7/8 Fine to medium sand; loose; wet.		
					204		
					WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC) 10YR-8/3 Medium to coarse sand with trace gravel 0.1-1" diameter; sub-rounded; trace 10YR-7/1 clay; loose; wet.		
210	-51						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					WELL-GRADED SAND WITH CLAY AND GRAVEL (SW-SC) 10YR-8/3 Medium to coarse sand with trace gravel 0.1-1" diameter; sub-rounded; trace 10YR-7/1 clay; loose; wet. *(continued)*		
					217		
220	-61				***LEAN CLAY WITH SAND (CL)*** 10YR-8/1 Lean clay with trace fine sand; hard; brittle; low plasticity; loose; moist.		
					223		
230	-71				***LEAN CLAY WITH SAND (CL)*** 10R-4/6 Lean clay with 10YR-5/6 medium sand; white mottling; hard; low plasticity; moist.		
					236		
240	-81				***LEAN CLAY (CL)*** 10YR-3/2 Lean clasy; extremely hard; no to low plasticity; dry.		
250	-91						

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
					256		
					LEAN CLAY (CL) 10YR-3/1 Lean clay; hard; low plasticity; brittle; dry.		
260	-101						
					263		
					LEAN CLAY WITH SAND (CL) 10YR-5/1 Lean clay; soft; trace fine sand; low plasticity; moist.		
					267		
					WELL-GRADED SAND (SW) 10YR-7/6 Fine to coarse sand; loose; moist.		
270	-111						
280	-121				280		
					POORLY-GRADED SAND (SP) 10YR-6/4 Fine sand; trace clay; loose; medium density; moist.		
					288		
290	-131				***LEAN CLAY (CL)*** 10YR-3/1 Lean clay; very hard; very dense; low plasticity; dry.		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Physical Description	*In Situ* Testing Log (MIN / Parameter / MAX)	Well
					Notes:		
300	-141				***LEAN CLAY (CL)*** 10YR-3/1 Lean clay; very hard; very dense; low plasticity; dry. *(continued)*		
					304		
					LEAN CLAY WITH SAND (CL) 10YR-4/1 Lean clay with fine sand; low-medium plasticity; moist.		
					307		
					POORLY-GRADED SAND WITH CLAY (SP-SC) 10YR-3/1 Fine sand with lean clay; soft to firm; no plasticity; wet.		
					309		
310	-151				***LEAN CLAY WITH GRAVEL (CL)*** 10YR-5/1 Lean clay with rounded gravel and trace fine sand; hard; no plasticity; dry.		
					312		
					LEAN CLAY (CL) 10YR-3/1 Lean clay; very hard; very dense; low plasticity; dry.		
320	-161						
					325		
					LEAN CLAY WITH SAND (CL) 10YR-6/1 Lean clay with fine sand; red mottling; firm; moist.		
330	-171						
					331		
					LEAN CLAY WITH SAND (CL) 5/2-7/3 Lean clay with trace fine to medium sand; gray and red mottling; hard; slightly moist.		
					338		

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Project Name: Kop-Flex	Client: Emerson	Location: Hanover, Maryland	Boring Log: *MW-36D*

Depth (ft)	Elevation (ft)	Type	Lab Sample	Graphic Log	Notes: / Physical Description	*In Situ* Testing Log (MIN – Parameter – MAX)	Well
340	-181				***SANDY LEAN CLAY (CL)*** 5YR-7/3 Sandy lean clay; firm; low-medium plasticity; dry to moist. *(continued)*		
					347		
350	-191				***POORLY-GRADED SAND WITH CLAY (SP-SC)*** 2.5YR-5/8 Poorly sorted sand with trace clay; loose; moist.		
					354		
					LEAN CLAY WITH SAND (CL) 5YR-7/1 Lean clay with fine sand; hard; medium density; no plasticity; dry.		
					357		
360	-201				***POORLY-GRADED SAND WITH CLAY (SP-SC)*** 10YR-7/1 Poorly sorted sand with trace clay; loose; moist.		
					365		
					LEAN CLAY 10YR-6/2 Lean clay with fine sand; mottling; very hard; dense; low plasticity; dry.		
370	-211				Bottom of Boring at 366 feet. All soil classification based on visual descriptions made during the installation of the boring, unless noted otherwise.		
380	-221						

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APPENDIX B – COLOR-TEC FIELD SCREENING PROCEDURE

Standard Operating Procedures for Analysis of Total Chlorinated Ethenes in Soil and Groundwater Using the Color Tec Screening Method

Description

This SOP describes a field screening method for determining total chlorinated ethene concentrations in the headspace above soil and groundwater samples. The method employs colorimetric gas detector tubes to analyze the headspace gases. To conduct the method, groundwater or a soil and water mixture are placed in a standard 40 mL VOA vial and capped. The sample vial is then agitated vigorously for 20 seconds. Using a manual vacuum pump, two hollow needles, and Tygon® tubing, the headspace vapor is purged from the vial through the colorimetric gas detector tube. The tips of the needles are positioned so that one is in the headspace area and one is submerged at the bottom of the vial. As air is drawn from the headspace through one needle, ambient air is allowed into the bottom of the vial through the other needle. This process purges the VOCs from the water so no headspace calculation using Henry's Constant is required.

Each colorimetric tube contains a catalyst that decomposes the chlorinated ethene, releasing hydrogen chloride, which discolors the reagent (4-phenylazo-diphenylamine) in the tube. Any color change within the detector tube indicates the presence of a chlorinated ethene. The detector tubes are constructed of glass and printed with calibration scales to facilitate measurement of the linear extent of the reaction within the tube. The manufacturer of the tubes (Gastec®) provides tubes for a variety of concentration ranges. The lowest concentration range tube is used initially to screen the sample. When a positive result is observed, the concentration level is obtained by matching the linear extent of the discolored reagent inside the tube to the calibration scale printed on the outside of the tube. If the calibrated range of the tube is exceeded by the reaction, a tube with a higher concentration range is used to screen a duplicate sample. This procedure is repeated until the approximate concentration is determined.

Safety Precautions

Safety glasses should be worn whenever handling potentially contaminated soil or water.

Analysis Procedure

Materials Needed

Gastec® hand pump or equivalent
Extra low, low, medium, and high range Gastec® colorimetric tubes
Plastic male luer lock threaded fitting with ⅛-in hose barb
Plastic male luer non-threaded fitting with ⅛-in hose barb
Tygon® lab tubing ⅛-in ID × ¼-inch OD
Deflected noncoring septum penetration needle (18G × 4)
Hot plate
Test tube rack
Vortex mixer
Charcoal prefilter tubes
40 mL clear VOA with Teflon-silicon septa
Kimwipes™

Reagents Needed

For soil samples, 20 mL ultra-pure deionized water per sample
Chlorinated ethene QC standard
Decontamination materials

Pitfalls

- The color change indicated by a sample containing less than 10 µg/L PCE or less than 30 µg/L vinyl chloride is very subtle and could be missed by an inexperienced operator. The solution to this problem is practice and careful examination of each tube after pumping.

- Introduction of water vapor into the tube past the catalyst stage could indicate a low level false positive to an inexperienced operator. However, water-induced false positives are easily recognized by an experienced operator and are avoidable through proper placement of the extraction needle in the VOA vial.

- If chlorinated tap water is used in the soil sample screening procedure, the free chlorine in the tap water could (theoretically) indicate a low-level false positive in the soil sample. The potential for producing a false reading in this manner can be avoided by using ultrapure deionized water during the soil sample screening procedure.

- Do not use hydrochloric acid as a preservative when using this method.

Procedure

Water

1. Fill 40 mL VOA vial with 24 ml (about 60 percent of volume) of groundwater sample and cap.

2. Shake the sample vigorously for 20 seconds.

3. Penetrate the septum with a needle equipped with the charcoal pre-filter tube and position the needle point near the bottom of the vial.

4. Penetrate the septum with the extraction needle attached to the Tygon® tubing. Ensure that the needle tip is well clear of the water surface.

5. Break one end of the detection tube and attach it to the Tygon® tubing.

6. Break the other end of the detection tube and attach it to the hand pump.

7. Begin drawing air from the vial and observe any change in color in the tube.

8. Record the concentration reached by the change in color on the scale marked on the tube.

Soil

1. Fill 40-ml VOA vial with approximately 10 cc of soil and 10 ml of ultrapure deionized water (about 50-70 percent of volume) and cap.

2. Shake the sample vigorously for 20 seconds.

3. Penetrate the septum with a needle equipped with a charcoal pre-filter tube and position the needle point near the top of the soil.

4. Penetrate the septum with a needle attached to the Tygon® tubing. Ensure that the needle tip is well clear of the water surface.

5. Break one end of the detection tube and attach it to the Tygon® tubing.

6. Break the other end of the detection tube and attach it to the hand pump.

7. Begin drawing air from the vial and observe any change in color in the tube.

8. Record the concentration reached by the change in color on the scale marked on the tube.

Detection Limits

The practical quantitation limit for PCE is 5-10 ppb as measured in the headspace. This method does not employ Henry's Constant or other partitioning methods to back calculate the actual concentrations in the soil or water sample. Samples containing only trans-1,2-dichloroethene, 1,1-dichloroethene, or vinyl chloride are generally not detectable with ColorTec at concentrations below 25 µg/L.

General Interferences

Other compounds including bromine, free chlorine, and hydrogen chloride can also indicate a positive reaction within the detector tube.

The Gastec® tubes are sold to detect specific chlorinated alkenes. However, if there are other chlorinated ethenes present in a sample, the identification of a specific chlorinated compound is not possible using the ColorTec method. The developers of the ColorTec method recommend using the Gastec® tetrachloro-ethene tubes for all sampling.

The detector tubes are designed to be used at temperatures of 0 to 40 °C (32 to 104 °F) and are calibrated based on a tube temperature (not sample temperature) of 20 °C (68 °F). There is a significant reduction in sensitivity of the tubes when sustained ambient air temperatures are significantly lower than 20 °C while conducting the method. The reduction in the temperature of the reagent decreases the reaction time resulting in a less visible color change within the tube. Conversely, when ambient temperatures are in excess of 20 °C, the tubes may be hypersensitive. The following correction factors provided by Gastec® can be applied to the readings to correct for sustained ambient temperatures other than 20 °C or 68 °F:

Temperature	0 °C (32 °F)	10 °C (50 °F)	20 °C (68 °F)	30 °C (86 °F)	40 °C (104 °F)
Correction Factor	× 2	× 1.3	× 1	× 0.7	× 0.55

Because tube/sample temperatures below 20 °C significantly reduce the sensitivity of the method, it is recomended that the prepared sample vials and colorimetric tubes (prior to breaking the tips) be heated using a hot water bath prior to screening when ambient temperatures are below 20 °C.

APPENDIX C – LABORATORY ANALYTICAL REPORTS FOR DEPTH-DISCRETE GROUNDWATER SAMPLES

MW-29 LOCATION

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18030618

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389.01

March 7, 2018

Phase Separation Science, Inc.

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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.

March 7, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18030618**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389.01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18030618**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 10, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18030618

Project ID: 31400389.01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/06/2018 at 04:20 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18030618-001	MW-29-IDW-Drill Cuttings	SOIL	03/06/18 08:45
18030618-002	MW-29-(136-146)	WATER	03/06/18 09:50
18030618-003	MW-29-(146-156)	WATER	03/06/18 12:05
18030618-004	MW-29-Drill Water	WATER	03/06/18 14:05
18030618-005	Trip Blank	WATER	03/06/18 16:20

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-IDW-Drill Cuttings **Date/Time Sampled: 03/06/2018 08:45** **PSS Sample ID: 18030618-001**
Matrix: SOIL **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Benzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Bromochloromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Bromodichloromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Bromoform	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Bromomethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
2-Butanone (MEK)	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Carbon Disulfide	ND	ug/kg	10		1	03/06/18	03/06/18 20:11	1035
Carbon tetrachloride	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Chlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Chloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Chloroform	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Chloromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Cyclohexane	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
1,2-Dibromo-3-chloropropane	ND	ug/kg	40		1	03/06/18	03/06/18 20:11	1035
Dibromochloromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2-Dibromoethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2-Dichlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,3-Dichlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,4-Dichlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Dichlorodifluoromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1-Dichloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2-Dichloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1-Dichloroethene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
cis-1,2-Dichloroethene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2-Dichloropropane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
cis-1,3-Dichloropropene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
trans-1,2-Dichloroethene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
trans-1,3-Dichloropropene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Ethylbenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-IDW-Drill Cuttings **Date/Time Sampled: 03/06/2018 08:45** **PSS Sample ID: 18030618-001**
Matrix: SOIL **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Isopropylbenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Methyl Acetate	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Methylcyclohexane	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Methylene chloride	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	20		1	03/06/18	03/06/18 20:11	1035
Methyl-t-Butyl Ether	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Naphthalene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Styrene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Tetrachloroethene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Toluene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2,3-Trichlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,2,4-Trichlorobenzene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1,1-Trichloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1,2-Trichloroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Trichloroethene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Trichlorofluoromethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
Vinyl chloride	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035
m&p-Xylene	ND	ug/kg	10		1	03/06/18	03/06/18 20:11	1035
o-Xylene	ND	ug/kg	5.0		1	03/06/18	03/06/18 20:11	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-(136-146) **Date/Time Sampled: 03/06/2018 09:50** **PSS Sample ID: 18030618-002**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
Benzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Bromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Bromoform	ND	ug/L	5.0		1	03/06/18	03/06/18 17:46	1011
Bromomethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
Carbon Disulfide	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Chlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Chloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Chloroform	**3.5**	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Chloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Cyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/06/18	03/06/18 17:46	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Ethylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-(136-146) **Date/Time Sampled: 03/06/2018 09:50** **PSS Sample ID: 18030618-002**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 17:46	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Methyl Acetate	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
Methylcyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 17:46	1011
Methylene chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 17:46	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Naphthalene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Styrene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Toluene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Trichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/06/18	03/06/18 17:46	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
Vinyl chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011
m&p-Xylene	ND	ug/L	2.0		1	03/06/18	03/06/18 17:46	1011
o-Xylene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:46	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-(146-156) **Date/Time Sampled: 03/06/2018 12:05** **PSS Sample ID: 18030618-003**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
Benzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Bromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Bromoform	ND	ug/L	5.0		1	03/06/18	03/06/18 18:07	1011
Bromomethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
Carbon Disulfide	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Chlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Chloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Chloroform	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Chloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Cyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/06/18	03/06/18 18:07	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Ethylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-(146-156) **Date/Time Sampled: 03/06/2018 12:05** **PSS Sample ID: 18030618-003**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 18:07	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Methyl Acetate	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
Methylcyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 18:07	1011
Methylene chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 18:07	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Naphthalene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Styrene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Toluene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Trichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/06/18	03/06/18 18:07	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
Vinyl chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011
m&p-Xylene	ND	ug/L	2.0		1	03/06/18	03/06/18 18:07	1011
o-Xylene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:07	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-Drill Water **Date/Time Sampled: 03/06/2018 14:05** **PSS Sample ID: 18030618-004**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	**16**	ug/L	10		1	03/06/18	03/06/18 18:30	1011
Benzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Bromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Bromoform	ND	ug/L	5.0		1	03/06/18	03/06/18 18:30	1011
Bromomethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
2-Butanone (MEK)	**1,600**	ug/L	200		20	03/06/18	03/07/18 08:13	1011
Carbon Disulfide	ND	ug/L	10		1	03/06/18	03/06/18 18:30	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Chlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Chloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Chloroform	**2.5**	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Chloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Cyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 18:30	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/06/18	03/06/18 18:30	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Ethylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-29-Drill Water **Date/Time Sampled: 03/06/2018 14:05** **PSS Sample ID: 18030618-004**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 18:30	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Methyl Acetate	ND	ug/L	10		1	03/06/18	03/06/18 18:30	1011
Methylcyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 18:30	1011
Methylene chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 18:30	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Naphthalene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Styrene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Toluene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Trichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/06/18	03/06/18 18:30	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
Vinyl chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011
m&p-Xylene	ND	ug/L	2.0		1	03/06/18	03/06/18 18:30	1011
o-Xylene	ND	ug/L	1.0		1	03/06/18	03/06/18 18:30	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: Trip Blank **Date/Time Sampled: 03/06/2018 16:20** **PSS Sample ID: 18030618-005**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
Benzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Bromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Bromoform	ND	ug/L	5.0		1	03/06/18	03/06/18 17:22	1011
Bromomethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
Carbon Disulfide	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Chlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Chloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Chloroform	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Chloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Cyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/06/18	03/06/18 17:22	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Ethylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030618

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: Trip Blank **Date/Time Sampled: 03/06/2018 16:20** **PSS Sample ID: 18030618-005**
Matrix: WATER **Date/Time Received: 03/06/2018 16:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 17:22	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Methyl Acetate	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
Methylcyclohexane	ND	ug/L	10		1	03/06/18	03/06/18 17:22	1011
Methylene chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/06/18	03/06/18 17:22	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Naphthalene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Styrene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Toluene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Trichloroethene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/06/18	03/06/18 17:22	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
Vinyl chloride	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011
m&p-Xylene	ND	ug/L	2.0		1	03/06/18	03/06/18 17:22	1011
o-Xylene	ND	ug/L	1.0		1	03/06/18	03/06/18 17:22	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18030618
Project ID: 31400389.01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

General Comments:
Results reported on an as received basis.

Analytical:

TCL Volatile Organic Compounds

Batch: 151084
Surrogate recoveries affected by sample matrix.

Batch: 151089
Laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) exceedances identified; see LCS summary form.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18030618
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-29-IDW-Drill Cuttings	Initial	18030618-001	1035	S	70287	151084	03/06/2018	03/06/2018 11:39	03/06/2018 20:11
	70287-1-BKS	BKS	70287-1-BKS	1035	S	70287	151084	--------	03/06/2018 11:39	03/06/2018 14:09
	70287-1-BLK	BLK	70287-1-BLK	1035	S	70287	151084	--------	03/06/2018 11:39	03/06/2018 14:49
	PRC-15R, 0'-10' S	MS	18030105-001 S	1035	S	70287	151084	02/26/2018	03/06/2018 11:39	03/06/2018 22:51
	PRC-15R, 0'-10' SD	MSD	18030105-001 SD	1035	S	70287	151084	02/26/2018	03/06/2018 11:39	03/06/2018 23:31
	MW-29-(136-146)	Initial	18030618-002	1011	W	70288	151085	03/06/2018	03/06/2018 12:47	03/06/2018 17:46
	MW-29-(146-156)	Initial	18030618-003	1011	W	70288	151085	03/06/2018	03/06/2018 12:47	03/06/2018 18:07
	MW-29-Drill Water	Initial	18030618-004	1011	W	70288	151085	03/06/2018	03/06/2018 12:47	03/06/2018 18:30
	Trip Blank	Initial	18030618-005	1011	W	70288	151085	03/06/2018	03/06/2018 12:47	03/06/2018 17:22
	70288-1-BKS	BKS	70288-1-BKS	1011	W	70288	151085	--------	03/06/2018 12:47	03/06/2018 13:51
	70288-1-BLK	BLK	70288-1-BLK	1011	W	70288	151085	--------	03/06/2018 12:47	03/06/2018 15:00
	MW-1s S	MS	18022806-001 S	1011	W	70288	151085	02/27/2018	03/06/2018 12:47	03/06/2018 15:51
	MW-1s SD	MSD	18022806-001 SD	1011	W	70288	151085	02/27/2018	03/06/2018 12:47	03/06/2018 16:12
	70289-1-BKS	BKS	70289-1-BKS	1011	W	70289	151089	--------	03/07/2018 00:18	03/07/2018 01:25
	70289-1-BLK	BLK	70289-1-BLK	1011	W	70289	151089	--------	03/07/2018 00:18	03/07/2018 02:51
	MW-12 S	MS	18022806-017 S	1011	W	70289	151089	02/27/2018	03/07/2018 00:18	03/07/2018 03:34
	MW-12 SD	MSD	18022806-017 SD	1011	W	70289	151089	02/27/2018	03/07/2018 00:18	03/07/2018 03:55
	MW-29-Drill Water	Reanalysis	18030618-004	1011	W	70288	151089	03/06/2018	03/06/2018 12:47	03/07/2018 08:13

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030
Seq Number: 151084 Matrix: Soil Date Prep: 03/06/2018
PSS Sample ID: 18030618-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	128	*	82-126	%	03/06/18 20:11
Dibromofluoromethane	102		92-113	%	03/06/18 20:11
Toluene-D8	98		94-105	%	03/06/18 20:11

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151085 Matrix: Water Date Prep: 03/06/2018
PSS Sample ID: 18030618-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	03/06/18 17:46
Dibromofluoromethane	111		91-119	%	03/06/18 17:46
Toluene-D8	103		90-117	%	03/06/18 17:46

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151085 Matrix: Water Date Prep: 03/06/2018
PSS Sample ID: 18030618-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		86-111	%	03/06/18 18:07
Dibromofluoromethane	105		91-119	%	03/06/18 18:07
Toluene-D8	100		90-117	%	03/06/18 18:07

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151085 Matrix: Water Date Prep: 03/06/2018
PSS Sample ID: 18030618-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/06/18 18:30
Dibromofluoromethane	105		91-119	%	03/06/18 18:30
Toluene-D8	98		90-117	%	03/06/18 18:30

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151085 Matrix: Water Date Prep: 03/06/2018
PSS Sample ID: 18030618-005

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/06/18 17:22
Dibromofluoromethane	104		91-119	%	03/06/18 17:22
Toluene-D8	98		90-117	%	03/06/18 17:22

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151084 Matrix: Solid Date Prep: 03/06/18

MB Sample Id: 70287-1-BLK LCS Sample Id: 70287-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	48	60	100	167	46-127	ug/kg	03/06/18 14:09	H
Benzene	<5.0	60	62	103	70-127	ug/kg	03/06/18 14:09	
Bromochloromethane	<5.0	60	62	103	68-122	ug/kg	03/06/18 14:09	
Bromodichloromethane	<5.0	60	60	100	68-122	ug/kg	03/06/18 14:09	
Bromoform	<5.0	60	55	92	57-127	ug/kg	03/06/18 14:09	
Bromomethane	<5.0	60	63	105	68-123	ug/kg	03/06/18 14:09	
2-Butanone (MEK)	<20	60	75	125	41-136	ug/kg	03/06/18 14:09	
Carbon Disulfide	<10	60	63	105	66-135	ug/kg	03/06/18 14:09	
Carbon tetrachloride	<5.0	60	59	98	64-147	ug/kg	03/06/18 14:09	
Chlorobenzene	<5.0	60	55	92	70-121	ug/kg	03/06/18 14:09	
Chloroethane	<5.0	60	63	105	66-142	ug/kg	03/06/18 14:09	
Chloroform	<5.0	60	61	102	68-123	ug/kg	03/06/18 14:09	
Chloromethane	<5.0	60	66	110	65-136	ug/kg	03/06/18 14:09	
Cyclohexane	<20	60	62	103	62-138	ug/kg	03/06/18 14:09	
1,2-Dibromo-3-chloropropane	<40	60	60	100	55-122	ug/kg	03/06/18 14:09	
Dibromochloromethane	<5.0	60	58	97	61-122	ug/kg	03/06/18 14:09	
1,2-Dibromoethane	<5.0	60	61	102	63-119	ug/kg	03/06/18 14:09	
1,2-Dichlorobenzene	<5.0	60	44	73	65-121	ug/kg	03/06/18 14:09	
1,3-Dichlorobenzene	<5.0	60	46	77	69-121	ug/kg	03/06/18 14:09	
1,4-Dichlorobenzene	<5.0	60	44	73	69-118	ug/kg	03/06/18 14:09	
Dichlorodifluoromethane	<5.0	60	67	112	53-162	ug/kg	03/06/18 14:09	
1,1-Dichloroethane	<5.0	60	64	107	70-127	ug/kg	03/06/18 14:09	
1,2-Dichloroethane	<5.0	60	63	105	68-118	ug/kg	03/06/18 14:09	
1,1-Dichloroethene	<5.0	60	61	102	69-133	ug/kg	03/06/18 14:09	
1,2-Dichloropropane	<5.0	60	64	107	70-122	ug/kg	03/06/18 14:09	
cis-1,2-Dichloroethene	<5.0	60	63	105	68-126	ug/kg	03/06/18 14:09	
cis-1,3-Dichloropropene	<5.0	60	62	103	68-121	ug/kg	03/06/18 14:09	
trans-1,2-Dichloroethene	<5.0	60	62	103	70-132	ug/kg	03/06/18 14:09	
trans-1,3-Dichloropropene	<5.0	60	61	102	67-115	ug/kg	03/06/18 14:09	
Ethylbenzene	<5.0	60	56	93	70-125	ug/kg	03/06/18 14:09	
2-Hexanone (MBK)	<20	60	73	122	40-121	ug/kg	03/06/18 14:09	H
Isopropylbenzene	<5.0	60	56	93	68-130	ug/kg	03/06/18 14:09	
Methyl Acetate	<20	60	70	117	60-125	ug/kg	03/06/18 14:09	
Methylcyclohexane	<20	60	54	90	62-150	ug/kg	03/06/18 14:09	
Methylene chloride	<5.0	60	60	100	67-121	ug/kg	03/06/18 14:09	
4-Methyl-2-Pentanone (MIBK)	<20	60	69	115	48-117	ug/kg	03/06/18 14:09	
Methyl-t-Butyl Ether	<5.0	60	65	108	66-119	ug/kg	03/06/18 14:09	
Naphthalene	<5.0	60	36	60	54-115	ug/kg	03/06/18 14:09	
Styrene	<5.0	60	54	90	71-120	ug/kg	03/06/18 14:09	
1,1,2,2-Tetrachloroethane	<5.0	60	64	107	59-122	ug/kg	03/06/18 14:09	
Tetrachloroethene	<5.0	60	55	92	65-145	ug/kg	03/06/18 14:09	
Toluene	<5.0	60	61	102	69-129	ug/kg	03/06/18 14:09	
1,2,3-Trichlorobenzene	<5.0	60	30	50	60-114	ug/kg	03/06/18 14:09	L
1,2,4-Trichlorobenzene	<5.0	60	31	52	64-115	ug/kg	03/06/18 14:09	L
1,1,1-Trichloroethane	<5.0	60	60	100	65-139	ug/kg	03/06/18 14:09	
1,1,2-Trichloroethane	<5.0	60	63	105	64-125	ug/kg	03/06/18 14:09	
Trichloroethene	<5.0	60	60	100	69-133	ug/kg	03/06/18 14:09	
Trichlorofluoromethane	<5.0	60	65	108	59-153	ug/kg	03/06/18 14:09	
1,1,2-Trichlorotrifluoroethane	<5.0	60	59	98	62-139	ug/kg	03/06/18 14:09	
Vinyl chloride	<5.0	60	62	103	69-142	ug/kg	03/06/18 14:09	
m&p-Xylene	<10	120	110	92	71-124	ug/kg	03/06/18 14:09	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151084 Matrix: Solid Date Prep: 03/06/18

MB Sample Id: 70287-1-BLK LCS Sample Id: 70287-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<5.0	60	56	93	72-123	ug/kg	03/06/18 14:09	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	122		102		82-126	%	03/06/18 14:09
Dibromofluoromethane	102		102		92-113	%	03/06/18 14:09
Toluene-D8	98		98		94-105	%	03/06/18 14:09

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151085 Matrix: Water Date Prep: 03/06/18

MB Sample Id: 70288-1-BLK LCS Sample Id: 70288-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.87	96	29-149	ug/L	03/06/18 13:51	
Benzene	<1.000	50.00	57.62	115	85-123	ug/L	03/06/18 13:51	
Bromochloromethane	<1.000	50.00	60.67	121	82-136	ug/L	03/06/18 13:51	
Bromodichloromethane	<1.000	50.00	56.34	113	88-133	ug/L	03/06/18 13:51	
Bromoform	<5.000	50.00	55.85	112	80-126	ug/L	03/06/18 13:51	
Bromomethane	<1.000	50.00	66.72	133	64-139	ug/L	03/06/18 13:51	
2-Butanone (MEK)	<10.00	50.00	53.82	108	39-135	ug/L	03/06/18 13:51	
Carbon Disulfide	<10.00	50.00	56.10	112	85-124	ug/L	03/06/18 13:51	
Carbon tetrachloride	<1.000	50.00	58.56	117	81-138	ug/L	03/06/18 13:51	
Chlorobenzene	<1.000	50.00	58.76	118	85-120	ug/L	03/06/18 13:51	
Chloroethane	<1.000	50.00	55.38	111	75-129	ug/L	03/06/18 13:51	
Chloroform	<1.000	50.00	57.76	116	85-128	ug/L	03/06/18 13:51	
Chloromethane	<1.000	50.00	44.59	89	60-139	ug/L	03/06/18 13:51	
Cyclohexane	<10.00	50.00	55.87	112	55-131	ug/L	03/06/18 13:51	
1,2-Dibromo-3-chloropropane	<5.000	50.00	61.88	124	69-127	ug/L	03/06/18 13:51	
Dibromochloromethane	<1.000	50.00	60.57	121	82-127	ug/L	03/06/18 13:51	
1,2-Dibromoethane	<1.000	50.00	57.14	114	82-121	ug/L	03/06/18 13:51	
1,2-Dichlorobenzene	<1.000	50.00	59.33	119	82-123	ug/L	03/06/18 13:51	
1,3-Dichlorobenzene	<1.000	50.00	57.80	116	81-123	ug/L	03/06/18 13:51	
1,4-Dichlorobenzene	<1.000	50.00	60.10	120	81-121	ug/L	03/06/18 13:51	
Dichlorodifluoromethane	<1.000	50.00	55.60	111	69-147	ug/L	03/06/18 13:51	
1,1-Dichloroethane	<1.000	50.00	54.64	109	83-123	ug/L	03/06/18 13:51	
1,2-Dichloroethane	<1.000	50.00	58.02	116	86-138	ug/L	03/06/18 13:51	
1,1-Dichloroethene	<1.000	50.00	55.71	111	85-127	ug/L	03/06/18 13:51	
cis-1,2-Dichloroethene	<1.000	50.00	58.09	116	87-127	ug/L	03/06/18 13:51	
1,2-Dichloropropane	<1.000	50.00	54.71	109	79-125	ug/L	03/06/18 13:51	
cis-1,3-Dichloropropene	<1.000	50.00	53.06	106	79-131	ug/L	03/06/18 13:51	
trans-1,3-Dichloropropene	<1.000	50.00	54.19	108	82-133	ug/L	03/06/18 13:51	
trans-1,2-Dichloroethene	<1.000	50.00	55.28	111	85-125	ug/L	03/06/18 13:51	
Ethylbenzene	<1.000	50.00	58.07	116	83-123	ug/L	03/06/18 13:51	
2-Hexanone (MBK)	<5.000	50.00	45.70	91	37-137	ug/L	03/06/18 13:51	
Isopropylbenzene	<1.000	50.00	55.81	112	70-131	ug/L	03/06/18 13:51	
Methyl Acetate	<10.00	50.00	57.26	115	69-127	ug/L	03/06/18 13:51	
Methylcyclohexane	<10.00	50.00	56.59	113	75-129	ug/L	03/06/18 13:51	
Methylene chloride	<1.000	50.00	55.65	111	86-124	ug/L	03/06/18 13:51	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	48.08	96	39-143	ug/L	03/06/18 13:51	
Methyl-t-Butyl Ether	<1.000	50.00	39.89	80	75-134	ug/L	03/06/18 13:51	
Naphthalene	<1.000	50.00	47.88	96	61-118	ug/L	03/06/18 13:51	
Styrene	<1.000	50.00	56.05	112	80-120	ug/L	03/06/18 13:51	
1,1,2,2-Tetrachloroethane	<1.000	50.00	62.20	124	64-125	ug/L	03/06/18 13:51	
Tetrachloroethene	<1.000	50.00	54.34	109	83-138	ug/L	03/06/18 13:51	
Toluene	<1.000	50.00	57.65	115	88-126	ug/L	03/06/18 13:51	
1,2,3-Trichlorobenzene	<1.000	50.00	53.43	107	75-124	ug/L	03/06/18 13:51	
1,2,4-Trichlorobenzene	<1.000	50.00	48.96	98	77-131	ug/L	03/06/18 13:51	
1,1,1-Trichloroethane	<1.000	50.00	55.98	112	68-146	ug/L	03/06/18 13:51	
1,1,2-Trichloroethane	<1.000	50.00	58.64	117	85-124	ug/L	03/06/18 13:51	
Trichloroethene	<1.000	50.00	56.27	113	87-127	ug/L	03/06/18 13:51	
Trichlorofluoromethane	<5.000	50.00	57.23	114	77-147	ug/L	03/06/18 13:51	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	58.33	117	68-135	ug/L	03/06/18 13:51	
Vinyl chloride	<1.000	50.00	56.47	113	74-138	ug/L	03/06/18 13:51	
m&p-Xylene	<2.000	100	111.5	112	84-124	ug/L	03/06/18 13:51	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030618

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151085 Matrix: Water Date Prep: 03/06/18
MB Sample Id: 70288-1-BLK LCS Sample Id: 70288-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	58.42	117	79-126	ug/L	03/06/18 13:51	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		98		86-111	%	03/06/18 13:51
Dibromofluoromethane	105		107		91-119	%	03/06/18 13:51
Toluene-D8	97		102		90-117	%	03/06/18 13:51

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151089 Matrix: Water Date Prep: 03/07/18
MB Sample Id: 70289-1-BLK LCS Sample Id: 70289-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
2-Butanone (MEK)	<10.00	50.00	62.96	126	39-135	ug/L	03/07/18 01:25	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		96		86-111	%	03/07/18 01:25
Dibromofluoromethane	106		104		91-119	%	03/07/18 01:25
Toluene-D8	99		99		90-117	%	03/07/18 01:25

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 1803068

Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Drive

Project Name: Kop-Flex

WSP USA Contact Name: Eric Johnson

Project Location: Hanover MD

WSP USA Contact E-mail: Eric.Johnson@wsp.com

Project Number & Task: 31400389 / 01

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresg

Sampler(s) Signature(s):

No. 008240

Laboratory Name & Location: Phase Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 HR ASAP

Requested Analyses & Preservatives

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs By 8260	Sample Comments
1	MW-29-IDW-Drill Cuttings	S	3/6/18		0845		4	X	
2	MW-29 (13G-14G)	AQ	3/6/18		0950		3	X	
3	MW-29 (14G-15G)	AQ	3/6/18		1205		3	X	
4	MW-29-Drill water	AQ	3/6/18		1405		3	X	
5	Trip Blank	TB					2	X	

# of Coolers: 1 Temp Blank 4°C

Custody Seals: ABS

Ice Present: PRES Temp: 4°-5°C

Shipping Carrier: GTE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/6/18	1541					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
	03/06/18	1600					

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18030618	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/06/2018 04:20:00 PM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389.01	**Tracking No**	Not Applicable
Disposal Date	04/10/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	5
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 5 Total No. of Containers Received 15

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/06/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 03/06/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18030714

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

March 7, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 7, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18030714**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18030714**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 11, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18030714

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/07/2018 at 12:24 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18030714-001	MW-29 (174-184)	WATER	03/06/18 16:10
18030714-002	MW-29 (196-206)	WATER	03/07/18 10:20
18030714-003	Trip Blank	WATER	03/07/18 12:24

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-29 (174-184) **Date/Time Sampled: 03/06/2018 16:10** **PSS Sample ID: 18030714-001**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
Benzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Bromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Bromoform	ND	ug/L	5.0		1	03/07/18	03/07/18 16:04	1011
Bromomethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
Carbon Disulfide	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Chlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Chloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Chloroform	**2.2**	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Chloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Cyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/07/18	03/07/18 16:04	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Ethylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-29 (174-184) **Date/Time Sampled: 03/06/2018 16:10** **PSS Sample ID: 18030714-001**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 16:04	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Methyl Acetate	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
Methylcyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 16:04	1011
Methylene chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 16:04	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Naphthalene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Styrene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Toluene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Trichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/07/18	03/07/18 16:04	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
Vinyl chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011
m&p-Xylene	ND	ug/L	2.0		1	03/07/18	03/07/18 16:04	1011
o-Xylene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-29 (196-206) **Date/Time Sampled: 03/07/2018 10:20** **PSS Sample ID: 18030714-002**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
Benzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Bromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Bromodichloromethane	**1.5**	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Bromoform	ND	ug/L	5.0		1	03/07/18	03/07/18 16:25	1011
Bromomethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
Carbon Disulfide	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Chlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Chloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Chloroform	**5.5**	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Chloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Cyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/07/18	03/07/18 16:25	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Ethylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-29 (196-206) **Date/Time Sampled: 03/07/2018 10:20** **PSS Sample ID: 18030714-002**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 16:25	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Methyl Acetate	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
Methylcyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 16:25	1011
Methylene chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 16:25	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Naphthalene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Styrene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Toluene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Trichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/07/18	03/07/18 16:25	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
Vinyl chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011
m&p-Xylene	ND	ug/L	2.0		1	03/07/18	03/07/18 16:25	1011
o-Xylene	ND	ug/L	1.0		1	03/07/18	03/07/18 16:25	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/07/2018 12:24** **PSS Sample ID: 18030714-003**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
Benzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Bromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Bromoform	ND	ug/L	5.0		1	03/07/18	03/07/18 15:37	1011
Bromomethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
Carbon Disulfide	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Chlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Chloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Chloroform	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Chloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Cyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/07/18	03/07/18 15:37	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Ethylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18030714

WSP USA - Herndon, Herndon, VA

March 7, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/07/2018 12:24** **PSS Sample ID: 18030714-003**
Matrix: WATER **Date/Time Received: 03/07/2018 12:24**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 15:37	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Methyl Acetate	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
Methylcyclohexane	ND	ug/L	10		1	03/07/18	03/07/18 15:37	1011
Methylene chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/07/18	03/07/18 15:37	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Naphthalene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Styrene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Toluene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Trichloroethene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/07/18	03/07/18 15:37	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
Vinyl chloride	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011
m&p-Xylene	ND	ug/L	2.0		1	03/07/18	03/07/18 15:37	1011
o-Xylene	ND	ug/L	1.0		1	03/07/18	03/07/18 15:37	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18030714

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18030714
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-29 (174-184)	Initial	18030714-001	1011	W	70300	151123	03/06/2018	03/07/2018 12:38	03/07/2018 16:04
	MW-29 (196-206)	Initial	18030714-002	1011	W	70300	151123	03/07/2018	03/07/2018 12:38	03/07/2018 16:25
	Trip Blank	Initial	18030714-003	1011	W	70300	151123	03/07/2018	03/07/2018 12:38	03/07/2018 15:37
	70300-1-BKS	BKS	70300-1-BKS	1011	W	70300	151123	--------	03/07/2018 12:38	03/07/2018 14:07
	70300-1-BLK	BLK	70300-1-BLK	1011	W	70300	151123	--------	03/07/2018 12:38	03/07/2018 15:16

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030714

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151123 Matrix: Water Date Prep: 03/07/2018
PSS Sample ID: 18030714-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/07/18 16:04
Dibromofluoromethane	108		91-119	%	03/07/18 16:04
Toluene-D8	97		90-117	%	03/07/18 16:04

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151123 Matrix: Water Date Prep: 03/07/2018
PSS Sample ID: 18030714-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/07/18 16:25
Dibromofluoromethane	110		91-119	%	03/07/18 16:25
Toluene-D8	100		90-117	%	03/07/18 16:25

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151123 Matrix: Water Date Prep: 03/07/2018
PSS Sample ID: 18030714-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	108		86-111	%	03/07/18 15:37
Dibromofluoromethane	108		91-119	%	03/07/18 15:37
Toluene-D8	99		90-117	%	03/07/18 15:37

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030714

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151123 Matrix: Water Date Prep: 03/07/18

MB Sample Id: 70300-1-BLK LCS Sample Id: 70300-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.86	96	29-149	ug/L	03/07/18 14:07	
Benzene	<1.000	50.00	57.70	115	85-123	ug/L	03/07/18 14:07	
Bromochloromethane	<1.000	50.00	64.72	129	82-136	ug/L	03/07/18 14:07	
Bromodichloromethane	<1.000	50.00	59.83	120	88-133	ug/L	03/07/18 14:07	
Bromoform	<5.000	50.00	57.41	115	80-126	ug/L	03/07/18 14:07	
Bromomethane	<1.000	50.00	71.92	144	64-139	ug/L	03/07/18 14:07	H
2-Butanone (MEK)	<10.00	50.00	54.00	108	39-135	ug/L	03/07/18 14:07	
Carbon Disulfide	<10.00	50.00	59.89	120	85-124	ug/L	03/07/18 14:07	
Carbon tetrachloride	<1.000	50.00	59.67	119	81-138	ug/L	03/07/18 14:07	
Chlorobenzene	<1.000	50.00	61.18	122	85-120	ug/L	03/07/18 14:07	H
Chloroethane	<1.000	50.00	58.30	117	75-129	ug/L	03/07/18 14:07	
Chloroform	<1.000	50.00	61.38	123	85-128	ug/L	03/07/18 14:07	
Chloromethane	<1.000	50.00	46.79	94	60-139	ug/L	03/07/18 14:07	
Cyclohexane	<10.00	50.00	57.31	115	55-131	ug/L	03/07/18 14:07	
1,2-Dibromo-3-chloropropane	<5.000	50.00	62.13	124	69-127	ug/L	03/07/18 14:07	
Dibromochloromethane	<1.000	50.00	62.40	125	82-127	ug/L	03/07/18 14:07	
1,2-Dibromoethane	<1.000	50.00	61.17	122	82-121	ug/L	03/07/18 14:07	H
1,2-Dichlorobenzene	<1.000	50.00	59.76	120	82-123	ug/L	03/07/18 14:07	
1,3-Dichlorobenzene	<1.000	50.00	60.66	121	81-123	ug/L	03/07/18 14:07	
1,4-Dichlorobenzene	<1.000	50.00	60.49	121	81-121	ug/L	03/07/18 14:07	
Dichlorodifluoromethane	<1.000	50.00	59.09	118	69-147	ug/L	03/07/18 14:07	
1,1-Dichloroethane	<1.000	50.00	56.43	113	83-123	ug/L	03/07/18 14:07	
1,2-Dichloroethane	<1.000	50.00	59.58	119	86-138	ug/L	03/07/18 14:07	
1,1-Dichloroethene	<1.000	50.00	55.14	110	85-127	ug/L	03/07/18 14:07	
cis-1,2-Dichloroethene	<1.000	50.00	60.94	122	87-127	ug/L	03/07/18 14:07	
1,2-Dichloropropane	<1.000	50.00	58.70	117	79-125	ug/L	03/07/18 14:07	
cis-1,3-Dichloropropene	<1.000	50.00	55.64	111	79-131	ug/L	03/07/18 14:07	
trans-1,3-Dichloropropene	<1.000	50.00	52.07	104	82-133	ug/L	03/07/18 14:07	
trans-1,2-Dichloroethene	<1.000	50.00	56.81	114	85-125	ug/L	03/07/18 14:07	
Ethylbenzene	<1.000	50.00	58.80	118	83-123	ug/L	03/07/18 14:07	
2-Hexanone (MBK)	<5.000	50.00	46.09	92	37-137	ug/L	03/07/18 14:07	
Isopropylbenzene	<1.000	50.00	58.48	117	70-131	ug/L	03/07/18 14:07	
Methyl Acetate	<10.00	50.00	62.65	125	69-127	ug/L	03/07/18 14:07	
Methylcyclohexane	<10.00	50.00	59.78	120	75-129	ug/L	03/07/18 14:07	
Methylene chloride	<1.000	50.00	56.59	113	86-124	ug/L	03/07/18 14:07	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	48.95	98	39-143	ug/L	03/07/18 14:07	
Methyl-t-Butyl Ether	<1.000	50.00	31.54	63	75-134	ug/L	03/07/18 14:07	L
Naphthalene	<1.000	50.00	50.53	101	61-118	ug/L	03/07/18 14:07	
Styrene	<1.000	50.00	61.07	122	80-120	ug/L	03/07/18 14:07	H
1,1,2,2-Tetrachloroethane	<1.000	50.00	62.89	126	64-125	ug/L	03/07/18 14:07	H
Tetrachloroethene	<1.000	50.00	57.14	114	83-138	ug/L	03/07/18 14:07	
Toluene	<1.000	50.00	59.17	118	88-126	ug/L	03/07/18 14:07	
1,2,3-Trichlorobenzene	<1.000	50.00	52.08	104	75-124	ug/L	03/07/18 14:07	
1,2,4-Trichlorobenzene	<1.000	50.00	51.58	103	77-131	ug/L	03/07/18 14:07	
1,1,1-Trichloroethane	<1.000	50.00	55.31	111	68-146	ug/L	03/07/18 14:07	
1,1,2-Trichloroethane	<1.000	50.00	61.76	124	85-124	ug/L	03/07/18 14:07	
Trichloroethene	<1.000	50.00	59.63	119	87-127	ug/L	03/07/18 14:07	
Trichlorofluoromethane	<5.000	50.00	61.47	123	77-147	ug/L	03/07/18 14:07	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	61.04	122	68-135	ug/L	03/07/18 14:07	
Vinyl chloride	<1.000	50.00	57.14	114	74-138	ug/L	03/07/18 14:07	
m&p-Xylene	<2.000	100	120.9	121	84-124	ug/L	03/07/18 14:07	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18030714

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151123 Matrix: Water Date Prep: 03/07/18

MB Sample Id: 70300-1-BLK LCS Sample Id: 70300-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	60.27	121	79-126	ug/L	03/07/18 14:07	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		97		86-111	%	03/07/18 14:07
Dibromofluoromethane	105		108		91-119	%	03/07/18 14:07
Toluene-D8	97		98		90-117	%	03/07/18 14:07

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD ~~1803~~ 1803071 4

WSP USA Office Address: 13530 Dulles Technology Drive Suite 300 Herndon, VA

No. 008239 WSP

Project Name: Kop-Flex	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, MD	WSP USA Contact E-mail: Eric.Johnson@wsp.com
Project Number & Task: 31400389/01	WSP USA Contact Phone: 703-709-6500
Sampler(s) Name(s): Chris Cresci	Sampler(s) Signature(s):

Laboratory Name & Location: Phase Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 72 HR Emergency

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Requested Analyses & Preservatives: VOC 8260	Sample Comments
MW-29 (174-184)	AQ	3/6/18		1610		3	X	
MW-29 (196-206)	AQ	3/6/18		1020		3	X	
Trip Blank						2	X	

# of Coolers: 1 Temp Blank 1°C
Custody Seal: ABS
Ice Present: PRES Temp: 1°-3°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/7/18	1224					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18030714	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/07/2018 12:24:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	04/11/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	3
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/07/2018

Thomas Wingate

PM Review and Approval: Amber J Confer Date: 03/07/2018

Amber Confer

MW-30 LOCATION

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032921

Project Manager: Eric Johnson
Project Name : Kop Flex
Project Location: Hanover, MD
Project ID : 31400389/Task 1

March 30, 2018

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PHASE SEPARATION SCIENCE, INC.

March 30, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032921**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/Task 1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032921**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 3, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032921

Project ID: 31400389/Task 1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/29/2018 at 04:28 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032921-001	MW-30(1)-206-216	WATER	03/29/18 11:40
18032921-002	MW-30(1)-216-226	WATER	03/29/18 13:45

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032921

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-206-216 **Date/Time Sampled: 03/29/2018 11:40** **PSS Sample ID: 18032921-001**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 10:12	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Chloroform	**2.3**	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:12	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032921

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-206-216 **Date/Time Sampled: 03/29/2018 11:40** **PSS Sample ID: 18032921-001**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:12	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:12	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:12	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:12	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 10:12	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032921

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-216-226 **Date/Time Sampled: 03/29/2018 13:45** **PSS Sample ID: 18032921-002**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 10:33	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Chloroform	**1.6**	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:33	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,1-Dichloroethene	**1.1**	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032921

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-216-226 **Date/Time Sampled: 03/29/2018 13:45** **PSS Sample ID: 18032921-002**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:33	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:33	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:33	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:33	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 10:33	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:33	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032921

Project ID: 31400389/Task 1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

Vials for sample "MW-30(1)-216-226" contain headspace and sediment.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032921**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-30(1)-206-216	Initial	18032921-001	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 10:12
	MW-30(1)-216-226	Initial	18032921-002	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 10:33
	70672-1-BKS	BKS	70672-1-BKS	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:10
	70672-1-BLK	BLK	70672-1-BLK	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:51

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032921

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18032921-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		86-111	%	03/30/18 10:12
Dibromofluoromethane	102		91-119	%	03/30/18 10:12
Toluene-D8	100		90-117	%	03/30/18 10:12

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18032921-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/30/18 10:33
Dibromofluoromethane	100		91-119	%	03/30/18 10:33
Toluene-D8	99		90-117	%	03/30/18 10:33

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032921

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	35.66	71	29-149	ug/L	03/30/18 09:10	
Benzene	<1.000	50.00	47.98	96	85-123	ug/L	03/30/18 09:10	
Bromochloromethane	<1.000	50.00	43.75	88	82-136	ug/L	03/30/18 09:10	
Bromodichloromethane	<1.000	50.00	43.78	88	88-133	ug/L	03/30/18 09:10	
Bromoform	<5.000	50.00	44.66	89	80-126	ug/L	03/30/18 09:10	
Bromomethane	<1.000	50.00	34.27	69	64-139	ug/L	03/30/18 09:10	
2-Butanone	<10.00	50.00	34.32	69	39-135	ug/L	03/30/18 09:10	
Carbon Disulfide	<10.00	50.00	47.47	95	85-124	ug/L	03/30/18 09:10	
Carbon tetrachloride	<1.000	50.00	44.31	89	81-138	ug/L	03/30/18 09:10	
Chlorobenzene	<1.000	50.00	48.75	98	85-120	ug/L	03/30/18 09:10	
Chloroethane	<1.000	50.00	44.99	90	75-129	ug/L	03/30/18 09:10	
Chloroform	<1.000	50.00	43.01	86	85-128	ug/L	03/30/18 09:10	
Chloromethane	<1.000	50.00	33.35	67	60-139	ug/L	03/30/18 09:10	
Cyclohexane	<10.00	50.00	45.72	91	55-131	ug/L	03/30/18 09:10	
1,2-Dibromo-3-chloropropane	<5.000	50.00	41.15	82	69-127	ug/L	03/30/18 09:10	
Dibromochloromethane	<1.000	50.00	44.21	88	82-127	ug/L	03/30/18 09:10	
1,2-Dibromoethane	<1.000	50.00	42.73	85	82-121	ug/L	03/30/18 09:10	
1,2-Dichlorobenzene	<1.000	50.00	44.21	88	82-123	ug/L	03/30/18 09:10	
1,3-Dichlorobenzene	<1.000	50.00	49.48	99	81-123	ug/L	03/30/18 09:10	
1,4-Dichlorobenzene	<1.000	50.00	48.38	97	81-121	ug/L	03/30/18 09:10	
Dichlorodifluoromethane	<1.000	50.00	41.41	83	69-147	ug/L	03/30/18 09:10	
1,1-Dichloroethane	<1.000	50.00	47.50	95	83-123	ug/L	03/30/18 09:10	
1,2-Dichloroethane	<1.000	50.00	47.33	95	86-138	ug/L	03/30/18 09:10	
1,1-Dichloroethene	<1.000	50.00	48.63	97	85-127	ug/L	03/30/18 09:10	
cis-1,2-Dichloroethene	<1.000	50.00	47.65	95	87-127	ug/L	03/30/18 09:10	
1,2-Dichloropropane	<1.000	50.00	43.51	87	79-125	ug/L	03/30/18 09:10	
cis-1,3-Dichloropropene	<1.000	50.00	43.07	86	79-131	ug/L	03/30/18 09:10	
trans-1,3-Dichloropropene	<1.000	50.00	43.34	87	82-133	ug/L	03/30/18 09:10	
trans-1,2-Dichloroethene	<1.000	50.00	48.11	96	85-125	ug/L	03/30/18 09:10	
Ethylbenzene	<1.000	50.00	43.55	87	83-123	ug/L	03/30/18 09:10	
2-Hexanone (MBK)	<5.000	50.00	34.22	68	37-137	ug/L	03/30/18 09:10	
Isopropylbenzene	<1.000	50.00	43.34	87	70-131	ug/L	03/30/18 09:10	
Methyl Acetate	<10.00	50.00	40.10	80	69-127	ug/L	03/30/18 09:10	
Methylcyclohexane	<10.00	50.00	46.54	93	75-129	ug/L	03/30/18 09:10	
Methylene chloride	<1.000	50.00	46.43	93	86-124	ug/L	03/30/18 09:10	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.25	69	39-143	ug/L	03/30/18 09:10	
Methyl-t-Butyl Ether	<1.000	50.00	42.05	84	75-134	ug/L	03/30/18 09:10	
Naphthalene	<1.000	50.00	41.93	84	61-118	ug/L	03/30/18 09:10	
Styrene	<1.000	50.00	44.06	88	80-120	ug/L	03/30/18 09:10	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.46	91	64-125	ug/L	03/30/18 09:10	
Tetrachloroethene	<1.000	50.00	48.97	98	83-138	ug/L	03/30/18 09:10	
Toluene	<1.000	50.00	43.37	87	88-126	ug/L	03/30/18 09:10	L
1,2,3-Trichlorobenzene	<1.000	50.00	44.34	89	75-124	ug/L	03/30/18 09:10	
1,2,4-Trichlorobenzene	<1.000	50.00	44.85	90	77-131	ug/L	03/30/18 09:10	
1,1,1-Trichloroethane	<1.000	50.00	48.73	97	68-146	ug/L	03/30/18 09:10	
1,1,2-Trichloroethane	<1.000	50.00	48.10	96	85-124	ug/L	03/30/18 09:10	
Trichloroethene	<1.000	50.00	47.90	96	87-127	ug/L	03/30/18 09:10	
Trichlorofluoromethane	<5.000	50.00	48.73	97	77-147	ug/L	03/30/18 09:10	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	45.29	91	68-135	ug/L	03/30/18 09:10	
Vinyl chloride	<1.000	50.00	42.01	84	74-138	ug/L	03/30/18 09:10	
m&p-Xylene	<2.000	100	88.26	88	84-124	ug/L	03/30/18 09:10	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032921

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.20	88	79-126	ug/L	03/30/18 09:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		95		86-111	%	03/30/18 09:10
Dibromofluoromethane	101		100		91-119	%	03/30/18 09:10
Toluene-D8	100		99		90-117	%	03/30/18 09:10

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 180329211

WSP USA Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA

No. 008029 | WSP

Project Name: Kop-Flex	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, MD	WSP USA Contact E-mail: Eric.Johnson@wsp.com
Project Number & Task: 31400389/Task 1	WSP USA Contact Phone: 703-709-6500
Sampler(s) Name(s): Chris Cresh	Sampler(s) Signature(s):
Laboratory Name & Location: Pace Separation	
Laboratory Project Manager: Amber Confer	

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR Emergency / 24 HR

Requested Analyses & Preservatives: VOCs By 8260

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Sample Comments
MW-30(1)-Top Soil	S	3/29/17		1045		4	24 HR
MW-30(1)-206-216	AQ	3/29/17		1140		3	*Emergency*
MW-30(1)-216-226	AQ	3/29/17		1345		3	*Emergency*
MW-30(1)-Top Drill water	AQ	3/29/17		1355		3	24 HR
Trip Blank						2	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES
Temp: 2°-12°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
R. Cohen	3/29/18	1628					
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032921	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/29/2018 04:28:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/Task 1	**Tracking No**	Not Applicable
Disposal Date	05/03/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	12
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 6

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		No
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Vials for sample "MW-30(1)-216-226" contain headspace and sediment.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/29/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 03/29/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18033001

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

March 30, 2018

Phase Separation Science, Inc.

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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.

March 30, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18033001**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18033001**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 4, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18033001

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/30/2018 at 09:50 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18033001-001	MW-30(1) 236-246	WATER	03/29/18 11:20
18033001-002	Trip Blank	WATER	03/30/18 09:50

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033001

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 236-246 **Date/Time Sampled: 03/29/2018 11:20** **PSS Sample ID: 18033001-001**
Matrix: WATER **Date/Time Received: 03/30/2018 09:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 11:56	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Chloroform	**1.8**	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:56	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033001

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 236-246 **Date/Time Sampled: 03/29/2018 11:20** **PSS Sample ID: 18033001-001**
Matrix: WATER **Date/Time Received: 03/30/2018 09:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:56	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:56	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:56	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:56	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 11:56	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:56	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033001

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/30/2018 09:50** **PSS Sample ID: 18033001-002**
Matrix: WATER **Date/Time Received: 03/30/2018 09:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 11:35	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Chloroform	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:35	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033001

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/30/2018 09:50** **PSS Sample ID: 18033001-002**
Matrix: WATER **Date/Time Received: 03/30/2018 09:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:35	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:35	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:35	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:35	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 11:35	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:35	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18033001

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18033001**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-30(1) 236-246	Initial	18033001-001	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 11:56
	Trip Blank	Initial	18033001-002	1011	W	70672	151874	03/30/2018	03/30/2018 08:05	03/30/2018 11:35
	70672-1-BKS	BKS	70672-1-BKS	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:10
	70672-1-BLK	BLK	70672-1-BLK	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:51

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033001

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18033001-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/30/18 11:56
Dibromofluoromethane	101		91-119	%	03/30/18 11:56
Toluene-D8	100		90-117	%	03/30/18 11:56

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18033001-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		86-111	%	03/30/18 11:35
Dibromofluoromethane	101		91-119	%	03/30/18 11:35
Toluene-D8	100		90-117	%	03/30/18 11:35

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033001

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	35.66	71	29-149	ug/L	03/30/18 09:10	
Benzene	<1.000	50.00	47.98	96	85-123	ug/L	03/30/18 09:10	
Bromochloromethane	<1.000	50.00	43.75	88	82-136	ug/L	03/30/18 09:10	
Bromodichloromethane	<1.000	50.00	43.78	88	88-133	ug/L	03/30/18 09:10	
Bromoform	<5.000	50.00	44.66	89	80-126	ug/L	03/30/18 09:10	
Bromomethane	<1.000	50.00	34.27	69	64-139	ug/L	03/30/18 09:10	
2-Butanone	<10.00	50.00	34.32	69	39-135	ug/L	03/30/18 09:10	
Carbon Disulfide	<10.00	50.00	47.47	95	85-124	ug/L	03/30/18 09:10	
Carbon tetrachloride	<1.000	50.00	44.31	89	81-138	ug/L	03/30/18 09:10	
Chlorobenzene	<1.000	50.00	48.75	98	85-120	ug/L	03/30/18 09:10	
Chloroethane	<1.000	50.00	44.99	90	75-129	ug/L	03/30/18 09:10	
Chloroform	<1.000	50.00	43.01	86	85-128	ug/L	03/30/18 09:10	
Chloromethane	<1.000	50.00	33.35	67	60-139	ug/L	03/30/18 09:10	
Cyclohexane	<10.00	50.00	45.72	91	55-131	ug/L	03/30/18 09:10	
1,2-Dibromo-3-chloropropane	<5.000	50.00	41.15	82	69-127	ug/L	03/30/18 09:10	
Dibromochloromethane	<1.000	50.00	44.21	88	82-127	ug/L	03/30/18 09:10	
1,2-Dibromoethane	<1.000	50.00	42.73	85	82-121	ug/L	03/30/18 09:10	
1,2-Dichlorobenzene	<1.000	50.00	44.21	88	82-123	ug/L	03/30/18 09:10	
1,3-Dichlorobenzene	<1.000	50.00	49.48	99	81-123	ug/L	03/30/18 09:10	
1,4-Dichlorobenzene	<1.000	50.00	48.38	97	81-121	ug/L	03/30/18 09:10	
Dichlorodifluoromethane	<1.000	50.00	41.41	83	69-147	ug/L	03/30/18 09:10	
1,1-Dichloroethane	<1.000	50.00	47.50	95	83-123	ug/L	03/30/18 09:10	
1,2-Dichloroethane	<1.000	50.00	47.33	95	86-138	ug/L	03/30/18 09:10	
1,1-Dichloroethene	<1.000	50.00	48.63	97	85-127	ug/L	03/30/18 09:10	
cis-1,2-Dichloroethene	<1.000	50.00	47.65	95	87-127	ug/L	03/30/18 09:10	
1,2-Dichloropropane	<1.000	50.00	43.51	87	79-125	ug/L	03/30/18 09:10	
cis-1,3-Dichloropropene	<1.000	50.00	43.07	86	79-131	ug/L	03/30/18 09:10	
trans-1,3-Dichloropropene	<1.000	50.00	43.34	87	82-133	ug/L	03/30/18 09:10	
trans-1,2-Dichloroethene	<1.000	50.00	48.11	96	85-125	ug/L	03/30/18 09:10	
Ethylbenzene	<1.000	50.00	43.55	87	83-123	ug/L	03/30/18 09:10	
2-Hexanone (MBK)	<5.000	50.00	34.22	68	37-137	ug/L	03/30/18 09:10	
Isopropylbenzene	<1.000	50.00	43.34	87	70-131	ug/L	03/30/18 09:10	
Methyl Acetate	<10.00	50.00	40.10	80	69-127	ug/L	03/30/18 09:10	
Methylcyclohexane	<10.00	50.00	46.54	93	75-129	ug/L	03/30/18 09:10	
Methylene chloride	<1.000	50.00	46.43	93	86-124	ug/L	03/30/18 09:10	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.25	69	39-143	ug/L	03/30/18 09:10	
Methyl-t-Butyl Ether	<1.000	50.00	42.05	84	75-134	ug/L	03/30/18 09:10	
Naphthalene	<1.000	50.00	41.93	84	61-118	ug/L	03/30/18 09:10	
Styrene	<1.000	50.00	44.06	88	80-120	ug/L	03/30/18 09:10	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.46	91	64-125	ug/L	03/30/18 09:10	
Tetrachloroethene	<1.000	50.00	48.97	98	83-138	ug/L	03/30/18 09:10	
Toluene	<1.000	50.00	43.37	87	88-126	ug/L	03/30/18 09:10	L
1,2,3-Trichlorobenzene	<1.000	50.00	44.34	89	75-124	ug/L	03/30/18 09:10	
1,2,4-Trichlorobenzene	<1.000	50.00	44.85	90	77-131	ug/L	03/30/18 09:10	
1,1,1-Trichloroethane	<1.000	50.00	48.73	97	68-146	ug/L	03/30/18 09:10	
1,1,2-Trichloroethane	<1.000	50.00	48.10	96	85-124	ug/L	03/30/18 09:10	
Trichloroethene	<1.000	50.00	47.90	96	87-127	ug/L	03/30/18 09:10	
Trichlorofluoromethane	<5.000	50.00	48.73	97	77-147	ug/L	03/30/18 09:10	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	45.29	91	68-135	ug/L	03/30/18 09:10	
Vinyl chloride	<1.000	50.00	42.01	84	74-138	ug/L	03/30/18 09:10	
m&p-Xylene	<2.000	100	88.26	88	84-124	ug/L	03/30/18 09:10	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033001

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.20	88	79-126	ug/L	03/30/18 09:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		95		86-111	%	03/30/18 09:10
Dibromofluoromethane	101		100		91-119	%	03/30/18 09:10
Toluene-D8	100		99		90-117	%	03/30/18 09:10

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 180330d

Page 1 of 1

WSP USA Office Address: 13530 Dulles Technology Drive Suite 300 Herndon VA

Project Name: Kap-Fly	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, MD	WSP USA Contact E-mail: Eric.Johnson@wsp.com
Project Number & Task: 31400389/01	WSP USA Contact Phone: 703-709-6500
Sampler(s) Name(s): Chris Gesa	Sampler(s) Signature(s):

No. 008049

Laboratory Name & Location: Phase

Laboratory Project Manager: Amber Centers

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ____ HR Emergency

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Requested Analyses & Preservatives: VOCs	Sample Comments
MW-3061-230-246	AQ	3/29/18		1620		3	X	
Trip Blank						2	X	

# of Coolers: 1
Custody Seal: ABS
Ice Present: YES
Temp: 1°-2°C
Shipping Carrier: FDE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/30/18	0					
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
	3/30/18	900					

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18033001	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/30/2018 09:50:00 AM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/04/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	2
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 5

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/30/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 03/30/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18033015

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

March 30, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 30, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18033015**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18033015**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 4, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18033015

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/30/2018 at 01:20 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18033015-001	MW-30(1) 266-276	WATER	03/30/18 09:15
18033015-002	MW-30(1) 276-286	WATER	03/30/18 12:15
18033015-003	Trip Blank	WATER	03/30/18 13:20

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 266-276 **Date/Time Sampled: 03/30/2018 09:15** **PSS Sample ID: 18033015-001**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 14:28	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Chloroform	**1.5**	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:28	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,1-Dichloroethene	**6.3**	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 266-276 **Date/Time Sampled: 03/30/2018 09:15** **PSS Sample ID: 18033015-001**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:28	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:28	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:28	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:28	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 14:28	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:28	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 276-286 **Date/Time Sampled: 03/30/2018 12:15** **PSS Sample ID: 18033015-002**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 14:49	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Chloroform	**2.3**	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:49	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-30(1) 276-286 **Date/Time Sampled: 03/30/2018 12:15** **PSS Sample ID: 18033015-002**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:49	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:49	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:49	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:49	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 14:49	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:49	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/30/2018 13:20** **PSS Sample ID: 18033015-003**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 14:07	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Chloroform	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:07	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18033015

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/30/2018 13:20** **PSS Sample ID: 18033015-003**
Matrix: WATER **Date/Time Received: 03/30/2018 13:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:07	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 14:07	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 14:07	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 14:07	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 14:07	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 14:07	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18033015

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18033015**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-30(1) 266-276	Initial	18033015-001	1011	W	70672	151874	03/30/2018	03/30/2018 08:05	03/30/2018 14:28
	MW-30(1) 276-286	Initial	18033015-002	1011	W	70672	151874	03/30/2018	03/30/2018 08:05	03/30/2018 14:49
	Trip Blank	Initial	18033015-003	1011	W	70672	151874	03/30/2018	03/30/2018 08:05	03/30/2018 14:07
	70672-1-BKS	BKS	70672-1-BKS	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:10
	70672-1-BLK	BLK	70672-1-BLK	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:51
	MW-30(1)-206-216 S	MS	18032921-001 S	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 12:23
	MW-30(1)-206-216 SD	MSD	18032921-001 SD	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 12:44

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033015

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18033015-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/30/18 14:28
Dibromofluoromethane	102		91-119	%	03/30/18 14:28
Toluene-D8	101		90-117	%	03/30/18 14:28

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18033015-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	111		86-111	%	03/30/18 14:49
Dibromofluoromethane	101		91-119	%	03/30/18 14:49
Toluene-D8	99		90-117	%	03/30/18 14:49

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18033015-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	108		86-111	%	03/30/18 14:07
Dibromofluoromethane	101		91-119	%	03/30/18 14:07
Toluene-D8	100		90-117	%	03/30/18 14:07

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033015

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	35.66	71	29-149	ug/L	03/30/18 09:10	
Benzene	<1.000	50.00	47.98	96	85-123	ug/L	03/30/18 09:10	
Bromochloromethane	<1.000	50.00	43.75	88	82-136	ug/L	03/30/18 09:10	
Bromodichloromethane	<1.000	50.00	43.78	88	88-133	ug/L	03/30/18 09:10	
Bromoform	<5.000	50.00	44.66	89	80-126	ug/L	03/30/18 09:10	
Bromomethane	<1.000	50.00	34.27	69	64-139	ug/L	03/30/18 09:10	
2-Butanone	<10.00	50.00	34.32	69	39-135	ug/L	03/30/18 09:10	
Carbon Disulfide	<10.00	50.00	47.47	95	85-124	ug/L	03/30/18 09:10	
Carbon tetrachloride	<1.000	50.00	44.31	89	81-138	ug/L	03/30/18 09:10	
Chlorobenzene	<1.000	50.00	48.75	98	85-120	ug/L	03/30/18 09:10	
Chloroethane	<1.000	50.00	44.99	90	75-129	ug/L	03/30/18 09:10	
Chloroform	<1.000	50.00	43.01	86	85-128	ug/L	03/30/18 09:10	
Chloromethane	<1.000	50.00	33.35	67	60-139	ug/L	03/30/18 09:10	
Cyclohexane	<10.00	50.00	45.72	91	55-131	ug/L	03/30/18 09:10	
1,2-Dibromo-3-chloropropane	<5.000	50.00	41.15	82	69-127	ug/L	03/30/18 09:10	
Dibromochloromethane	<1.000	50.00	44.21	88	82-127	ug/L	03/30/18 09:10	
1,2-Dibromoethane	<1.000	50.00	42.73	85	82-121	ug/L	03/30/18 09:10	
1,2-Dichlorobenzene	<1.000	50.00	44.21	88	82-123	ug/L	03/30/18 09:10	
1,3-Dichlorobenzene	<1.000	50.00	49.48	99	81-123	ug/L	03/30/18 09:10	
1,4-Dichlorobenzene	<1.000	50.00	48.38	97	81-121	ug/L	03/30/18 09:10	
Dichlorodifluoromethane	<1.000	50.00	41.41	83	69-147	ug/L	03/30/18 09:10	
1,1-Dichloroethane	<1.000	50.00	47.50	95	83-123	ug/L	03/30/18 09:10	
1,2-Dichloroethane	<1.000	50.00	47.33	95	86-138	ug/L	03/30/18 09:10	
1,1-Dichloroethene	<1.000	50.00	48.63	97	85-127	ug/L	03/30/18 09:10	
cis-1,2-Dichloroethene	<1.000	50.00	47.65	95	87-127	ug/L	03/30/18 09:10	
1,2-Dichloropropane	<1.000	50.00	43.51	87	79-125	ug/L	03/30/18 09:10	
cis-1,3-Dichloropropene	<1.000	50.00	43.07	86	79-131	ug/L	03/30/18 09:10	
trans-1,3-Dichloropropene	<1.000	50.00	43.34	87	82-133	ug/L	03/30/18 09:10	
trans-1,2-Dichloroethene	<1.000	50.00	48.11	96	85-125	ug/L	03/30/18 09:10	
Ethylbenzene	<1.000	50.00	43.55	87	83-123	ug/L	03/30/18 09:10	
2-Hexanone (MBK)	<5.000	50.00	34.22	68	37-137	ug/L	03/30/18 09:10	
Isopropylbenzene	<1.000	50.00	43.34	87	70-131	ug/L	03/30/18 09:10	
Methyl Acetate	<10.00	50.00	40.10	80	69-127	ug/L	03/30/18 09:10	
Methylcyclohexane	<10.00	50.00	46.54	93	75-129	ug/L	03/30/18 09:10	
Methylene chloride	<1.000	50.00	46.43	93	86-124	ug/L	03/30/18 09:10	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.25	69	39-143	ug/L	03/30/18 09:10	
Methyl-t-Butyl Ether	<1.000	50.00	42.05	84	75-134	ug/L	03/30/18 09:10	
Naphthalene	<1.000	50.00	41.93	84	61-118	ug/L	03/30/18 09:10	
Styrene	<1.000	50.00	44.06	88	80-120	ug/L	03/30/18 09:10	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.46	91	64-125	ug/L	03/30/18 09:10	
Tetrachloroethene	<1.000	50.00	48.97	98	83-138	ug/L	03/30/18 09:10	
Toluene	<1.000	50.00	43.37	87	88-126	ug/L	03/30/18 09:10	L
1,2,3-Trichlorobenzene	<1.000	50.00	44.34	89	75-124	ug/L	03/30/18 09:10	
1,2,4-Trichlorobenzene	<1.000	50.00	44.85	90	77-131	ug/L	03/30/18 09:10	
1,1,1-Trichloroethane	<1.000	50.00	48.73	97	68-146	ug/L	03/30/18 09:10	
1,1,2-Trichloroethane	<1.000	50.00	48.10	96	85-124	ug/L	03/30/18 09:10	
Trichloroethene	<1.000	50.00	47.90	96	87-127	ug/L	03/30/18 09:10	
Trichlorofluoromethane	<5.000	50.00	48.73	97	77-147	ug/L	03/30/18 09:10	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	45.29	91	68-135	ug/L	03/30/18 09:10	
Vinyl chloride	<1.000	50.00	42.01	84	74-138	ug/L	03/30/18 09:10	
m&p-Xylene	<2.000	100	88.26	88	84-124	ug/L	03/30/18 09:10	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18033015

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.20	88	79-126	ug/L	03/30/18 09:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		95		86-111	%	03/30/18 09:10
Dibromofluoromethane	101		100		91-119	%	03/30/18 09:10
Toluene-D8	100		99		90-117	%	03/30/18 09:10

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 18033015

WSP USA Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA

No. 008050 — WSP

Project Name: KCP-Fleet	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, MD	WSP USA Contact E-mail: Eric.Johnson@wsp.com
Project Number & Task: 31400389/01	WSP USA Contact Phone: 703-709-6500
Sampler(s) Name(s): Chris Cresq	Sampler(s) Signature(s):

Laboratory Name & Location: Phase Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR Emergency

Requested Analyses & Preservatives: VOCs By 8260

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Sample Comments
MW-30(1)266-276	AQ	3/30/18		0915		3	
MW-30(1)276-286	AQ	3/30/18		1215		3	
Trip Blank						2	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES
Temp: 11°-12°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/30/18	1320					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18033015	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/30/2018 01:20:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/04/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	12
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/30/2018

Thomas Wingate

PM Review and Approval: N Y Jackson Date: 03/30/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18040321

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389.01

April 4, 2018

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
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FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

April 4, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18040321**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389.01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18040321**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 8, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18040321

Project ID: 31400389.01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/03/2018 at 02:35 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18040321-001	MW-30(1) (291-296)	GROUND WATER	04/02/18 16:30
18040321-002	Trip Blank	WATER	04/03/18 14:35
18040321-003	MW-30(1) (311-316)	GROUND WATER	04/02/18 11:55

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

OFFICES:
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ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-30(1) (291-296) **Date/Time Sampled: 04/02/2018 16:30** **PSS Sample ID: 18040321-001**
Matrix: GROUND WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
Benzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Bromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Bromoform	ND	ug/L	5.0		1	04/03/18	04/03/18 15:47	1011
Bromomethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
Carbon Disulfide	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Chlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Chloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Chloroform	**5.6**	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Chloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Cyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/03/18	04/03/18 15:47	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,1-Dichloroethene	**2.4**	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Ethylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-30(1) (291-296) **Date/Time Sampled: 04/02/2018 16:30** **PSS Sample ID: 18040321-001**
Matrix: GROUND WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 15:47	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Methyl Acetate	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
Methylcyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 15:47	1011
Methylene chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 15:47	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Naphthalene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Styrene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Toluene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Trichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/03/18	04/03/18 15:47	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
Vinyl chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011
m&p-Xylene	ND	ug/L	2.0		1	04/03/18	04/03/18 15:47	1011
o-Xylene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:47	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: Trip Blank **Date/Time Sampled: 04/03/2018 14:35** **PSS Sample ID: 18040321-002**
Matrix: WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
Benzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Bromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Bromoform	ND	ug/L	5.0		1	04/03/18	04/03/18 15:26	1011
Bromomethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
Carbon Disulfide	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Chlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Chloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Chloroform	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Chloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Cyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/03/18	04/03/18 15:26	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Ethylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: Trip Blank **Date/Time Sampled: 04/03/2018 14:35** **PSS Sample ID: 18040321-002**
Matrix: WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 15:26	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Methyl Acetate	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
Methylcyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 15:26	1011
Methylene chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 15:26	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Naphthalene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Styrene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Toluene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Trichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/03/18	04/03/18 15:26	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
Vinyl chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011
m&p-Xylene	ND	ug/L	2.0		1	04/03/18	04/03/18 15:26	1011
o-Xylene	ND	ug/L	1.0		1	04/03/18	04/03/18 15:26	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-30(1) (311-316) **Date/Time Sampled: 04/02/2018 11:55** **PSS Sample ID: 18040321-003**
Matrix: GROUND WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
Benzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Bromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Bromoform	ND	ug/L	5.0		1	04/03/18	04/03/18 16:08	1011
Bromomethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
Carbon Disulfide	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Chlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Chloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Chloroform	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Chloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Cyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/03/18	04/03/18 16:08	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,1-Dichloroethene	**3.1**	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Ethylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040321

WSP USA - Herndon, Herndon, VA

April 4, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389.01

Sample ID: MW-30(1) (311-316) **Date/Time Sampled: 04/02/2018 11:55** **PSS Sample ID: 18040321-003**
Matrix: GROUND WATER **Date/Time Received: 04/03/2018 14:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 16:08	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Methyl Acetate	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
Methylcyclohexane	ND	ug/L	10		1	04/03/18	04/03/18 16:08	1011
Methylene chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/03/18	04/03/18 16:08	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Naphthalene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Styrene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Toluene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Trichloroethene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/03/18	04/03/18 16:08	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
Vinyl chloride	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011
m&p-Xylene	ND	ug/L	2.0		1	04/03/18	04/03/18 16:08	1011
o-Xylene	ND	ug/L	1.0		1	04/03/18	04/03/18 16:08	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18040321

Project ID: 31400389.01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18040321**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-30(1) (291-296)	Initial	18040321-001	1011	W	70727	151981	04/02/2018	04/04/2018 09:21	04/03/2018 15:47
	Trip Blank	Initial	18040321-002	1011	W	70727	151981	04/03/2018	04/04/2018 09:21	04/03/2018 15:26
	MW-30(1) (311-316)	Initial	18040321-003	1011	W	70727	151981	04/02/2018	04/04/2018 09:21	04/03/2018 16:08
	70727-1-BKS	BKS	70727-1-BKS	1011	W	70727	151981	--------	04/04/2018 09:21	04/03/2018 17:10
	70727-1-BLK	BLK	70727-1-BLK	1011	W	70727	151981	--------	04/04/2018 09:21	04/03/2018 11:17
	Trip Blank S	MS	18040321-002 S	1011	W	70727	151981	04/03/2018	04/04/2018 09:21	04/03/2018 16:29
	Trip Blank SD	MSD	18040321-002 SD	1011	W	70727	151981	04/03/2018	04/04/2018 09:21	04/03/2018 16:50

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040321

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151981 Matrix: Ground Water Date Prep: 04/04/2018
PSS Sample ID: 18040321-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		87-109	%	04/03/18 15:47
Dibromofluoromethane	102		93-111	%	04/03/18 15:47
Toluene-D8	98		91-109	%	04/03/18 15:47

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151981 Matrix: Water Date Prep: 04/04/2018
PSS Sample ID: 18040321-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		87-109	%	04/03/18 15:26
Dibromofluoromethane	100		93-111	%	04/03/18 15:26
Toluene-D8	94		91-109	%	04/03/18 15:26

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151981 Matrix: Ground Water Date Prep: 04/04/2018
PSS Sample ID: 18040321-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		87-109	%	04/03/18 16:08
Dibromofluoromethane	101		93-111	%	04/03/18 16:08
Toluene-D8	97		91-109	%	04/03/18 16:08

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040321

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151981 Matrix: Water Date Prep: 04/04/18

MB Sample Id: 70727-1-BLK LCS Sample Id: 70727-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	51.57	103	55-120	ug/L	04/03/18 17:10	
Benzene	<1.000	50.00	60.24	120	87-123	ug/L	04/03/18 17:10	
Bromochloromethane	<1.000	50.00	55.25	111	74-136	ug/L	04/03/18 17:10	
Bromodichloromethane	<1.000	50.00	54.89	110	83-125	ug/L	04/03/18 17:10	
Bromoform	<5.000	50.00	55.53	111	72-129	ug/L	04/03/18 17:10	
Bromomethane	<1.000	50.00	41.35	83	45-167	ug/L	04/03/18 17:10	
2-Butanone (MEK)	<10.00	50.00	51.39	103	45-136	ug/L	04/03/18 17:10	
Carbon Disulfide	<10.00	50.00	55.95	112	87-123	ug/L	04/03/18 17:10	
Carbon tetrachloride	<1.000	50.00	53.62	107	79-133	ug/L	04/03/18 17:10	
Chlorobenzene	<1.000	50.00	61.09	122	87-127	ug/L	04/03/18 17:10	
Chloroethane	<1.000	50.00	55.20	110	81-122	ug/L	04/03/18 17:10	
Chloroform	<1.000	50.00	54.01	108	76-129	ug/L	04/03/18 17:10	
Chloromethane	<1.000	50.00	44.26	89	59-121	ug/L	04/03/18 17:10	
Cyclohexane	<10.00	50.00	53.88	108	83-122	ug/L	04/03/18 17:10	
1,2-Dibromo-3-chloropropane	<5.000	50.00	55.81	112	63-140	ug/L	04/03/18 17:10	
Dibromochloromethane	<1.000	50.00	54.76	110	73-139	ug/L	04/03/18 17:10	
1,2-Dibromoethane	<1.000	50.00	55.12	110	80-127	ug/L	04/03/18 17:10	
1,2-Dichlorobenzene	<1.000	50.00	57.48	115	82-129	ug/L	04/03/18 17:10	
1,3-Dichlorobenzene	<1.000	50.00	63.36	127	88-127	ug/L	04/03/18 17:10	
1,4-Dichlorobenzene	<1.000	50.00	62.28	125	84-129	ug/L	04/03/18 17:10	
Dichlorodifluoromethane	<1.000	50.00	43.50	87	70-131	ug/L	04/03/18 17:10	
1,1-Dichloroethane	<1.000	50.00	59.37	119	85-120	ug/L	04/03/18 17:10	
1,2-Dichloroethane	<1.000	50.00	60.22	120	86-125	ug/L	04/03/18 17:10	
1,1-Dichloroethene	<1.000	50.00	61.59	123	85-123	ug/L	04/03/18 17:10	
cis-1,2-Dichloroethene	<1.000	50.00	60.45	121	86-126	ug/L	04/03/18 17:10	
1,2-Dichloropropane	<1.000	50.00	54.61	109	83-120	ug/L	04/03/18 17:10	
cis-1,3-Dichloropropene	<1.000	50.00	53.67	107	81-125	ug/L	04/03/18 17:10	
trans-1,3-Dichloropropene	<1.000	50.00	54.07	108	79-121	ug/L	04/03/18 17:10	
trans-1,2-Dichloroethene	<1.000	50.00	60.08	120	87-120	ug/L	04/03/18 17:10	
Ethylbenzene	<1.000	50.00	54.77	110	82-128	ug/L	04/03/18 17:10	
2-Hexanone (MBK)	<5.000	50.00	51.60	103	56-116	ug/L	04/03/18 17:10	
Isopropylbenzene	<1.000	50.00	55.15	110	81-128	ug/L	04/03/18 17:10	
Methyl Acetate	<10.00	50.00	53.50	107	68-129	ug/L	04/03/18 17:10	
Methylcyclohexane	<10.00	50.00	54.88	110	84-127	ug/L	04/03/18 17:10	
Methylene chloride	<1.000	50.00	58.40	117	85-119	ug/L	04/03/18 17:10	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	50.47	101	57-116	ug/L	04/03/18 17:10	
Methyl-t-Butyl Ether	<1.000	50.00	54.38	109	61-130	ug/L	04/03/18 17:10	
Naphthalene	<1.000	50.00	58.09	116	74-114	ug/L	04/03/18 17:10	H
Styrene	<1.000	50.00	55.66	111	76-130	ug/L	04/03/18 17:10	
1,1,2,2-Tetrachloroethane	<1.000	50.00	61.50	123	79-131	ug/L	04/03/18 17:10	
Tetrachloroethene	<1.000	50.00	60.36	121	85-131	ug/L	04/03/18 17:10	
Toluene	<1.000	50.00	54.63	109	82-127	ug/L	04/03/18 17:10	
1,2,3-Trichlorobenzene	<1.000	50.00	57.91	116	79-123	ug/L	04/03/18 17:10	
1,2,4-Trichlorobenzene	<1.000	50.00	58.76	118	78-123	ug/L	04/03/18 17:10	
1,1,1-Trichloroethane	<1.000	50.00	59.97	120	87-125	ug/L	04/03/18 17:10	
1,1,2-Trichloroethane	<1.000	50.00	62.02	124	84-127	ug/L	04/03/18 17:10	
Trichloroethene	<1.000	50.00	60.03	120	87-124	ug/L	04/03/18 17:10	
Trichlorofluoromethane	<5.000	50.00	57.57	115	85-130	ug/L	04/03/18 17:10	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	53.73	107	81-132	ug/L	04/03/18 17:10	
Vinyl chloride	<1.000	50.00	50.29	101	66-133	ug/L	04/03/18 17:10	
m&p-Xylene	<2.000	100	109.3	109	78-126	ug/L	04/03/18 17:10	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040321

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151981 Matrix: Water Date Prep: 04/04/18
MB Sample Id: 70727-1-BLK LCS Sample Id: 70727-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	55.46	111	75-130	ug/L	04/03/18 17:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		96		87-109	%	04/03/18 17:10
Dibromofluoromethane	101		100		93-111	%	04/03/18 17:10
Toluene-D8	100		99		91-109	%	04/03/18 17:10

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040321

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151981 Matrix: Water Date Prep: 04/04/18

Parent Sample Id: 18040321-002 MS Sample Id: 18040321-002 S MSD Sample Id: 18040321-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<10.00	50.00	111.6	223	112.8	226	50-156	1	25	ug/L	04/03/18 16:29	X
Benzene	<1.000	50.00	55.90	112	55.72	111	77-143	0	25	ug/L	04/03/18 16:29	
Bromochloromethane	<1.000	50.00	50.10	100	50.65	101	83-133	1	25	ug/L	04/03/18 16:29	
Bromodichloromethane	<1.000	50.00	50.36	101	50.50	101	75-142	0	25	ug/L	04/03/18 16:29	
Bromoform	<5.000	50.00	50.73	101	50.65	101	74-131	0	25	ug/L	04/03/18 16:29	
Bromomethane	<1.000	50.00	39.64	79	40.59	81	48-166	2	25	ug/L	04/03/18 16:29	
2-Butanone (MEK)	<10.00	50.00	50.66	101	50.68	101	68-127	0	25	ug/L	04/03/18 16:29	
Carbon Disulfide	<10.00	50.00	51.87	104	52.81	106	73-148	2	25	ug/L	04/03/18 16:29	
Carbon tetrachloride	<1.000	50.00	50.45	101	50.14	100	76-144	1	25	ug/L	04/03/18 16:29	
Chlorobenzene	<1.000	50.00	56.45	113	56.10	112	73-150	1	25	ug/L	04/03/18 16:29	
Chloroethane	<1.000	50.00	52.44	105	53.87	108	72-142	3	25	ug/L	04/03/18 16:29	
Chloroform	<1.000	50.00	55.30	111	55.08	110	81-134	0	25	ug/L	04/03/18 16:29	
Chloromethane	<1.000	50.00	39.68	79	41.42	83	46-143	4	25	ug/L	04/03/18 16:29	
Cyclohexane	<10.00	50.00	51.36	103	51.06	102	75-138	1	25	ug/L	04/03/18 16:29	
1,2-Dibromo-3-chloropropane	<5.000	50.00	52.34	105	52.74	105	73-135	1	25	ug/L	04/03/18 16:29	
Dibromochloromethane	<1.000	50.00	50.26	101	50.52	101	81-137	1	25	ug/L	04/03/18 16:29	
1,2-Dibromoethane	<1.000	50.00	50.17	100	50.66	101	68-149	1	25	ug/L	04/03/18 16:29	
1,2-Dichlorobenzene	<1.000	50.00	51.40	103	52.31	105	66-146	2	25	ug/L	04/03/18 16:29	
1,3-Dichlorobenzene	<1.000	50.00	56.87	114	58.02	116	61-154	2	25	ug/L	04/03/18 16:29	
1,4-Dichlorobenzene	<1.000	50.00	55.71	111	56.61	113	64-150	2	25	ug/L	04/03/18 16:29	
Dichlorodifluoromethane	<1.000	50.00	42.58	85	42.85	86	60-148	1	25	ug/L	04/03/18 16:29	
1,1-Dichloroethane	<1.000	50.00	55.25	111	55.74	111	76-139	1	25	ug/L	04/03/18 16:29	
1,2-Dichloroethane	<1.000	50.00	55.00	110	54.92	110	81-139	0	25	ug/L	04/03/18 16:29	
1,1-Dichloroethene	<1.000	50.00	59.60	119	60.97	122	74-142	2	25	ug/L	04/03/18 16:29	
cis-1,2-Dichloroethene	<1.000	50.00	54.99	110	55.65	111	80-142	1	25	ug/L	04/03/18 16:29	
1,2-Dichloropropane	<1.000	50.00	49.75	100	49.98	100	73-138	0	25	ug/L	04/03/18 16:29	
cis-1,3-Dichloropropene	<1.000	50.00	48.85	98	49.48	99	64-149	1	25	ug/L	04/03/18 16:29	
trans-1,3-Dichloropropene	<1.000	50.00	48.78	98	49.35	99	67-135	1	25	ug/L	04/03/18 16:29	
trans-1,2-Dichloroethene	<1.000	50.00	55.56	111	55.82	112	75-142	0	25	ug/L	04/03/18 16:29	
Ethylbenzene	<1.000	50.00	50.74	101	50.46	101	68-151	1	25	ug/L	04/03/18 16:29	
2-Hexanone (MBK)	<5.000	50.00	50.84	102	50.25	101	43-147	1	25	ug/L	04/03/18 16:29	
Isopropylbenzene	<1.000	50.00	49.50	99	50.58	101	67-148	2	25	ug/L	04/03/18 16:29	
Methyl Acetate	<10.00	50.00	48.97	98	49.40	99	69-133	1	25	ug/L	04/03/18 16:29	
Methylcyclohexane	<10.00	50.00	51.94	104	51.32	103	62-152	1	25	ug/L	04/03/18 16:29	
Methylene chloride	<1.000	50.00	53.50	107	54.02	108	73-141	1	25	ug/L	04/03/18 16:29	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	49.45	99	48.98	98	61-125	1	25	ug/L	04/03/18 16:29	
Methyl-t-Butyl Ether	<1.000	50.00	48.70	97	49.99	100	45-143	3	25	ug/L	04/03/18 16:29	
Naphthalene	<1.000	50.00	54.05	108	53.01	106	40-145	2	25	ug/L	04/03/18 16:29	
Styrene	<1.000	50.00	47.75	96	47.52	95	72-135	0	25	ug/L	04/03/18 16:29	
1,1,2,2-Tetrachloroethane	<1.000	50.00	55.44	111	56.39	113	70-150	2	25	ug/L	04/03/18 16:29	
Tetrachloroethene	<1.000	50.00	56.47	113	56.11	112	55-166	1	25	ug/L	04/03/18 16:29	
Toluene	<1.000	50.00	50.59	101	50.61	101	68-152	0	25	ug/L	04/03/18 16:29	
1,2,3-Trichlorobenzene	<1.000	50.00	53.50	107	52.44	105	21-172	2	25	ug/L	04/03/18 16:29	
1,2,4-Trichlorobenzene	<1.000	50.00	54.40	109	52.73	105	16-172	3	25	ug/L	04/03/18 16:29	
1,1,1-Trichloroethane	<1.000	50.00	56.48	113	56.17	112	80-143	1	25	ug/L	04/03/18 16:29	
1,1,2-Trichloroethane	<1.000	50.00	56.31	113	55.86	112	68-154	1	25	ug/L	04/03/18 16:29	
Trichloroethene	<1.000	50.00	56.07	112	55.54	111	73-148	1	25	ug/L	04/03/18 16:29	
Trichlorofluoromethane	<5.000	50.00	55.79	112	55.52	111	80-145	0	25	ug/L	04/03/18 16:29	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.61	101	50.92	102	73-147	1	25	ug/L	04/03/18 16:29	
Vinyl chloride	<1.000	50.00	47.90	96	48.53	97	79-128	1	25	ug/L	04/03/18 16:29	
m&p-Xylene	<2.000	100	100.8	101	100.3	100	70-138	0	25	ug/L	04/03/18 16:29	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040321

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151981 Matrix: Water Date Prep: 04/04/18
Parent Sample Id: 18040321-002 MS Sample Id: 18040321-002 S MSD Sample Id: 18040321-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	51.57	103	51.07	102	71-139	1	25	ug/L	04/03/18 16:29	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		96		87-109	%	04/03/18 16:29
Dibromofluoromethane	100		101		93-111	%	04/03/18 16:29
Toluene-D8	100		100		91-109	%	04/03/18 16:29

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

1

*CLIENT: WSP *OFFICE LOC. Herndon, VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500

EMAIL: eric.johnson@wsp.com FAX NO.: (—)—

*PROJECT NAME: Kop Flex PROJECT NO.: 34000389/1

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 1804032 1 PAGE 1 OF 1

Matrix Codes:
SW=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

2

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: #4 / Analysis/ Method Required (3) * VOCs	REMARKS
1	MW-30(1)(291-296)	4/2/18	1630	GW	3	G	X	
2	Trip Blank	—	—	—	2	—	X	
3	MW-30(1)(311-316)	4/2/18	1155	GW	3	G	X	

5

Relinquished By:	Date	Time	Received By:
(1)	4/3/18	1350	
(2)	4/3	2:30	
(3)	Date	Time	Received By:
(4)	Date	Time	Received By:

4

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

# of Coolers: 1 Temp Blk 1°C
Custody Seal: Cooler-Intact
Ice Present: PRES Temp: 1-3°C
Shipping Carrier: FDX

Special Instructions:
trip blank lab provided

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: ____
STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18040321	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	04/03/2018 02:35:00 PM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389.01	**Tracking No**	Not Applicable
Disposal Date	05/08/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	Yes	Temp (deg C)	3
Seal(s) Signed / Dated?	Yes	Temp Blank Present	Yes

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 04/03/2018

Thomas Wingate

PM Review and Approval: N Y Jackson Date: 04/03/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18040524

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389

April 6, 2018

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES:
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ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

April 6, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18040524**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18040524**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 10, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18040524

Project ID: 31400389

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/05/2018 at 05:20 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18040524-001	Trip Blank	WATER	04/05/18 17:20
18040524-002	MW-30(1)(401-406)	GROUND WATER	04/05/18 12:50
18040524-003	MW-30(1)(411-416)	GROUND WATER	04/05/18 16:30

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 04/05/2018 17:20** **PSS Sample ID: 18040524-001**
Matrix: WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

pH=5

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
Benzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Bromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Bromoform	ND	ug/L	5.0		1	04/05/18	04/05/18 19:03	1011
Bromomethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
Carbon Disulfide	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Chlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Chloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Chloroform	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Chloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Cyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:03	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Ethylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 04/05/2018 17:20** **PSS Sample ID: 18040524-001**
Matrix: WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

pH=5

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:03	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Methyl Acetate	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
Methylcyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:03	1011
Methylene chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:03	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Naphthalene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Styrene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Toluene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Trichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:03	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
Vinyl chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011
m&p-Xylene	ND	ug/L	2.0		1	04/05/18	04/05/18 19:03	1011
o-Xylene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:03	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-30(1)(401-406) **Date/Time Sampled: 04/05/2018 12:50** **PSS Sample ID: 18040524-002**
Matrix: GROUND WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
Benzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Bromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Bromoform	ND	ug/L	5.0		1	04/05/18	04/05/18 19:24	1011
Bromomethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
Carbon Disulfide	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Chlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Chloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Chloroform	**2.2**	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Chloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Cyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:24	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Ethylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-30(1)(401-406) **Date/Time Sampled: 04/05/2018 12:50** **PSS Sample ID: 18040524-002**
Matrix: GROUND WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:24	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Methyl Acetate	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
Methylcyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:24	1011
Methylene chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:24	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Naphthalene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Styrene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Toluene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Trichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:24	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
Vinyl chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011
m&p-Xylene	ND	ug/L	2.0		1	04/05/18	04/05/18 19:24	1011
o-Xylene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:24	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-30(1)(411-416) **Date/Time Sampled: 04/05/2018 16:30** **PSS Sample ID: 18040524-003**
Matrix: GROUND WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
Benzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Bromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Bromoform	ND	ug/L	5.0		1	04/05/18	04/05/18 19:45	1011
Bromomethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
Carbon Disulfide	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Chlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Chloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Chloroform	**1.5**	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Chloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Cyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:45	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Ethylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18040524

WSP USA - Herndon, Herndon, VA

April 6, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-30(1)(411-416) **Date/Time Sampled: 04/05/2018 16:30** **PSS Sample ID: 18040524-003**
Matrix: GROUND WATER **Date/Time Received: 04/05/2018 17:20**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:45	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Methyl Acetate	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
Methylcyclohexane	ND	ug/L	10		1	04/05/18	04/05/18 19:45	1011
Methylene chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/05/18	04/05/18 19:45	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Naphthalene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Styrene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Toluene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Trichloroethene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/05/18	04/05/18 19:45	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
Vinyl chloride	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011
m&p-Xylene	ND	ug/L	2.0		1	04/05/18	04/05/18 19:45	1011
o-Xylene	ND	ug/L	1.0		1	04/05/18	04/05/18 19:45	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18040524

Project ID: 31400389

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18040524
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	Trip Blank	Initial	18040524-001	1011	W	70771	152063	04/05/2018	04/05/2018 17:00	04/05/2018 19:03
	MW-30(1)(401-406)	Initial	18040524-002	1011	W	70771	152063	04/05/2018	04/05/2018 17:00	04/05/2018 19:24
	MW-30(1)(411-416)	Initial	18040524-003	1011	W	70771	152063	04/05/2018	04/05/2018 17:00	04/05/2018 19:45
	70771-1-BKS	BKS	70771-1-BKS	1011	W	70771	152063	--------	04/05/2018 08:51	04/05/2018 09:59
	70771-1-BLK	BLK	70771-1-BLK	1011	W	70771	152063	--------	04/05/2018 08:51	04/05/2018 10:41
	MW-OS-2 S	MS	18040503-001 S	1011	W	70771	152063	04/04/2018	04/05/2018 08:51	04/05/2018 12:34
	MW-OS-1 S	MS	18040516-001 S	1011	W	70771	152063	04/05/2018	04/05/2018 17:00	04/05/2018 18:01
	MW-OS-2 SD	MSD	18040503-001 SD	1011	W	70771	152063	04/04/2018	04/05/2018 08:51	04/05/2018 13:06
	MW-OS-1 SD	MSD	18040516-001 SD	1011	W	70771	152063	04/05/2018	04/05/2018 17:00	04/05/2018 18:22

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040524

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152063 Matrix: Water Date Prep: 04/05/2018
PSS Sample ID: 18040524-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		87-109	%	04/05/18 19:03
Dibromofluoromethane	99		93-111	%	04/05/18 19:03
Toluene-D8	100		91-109	%	04/05/18 19:03

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152063 Matrix: Ground Water Date Prep: 04/05/2018
PSS Sample ID: 18040524-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		87-109	%	04/05/18 19:24
Dibromofluoromethane	101		93-111	%	04/05/18 19:24
Toluene-D8	100		91-109	%	04/05/18 19:24

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152063 Matrix: Ground Water Date Prep: 04/05/2018
PSS Sample ID: 18040524-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		87-109	%	04/05/18 19:45
Dibromofluoromethane	100		93-111	%	04/05/18 19:45
Toluene-D8	101		91-109	%	04/05/18 19:45

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040524

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152063 Matrix: Water Date Prep: 04/05/18

MB Sample Id: 70771-1-BLK LCS Sample Id: 70771-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	41.75	84	55-120	ug/L	04/05/18 09:59	
Benzene	<1.000	50.00	55.11	110	87-123	ug/L	04/05/18 09:59	
Bromochloromethane	<1.000	50.00	49.25	99	74-136	ug/L	04/05/18 09:59	
Bromodichloromethane	<1.000	50.00	50.98	102	83-125	ug/L	04/05/18 09:59	
Bromoform	<5.000	50.00	53.78	108	72-129	ug/L	04/05/18 09:59	
Bromomethane	<1.000	50.00	37.93	76	45-167	ug/L	04/05/18 09:59	
2-Butanone (MEK)	<10.00	50.00	40.13	80	45-136	ug/L	04/05/18 09:59	
Carbon Disulfide	<10.00	50.00	49.83	100	87-123	ug/L	04/05/18 09:59	
Carbon tetrachloride	<1.000	50.00	50.13	100	79-133	ug/L	04/05/18 09:59	
Chlorobenzene	<1.000	50.00	57.96	116	87-127	ug/L	04/05/18 09:59	
Chloroethane	<1.000	50.00	51.15	102	81-122	ug/L	04/05/18 09:59	
Chloroform	<1.000	50.00	49.10	98	76-129	ug/L	04/05/18 09:59	
Chloromethane	<1.000	50.00	41.70	83	59-121	ug/L	04/05/18 09:59	
Cyclohexane	<10.00	50.00	50.99	102	83-122	ug/L	04/05/18 09:59	
1,2-Dibromo-3-chloropropane	<5.000	50.00	49.35	99	63-140	ug/L	04/05/18 09:59	
Dibromochloromethane	<1.000	50.00	52.90	106	73-139	ug/L	04/05/18 09:59	
1,2-Dibromoethane	<1.000	50.00	50.51	101	80-127	ug/L	04/05/18 09:59	
1,2-Dichlorobenzene	<1.000	50.00	53.52	107	82-129	ug/L	04/05/18 09:59	
1,3-Dichlorobenzene	<1.000	50.00	60.41	121	88-127	ug/L	04/05/18 09:59	
1,4-Dichlorobenzene	<1.000	50.00	58.11	116	84-129	ug/L	04/05/18 09:59	
Dichlorodifluoromethane	<1.000	50.00	39.61	79	70-131	ug/L	04/05/18 09:59	
1,1-Dichloroethane	<1.000	50.00	53.12	106	85-120	ug/L	04/05/18 09:59	
1,2-Dichloroethane	<1.000	50.00	54.56	109	86-125	ug/L	04/05/18 09:59	
1,1-Dichloroethene	<1.000	50.00	55.61	111	85-123	ug/L	04/05/18 09:59	
cis-1,2-Dichloroethene	<1.000	50.00	53.97	108	86-126	ug/L	04/05/18 09:59	
1,2-Dichloropropane	<1.000	50.00	49.86	100	83-120	ug/L	04/05/18 09:59	
cis-1,3-Dichloropropene	<1.000	50.00	50.59	101	81-125	ug/L	04/05/18 09:59	
trans-1,3-Dichloropropene	<1.000	50.00	51.27	103	79-121	ug/L	04/05/18 09:59	
trans-1,2-Dichloroethene	<1.000	50.00	53.91	108	87-120	ug/L	04/05/18 09:59	
Ethylbenzene	<1.000	50.00	52.17	104	82-128	ug/L	04/05/18 09:59	
2-Hexanone (MBK)	<5.000	50.00	42.10	84	56-116	ug/L	04/05/18 09:59	
Isopropylbenzene	<1.000	50.00	51.48	103	81-128	ug/L	04/05/18 09:59	
Methyl Acetate	<10.00	50.00	43.95	88	68-129	ug/L	04/05/18 09:59	
Methylcyclohexane	<10.00	50.00	52.53	105	84-127	ug/L	04/05/18 09:59	
Methylene chloride	<1.000	50.00	50.86	102	85-119	ug/L	04/05/18 09:59	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	42.21	84	57-116	ug/L	04/05/18 09:59	
Methyl-t-Butyl Ether	<1.000	50.00	47.90	96	61-130	ug/L	04/05/18 09:59	
Naphthalene	<1.000	50.00	52.99	106	74-114	ug/L	04/05/18 09:59	
Styrene	<1.000	50.00	52.97	106	76-130	ug/L	04/05/18 09:59	
1,1,2,2-Tetrachloroethane	<1.000	50.00	53.86	108	79-131	ug/L	04/05/18 09:59	
Tetrachloroethene	<1.000	50.00	56.99	114	85-131	ug/L	04/05/18 09:59	
Toluene	<1.000	50.00	50.43	101	82-127	ug/L	04/05/18 09:59	
1,2,3-Trichlorobenzene	<1.000	50.00	56.00	112	79-123	ug/L	04/05/18 09:59	
1,2,4-Trichlorobenzene	<1.000	50.00	57.59	115	78-123	ug/L	04/05/18 09:59	
1,1,1-Trichloroethane	<1.000	50.00	55.27	111	87-125	ug/L	04/05/18 09:59	
1,1,2-Trichloroethane	<1.000	50.00	56.00	112	84-127	ug/L	04/05/18 09:59	
Trichloroethene	<1.000	50.00	54.90	110	87-124	ug/L	04/05/18 09:59	
Trichlorofluoromethane	<5.000	50.00	53.84	108	85-130	ug/L	04/05/18 09:59	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	49.97	100	81-132	ug/L	04/05/18 09:59	
Vinyl chloride	<1.000	50.00	45.99	92	66-133	ug/L	04/05/18 09:59	
m&p-Xylene	<2.000	100	105.3	105	78-126	ug/L	04/05/18 09:59	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18040524

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152063 Matrix: Water Date Prep: 04/05/18

MB Sample Id: 70771-1-BLK LCS Sample Id: 70771-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	52.63	105	75-130	ug/L	04/05/18 09:59	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		96		87-109	%	04/05/18 09:59
Dibromofluoromethane	100		99		93-111	%	04/05/18 09:59
Toluene-D8	100		100		91-109	%	04/05/18 09:59

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500

EMAIL: eric.johnson@wsp.com FAX NO.: ( )

*PROJECT NAME: Kop Flex PROJECT NO.: 31402389

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): MMC DW CERT NO.:

PSS Work Order #: 1804054 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE (C = COMP, G = GRAB)	Preservatives Used: HCl	Analysis/Method Required (3): * VOC	REMARKS
	Trip Blank				2			X	
	MW-30(1)(401 - 406)	4/5/18	1250	GW	3	G		X	
	MW-30(1)(411 - 416)	4/5/18	1630	GW	3	G		X	

(5)

Relinquished By: (1)	Date	Time	Received By:
	4/5/18	1720	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ____

# of Coolers: 1

Custody Seal: ABS

Ice Present: PRE Temp: 2-9°C

Shipping Carrier: Client

Special Instructions:
trip blank provided by lab

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE: ____

STATE RESULTS REPORTED TO:
MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18040524	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	04/05/2018 05:20:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389	**Tracking No**	Not Applicable
Disposal Date	05/10/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	9
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	MML
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Amber Confer Date: 04/06/2018

Amber Confer

PM Review and Approval: Amber Confer Date: 04/06/2018

Amber Confer

MW-32 LOCATION

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031316

Project Manager: Eric Johnson

Project Name : Kop-Flex

Project Location: Hanover, MD

Project ID : 31400389/1

March 14, 2018

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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PHASE SEPARATION SCIENCE, INC.

March 14, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18031316**
Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID.: 31400389/1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031316**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 17, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031316

Project ID: 31400389/1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/13/2018 at 05:15 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031316-001	MW-32 (166-176)	GROUND WATER	03/13/18 10:35
18031316-002	MW-32 (191-196)	GROUND WATER	03/13/18 15:35
18031316-003	Trip Blank	WATER	03/13/18 17:15

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

OFFICES:
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ROUTE 40 WEST
BALTIMORE, MD 21228
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800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-32 (166-176) **Date/Time Sampled: 03/13/2018 10:35** **PSS Sample ID: 18031316-001**
Matrix: GROUND WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
Benzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Bromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Bromoform	ND	ug/L	5.0		1	03/13/18	03/13/18 18:08	1011
Bromomethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
Carbon Disulfide	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Chlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Chloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Chloroform	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Chloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Cyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/13/18	03/13/18 18:08	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Ethylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-32 (166-176) **Date/Time Sampled: 03/13/2018 10:35** **PSS Sample ID: 18031316-001**
Matrix: GROUND WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 18:08	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Methyl Acetate	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
Methylcyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 18:08	1011
Methylene chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 18:08	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Naphthalene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Styrene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Toluene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Trichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/13/18	03/13/18 18:08	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
Vinyl chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011
m&p-Xylene	ND	ug/L	2.0		1	03/13/18	03/13/18 18:08	1011
o-Xylene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:08	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-32 (191-196) **Date/Time Sampled: 03/13/2018 15:35** **PSS Sample ID: 18031316-002**
Matrix: GROUND WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
Benzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Bromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Bromoform	ND	ug/L	5.0		1	03/13/18	03/13/18 18:29	1011
Bromomethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
Carbon Disulfide	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Chlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Chloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Chloroform	**1.0**	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Chloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Cyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/13/18	03/13/18 18:29	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Ethylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-32 (191-196) **Date/Time Sampled: 03/13/2018 15:35** **PSS Sample ID: 18031316-002**
Matrix: GROUND WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 18:29	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Methyl Acetate	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
Methylcyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 18:29	1011
Methylene chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 18:29	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Naphthalene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Styrene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Toluene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Trichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/13/18	03/13/18 18:29	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
Vinyl chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011
m&p-Xylene	ND	ug/L	2.0		1	03/13/18	03/13/18 18:29	1011
o-Xylene	ND	ug/L	1.0		1	03/13/18	03/13/18 18:29	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/13/2018 17:15** **PSS Sample ID: 18031316-003**
Matrix: WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
Benzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Bromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Bromoform	ND	ug/L	5.0		1	03/13/18	03/13/18 17:47	1011
Bromomethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
Carbon Disulfide	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Chlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Chloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Chloroform	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Chloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Cyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/13/18	03/13/18 17:47	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Ethylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031316

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop-Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/13/2018 17:15** **PSS Sample ID: 18031316-003**
Matrix: WATER **Date/Time Received: 03/13/2018 17:15**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B
pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 17:47	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Methyl Acetate	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
Methylcyclohexane	ND	ug/L	10		1	03/13/18	03/13/18 17:47	1011
Methylene chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/13/18	03/13/18 17:47	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Naphthalene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Styrene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Toluene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Trichloroethene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/13/18	03/13/18 17:47	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
Vinyl chloride	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011
m&p-Xylene	ND	ug/L	2.0		1	03/13/18	03/13/18 17:47	1011
o-Xylene	ND	ug/L	1.0		1	03/13/18	03/13/18 17:47	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Flex

Work Order Number(s): 18031316
Project ID: 31400389/1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18031316
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-32 (166-176)	Initial	18031316-001	1011	W	70394	151321	03/13/2018	03/13/2018 10:00	03/13/2018 18:08
	MW-32 (191-196)	Initial	18031316-002	1011	W	70394	151321	03/13/2018	03/13/2018 10:00	03/13/2018 18:29
	Trip Blank	Initial	18031316-003	1011	W	70394	151321	03/13/2018	03/13/2018 10:00	03/13/2018 17:47
	70394-1-BKS	BKS	70394-1-BKS	1011	W	70394	151321	--------	03/13/2018 10:00	03/13/2018 11:44
	70394-1-BLK	BLK	70394-1-BLK	1011	W	70394	151321	--------	03/13/2018 10:00	03/13/2018 12:56
	Sys Eff S	MS	18030819-001 S	1011	W	70394	151321	03/08/2018	03/13/2018 10:00	03/13/2018 14:19
	Sys Eff SD	MSD	18030819-001 SD	1011	W	70394	151321	03/08/2018	03/13/2018 10:00	03/13/2018 14:40

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031316

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151321 Matrix: Ground Water Date Prep: 03/13/2018
PSS Sample ID: 18031316-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		86-111	%	03/13/18 18:08
Dibromofluoromethane	104		91-119	%	03/13/18 18:08
Toluene-D8	106		90-117	%	03/13/18 18:08

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151321 Matrix: Ground Water Date Prep: 03/13/2018
PSS Sample ID: 18031316-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/13/18 18:29
Dibromofluoromethane	101		91-119	%	03/13/18 18:29
Toluene-D8	105		90-117	%	03/13/18 18:29

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151321 Matrix: Water Date Prep: 03/13/2018
PSS Sample ID: 18031316-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/13/18 17:47
Dibromofluoromethane	101		91-119	%	03/13/18 17:47
Toluene-D8	104		90-117	%	03/13/18 17:47

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031316

WSP USA - Herndon

Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151321 Matrix: Water Date Prep: 03/13/18

MB Sample Id: 70394-1-BLK LCS Sample Id: 70394-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	37.27	75	29-149	ug/L	03/13/18 11:44	
Benzene	<1.000	50.00	47.76	96	85-123	ug/L	03/13/18 11:44	
Bromochloromethane	<1.000	50.00	45.03	90	82-136	ug/L	03/13/18 11:44	
Bromodichloromethane	<1.000	50.00	49.56	99	88-133	ug/L	03/13/18 11:44	
Bromoform	<5.000	50.00	40.89	82	80-126	ug/L	03/13/18 11:44	
Bromomethane	<1.000	50.00	48.58	97	64-139	ug/L	03/13/18 11:44	
2-Butanone (MEK)	<10.00	50.00	34.87	70	39-135	ug/L	03/13/18 11:44	
Carbon Disulfide	<10.00	50.00	50.51	101	85-124	ug/L	03/13/18 11:44	
Carbon tetrachloride	<1.000	50.00	49.18	98	81-138	ug/L	03/13/18 11:44	
Chlorobenzene	<1.000	50.00	49.05	98	85-120	ug/L	03/13/18 11:44	
Chloroethane	<1.000	50.00	48.47	97	75-129	ug/L	03/13/18 11:44	
Chloroform	<1.000	50.00	46.21	92	85-128	ug/L	03/13/18 11:44	
Chloromethane	<1.000	50.00	46.94	94	60-139	ug/L	03/13/18 11:44	
Cyclohexane	<10.00	50.00	47.60	95	55-131	ug/L	03/13/18 11:44	
1,2-Dibromo-3-chloropropane	<5.000	50.00	37.68	75	69-127	ug/L	03/13/18 11:44	
Dibromochloromethane	<1.000	50.00	44.20	88	82-127	ug/L	03/13/18 11:44	
1,2-Dibromoethane	<1.000	50.00	49.59	99	82-121	ug/L	03/13/18 11:44	
1,2-Dichlorobenzene	<1.000	50.00	48.57	97	82-123	ug/L	03/13/18 11:44	
1,3-Dichlorobenzene	<1.000	50.00	49.40	99	81-123	ug/L	03/13/18 11:44	
1,4-Dichlorobenzene	<1.000	50.00	48.14	96	81-121	ug/L	03/13/18 11:44	
Dichlorodifluoromethane	<1.000	50.00	50.19	100	69-147	ug/L	03/13/18 11:44	
1,1-Dichloroethane	<1.000	50.00	46.94	94	83-123	ug/L	03/13/18 11:44	
1,2-Dichloroethane	<1.000	50.00	47.47	95	86-138	ug/L	03/13/18 11:44	
1,1-Dichloroethene	<1.000	50.00	47.46	95	85-127	ug/L	03/13/18 11:44	
cis-1,2-Dichloroethene	<1.000	50.00	48.39	97	87-127	ug/L	03/13/18 11:44	
1,2-Dichloropropane	<1.000	50.00	47.85	96	79-125	ug/L	03/13/18 11:44	
cis-1,3-Dichloropropene	<1.000	50.00	51.42	103	79-131	ug/L	03/13/18 11:44	
trans-1,3-Dichloropropene	<1.000	50.00	46.59	93	82-133	ug/L	03/13/18 11:44	
trans-1,2-Dichloroethene	<1.000	50.00	47.87	96	85-125	ug/L	03/13/18 11:44	
Ethylbenzene	<1.000	50.00	49.80	100	83-123	ug/L	03/13/18 11:44	
2-Hexanone (MBK)	<5.000	50.00	41.08	82	37-137	ug/L	03/13/18 11:44	
Isopropylbenzene	<1.000	50.00	49.74	99	70-131	ug/L	03/13/18 11:44	
Methyl Acetate	<10.00	50.00	41.39	83	69-127	ug/L	03/13/18 11:44	
Methylcyclohexane	<10.00	50.00	50.77	102	75-129	ug/L	03/13/18 11:44	
Methylene chloride	<1.000	50.00	48.69	97	86-124	ug/L	03/13/18 11:44	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	38.72	77	39-143	ug/L	03/13/18 11:44	
Methyl-t-Butyl Ether	<1.000	50.00	46.22	92	75-134	ug/L	03/13/18 11:44	
Naphthalene	<1.000	50.00	41.82	84	61-118	ug/L	03/13/18 11:44	
Styrene	<1.000	50.00	44.14	88	80-120	ug/L	03/13/18 11:44	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.71	91	64-125	ug/L	03/13/18 11:44	
Tetrachloroethene	<1.000	50.00	52.98	106	83-138	ug/L	03/13/18 11:44	
Toluene	<1.000	50.00	51.84	104	88-126	ug/L	03/13/18 11:44	
1,2,3-Trichlorobenzene	<1.000	50.00	50.17	100	75-124	ug/L	03/13/18 11:44	
1,2,4-Trichlorobenzene	<1.000	50.00	50.42	101	77-131	ug/L	03/13/18 11:44	
1,1,1-Trichloroethane	<1.000	50.00	48.39	97	68-146	ug/L	03/13/18 11:44	
1,1,2-Trichloroethane	<1.000	50.00	50.44	101	85-124	ug/L	03/13/18 11:44	
Trichloroethene	<1.000	50.00	49.54	99	87-127	ug/L	03/13/18 11:44	
Trichlorofluoromethane	<5.000	50.00	49.55	99	77-147	ug/L	03/13/18 11:44	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.93	102	68-135	ug/L	03/13/18 11:44	
Vinyl chloride	<1.000	50.00	45.49	91	74-138	ug/L	03/13/18 11:44	
m&p-Xylene	<2.000	100	88.62	89	84-124	ug/L	03/13/18 11:44	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031316

WSP USA - Herndon
Kop-Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151321 Matrix: Water Date Prep: 03/13/18

MB Sample Id: 70394-1-BLK LCS Sample Id: 70394-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.48	89	79-126	ug/L	03/13/18 11:44	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		97		86-111	%	03/13/18 11:44
Dibromofluoromethane	99		100		91-119	%	03/13/18 11:44
Toluene-D8	104		105		90-117	%	03/13/18 11:44

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500
EMAIL: eric.johnson@wsp.com FAX NO.:
*PROJECT NAME: Kop-Flex PROJECT NO.: 31400 3891
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MMM DW CERT NO.:

PSS Work Order #: 1803131 6 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: HCl	Analysis/ Method Required (3) * VOCs	REMARKS
	MW-32 (166-176)	3/13/18	1035	GW	3	G		X	
	MW-32 (191-196)	3/13/18	1535	GW	3	G		X	
	trip blank				2			X	

(5)

Relinquished By: (1)	Date	Time	Received By:
R. Yolman	3/13/18	1715	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

Data Deliverables Required:
COA QC SUMM CLP LIKE OTHER
☐ ☐ ☐ _____

# of Coolers: 1 Temp Blank 3°C
Custody Seal: BTBS
Ice Present: PRES Temp: 6°-3°C
Shipping Carrier: Client

Special Instructions:
trip blank was lab provided

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: _____
STATE RESULTS REPORTED TO: MD ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER _____

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031316	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/13/2018 05:15:00 PM
Project Name	Kop-Flex	**Delivered By**	Client
Project Number	31400389/1	**Tracking No**	Not Applicable
Disposal Date	04/17/2018	**Logged In By**	Amber Confer

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	7
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Amber Confer Date: 03/14/2018

Amber Confer

PM Review and Approval: Lynn Jackson Date: 03/14/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031426

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389

March 15, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 15, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18031426**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031426**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 18, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031426

Project ID: 31400389

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/14/2018 at 04:05 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031426-001	MW-32 (221-226)	WATER	03/14/18 12:50
18031426-002	MW-32 (211-216)	WATER	03/14/18 09:20
18031426-003	MW-32 (201-206)	WATER	03/13/18 17:45
18031426-004	MW-32 (231-236)	WATER	03/14/18 15:25
18031426-005	Trip Blank	WATER	03/14/18 16:05

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (221-226) **Date/Time Sampled: 03/14/2018 12:50** **PSS Sample ID: 18031426-001**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
Benzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Bromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Bromoform	ND	ug/L	5.0		1	03/14/18	03/14/18 20:18	1011
Bromomethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
Carbon Disulfide	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Chlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Chloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Chloroform	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Chloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Cyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/14/18	03/14/18 20:18	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Ethylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (221-226) **Date/Time Sampled: 03/14/2018 12:50** **PSS Sample ID: 18031426-001**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 20:18	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Methyl Acetate	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
Methylcyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 20:18	1011
Methylene chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 20:18	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Naphthalene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Styrene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Toluene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Trichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/14/18	03/14/18 20:18	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
Vinyl chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011
m&p-Xylene	ND	ug/L	2.0		1	03/14/18	03/14/18 20:18	1011
o-Xylene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:18	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (211-216) **Date/Time Sampled: 03/14/2018 09:20** **PSS Sample ID: 18031426-002**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
Benzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Bromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Bromoform	ND	ug/L	5.0		1	03/14/18	03/14/18 20:39	1011
Bromomethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
Carbon Disulfide	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Chlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Chloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Chloroform	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Chloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Cyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/14/18	03/14/18 20:39	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Ethylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (211-216) **Date/Time Sampled: 03/14/2018 09:20** **PSS Sample ID: 18031426-002**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 20:39	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Methyl Acetate	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
Methylcyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 20:39	1011
Methylene chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 20:39	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Naphthalene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Styrene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Toluene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Trichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/14/18	03/14/18 20:39	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
Vinyl chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011
m&p-Xylene	ND	ug/L	2.0		1	03/14/18	03/14/18 20:39	1011
o-Xylene	ND	ug/L	1.0		1	03/14/18	03/14/18 20:39	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (201-206) **Date/Time Sampled: 03/13/2018 17:45** **PSS Sample ID: 18031426-003**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
Benzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Bromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Bromoform	ND	ug/L	5.0		1	03/14/18	03/14/18 21:00	1011
Bromomethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
Carbon Disulfide	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Chlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Chloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Chloroform	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Chloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Cyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:00	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Ethylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (201-206) **Date/Time Sampled: 03/13/2018 17:45** **PSS Sample ID: 18031426-003**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:00	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Methyl Acetate	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
Methylcyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:00	1011
Methylene chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:00	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Naphthalene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Styrene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Toluene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Trichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:00	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
Vinyl chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011
m&p-Xylene	ND	ug/L	2.0		1	03/14/18	03/14/18 21:00	1011
o-Xylene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:00	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (231-236) **Date/Time Sampled: 03/14/2018 15:25** **PSS Sample ID: 18031426-004**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
Benzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Bromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Bromoform	ND	ug/L	5.0		1	03/14/18	03/14/18 21:21	1011
Bromomethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
Carbon Disulfide	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Chlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Chloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Chloroform	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Chloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Cyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:21	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Ethylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (231-236) **Date/Time Sampled: 03/14/2018 15:25** **PSS Sample ID: 18031426-004**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:21	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Methyl Acetate	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
Methylcyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:21	1011
Methylene chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:21	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Naphthalene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Styrene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Toluene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Trichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:21	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
Vinyl chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011
m&p-Xylene	ND	ug/L	2.0		1	03/14/18	03/14/18 21:21	1011
o-Xylene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:21	1011

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 03/14/2018 16:05** **PSS Sample ID: 18031426-005**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
Benzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Bromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Bromoform	ND	ug/L	5.0		1	03/14/18	03/14/18 21:42	1011
Bromomethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
Carbon Disulfide	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Chlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Chloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Chloroform	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Chloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Cyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:42	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Ethylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031426

WSP USA - Herndon, Herndon, VA

March 15, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 03/14/2018 16:05** **PSS Sample ID: 18031426-005**
Matrix: WATER **Date/Time Received: 03/14/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B
pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:42	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Methyl Acetate	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
Methylcyclohexane	ND	ug/L	10		1	03/14/18	03/14/18 21:42	1011
Methylene chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/14/18	03/14/18 21:42	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Naphthalene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Styrene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Toluene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Trichloroethene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/14/18	03/14/18 21:42	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
Vinyl chloride	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011
m&p-Xylene	ND	ug/L	2.0		1	03/14/18	03/14/18 21:42	1011
o-Xylene	ND	ug/L	1.0		1	03/14/18	03/14/18 21:42	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031426

Project ID: 31400389

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18031426**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-32 (221-226)	Initial	18031426-001	1011	W	70412	151361	03/14/2018	03/14/2018 09:58	03/14/2018 20:18
	MW-32 (211-216)	Initial	18031426-002	1011	W	70412	151361	03/14/2018	03/14/2018 09:58	03/14/2018 20:39
	MW-32 (201-206)	Initial	18031426-003	1011	W	70412	151361	03/13/2018	03/14/2018 09:58	03/14/2018 21:00
	MW-32 (231-236)	Initial	18031426-004	1011	W	70412	151361	03/14/2018	03/14/2018 09:58	03/14/2018 21:21
	Trip Blank	Initial	18031426-005	1011	W	70412	151361	03/14/2018	03/14/2018 09:58	03/14/2018 21:42
	70412-1-BKS	BKS	70412-1-BKS	1011	W	70412	151361	--------	03/14/2018 09:58	03/14/2018 11:02
	70412-1-BLK	BLK	70412-1-BLK	1011	W	70412	151361	--------	03/14/2018 09:58	03/14/2018 12:17
	AM-BA S	MS	18030905-001 S	1011	W	70412	151361	03/09/2018	03/14/2018 09:58	03/14/2018 15:27
	AM-BA SD	MSD	18030905-001 SD	1011	W	70412	151361	03/09/2018	03/14/2018 09:58	03/14/2018 15:48

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031426

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151361 Matrix: Water Date Prep: 03/14/2018
PSS Sample ID: 18031426-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	96		86-111	%	03/14/18 20:18
Dibromofluoromethane	101		91-119	%	03/14/18 20:18
Toluene-D8	103		90-117	%	03/14/18 20:18

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151361 Matrix: Water Date Prep: 03/14/2018
PSS Sample ID: 18031426-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/14/18 20:39
Dibromofluoromethane	100		91-119	%	03/14/18 20:39
Toluene-D8	103		90-117	%	03/14/18 20:39

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151361 Matrix: Water Date Prep: 03/14/2018
PSS Sample ID: 18031426-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		86-111	%	03/14/18 21:00
Dibromofluoromethane	100		91-119	%	03/14/18 21:00
Toluene-D8	105		90-117	%	03/14/18 21:00

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151361 Matrix: Water Date Prep: 03/14/2018
PSS Sample ID: 18031426-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/14/18 21:21
Dibromofluoromethane	102		91-119	%	03/14/18 21:21
Toluene-D8	101		90-117	%	03/14/18 21:21

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031426

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151361 Matrix: Water Date Prep: 03/14/2018
PSS Sample ID: 18031426-005

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		86-111	%	03/14/18 21:42
Dibromofluoromethane	100		91-119	%	03/14/18 21:42
Toluene-D8	104		90-117	%	03/14/18 21:42

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031426

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151361 Matrix: Water Date Prep: 03/14/18

MB Sample Id: 70412-1-BLK LCS Sample Id: 70412-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	41.56	83	29-149	ug/L	03/14/18 11:02	
Benzene	<1.000	50.00	53.28	107	85-123	ug/L	03/14/18 11:02	
Bromochloromethane	<1.000	50.00	50.18	100	82-136	ug/L	03/14/18 11:02	
Bromodichloromethane	<1.000	50.00	54.19	108	88-133	ug/L	03/14/18 11:02	
Bromoform	<5.000	50.00	46.31	93	80-126	ug/L	03/14/18 11:02	
Bromomethane	<1.000	50.00	54.03	108	64-139	ug/L	03/14/18 11:02	
2-Butanone (MEK)	<10.00	50.00	36.55	73	39-135	ug/L	03/14/18 11:02	
Carbon Disulfide	<10.00	50.00	53.48	107	85-124	ug/L	03/14/18 11:02	
Carbon tetrachloride	<1.000	50.00	53.89	108	81-138	ug/L	03/14/18 11:02	
Chlorobenzene	<1.000	50.00	54.53	109	85-120	ug/L	03/14/18 11:02	
Chloroethane	<1.000	50.00	54.07	108	75-129	ug/L	03/14/18 11:02	
Chloroform	<1.000	50.00	50.89	102	85-128	ug/L	03/14/18 11:02	
Chloromethane	<1.000	50.00	55.95	112	60-139	ug/L	03/14/18 11:02	
Cyclohexane	<10.00	50.00	49.81	100	55-131	ug/L	03/14/18 11:02	
1,2-Dibromo-3-chloropropane	<5.000	50.00	44.37	89	69-127	ug/L	03/14/18 11:02	
Dibromochloromethane	<1.000	50.00	48.94	98	82-127	ug/L	03/14/18 11:02	
1,2-Dibromoethane	<1.000	50.00	53.76	108	82-121	ug/L	03/14/18 11:02	
1,2-Dichlorobenzene	<1.000	50.00	53.24	106	82-123	ug/L	03/14/18 11:02	
1,3-Dichlorobenzene	<1.000	50.00	54.29	109	81-123	ug/L	03/14/18 11:02	
1,4-Dichlorobenzene	<1.000	50.00	53.75	108	81-121	ug/L	03/14/18 11:02	
Dichlorodifluoromethane	<1.000	50.00	52.33	105	69-147	ug/L	03/14/18 11:02	
1,1-Dichloroethane	<1.000	50.00	51.93	104	83-123	ug/L	03/14/18 11:02	
1,2-Dichloroethane	<1.000	50.00	53.94	108	86-138	ug/L	03/14/18 11:02	
1,1-Dichloroethene	<1.000	50.00	53.59	107	85-127	ug/L	03/14/18 11:02	
cis-1,2-Dichloroethene	<1.000	50.00	53.56	107	87-127	ug/L	03/14/18 11:02	
1,2-Dichloropropane	<1.000	50.00	53.45	107	79-125	ug/L	03/14/18 11:02	
cis-1,3-Dichloropropene	<1.000	50.00	56.54	113	79-131	ug/L	03/14/18 11:02	
trans-1,3-Dichloropropene	<1.000	50.00	50.99	102	82-133	ug/L	03/14/18 11:02	
trans-1,2-Dichloroethene	<1.000	50.00	53.59	107	85-125	ug/L	03/14/18 11:02	
Ethylbenzene	<1.000	50.00	55.17	110	83-123	ug/L	03/14/18 11:02	
2-Hexanone (MBK)	<5.000	50.00	42.49	85	37-137	ug/L	03/14/18 11:02	
Isopropylbenzene	<1.000	50.00	55.04	110	70-131	ug/L	03/14/18 11:02	
Methyl Acetate	<10.00	50.00	46.24	92	69-127	ug/L	03/14/18 11:02	
Methylcyclohexane	<10.00	50.00	51.99	104	75-129	ug/L	03/14/18 11:02	
Methylene chloride	<1.000	50.00	54.13	108	86-124	ug/L	03/14/18 11:02	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	39.67	79	39-143	ug/L	03/14/18 11:02	
Methyl-t-Butyl Ether	<1.000	50.00	52.49	105	75-134	ug/L	03/14/18 11:02	
Naphthalene	<1.000	50.00	46.85	94	61-118	ug/L	03/14/18 11:02	
Styrene	<1.000	50.00	49.97	100	80-120	ug/L	03/14/18 11:02	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.18	104	64-125	ug/L	03/14/18 11:02	
Tetrachloroethene	<1.000	50.00	58.22	116	83-138	ug/L	03/14/18 11:02	
Toluene	<1.000	50.00	56.56	113	88-126	ug/L	03/14/18 11:02	
1,2,3-Trichlorobenzene	<1.000	50.00	54.61	109	75-124	ug/L	03/14/18 11:02	
1,2,4-Trichlorobenzene	<1.000	50.00	54.43	109	77-131	ug/L	03/14/18 11:02	
1,1,1-Trichloroethane	<1.000	50.00	52.96	106	68-146	ug/L	03/14/18 11:02	
1,1,2-Trichloroethane	<1.000	50.00	56.50	113	85-124	ug/L	03/14/18 11:02	
Trichloroethene	<1.000	50.00	54.41	109	87-127	ug/L	03/14/18 11:02	
Trichlorofluoromethane	<5.000	50.00	52.39	105	77-147	ug/L	03/14/18 11:02	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	52.76	106	68-135	ug/L	03/14/18 11:02	
Vinyl chloride	<1.000	50.00	44.94	90	74-138	ug/L	03/14/18 11:02	
m&p-Xylene	<2.000	100	98.57	99	84-124	ug/L	03/14/18 11:02	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031426

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151361 Matrix: Water Date Prep: 03/14/18

MB Sample Id: 70412-1-BLK LCS Sample Id: 70412-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	49.31	99	79-126	ug/L	03/14/18 11:02	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		97		86-111	%	03/14/18 11:02
Dibromofluoromethane	102		100		91-119	%	03/14/18 11:02
Toluene-D8	103		104		90-117	%	03/14/18 11:02

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

1

*CLIENT: WSP *OFFICE LOC.: Herndon VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500

EMAIL: eric.johnson@wsp.com FAX NO.:

*PROJECT NAME: Kapfla PROJECT NO.: 34003B9

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 1803142 PAGE 1 OF 1

Matrix Codes:
SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

2

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: Hcl	Analysis/ Method Required: (3) * VOCs	REMARKS
1	MW-32 (221-226)	3/14/18	1250	Aq	3	G	X		
2	MW-32 (211-216)	3/14/18	0920	Aq	3	G	X		
3	MW-32 (201-206)	3/13/18	1745	Aq	3	G	X		
4	MW-32 (231-236)	3/14/18	1525	Aq	3	G	X		
5	Trip Blank				2		X		

5

Relinquished By: (1)	Date	Time	Received By:
R. Aflam	3/14/18	1605	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

4

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ☐

# of Coolers: 1 Temp Blank 1°C

Custody Seal: ABS

Ice Present: PRES Temp: 5°-5°C

Shipping Carrier: Client

Special Instructions:
trip blank was provided by the lab

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE:

STATE RESULTS REPORTED TO:
MD ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031426	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/14/2018 04:05:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389	**Tracking No**	Not Applicable
Disposal Date	04/18/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	5
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 5 Total No. of Containers Received 14

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/14/2018

Thomas Wingate

PM Review and Approval: N L Jackson Date: 03/14/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031513

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389

March 16, 2018

Phase Separation Science, Inc.

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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.

March 16, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18031513**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031513**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 19, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031513

Project ID: 31400389

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/15/2018 at 01:30 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031513-001	MW-32 (261-266)	GROUND WATER	03/15/18 12:15
18031513-002	Trip Blank	WATER	03/15/18 12:47

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031513

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (261-266) **Date/Time Sampled: 03/15/2018 12:15** **PSS Sample ID: 18031513-001**
Matrix: GROUND WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
Benzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Bromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Bromoform	ND	ug/L	5.0		1	03/15/18	03/15/18 17:00	1011
Bromomethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
Carbon Disulfide	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Chlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Chloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Chloroform	**2.9**	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Chloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Cyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/15/18	03/15/18 17:00	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Ethylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031513

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 (261-266) **Date/Time Sampled: 03/15/2018 12:15** **PSS Sample ID: 18031513-001**
Matrix: GROUND WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 17:00	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Methyl Acetate	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
Methylcyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 17:00	1011
Methylene chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 17:00	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Naphthalene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Styrene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Toluene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Trichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/15/18	03/15/18 17:00	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
Vinyl chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011
m&p-Xylene	ND	ug/L	2.0		1	03/15/18	03/15/18 17:00	1011
o-Xylene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:00	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031513

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 03/15/2018 12:47** **PSS Sample ID: 18031513-002**
Matrix: WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
Benzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Bromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Bromoform	ND	ug/L	5.0		1	03/15/18	03/15/18 16:40	1011
Bromomethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
Carbon Disulfide	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Chlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Chloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Chloroform	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Chloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Cyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/15/18	03/15/18 16:40	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Ethylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031513

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: Trip Blank **Date/Time Sampled: 03/15/2018 12:47** **PSS Sample ID: 18031513-002**
Matrix: WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B
pH=7

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 16:40	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Methyl Acetate	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
Methylcyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 16:40	1011
Methylene chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 16:40	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Naphthalene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Styrene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Toluene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Trichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/15/18	03/15/18 16:40	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
Vinyl chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011
m&p-Xylene	ND	ug/L	2.0		1	03/15/18	03/15/18 16:40	1011
o-Xylene	ND	ug/L	1.0		1	03/15/18	03/15/18 16:40	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031513

Project ID: 31400389

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18031513
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-32 (261-266)	Initial	18031513-001	1011	W	70433	151416	03/15/2018	03/15/2018 08:12	03/15/2018 17:00
	Trip Blank	Initial	18031513-002	1011	W	70433	151416	03/15/2018	03/15/2018 08:12	03/15/2018 16:40
	70433-1-BKS	BKS	70433-1-BKS	1011	W	70433	151416	--------	03/15/2018 08:12	03/15/2018 10:37
	70433-1-BLK	BLK	70433-1-BLK	1011	W	70433	151416	--------	03/15/2018 08:12	03/15/2018 11:39
	Sinclair DW S	MS	18031508-001 S	1011	W	70433	151416	03/14/2018	03/15/2018 08:12	03/15/2018 15:16
	Sinclair DW SD	MSD	18031508-001 SD	1011	W	70433	151416	03/14/2018	03/15/2018 08:12	03/15/2018 15:37

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031513

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151416 Matrix: Ground Water Date Prep: 03/15/2018
PSS Sample ID: 18031513-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	94		86-111	%	03/15/18 17:00
Dibromofluoromethane	99		91-119	%	03/15/18 17:00
Toluene-D8	104		90-117	%	03/15/18 17:00

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151416 Matrix: Water Date Prep: 03/15/2018
PSS Sample ID: 18031513-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/15/18 16:40
Dibromofluoromethane	99		91-119	%	03/15/18 16:40
Toluene-D8	105		90-117	%	03/15/18 16:40

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031513

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151416 Matrix: Water Date Prep: 03/15/18

MB Sample Id: 70433-1-BLK LCS Sample Id: 70433-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.39	95	29-149	ug/L	03/15/18 10:37	
Benzene	<1.000	50.00	49.80	100	85-123	ug/L	03/15/18 10:37	
Bromochloromethane	<1.000	50.00	48.55	97	82-136	ug/L	03/15/18 10:37	
Bromodichloromethane	<1.000	50.00	52.05	104	88-133	ug/L	03/15/18 10:37	
Bromoform	<5.000	50.00	45.46	91	80-126	ug/L	03/15/18 10:37	
Bromomethane	<1.000	50.00	48.98	98	64-139	ug/L	03/15/18 10:37	
2-Butanone (MEK)	<10.00	50.00	43.88	88	39-135	ug/L	03/15/18 10:37	
Carbon Disulfide	<10.00	50.00	49.80	100	85-124	ug/L	03/15/18 10:37	
Carbon tetrachloride	<1.000	50.00	50.61	101	81-138	ug/L	03/15/18 10:37	
Chlorobenzene	<1.000	50.00	51.68	103	85-120	ug/L	03/15/18 10:37	
Chloroethane	<1.000	50.00	49.46	99	75-129	ug/L	03/15/18 10:37	
Chloroform	<1.000	50.00	48.35	97	85-128	ug/L	03/15/18 10:37	
Chloromethane	<1.000	50.00	49.54	99	60-139	ug/L	03/15/18 10:37	
Cyclohexane	<10.00	50.00	47.69	95	55-131	ug/L	03/15/18 10:37	
1,2-Dibromo-3-chloropropane	<5.000	50.00	46.68	93	69-127	ug/L	03/15/18 10:37	
Dibromochloromethane	<1.000	50.00	47.35	95	82-127	ug/L	03/15/18 10:37	
1,2-Dibromoethane	<1.000	50.00	53.07	106	82-121	ug/L	03/15/18 10:37	
1,2-Dichlorobenzene	<1.000	50.00	51.06	102	82-123	ug/L	03/15/18 10:37	
1,3-Dichlorobenzene	<1.000	50.00	52.03	104	81-123	ug/L	03/15/18 10:37	
1,4-Dichlorobenzene	<1.000	50.00	51.03	102	81-121	ug/L	03/15/18 10:37	
Dichlorodifluoromethane	<1.000	50.00	48.46	97	69-147	ug/L	03/15/18 10:37	
1,1-Dichloroethane	<1.000	50.00	48.81	98	83-123	ug/L	03/15/18 10:37	
1,2-Dichloroethane	<1.000	50.00	51.91	104	86-138	ug/L	03/15/18 10:37	
1,1-Dichloroethene	<1.000	50.00	50.05	100	85-127	ug/L	03/15/18 10:37	
cis-1,2-Dichloroethene	<1.000	50.00	50.70	101	87-127	ug/L	03/15/18 10:37	
1,2-Dichloropropane	<1.000	50.00	50.60	101	79-125	ug/L	03/15/18 10:37	
cis-1,3-Dichloropropene	<1.000	50.00	54.04	108	79-131	ug/L	03/15/18 10:37	
trans-1,3-Dichloropropene	<1.000	50.00	49.35	99	82-133	ug/L	03/15/18 10:37	
trans-1,2-Dichloroethene	<1.000	50.00	50.05	100	85-125	ug/L	03/15/18 10:37	
Ethylbenzene	<1.000	50.00	51.81	104	83-123	ug/L	03/15/18 10:37	
2-Hexanone (MBK)	<5.000	50.00	48.98	98	37-137	ug/L	03/15/18 10:37	
Isopropylbenzene	<1.000	50.00	51.83	104	70-131	ug/L	03/15/18 10:37	
Methyl Acetate	<10.00	50.00	47.08	94	69-127	ug/L	03/15/18 10:37	
Methylcyclohexane	<10.00	50.00	50.30	101	75-129	ug/L	03/15/18 10:37	
Methylene chloride	<1.000	50.00	52.33	105	86-124	ug/L	03/15/18 10:37	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	45.45	91	39-143	ug/L	03/15/18 10:37	
Methyl-t-Butyl Ether	<1.000	50.00	51.15	102	75-134	ug/L	03/15/18 10:37	
Naphthalene	<1.000	50.00	45.02	90	61-118	ug/L	03/15/18 10:37	
Styrene	<1.000	50.00	47.08	94	80-120	ug/L	03/15/18 10:37	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.26	105	64-125	ug/L	03/15/18 10:37	
Tetrachloroethene	<1.000	50.00	55.00	110	83-138	ug/L	03/15/18 10:37	
Toluene	<1.000	50.00	53.67	107	88-126	ug/L	03/15/18 10:37	
1,2,3-Trichlorobenzene	<1.000	50.00	50.76	102	75-124	ug/L	03/15/18 10:37	
1,2,4-Trichlorobenzene	<1.000	50.00	50.21	100	77-131	ug/L	03/15/18 10:37	
1,1,1-Trichloroethane	<1.000	50.00	49.98	100	68-146	ug/L	03/15/18 10:37	
1,1,2-Trichloroethane	<1.000	50.00	54.79	110	85-124	ug/L	03/15/18 10:37	
Trichloroethene	<1.000	50.00	50.89	102	87-127	ug/L	03/15/18 10:37	
Trichlorofluoromethane	<5.000	50.00	49.65	99	77-147	ug/L	03/15/18 10:37	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.50	101	68-135	ug/L	03/15/18 10:37	
Vinyl chloride	<1.000	50.00	40.26	81	74-138	ug/L	03/15/18 10:37	
m&p-Xylene	<2.000	100	93.34	93	84-124	ug/L	03/15/18 10:37	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031513

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151416 Matrix: Water Date Prep: 03/15/18

MB Sample Id: 70433-1-BLK LCS Sample Id: 70433-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	46.69	93	79-126	ug/L	03/15/18 10:37	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	105		97		86-111	%	03/15/18 10:37
Dibromofluoromethane	99		100		91-119	%	03/15/18 10:37
Toluene-D8	105		104		90-117	%	03/15/18 10:37

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1)

*CLIENT: WSP *OFFICE LOC. Herndon, VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500

EMAIL: eric.johnson@wsp.com FAX NO.: ( )

*PROJECT NAME: Konflex PROJECT NO.: 31402 3891

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 1803513 PAGE 1 OF 1

Matrix Codes:
SW=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis/ Method Required (3) * VOCs	REMARKS
	MW-32(261-266)	3/15/18	1215	GW	3	G		X	
	Trip Blank	3/15/18	1247		2	G		X	

(5)

Relinquished By: (1)	Date	Time	Received By:
Molly Mey	3/15/18	1330	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☒ Next Day ~~☐ Emergency~~ ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER

# of Coolers: 1 Temp Blank: 1°C

Custody Seal: ABS

Ice Present: PRES Temp: 5° - 10°C

Shipping Carrier: Client

Special Instructions:
24 hr. TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE

STATE RESULTS REPORTED TO:
MD ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031513	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/15/2018 01:30:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389	**Tracking No**	Not Applicable
Disposal Date	04/19/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	10
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	ML
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 5

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/15/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 03/15/2018

Amber Confer

MW-34 LOCATION

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18041702

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

April 17, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

April 17, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18041702**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18041702**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 22, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041702

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/17/2018 at 09:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18041702-001	MW-34 (315-325)	WATER	04/16/18 12:15
18041702-002	MW-34 (325-335)	WATER	04/16/18 17:10

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041702

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (315-325) **Date/Time Sampled: 04/16/2018 12:15** **PSS Sample ID: 18041702-001**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
Benzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Bromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Bromoform	ND	ug/L	5.0		1	04/17/18	04/17/18 10:49	1011
Bromomethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
Carbon Disulfide	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Chlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Chloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Chloroform	**2.4**	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Chloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Cyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/17/18	04/17/18 10:49	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Ethylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041702

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (315-325) **Date/Time Sampled: 04/16/2018 12:15** **PSS Sample ID: 18041702-001**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 10:49	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Methyl Acetate	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
Methylcyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 10:49	1011
Methylene chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 10:49	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Naphthalene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Styrene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Toluene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Trichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/17/18	04/17/18 10:49	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
Vinyl chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011
m&p-Xylene	ND	ug/L	2.0		1	04/17/18	04/17/18 10:49	1011
o-Xylene	ND	ug/L	1.0		1	04/17/18	04/17/18 10:49	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041702

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (325-335) **Date/Time Sampled: 04/16/2018 17:10** **PSS Sample ID: 18041702-002**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
Benzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Bromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Bromoform	ND	ug/L	5.0		1	04/17/18	04/17/18 11:10	1011
Bromomethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
Carbon Disulfide	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Chlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Chloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Chloroform	**3.1**	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Chloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Cyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/17/18	04/17/18 11:10	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Ethylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041702

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (325-335) **Date/Time Sampled: 04/16/2018 17:10** **PSS Sample ID: 18041702-002**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 11:10	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Methyl Acetate	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
Methylcyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 11:10	1011
Methylene chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 11:10	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Naphthalene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Styrene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Toluene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Trichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/17/18	04/17/18 11:10	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
Vinyl chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011
m&p-Xylene	ND	ug/L	2.0		1	04/17/18	04/17/18 11:10	1011
o-Xylene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:10	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041702

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18041702
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-34 (315-325)	Initial	18041702-001	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 10:49
	MW-34 (325-335)	Initial	18041702-002	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 11:10
	70925-1-BKS	BKS	70925-1-BKS	1011	W	70925	152361	--------	04/17/2018 07:47	04/17/2018 08:55
	70925-1-BLK	BLK	70925-1-BLK	1011	W	70925	152361	--------	04/17/2018 07:47	04/17/2018 10:17
	MW-34 (315-325) S	MS	18041702-001 S	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 12:01
	MW-34 (315-325) SD	MSD	18041702-001 SD	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 12:21

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041702

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/2018
PSS Sample ID: 18041702-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	105		87-109	%	04/17/18 10:49
Dibromofluoromethane	100		93-111	%	04/17/18 10:49
Toluene-D8	100		91-109	%	04/17/18 10:49

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/2018
PSS Sample ID: 18041702-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		87-109	%	04/17/18 11:10
Dibromofluoromethane	100		93-111	%	04/17/18 11:10
Toluene-D8	101		91-109	%	04/17/18 11:10

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041702

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152361 Matrix: Water Date Prep: 04/17/18

MB Sample Id: 70925-1-BLK LCS Sample Id: 70925-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	32.37	65	55-120	ug/L	04/17/18 08:55	
Benzene	<1.000	50.00	49.04	98	87-123	ug/L	04/17/18 08:55	
Bromochloromethane	<1.000	50.00	44.80	90	74-136	ug/L	04/17/18 08:55	
Bromodichloromethane	<1.000	50.00	44.01	88	83-125	ug/L	04/17/18 08:55	
Bromoform	<5.000	50.00	43.69	87	72-129	ug/L	04/17/18 08:55	
Bromomethane	<1.000	50.00	39.05	78	45-167	ug/L	04/17/18 08:55	
2-Butanone (MEK)	<10.00	50.00	36.28	73	45-136	ug/L	04/17/18 08:55	
Carbon Disulfide	<10.00	50.00	49.17	98	87-123	ug/L	04/17/18 08:55	
Carbon tetrachloride	<1.000	50.00	44.52	89	79-133	ug/L	04/17/18 08:55	
Chlorobenzene	<1.000	50.00	49.26	99	87-127	ug/L	04/17/18 08:55	
Chloroethane	<1.000	50.00	49.18	98	81-122	ug/L	04/17/18 08:55	
Chloroform	<1.000	50.00	43.36	87	76-129	ug/L	04/17/18 08:55	
Chloromethane	<1.000	50.00	48.81	98	59-121	ug/L	04/17/18 08:55	
Cyclohexane	<10.00	50.00	45.42	91	83-122	ug/L	04/17/18 08:55	
1,2-Dibromo-3-chloropropane	<5.000	50.00	38.82	78	63-140	ug/L	04/17/18 08:55	
Dibromochloromethane	<1.000	50.00	43.43	87	73-139	ug/L	04/17/18 08:55	
1,2-Dibromoethane	<1.000	50.00	43.12	86	80-127	ug/L	04/17/18 08:55	
1,2-Dichlorobenzene	<1.000	50.00	44.25	89	82-129	ug/L	04/17/18 08:55	
1,3-Dichlorobenzene	<1.000	50.00	49.75	100	88-127	ug/L	04/17/18 08:55	
1,4-Dichlorobenzene	<1.000	50.00	47.85	96	84-129	ug/L	04/17/18 08:55	
Dichlorodifluoromethane	<1.000	50.00	57.73	115	70-131	ug/L	04/17/18 08:55	
1,1-Dichloroethane	<1.000	50.00	47.86	96	85-120	ug/L	04/17/18 08:55	
1,2-Dichloroethane	<1.000	50.00	48.29	97	86-125	ug/L	04/17/18 08:55	
1,1-Dichloroethene	<1.000	50.00	45.80	92	85-123	ug/L	04/17/18 08:55	
cis-1,2-Dichloroethene	<1.000	50.00	48.53	97	86-126	ug/L	04/17/18 08:55	
1,2-Dichloropropane	<1.000	50.00	43.58	87	83-120	ug/L	04/17/18 08:55	
cis-1,3-Dichloropropene	<1.000	50.00	43.57	87	81-125	ug/L	04/17/18 08:55	
trans-1,3-Dichloropropene	<1.000	50.00	42.88	86	79-121	ug/L	04/17/18 08:55	
trans-1,2-Dichloroethene	<1.000	50.00	48.97	98	87-120	ug/L	04/17/18 08:55	
Ethylbenzene	<1.000	50.00	44.06	88	82-128	ug/L	04/17/18 08:55	
2-Hexanone (MBK)	<5.000	50.00	35.39	71	56-116	ug/L	04/17/18 08:55	
Isopropylbenzene	<1.000	50.00	42.88	86	81-128	ug/L	04/17/18 08:55	
Methyl Acetate	<10.00	50.00	39.57	79	68-129	ug/L	04/17/18 08:55	
Methylcyclohexane	<10.00	50.00	48.63	97	84-127	ug/L	04/17/18 08:55	
Methylene chloride	<1.000	50.00	45.55	91	85-119	ug/L	04/17/18 08:55	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.94	70	57-116	ug/L	04/17/18 08:55	
Methyl-t-Butyl Ether	<1.000	50.00	41.92	84	61-130	ug/L	04/17/18 08:55	
Naphthalene	<1.000	50.00	43.15	86	74-114	ug/L	04/17/18 08:55	
Styrene	<1.000	50.00	43.90	88	76-130	ug/L	04/17/18 08:55	
1,1,2,2-Tetrachloroethane	<1.000	50.00	43.63	87	79-131	ug/L	04/17/18 08:55	
Tetrachloroethene	<1.000	50.00	52.51	105	85-131	ug/L	04/17/18 08:55	
Toluene	<1.000	50.00	45.12	90	82-127	ug/L	04/17/18 08:55	
1,2,3-Trichlorobenzene	<1.000	50.00	45.94	92	79-123	ug/L	04/17/18 08:55	
1,2,4-Trichlorobenzene	<1.000	50.00	46.71	93	78-123	ug/L	04/17/18 08:55	
1,1,1-Trichloroethane	<1.000	50.00	48.86	98	87-125	ug/L	04/17/18 08:55	
1,1,2-Trichloroethane	<1.000	50.00	48.42	97	84-127	ug/L	04/17/18 08:55	
Trichloroethene	<1.000	50.00	47.95	96	87-124	ug/L	04/17/18 08:55	
Trichlorofluoromethane	<5.000	50.00	51.73	103	85-130	ug/L	04/17/18 08:55	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	44.44	89	81-132	ug/L	04/17/18 08:55	
Vinyl chloride	<1.000	50.00	49.66	99	66-133	ug/L	04/17/18 08:55	
m&p-Xylene	<2.000	100	88.70	89	78-126	ug/L	04/17/18 08:55	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041702

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/18
MB Sample Id: 70925-1-BLK LCS Sample Id: 70925-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.65	89	75-130	ug/L	04/17/18 08:55	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		96		87-109	%	04/17/18 08:55
Dibromofluoromethane	99		100		93-111	%	04/17/18 08:55
Toluene-D8	101		100		91-109	%	04/17/18 08:55

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041702

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152361 Matrix: Water Date Prep: 04/17/18

Parent Sample Id: 18041702-001 MS Sample Id: 18041702-001 S MSD Sample Id: 18041702-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<10.00	50.00	38.92	78	43.40	87	50-156	11	25	ug/L	04/17/18 12:01	
Benzene	<1.000	50.00	51.87	104	52.68	105	77-143	2	25	ug/L	04/17/18 12:01	
Bromochloromethane	<1.000	50.00	46.26	93	48.16	96	83-133	4	25	ug/L	04/17/18 12:01	
Bromodichloromethane	<1.000	50.00	46.29	93	47.94	96	75-142	4	25	ug/L	04/17/18 12:01	
Bromoform	<5.000	50.00	43.32	87	45.04	90	74-131	4	25	ug/L	04/17/18 12:01	
Bromomethane	<1.000	50.00	42.07	84	43.97	88	48-166	4	25	ug/L	04/17/18 12:01	
2-Butanone (MEK)	<10.00	50.00	33.15	66	36.66	73	68-127	10	25	ug/L	04/17/18 12:01	X
Carbon Disulfide	<10.00	50.00	53.43	107	53.77	108	73-148	1	25	ug/L	04/17/18 12:01	
Carbon tetrachloride	<1.000	50.00	46.62	93	46.83	94	76-144	0	25	ug/L	04/17/18 12:01	
Chlorobenzene	<1.000	50.00	51.80	104	51.39	103	73-150	1	25	ug/L	04/17/18 12:01	
Chloroethane	<1.000	50.00	52.54	105	55.06	110	72-142	5	25	ug/L	04/17/18 12:01	
Chloroform	2.410	50.00	48.23	92	49.05	93	81-134	2	25	ug/L	04/17/18 12:01	
Chloromethane	<1.000	50.00	49.39	99	53.15	106	46-143	7	25	ug/L	04/17/18 12:01	
Cyclohexane	<10.00	50.00	48.11	96	46.77	94	75-138	3	25	ug/L	04/17/18 12:01	
1,2-Dibromo-3-chloropropane	<5.000	50.00	38.95	78	42.54	85	73-135	9	25	ug/L	04/17/18 12:01	
Dibromochloromethane	<1.000	50.00	44.65	89	45.94	92	81-137	3	25	ug/L	04/17/18 12:01	
1,2-Dibromoethane	<1.000	50.00	44.46	89	45.74	91	68-149	3	25	ug/L	04/17/18 12:01	
1,2-Dichlorobenzene	<1.000	50.00	45.54	91	45.79	92	66-146	1	25	ug/L	04/17/18 12:01	
1,3-Dichlorobenzene	<1.000	50.00	51.53	103	51.14	102	61-154	1	25	ug/L	04/17/18 12:01	
1,4-Dichlorobenzene	<1.000	50.00	50.20	100	49.87	100	64-150	1	25	ug/L	04/17/18 12:01	
Dichlorodifluoromethane	<1.000	50.00	60.75	122	59.91	120	60-148	1	25	ug/L	04/17/18 12:01	
1,1-Dichloroethane	<1.000	50.00	50.47	101	51.88	104	76-139	3	25	ug/L	04/17/18 12:01	
1,2-Dichloroethane	<1.000	50.00	50.55	101	52.66	105	81-139	4	25	ug/L	04/17/18 12:01	
1,1-Dichloroethene	<1.000	50.00	53.22	106	54.58	109	74-142	3	25	ug/L	04/17/18 12:01	
cis-1,2-Dichloroethene	<1.000	50.00	51.46	103	52.66	105	80-142	2	25	ug/L	04/17/18 12:01	
1,2-Dichloropropane	<1.000	50.00	45.49	91	47.12	94	73-138	4	25	ug/L	04/17/18 12:01	
cis-1,3-Dichloropropene	<1.000	50.00	44.06	88	45.86	92	64-149	4	25	ug/L	04/17/18 12:01	
trans-1,3-Dichloropropene	<1.000	50.00	43.55	87	45.33	91	67-135	4	25	ug/L	04/17/18 12:01	
trans-1,2-Dichloroethene	<1.000	50.00	52.08	104	52.66	105	75-142	1	25	ug/L	04/17/18 12:01	
Ethylbenzene	<1.000	50.00	46.36	93	45.46	91	68-151	2	25	ug/L	04/17/18 12:01	
2-Hexanone (MBK)	<5.000	50.00	32.31	65	35.01	70	43-147	8	25	ug/L	04/17/18 12:01	
Isopropylbenzene	<1.000	50.00	44.63	89	44.53	89	67-148	0	25	ug/L	04/17/18 12:01	
Methyl Acetate	<10.00	50.00	42.25	85	46.19	92	69-133	9	25	ug/L	04/17/18 12:01	
Methylcyclohexane	<10.00	50.00	49.30	99	47.35	95	62-152	4	25	ug/L	04/17/18 12:01	
Methylene chloride	<1.000	50.00	49.60	99	51.68	103	73-141	4	25	ug/L	04/17/18 12:01	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	32.54	65	35.44	71	61-125	9	25	ug/L	04/17/18 12:01	
Methyl-t-Butyl Ether	<1.000	50.00	43.23	86	46.59	93	45-143	7	25	ug/L	04/17/18 12:01	
Naphthalene	<1.000	50.00	44.61	89	44.50	89	40-145	0	25	ug/L	04/17/18 12:01	
Styrene	<1.000	50.00	45.84	92	44.94	90	72-135	2	25	ug/L	04/17/18 12:01	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.21	90	47.22	94	70-150	4	25	ug/L	04/17/18 12:01	
Tetrachloroethene	<1.000	50.00	53.27	107	53.47	107	55-166	0	25	ug/L	04/17/18 12:01	
Toluene	<1.000	50.00	46.89	94	47.65	95	68-152	2	25	ug/L	04/17/18 12:01	
1,2,3-Trichlorobenzene	<1.000	50.00	47.38	95	45.19	90	21-172	5	25	ug/L	04/17/18 12:01	
1,2,4-Trichlorobenzene	<1.000	50.00	48.27	97	46.25	93	16-172	4	25	ug/L	04/17/18 12:01	
1,1,1-Trichloroethane	<1.000	50.00	51.80	104	52.28	105	80-143	1	25	ug/L	04/17/18 12:01	
1,1,2-Trichloroethane	<1.000	50.00	49.44	99	52.12	104	68-154	5	25	ug/L	04/17/18 12:01	
Trichloroethene	<1.000	50.00	52.39	105	52.52	105	73-148	0	25	ug/L	04/17/18 12:01	
Trichlorofluoromethane	<5.000	50.00	55.70	111	55.22	110	80-145	1	25	ug/L	04/17/18 12:01	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.44	101	48.73	97	73-147	3	25	ug/L	04/17/18 12:01	
Vinyl chloride	<1.000	50.00	53.48	107	53.92	108	79-128	1	25	ug/L	04/17/18 12:01	
m&p-Xylene	<2.000	100	93.80	94	91.79	92	70-138	2	25	ug/L	04/17/18 12:01	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041702

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/18
Parent Sample Id: 18041702-001 MS Sample Id: 18041702-001 S MSD Sample Id: 18041702-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	47.24	94	46.07	92	71-139	3	25	ug/L	04/17/18 12:01	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		94		87-109	%	04/17/18 12:01
Dibromofluoromethane	100		101		93-111	%	04/17/18 12:01
Toluene-D8	100		100		91-109	%	04/17/18 12:01

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD

18041702

WSP USA Office Address: 13530 Dulles Technology Drive Suite 300 Herndon VA

Project Name: Kop-Flex

WSP USA Contact Name: Eric Johnson

Project Location: Hanover, MD

WSP USA Contact E-mail: Eric.Johnson@wsp.com

Project Number & Task: 31400384/01

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresci

Sampler(s) Signature(s):

No. 008038

Laboratory Name & Location: Phase Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR see Below

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260	Sample Comments
~~MW-34~~ Iowson	S	4/16/18		0955		4	X	*24 HR TAT*
MW-34 Iowson Drill Water	AQ	4/16/18		1045		3	X	*24 HR TAT*
MW-34 (315-325)	AQ	4/16/18		1215		3	X	* Emergency *
MW-34 (325-335)	AQ	4/16/18		1710		3	X	* Emergency *
Trip Blank						2	X	24 HR TAT

# of Coolers: 1

Custody Seal: ABS

Ice Present: PRES

Temp: 1°-3°C

Shipping Carrier: FDE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	04/17/18	0830					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
	04/17/18	0945					

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18041702	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	04/17/2018 09:45:00 AM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/22/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	3
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 6

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 04/17/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 04/17/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18041825

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

April 19, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

April 19, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18041825**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18041825**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 23, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041825

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/18/2018 at 04:05 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18041825-001	MW-34 (355-365)	WATER	04/17/18 15:55
18041825-002	MW-34 (375-385)	WATER	04/18/18 09:35
18041825-003	MW-34 (395-405)	WATER	04/18/18 12:50
18041825-004	Trip Blank	WATER	04/18/18 16:05

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (355-365) **Date/Time Sampled: 04/17/2018 15:55** **PSS Sample ID: 18041825-001**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
Benzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Bromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Bromodichloromethane	**1.0**	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Bromoform	ND	ug/L	5.0		1	04/18/18	04/18/18 17:12	1011
Bromomethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
Carbon Disulfide	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Chlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Chloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Chloroform	**3.2**	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Chloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Cyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:12	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Ethylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (355-365) **Date/Time Sampled: 04/17/2018 15:55** **PSS Sample ID: 18041825-001**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:12	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Methyl Acetate	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
Methylcyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:12	1011
Methylene chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:12	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Naphthalene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Styrene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Toluene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Trichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:12	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
Vinyl chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011
m&p-Xylene	ND	ug/L	2.0		1	04/18/18	04/18/18 17:12	1011
o-Xylene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:12	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (375-385) **Date/Time Sampled: 04/18/2018 09:35** **PSS Sample ID: 18041825-002**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
Benzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Bromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Bromodichloromethane	**1.1**	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Bromoform	ND	ug/L	5.0		1	04/18/18	04/18/18 17:33	1011
Bromomethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
Carbon Disulfide	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Chlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Chloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Chloroform	**3.7**	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Chloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Cyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:33	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Ethylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (375-385) **Date/Time Sampled: 04/18/2018 09:35** **PSS Sample ID: 18041825-002**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:33	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Methyl Acetate	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
Methylcyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:33	1011
Methylene chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:33	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Naphthalene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Styrene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Toluene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Trichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:33	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
Vinyl chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011
m&p-Xylene	ND	ug/L	2.0		1	04/18/18	04/18/18 17:33	1011
o-Xylene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:33	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (395-405) **Date/Time Sampled: 04/18/2018 12:50** **PSS Sample ID: 18041825-003**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
Benzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Bromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Bromoform	ND	ug/L	5.0		1	04/18/18	04/18/18 17:53	1011
Bromomethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
Carbon Disulfide	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Chlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Chloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Chloroform	**2.5**	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Chloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Cyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:53	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Ethylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-34 (395-405) **Date/Time Sampled: 04/18/2018 12:50** **PSS Sample ID: 18041825-003**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:53	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Methyl Acetate	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
Methylcyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 17:53	1011
Methylene chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 17:53	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Naphthalene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Styrene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Toluene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Trichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/18/18	04/18/18 17:53	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
Vinyl chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011
m&p-Xylene	ND	ug/L	2.0		1	04/18/18	04/18/18 17:53	1011
o-Xylene	ND	ug/L	1.0		1	04/18/18	04/18/18 17:53	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 04/18/2018 16:05** **PSS Sample ID: 18041825-004**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
Benzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Bromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Bromoform	ND	ug/L	5.0		1	04/18/18	04/18/18 16:51	1011
Bromomethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
Carbon Disulfide	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Chlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Chloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Chloroform	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Chloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Cyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/18/18	04/18/18 16:51	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Ethylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041825

WSP USA - Herndon, Herndon, VA

April 19, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 04/18/2018 16:05** **PSS Sample ID: 18041825-004**
Matrix: WATER **Date/Time Received: 04/18/2018 16:05**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 16:51	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Methyl Acetate	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
Methylcyclohexane	ND	ug/L	10		1	04/18/18	04/18/18 16:51	1011
Methylene chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/18/18	04/18/18 16:51	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Naphthalene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Styrene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Toluene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Trichloroethene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/18/18	04/18/18 16:51	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
Vinyl chloride	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011
m&p-Xylene	ND	ug/L	2.0		1	04/18/18	04/18/18 16:51	1011
o-Xylene	ND	ug/L	1.0		1	04/18/18	04/18/18 16:51	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041825

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18041825**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-34 (355-365)	Initial	18041825-001	1011	W	70965	152449	04/17/2018	04/18/2018 09:07	04/18/2018 17:12
	MW-34 (375-385)	Initial	18041825-002	1011	W	70965	152449	04/18/2018	04/18/2018 09:07	04/18/2018 17:33
	MW-34 (395-405)	Initial	18041825-003	1011	W	70965	152449	04/18/2018	04/18/2018 09:07	04/18/2018 17:53
	Trip Blank	Initial	18041825-004	1011	W	70965	152449	04/18/2018	04/18/2018 09:07	04/18/2018 16:51
	70965-1-BKS	BKS	70965-1-BKS	1011	W	70965	152449	--------	04/18/2018 09:07	04/18/2018 10:12
	70965-1-BLK	BLK	70965-1-BLK	1011	W	70965	152449	--------	04/18/2018 09:07	04/18/2018 11:25
	442600-DL4-GW-07 S	MS	18041606-001 S	1011	W	70965	152449	04/16/2018	04/18/2018 09:07	04/18/2018 12:37
	442600-DL4-GW-07 SD	MSD	18041606-001 SD	1011	W	70965	152449	04/16/2018	04/18/2018 09:07	04/18/2018 12:58

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041825

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152449 Matrix: Water Date Prep: 04/18/2018
PSS Sample ID: 18041825-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	92		87-109	%	04/18/18 17:12
Dibromofluoromethane	101		93-111	%	04/18/18 17:12
Toluene-D8	96		91-109	%	04/18/18 17:12

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152449 Matrix: Water Date Prep: 04/18/2018
PSS Sample ID: 18041825-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		87-109	%	04/18/18 17:33
Dibromofluoromethane	99		93-111	%	04/18/18 17:33
Toluene-D8	100		91-109	%	04/18/18 17:33

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152449 Matrix: Water Date Prep: 04/18/2018
PSS Sample ID: 18041825-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		87-109	%	04/18/18 17:53
Dibromofluoromethane	100		93-111	%	04/18/18 17:53
Toluene-D8	101		91-109	%	04/18/18 17:53

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152449 Matrix: Water Date Prep: 04/18/2018
PSS Sample ID: 18041825-004

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		87-109	%	04/18/18 16:51
Dibromofluoromethane	99		93-111	%	04/18/18 16:51
Toluene-D8	100		91-109	%	04/18/18 16:51

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041825

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152449 Matrix: Water Date Prep: 04/18/18

MB Sample Id: 70965-1-BLK LCS Sample Id: 70965-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	35.22	70	55-120	ug/L	04/18/18 10:12	
Benzene	<1.000	50.00	46.75	94	87-123	ug/L	04/18/18 10:12	
Bromochloromethane	<1.000	50.00	42.26	85	74-136	ug/L	04/18/18 10:12	
Bromodichloromethane	<1.000	50.00	41.48	83	83-125	ug/L	04/18/18 10:12	
Bromoform	<5.000	50.00	41.26	83	72-129	ug/L	04/18/18 10:12	
Bromomethane	<1.000	50.00	38.23	76	45-167	ug/L	04/18/18 10:12	
2-Butanone (MEK)	<10.00	50.00	33.12	66	45-136	ug/L	04/18/18 10:12	
Carbon Disulfide	<10.00	50.00	46.46	93	87-123	ug/L	04/18/18 10:12	
Carbon tetrachloride	<1.000	50.00	41.95	84	79-133	ug/L	04/18/18 10:12	
Chlorobenzene	<1.000	50.00	47.56	95	87-127	ug/L	04/18/18 10:12	
Chloroethane	<1.000	50.00	48.76	98	81-122	ug/L	04/18/18 10:12	
Chloroform	<1.000	50.00	41.39	83	76-129	ug/L	04/18/18 10:12	
Chloromethane	<1.000	50.00	47.48	95	59-121	ug/L	04/18/18 10:12	
Cyclohexane	<10.00	50.00	43.59	87	83-122	ug/L	04/18/18 10:12	
1,2-Dibromo-3-chloropropane	<5.000	50.00	35.65	71	63-140	ug/L	04/18/18 10:12	
Dibromochloromethane	<1.000	50.00	41.38	83	73-139	ug/L	04/18/18 10:12	
1,2-Dibromoethane	<1.000	50.00	41.26	83	80-127	ug/L	04/18/18 10:12	
1,2-Dichlorobenzene	<1.000	50.00	41.37	83	82-129	ug/L	04/18/18 10:12	
1,3-Dichlorobenzene	<1.000	50.00	46.50	93	88-127	ug/L	04/18/18 10:12	
1,4-Dichlorobenzene	<1.000	50.00	45.22	90	84-129	ug/L	04/18/18 10:12	
Dichlorodifluoromethane	<1.000	50.00	56.11	112	70-131	ug/L	04/18/18 10:12	
1,1-Dichloroethane	<1.000	50.00	44.93	90	85-120	ug/L	04/18/18 10:12	
1,2-Dichloroethane	<1.000	50.00	45.56	91	86-125	ug/L	04/18/18 10:12	
1,1-Dichloroethene	<1.000	50.00	47.93	96	85-123	ug/L	04/18/18 10:12	
cis-1,2-Dichloroethene	<1.000	50.00	46.05	92	86-126	ug/L	04/18/18 10:12	
1,2-Dichloropropane	<1.000	50.00	41.67	83	83-120	ug/L	04/18/18 10:12	
cis-1,3-Dichloropropene	<1.000	50.00	40.92	82	81-125	ug/L	04/18/18 10:12	
trans-1,3-Dichloropropene	<1.000	50.00	40.56	81	79-121	ug/L	04/18/18 10:12	
trans-1,2-Dichloroethene	<1.000	50.00	45.91	92	87-120	ug/L	04/18/18 10:12	
Ethylbenzene	<1.000	50.00	42.65	85	82-128	ug/L	04/18/18 10:12	
2-Hexanone (MBK)	<5.000	50.00	33.13	66	56-116	ug/L	04/18/18 10:12	
Isopropylbenzene	<1.000	50.00	40.59	81	81-128	ug/L	04/18/18 10:12	
Methyl Acetate	<10.00	50.00	36.81	74	68-129	ug/L	04/18/18 10:12	
Methylcyclohexane	<10.00	50.00	45.02	90	84-127	ug/L	04/18/18 10:12	
Methylene chloride	<1.000	50.00	43.73	87	85-119	ug/L	04/18/18 10:12	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	32.70	65	57-116	ug/L	04/18/18 10:12	
Methyl-t-Butyl Ether	<1.000	50.00	39.44	79	61-130	ug/L	04/18/18 10:12	
Naphthalene	<1.000	50.00	39.83	80	74-114	ug/L	04/18/18 10:12	
Styrene	<1.000	50.00	42.53	85	76-130	ug/L	04/18/18 10:12	
1,1,2,2-Tetrachloroethane	<1.000	50.00	40.04	80	79-131	ug/L	04/18/18 10:12	
Tetrachloroethene	<1.000	50.00	48.16	96	85-131	ug/L	04/18/18 10:12	
Toluene	<1.000	50.00	42.44	85	82-127	ug/L	04/18/18 10:12	
1,2,3-Trichlorobenzene	<1.000	50.00	42.83	86	79-123	ug/L	04/18/18 10:12	
1,2,4-Trichlorobenzene	<1.000	50.00	43.95	88	78-123	ug/L	04/18/18 10:12	
1,1,1-Trichloroethane	<1.000	50.00	46.57	93	87-125	ug/L	04/18/18 10:12	
1,1,2-Trichloroethane	<1.000	50.00	45.38	91	84-127	ug/L	04/18/18 10:12	
Trichloroethene	<1.000	50.00	46.75	94	87-124	ug/L	04/18/18 10:12	
Trichlorofluoromethane	<5.000	50.00	50.32	101	85-130	ug/L	04/18/18 10:12	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	44.89	90	81-132	ug/L	04/18/18 10:12	
Vinyl chloride	<1.000	50.00	47.64	95	66-133	ug/L	04/18/18 10:12	
m&p-Xylene	<2.000	100	86.51	87	78-126	ug/L	04/18/18 10:12	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041825

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152449 Matrix: Water Date Prep: 04/18/18

MB Sample Id: 70965-1-BLK LCS Sample Id: 70965-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	43.24	86	75-130	ug/L	04/18/18 10:12	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		95		87-109	%	04/18/18 10:12
Dibromofluoromethane	99		100		93-111	%	04/18/18 10:12
Toluene-D8	100		100		91-109	%	04/18/18 10:12

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 18041825

Page 1 of 1

No. 008253 wsp

WSP USA Office Address: 13530 Dulles Technology Drive Suite 300 Herndon VA 20171

Project Name: Kop-Flex

WSP USA Contact Name: Eric Johnson

Project Location: Hanover, MD

WSP USA Contact E-mail: Eric.Johnson @wsp.com

Project Number & Task: 31400389 /01

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresa

Sampler(s) Signature(s): [signature]

Laboratory Name & Location: Phase Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☒ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR *Emergency*

Requested Analyses & Preservatives: VOCs 8260

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260	Sample Comments
MW-34(355-365)	AQ	4/17/18		1555		3	X	
MW-34(375-385)	AQ	4/18/18		0935		3	X	
MW-34(395-405)	AQ	4/18/18		1250		3	X	
Trip Blank						2	X	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES Temp: 1°-3°C
Shipping Carrier: TTE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	04/18/18	3:12	Dan Parta				
Dan Parta	04/18/18	1605	[signature]			Number of Packages	Custody Seal Number(s)

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18041825	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	04/18/2018 04:05:00 PM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/23/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	3
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 4 Total No. of Containers Received 11

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 04/18/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 04/18/2018

Lynn Jackson

MW-36 LOCATION

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032037

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/1

March 22, 2018

Phase Separation Science, Inc.

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Baltimore, MD 21228
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PHASE SEPARATION SCIENCE, INC.

March 22, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032037**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032037**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 24, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032037

Project ID: 31400389/1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/20/2018 at 05:10 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032037-001	MW-36 (201-206)	GROUND WATER	03/20/18 16:20
18032037-002	Trip Blank	WATER	03/20/18 17:10

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032037

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (201-206) **Date/Time Sampled: 03/20/2018 16:20** **PSS Sample ID: 18032037-001**
Matrix: GROUND WATER **Date/Time Received: 03/20/2018 17:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
Benzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Bromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Bromoform	ND	ug/L	5.0		1	03/20/18	03/20/18 20:42	1011
Bromomethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
Carbon Disulfide	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Chlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Chloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Chloroform	**1.4**	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Chloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Cyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/20/18	03/20/18 20:42	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,1-Dichloroethane	**5.5**	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2-Dichloroethane	**1.4**	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,1-Dichloroethene	**110**	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Ethylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032037

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (201-206) **Date/Time Sampled: 03/20/2018 16:20** **PSS Sample ID: 18032037-001**
Matrix: GROUND WATER **Date/Time Received: 03/20/2018 17:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 20:42	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Methyl Acetate	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
Methylcyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 20:42	1011
Methylene chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 20:42	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Naphthalene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Styrene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Toluene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,1,1-Trichloroethane	**2.1**	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Trichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/20/18	03/20/18 20:42	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
Vinyl chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011
m&p-Xylene	ND	ug/L	2.0		1	03/20/18	03/20/18 20:42	1011
o-Xylene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:42	1011

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BALTIMORE, MD 21228
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800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032037

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/20/2018 17:10** **PSS Sample ID: 18032037-002**
Matrix: WATER **Date/Time Received: 03/20/2018 17:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
Benzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Bromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Bromoform	ND	ug/L	5.0		1	03/20/18	03/20/18 20:20	1011
Bromomethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
Carbon Disulfide	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Chlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Chloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Chloroform	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Chloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Cyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/20/18	03/20/18 20:20	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Ethylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032037

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/20/2018 17:10** **PSS Sample ID: 18032037-002**
Matrix: WATER **Date/Time Received: 03/20/2018 17:10**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 20:20	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Methyl Acetate	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
Methylcyclohexane	ND	ug/L	10		1	03/20/18	03/20/18 20:20	1011
Methylene chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/20/18	03/20/18 20:20	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Naphthalene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Styrene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Toluene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Trichloroethene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/20/18	03/20/18 20:20	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
Vinyl chloride	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011
m&p-Xylene	ND	ug/L	2.0		1	03/20/18	03/20/18 20:20	1011
o-Xylene	ND	ug/L	1.0		1	03/20/18	03/20/18 20:20	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032037

Project ID: 31400389/1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18032037
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-36 (201-206)	Initial	18032037-001	1011	W	70509	151553	03/20/2018	03/20/2018 08:55	03/20/2018 20:42
	Trip Blank	Initial	18032037-002	1011	W	70509	151553	03/20/2018	03/20/2018 08:55	03/20/2018 20:20
	70509-1-BKS	BKS	70509-1-BKS	1011	W	70509	151553	--------	03/20/2018 08:55	03/20/2018 10:00
	70509-1-BLK	BLK	70509-1-BLK	1011	W	70509	151553	--------	03/20/2018 08:55	03/20/2018 11:37
	12815-MW101-3/18 S	MS	18031619-001 S	1011	W	70509	151553	03/15/2018	03/20/2018 08:55	03/20/2018 13:31
	12815-MW101-3/18 SD	MSD	18031619-001 SD	1011	W	70509	151553	03/15/2018	03/20/2018 08:55	03/20/2018 13:56

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032037

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151553 Matrix: Ground Water Date Prep: 03/20/2018
PSS Sample ID: 18032037-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		86-111	%	03/20/18 20:42
Dibromofluoromethane	101		91-119	%	03/20/18 20:42
Toluene-D8	100		90-117	%	03/20/18 20:42

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151553 Matrix: Water Date Prep: 03/20/2018
PSS Sample ID: 18032037-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		86-111	%	03/20/18 20:20
Dibromofluoromethane	107		91-119	%	03/20/18 20:20
Toluene-D8	105		90-117	%	03/20/18 20:20

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032037

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151553 Matrix: Water Date Prep: 03/20/18

MB Sample Id: 70509-1-BLK LCS Sample Id: 70509-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	49.57	99	29-149	ug/L	03/20/18 10:00	
Benzene	<1.000	50.00	48.74	97	85-123	ug/L	03/20/18 10:00	
Bromochloromethane	<1.000	50.00	51.74	103	82-136	ug/L	03/20/18 10:00	
Bromodichloromethane	<1.000	50.00	53.11	106	88-133	ug/L	03/20/18 10:00	
Bromoform	<5.000	50.00	54.28	109	80-126	ug/L	03/20/18 10:00	
Bromomethane	<1.000	50.00	47.38	95	64-139	ug/L	03/20/18 10:00	
2-Butanone (MEK)	<10.00	50.00	44.51	89	39-135	ug/L	03/20/18 10:00	
Carbon Disulfide	<10.00	50.00	52.60	105	85-124	ug/L	03/20/18 10:00	
Carbon tetrachloride	<1.000	50.00	47.94	96	81-138	ug/L	03/20/18 10:00	
Chlorobenzene	<1.000	50.00	50.58	101	85-120	ug/L	03/20/18 10:00	
Chloroethane	<1.000	50.00	49.00	98	75-129	ug/L	03/20/18 10:00	
Chloroform	<1.000	50.00	48.16	96	85-128	ug/L	03/20/18 10:00	
Chloromethane	<1.000	50.00	46.17	92	60-139	ug/L	03/20/18 10:00	
Cyclohexane	<10.00	50.00	50.47	101	55-131	ug/L	03/20/18 10:00	
1,2-Dibromo-3-chloropropane	<5.000	50.00	48.94	98	69-127	ug/L	03/20/18 10:00	
Dibromochloromethane	<1.000	50.00	56.16	112	82-127	ug/L	03/20/18 10:00	
1,2-Dibromoethane	<1.000	50.00	52.69	105	82-121	ug/L	03/20/18 10:00	
1,2-Dichlorobenzene	<1.000	50.00	52.59	105	82-123	ug/L	03/20/18 10:00	
1,3-Dichlorobenzene	<1.000	50.00	52.57	105	81-123	ug/L	03/20/18 10:00	
1,4-Dichlorobenzene	<1.000	50.00	51.65	103	81-121	ug/L	03/20/18 10:00	
Dichlorodifluoromethane	<1.000	50.00	50.18	100	69-147	ug/L	03/20/18 10:00	
1,1-Dichloroethane	<1.000	50.00	49.13	98	83-123	ug/L	03/20/18 10:00	
1,2-Dichloroethane	<1.000	50.00	49.22	98	86-138	ug/L	03/20/18 10:00	
1,1-Dichloroethene	<1.000	50.00	48.94	98	85-127	ug/L	03/20/18 10:00	
cis-1,2-Dichloroethene	<1.000	50.00	48.72	97	87-127	ug/L	03/20/18 10:00	
1,2-Dichloropropane	<1.000	50.00	49.84	100	79-125	ug/L	03/20/18 10:00	
cis-1,3-Dichloropropene	<1.000	50.00	53.77	108	79-131	ug/L	03/20/18 10:00	
trans-1,3-Dichloropropene	<1.000	50.00	47.54	95	82-133	ug/L	03/20/18 10:00	
trans-1,2-Dichloroethene	<1.000	50.00	49.64	99	85-125	ug/L	03/20/18 10:00	
Ethylbenzene	<1.000	50.00	51.65	103	83-123	ug/L	03/20/18 10:00	
2-Hexanone (MBK)	<5.000	50.00	45.86	92	37-137	ug/L	03/20/18 10:00	
Isopropylbenzene	<1.000	50.00	50.99	102	70-131	ug/L	03/20/18 10:00	
Methyl Acetate	<10.00	50.00	43.90	88	69-127	ug/L	03/20/18 10:00	
Methylcyclohexane	<10.00	50.00	51.48	103	75-129	ug/L	03/20/18 10:00	
Methylene chloride	<1.000	50.00	49.04	98	86-124	ug/L	03/20/18 10:00	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	46.79	94	39-143	ug/L	03/20/18 10:00	
Methyl-t-Butyl Ether	<1.000	50.00	50.08	100	75-134	ug/L	03/20/18 10:00	
Naphthalene	<1.000	50.00	48.31	97	61-118	ug/L	03/20/18 10:00	
Styrene	<1.000	50.00	51.97	104	80-120	ug/L	03/20/18 10:00	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.41	105	64-125	ug/L	03/20/18 10:00	
Tetrachloroethene	<1.000	50.00	51.99	104	83-138	ug/L	03/20/18 10:00	
Toluene	<1.000	50.00	50.82	102	88-126	ug/L	03/20/18 10:00	
1,2,3-Trichlorobenzene	<1.000	50.00	48.10	96	75-124	ug/L	03/20/18 10:00	
1,2,4-Trichlorobenzene	<1.000	50.00	46.69	93	77-131	ug/L	03/20/18 10:00	
1,1,1-Trichloroethane	<1.000	50.00	50.40	101	68-146	ug/L	03/20/18 10:00	
1,1,2-Trichloroethane	<1.000	50.00	51.14	102	85-124	ug/L	03/20/18 10:00	
Trichloroethene	<1.000	50.00	50.36	101	87-127	ug/L	03/20/18 10:00	
Trichlorofluoromethane	<5.000	50.00	51.79	104	77-147	ug/L	03/20/18 10:00	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	46.66	93	68-135	ug/L	03/20/18 10:00	
Vinyl chloride	<1.000	50.00	50.84	102	74-138	ug/L	03/20/18 10:00	
m&p-Xylene	<2.000	100	104.6	105	84-124	ug/L	03/20/18 10:00	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032037

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151553 Matrix: Water Date Prep: 03/20/18

MB Sample Id: 70509-1-BLK LCS Sample Id: 70509-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	51.34	103	79-126	ug/L	03/20/18 10:00	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		101		86-111	%	03/20/18 10:00
Dibromofluoromethane	100		103		91-119	%	03/20/18 10:00
Toluene-D8	99		100		90-117	%	03/20/18 10:00

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500
EMAIL: eric.johnson@wsp.com FAX NO.:
*PROJECT NAME: Karflex PROJECT NO.: 31400384/1
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 18032037 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: #0	Analysis/ Method Required (3): * VOC	REMARKS
	MW-36 (201-206)	3/20/18	1620	GW	3	G		X	
	Trip Blank				2			X	

(5)

Relinquished By: (1)	Date	Time	Received By:
R. Eyler	3/20/18	1710	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA QC SUMM CLP LIKE OTHER
☐ ☐ ☐ _____

# of Coolers: 1 Temp Blank 3°C
Custody Seal: ~~+~~ ABS 3/22/18
Ice Present: PRES ~~ABS~~ Temp: 1°-4°C
Shipping Carrier: Client

Special Instructions:
Trip blank lab provided

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: _____
STATE RESULTS REPORTED TO: ~~MD~~ ☑ DE ☐ PA ☐ VA ☐ WV ☐ OTHER _____

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032037	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/20/2018 05:10:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/1	**Tracking No**	Not Applicable
Disposal Date	04/24/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	4
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	MML
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 5

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/20/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 03/20/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032206

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/1

March 22, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 22, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032206**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032206**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 26, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032206

Project ID: 31400389/1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/22/2018 at 10:25 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032206-001	MW-36 (231-236)	GROUND WATER	03/21/18 12:40
18032206-002	MW-36 (211-216)	GROUND WATER	03/20/18 18:55
18032206-003	Trip Blank	WATER	03/22/18 10:25

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (231-236) **Date/Time Sampled: 03/21/2018 12:40** **PSS Sample ID: 18032206-001**
Matrix: GROUND WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
Benzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Bromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Bromoform	ND	ug/L	5.0		1	03/22/18	03/22/18 13:22	1011
Bromomethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
Carbon Disulfide	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Chlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Chloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Chloroform	**1.3**	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Chloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Cyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:22	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,1-Dichloroethene	**7.0**	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Ethylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011

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CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (231-236) **Date/Time Sampled: 03/21/2018 12:40** **PSS Sample ID: 18032206-001**
Matrix: GROUND WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:22	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Methyl Acetate	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
Methylcyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:22	1011
Methylene chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:22	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Naphthalene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Styrene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Toluene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Trichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:22	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
Vinyl chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011
m&p-Xylene	ND	ug/L	2.0		1	03/22/18	03/22/18 13:22	1011
o-Xylene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:22	1011

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CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (211-216) **Date/Time Sampled: 03/20/2018 18:55** **PSS Sample ID: 18032206-002**
Matrix: GROUND WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
Benzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Bromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Bromoform	ND	ug/L	5.0		1	03/22/18	03/22/18 13:43	1011
Bromomethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
Carbon Disulfide	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Chlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Chloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Chloroform	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Chloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Cyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:43	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,1-Dichloroethane	**5.0**	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2-Dichloroethane	**1.4**	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,1-Dichloroethene	**130**	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Ethylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011

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CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (211-216) **Date/Time Sampled: 03/20/2018 18:55** **PSS Sample ID: 18032206-002**
Matrix: GROUND WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:43	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Methyl Acetate	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
Methylcyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:43	1011
Methylene chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:43	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Naphthalene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Styrene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Toluene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,1,1-Trichloroethane	**2.8**	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Trichloroethene	**1.2**	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:43	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
Vinyl chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011
m&p-Xylene	ND	ug/L	2.0		1	03/22/18	03/22/18 13:43	1011
o-Xylene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:43	1011

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CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/22/2018 10:25** **PSS Sample ID: 18032206-003**
Matrix: WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
Benzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Bromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Bromoform	ND	ug/L	5.0		1	03/22/18	03/22/18 12:41	1011
Bromomethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
Carbon Disulfide	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Chlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Chloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Chloroform	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Chloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Cyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/22/18	03/22/18 12:41	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Ethylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032206

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/22/2018 10:25** **PSS Sample ID: 18032206-003**
Matrix: WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 12:41	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Methyl Acetate	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
Methylcyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 12:41	1011
Methylene chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 12:41	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Naphthalene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Styrene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Toluene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Trichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/22/18	03/22/18 12:41	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
Vinyl chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011
m&p-Xylene	ND	ug/L	2.0		1	03/22/18	03/22/18 12:41	1011
o-Xylene	ND	ug/L	1.0		1	03/22/18	03/22/18 12:41	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032206
Project ID: 31400389/1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

General Comments:
Changed TAT to emergency, per client.
NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032206**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-36 (231-236)	Initial	18032206-001	1011	W	70520	151557	03/21/2018	03/22/2018 09:08	03/22/2018 13:22
	MW-36 (211-216)	Initial	18032206-002	1011	W	70520	151557	03/20/2018	03/22/2018 09:08	03/22/2018 13:43
	Trip Blank	Initial	18032206-003	1011	W	70520	151557	03/22/2018	03/22/2018 09:08	03/22/2018 12:41
	70520-1-BKS	BKS	70520-1-BKS	1011	W	70520	151557	--------	03/22/2018 09:08	03/22/2018 11:07
	70520-1-BLK	BLK	70520-1-BLK	1011	W	70520	151557	--------	03/22/2018 09:08	03/22/2018 11:49

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032206

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151557 Matrix: Ground Water Date Prep: 03/22/2018
PSS Sample ID: 18032206-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		86-111	%	03/22/18 13:22
Dibromofluoromethane	99		91-119	%	03/22/18 13:22
Toluene-D8	104		90-117	%	03/22/18 13:22

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151557 Matrix: Ground Water Date Prep: 03/22/2018
PSS Sample ID: 18032206-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	99		86-111	%	03/22/18 13:43
Dibromofluoromethane	99		91-119	%	03/22/18 13:43
Toluene-D8	105		90-117	%	03/22/18 13:43

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151557 Matrix: Water Date Prep: 03/22/2018
PSS Sample ID: 18032206-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	95		86-111	%	03/22/18 12:41
Dibromofluoromethane	100		91-119	%	03/22/18 12:41
Toluene-D8	106		90-117	%	03/22/18 12:41

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032206

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151557 Matrix: Water Date Prep: 03/22/18

MB Sample Id: 70520-1-BLK LCS Sample Id: 70520-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	44.72	89	29-149	ug/L	03/22/18 11:07	
Benzene	<1.000	50.00	48.48	97	85-123	ug/L	03/22/18 11:07	
Bromochloromethane	<1.000	50.00	46.66	93	82-136	ug/L	03/22/18 11:07	
Bromodichloromethane	<1.000	50.00	49.50	99	88-133	ug/L	03/22/18 11:07	
Bromoform	<5.000	50.00	42.64	85	80-126	ug/L	03/22/18 11:07	
Bromomethane	<1.000	50.00	49.59	99	64-139	ug/L	03/22/18 11:07	
2-Butanone (MEK)	<10.00	50.00	41.30	83	39-135	ug/L	03/22/18 11:07	
Carbon Disulfide	<10.00	50.00	50.63	101	85-124	ug/L	03/22/18 11:07	
Carbon tetrachloride	<1.000	50.00	50.61	101	81-138	ug/L	03/22/18 11:07	
Chlorobenzene	<1.000	50.00	50.39	101	85-120	ug/L	03/22/18 11:07	
Chloroethane	<1.000	50.00	48.98	98	75-129	ug/L	03/22/18 11:07	
Chloroform	<1.000	50.00	46.79	94	85-128	ug/L	03/22/18 11:07	
Chloromethane	<1.000	50.00	49.84	100	60-139	ug/L	03/22/18 11:07	
Cyclohexane	<10.00	50.00	48.01	96	55-131	ug/L	03/22/18 11:07	
1,2-Dibromo-3-chloropropane	<5.000	50.00	39.90	80	69-127	ug/L	03/22/18 11:07	
Dibromochloromethane	<1.000	50.00	44.24	88	82-127	ug/L	03/22/18 11:07	
1,2-Dibromoethane	<1.000	50.00	48.89	98	82-121	ug/L	03/22/18 11:07	
1,2-Dichlorobenzene	<1.000	50.00	49.88	100	82-123	ug/L	03/22/18 11:07	
1,3-Dichlorobenzene	<1.000	50.00	50.37	101	81-123	ug/L	03/22/18 11:07	
1,4-Dichlorobenzene	<1.000	50.00	49.44	99	81-121	ug/L	03/22/18 11:07	
Dichlorodifluoromethane	<1.000	50.00	51.12	102	69-147	ug/L	03/22/18 11:07	
1,1-Dichloroethane	<1.000	50.00	46.94	94	83-123	ug/L	03/22/18 11:07	
1,2-Dichloroethane	<1.000	50.00	47.66	95	86-138	ug/L	03/22/18 11:07	
1,1-Dichloroethene	<1.000	50.00	48.17	96	85-127	ug/L	03/22/18 11:07	
cis-1,2-Dichloroethene	<1.000	50.00	49.30	99	87-127	ug/L	03/22/18 11:07	
1,2-Dichloropropane	<1.000	50.00	48.12	96	79-125	ug/L	03/22/18 11:07	
cis-1,3-Dichloropropene	<1.000	50.00	51.04	102	79-131	ug/L	03/22/18 11:07	
trans-1,3-Dichloropropene	<1.000	50.00	46.21	92	82-133	ug/L	03/22/18 11:07	
trans-1,2-Dichloroethene	<1.000	50.00	49.00	98	85-125	ug/L	03/22/18 11:07	
Ethylbenzene	<1.000	50.00	50.40	101	83-123	ug/L	03/22/18 11:07	
2-Hexanone (MBK)	<5.000	50.00	47.43	95	37-137	ug/L	03/22/18 11:07	
Isopropylbenzene	<1.000	50.00	50.39	101	70-131	ug/L	03/22/18 11:07	
Methyl Acetate	<10.00	50.00	44.04	88	69-127	ug/L	03/22/18 11:07	
Methylcyclohexane	<10.00	50.00	53.33	107	75-129	ug/L	03/22/18 11:07	
Methylene chloride	<1.000	50.00	49.09	98	86-124	ug/L	03/22/18 11:07	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	43.87	88	39-143	ug/L	03/22/18 11:07	
Methyl-t-Butyl Ether	<1.000	50.00	46.02	92	75-134	ug/L	03/22/18 11:07	
Naphthalene	<1.000	50.00	43.09	86	61-118	ug/L	03/22/18 11:07	
Styrene	<1.000	50.00	45.66	91	80-120	ug/L	03/22/18 11:07	
1,1,2,2-Tetrachloroethane	<1.000	50.00	46.69	93	64-125	ug/L	03/22/18 11:07	
Tetrachloroethene	<1.000	50.00	56.90	114	83-138	ug/L	03/22/18 11:07	
Toluene	<1.000	50.00	52.58	105	88-126	ug/L	03/22/18 11:07	
1,2,3-Trichlorobenzene	<1.000	50.00	50.88	102	75-124	ug/L	03/22/18 11:07	
1,2,4-Trichlorobenzene	<1.000	50.00	51.50	103	77-131	ug/L	03/22/18 11:07	
1,1,1-Trichloroethane	<1.000	50.00	48.70	97	68-146	ug/L	03/22/18 11:07	
1,1,2-Trichloroethane	<1.000	50.00	51.87	104	85-124	ug/L	03/22/18 11:07	
Trichloroethene	<1.000	50.00	50.49	101	87-127	ug/L	03/22/18 11:07	
Trichlorofluoromethane	<5.000	50.00	50.94	102	77-147	ug/L	03/22/18 11:07	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	54.35	109	68-135	ug/L	03/22/18 11:07	
Vinyl chloride	<1.000	50.00	39.70	79	74-138	ug/L	03/22/18 11:07	
m&p-Xylene	<2.000	100	90.91	91	84-124	ug/L	03/22/18 11:07	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032206

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151557 Matrix: Water Date Prep: 03/22/18

MB Sample Id: 70520-1-BLK LCS Sample Id: 70520-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	45.26	91	79-126	ug/L	03/22/18 11:07	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		96		86-111	%	03/22/18 11:07
Dibromofluoromethane	99		100		91-119	%	03/22/18 11:07
Toluene-D8	105		105		90-117	%	03/22/18 11:07

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 18032206

WSP USA Office Address: Herndon, VA

Project Name: Kapflex

Project Location: Hanover, MD

Project Number & Task: 31400389/1

WSP USA Contact Name: Eric Johnson

WSP USA Contact E-mail: eric.johnson@wsp.com

WSP USA Contact Phone: 703 709 6500

Sampler(s) Name(s): Molly Long

Sampler(s) Signature(s): MML

No. 008252

Laboratory Name & Location: Phase

Laboratory Project Manager: Amber

Requested Turn-Around Time: ☐ Standard ☒ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start Date	Collection Start Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOC	Sample Comments
MW-36 (231-236)	GW	3/21/18		1240		3	X	
MW-36 (211-216)	GW	3/20/18		1855		3	X	
Trip Blank						2	X	lab provided

# of Coolers: 1

Custody Seal: ABS

Ice Present: PRES Temp: 1°-2°C

Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/22/18	1525				delivered in person	
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**
						1	

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032206	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/22/2018 10:25:00 AM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/1	**Tracking No**	Not Applicable
Disposal Date	04/26/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	2
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Molly Long
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/22/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 03/22/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032326

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/1

March 26, 2018

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

March 26, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032326**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032326**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 27, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032326

Project ID: 31400389/1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/23/2018 at 12:35 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032326-001	MW-36 (281-286)	GROUND WATER	03/23/18 11:35
18032326-002	Trip Blank	WATER	03/23/18 12:40

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

OFFICES:
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ROUTE 40 WEST
BALTIMORE, MD 21228
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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032326

WSP USA - Herndon, Herndon, VA

March 26, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (281-286) **Date/Time Sampled: 03/23/2018 11:35** **PSS Sample ID: 18032326-001**
Matrix: GROUND WATER **Date/Time Received: 03/23/2018 12:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
Benzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Bromochloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Bromoform	ND	ug/L	5.0		1	03/24/18	03/24/18 18:04	1011
Bromomethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
Carbon Disulfide	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Chlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Chloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Chloroform	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Chloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Cyclohexane	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/24/18	03/24/18 18:04	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Ethylbenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032326

WSP USA - Herndon, Herndon, VA

March 26, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 (281-286) **Date/Time Sampled: 03/23/2018 11:35** **PSS Sample ID: 18032326-001**
Matrix: GROUND WATER **Date/Time Received: 03/23/2018 12:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/24/18	03/24/18 18:04	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Methyl Acetate	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
Methylcyclohexane	ND	ug/L	10		1	03/24/18	03/24/18 18:04	1011
Methylene chloride	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/24/18	03/24/18 18:04	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Naphthalene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Styrene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Toluene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Trichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/24/18	03/24/18 18:04	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
Vinyl chloride	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011
m&p-Xylene	ND	ug/L	2.0		1	03/24/18	03/24/18 18:04	1011
o-Xylene	ND	ug/L	1.0		1	03/24/18	03/24/18 18:04	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032326

WSP USA - Herndon, Herndon, VA

March 26, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/23/2018 12:40** **PSS Sample ID: 18032326-002**
Matrix: WATER **Date/Time Received: 03/23/2018 12:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
Benzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Bromochloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Bromoform	ND	ug/L	5.0		1	03/24/18	03/24/18 17:43	1011
Bromomethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
Carbon Disulfide	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Chlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Chloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Chloroform	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Chloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Cyclohexane	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/24/18	03/24/18 17:43	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Ethylbenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032326

WSP USA - Herndon, Herndon, VA

March 26, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: Trip Blank **Date/Time Sampled: 03/23/2018 12:40** **PSS Sample ID: 18032326-002**
Matrix: WATER **Date/Time Received: 03/23/2018 12:35**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/24/18	03/24/18 17:43	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Methyl Acetate	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
Methylcyclohexane	ND	ug/L	10		1	03/24/18	03/24/18 17:43	1011
Methylene chloride	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/24/18	03/24/18 17:43	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Naphthalene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Styrene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Toluene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Trichloroethene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/24/18	03/24/18 17:43	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
Vinyl chloride	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011
m&p-Xylene	ND	ug/L	2.0		1	03/24/18	03/24/18 17:43	1011
o-Xylene	ND	ug/L	1.0		1	03/24/18	03/24/18 17:43	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032326
Project ID: 31400389/1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

Containers received labeled with sampling date of 3/22/18.

Analytical:

TCL Volatile Organic Compounds

Batch: 151621

Laboratory control sample and/or laboratory control sample duplicate (LCS/LCSD) exceedances identified; see LCS summary form.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032326**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-36 (281-286)	Initial	18032326-001	1011	W	70559	151621	03/23/2018	03/24/2018 14:40	03/24/2018 18:04
	Trip Blank	Initial	18032326-002	1011	W	70559	151621	03/23/2018	03/24/2018 14:40	03/24/2018 17:43
	70559-1-BKS	BKS	70559-1-BKS	1011	W	70559	151621	--------	03/24/2018 14:40	03/24/2018 15:39
	70559-1-BLK	BLK	70559-1-BLK	1011	W	70559	151621	--------	03/24/2018 14:40	03/24/2018 16:41
	MW-36 (281-286) S	MS	18032326-001 S	1011	W	70559	151621	03/23/2018	03/24/2018 14:40	03/24/2018 18:25
	MW-36 (281-286) SD	MSD	18032326-001 SD	1011	W	70559	151621	03/23/2018	03/24/2018 14:40	03/24/2018 18:46

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032326

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151621 Matrix: Ground Water Date Prep: 03/24/2018
PSS Sample ID: 18032326-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	03/24/18 18:04
Dibromofluoromethane	100		91-119	%	03/24/18 18:04
Toluene-D8	101		90-117	%	03/24/18 18:04

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151621 Matrix: Water Date Prep: 03/24/2018
PSS Sample ID: 18032326-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		86-111	%	03/24/18 17:43
Dibromofluoromethane	100		91-119	%	03/24/18 17:43
Toluene-D8	101		90-117	%	03/24/18 17:43

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032326

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151621 Matrix: Water Date Prep: 03/24/18

MB Sample Id: 70559-1-BLK LCS Sample Id: 70559-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	36.04	72	29-149	ug/L	03/24/18 15:39	
Benzene	<1.000	50.00	46.16	92	85-123	ug/L	03/24/18 15:39	
Bromochloromethane	<1.000	50.00	41.16	82	82-136	ug/L	03/24/18 15:39	
Bromodichloromethane	<1.000	50.00	41.27	83	88-133	ug/L	03/24/18 15:39	L
Bromoform	<5.000	50.00	40.23	80	80-126	ug/L	03/24/18 15:39	
Bromomethane	<1.000	50.00	38.14	76	64-139	ug/L	03/24/18 15:39	
2-Butanone (MEK)	<10.00	50.00	35.64	71	39-135	ug/L	03/24/18 15:39	
Carbon Disulfide	<10.00	50.00	47.10	94	85-124	ug/L	03/24/18 15:39	
Carbon tetrachloride	<1.000	50.00	41.28	83	81-138	ug/L	03/24/18 15:39	
Chlorobenzene	<1.000	50.00	46.02	92	85-120	ug/L	03/24/18 15:39	
Chloroethane	<1.000	50.00	46.59	93	75-129	ug/L	03/24/18 15:39	
Chloroform	<1.000	50.00	41.05	82	85-128	ug/L	03/24/18 15:39	L
Chloromethane	<1.000	50.00	43.90	88	60-139	ug/L	03/24/18 15:39	
Cyclohexane	<10.00	50.00	42.48	85	55-131	ug/L	03/24/18 15:39	
1,2-Dibromo-3-chloropropane	<5.000	50.00	38.96	78	69-127	ug/L	03/24/18 15:39	
Dibromochloromethane	<1.000	50.00	41.33	83	82-127	ug/L	03/24/18 15:39	
1,2-Dibromoethane	<1.000	50.00	40.94	82	82-121	ug/L	03/24/18 15:39	
1,2-Dichlorobenzene	<1.000	50.00	41.93	84	82-123	ug/L	03/24/18 15:39	
1,3-Dichlorobenzene	<1.000	50.00	47.20	94	81-123	ug/L	03/24/18 15:39	
1,4-Dichlorobenzene	<1.000	50.00	46.19	92	81-121	ug/L	03/24/18 15:39	
Dichlorodifluoromethane	<1.000	50.00	43.37	87	69-147	ug/L	03/24/18 15:39	
1,1-Dichloroethane	<1.000	50.00	45.60	91	83-123	ug/L	03/24/18 15:39	
1,2-Dichloroethane	<1.000	50.00	45.54	91	86-138	ug/L	03/24/18 15:39	
1,1-Dichloroethene	<1.000	50.00	46.63	93	85-127	ug/L	03/24/18 15:39	
cis-1,2-Dichloroethene	<1.000	50.00	45.75	92	87-127	ug/L	03/24/18 15:39	
1,2-Dichloropropane	<1.000	50.00	42.00	84	79-125	ug/L	03/24/18 15:39	
cis-1,3-Dichloropropene	<1.000	50.00	41.44	83	79-131	ug/L	03/24/18 15:39	
trans-1,3-Dichloropropene	<1.000	50.00	41.43	83	82-133	ug/L	03/24/18 15:39	
trans-1,2-Dichloroethene	<1.000	50.00	45.59	91	85-125	ug/L	03/24/18 15:39	
Ethylbenzene	<1.000	50.00	41.43	83	83-123	ug/L	03/24/18 15:39	
2-Hexanone (MBK)	<5.000	50.00	35.43	71	37-137	ug/L	03/24/18 15:39	
Isopropylbenzene	<1.000	50.00	42.15	84	70-131	ug/L	03/24/18 15:39	
Methyl Acetate	<10.00	50.00	38.31	77	69-127	ug/L	03/24/18 15:39	
Methylcyclohexane	<10.00	50.00	43.20	86	75-129	ug/L	03/24/18 15:39	
Methylene chloride	<1.000	50.00	44.84	90	86-124	ug/L	03/24/18 15:39	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	35.72	71	39-143	ug/L	03/24/18 15:39	
Methyl-t-Butyl Ether	<1.000	50.00	41.33	83	75-134	ug/L	03/24/18 15:39	
Naphthalene	<1.000	50.00	40.21	80	61-118	ug/L	03/24/18 15:39	
Styrene	<1.000	50.00	41.89	84	80-120	ug/L	03/24/18 15:39	
1,1,2,2-Tetrachloroethane	<1.000	50.00	43.86	88	64-125	ug/L	03/24/18 15:39	
Tetrachloroethene	<1.000	50.00	45.71	91	83-138	ug/L	03/24/18 15:39	
Toluene	<1.000	50.00	41.69	83	88-126	ug/L	03/24/18 15:39	L
1,2,3-Trichlorobenzene	<1.000	50.00	42.29	85	75-124	ug/L	03/24/18 15:39	
1,2,4-Trichlorobenzene	<1.000	50.00	43.49	87	77-131	ug/L	03/24/18 15:39	
1,1,1-Trichloroethane	<1.000	50.00	46.15	92	68-146	ug/L	03/24/18 15:39	
1,1,2-Trichloroethane	<1.000	50.00	45.04	90	85-124	ug/L	03/24/18 15:39	
Trichloroethene	<1.000	50.00	45.97	92	87-127	ug/L	03/24/18 15:39	
Trichlorofluoromethane	<5.000	50.00	46.86	94	77-147	ug/L	03/24/18 15:39	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	42.75	86	68-135	ug/L	03/24/18 15:39	
Vinyl chloride	<1.000	50.00	44.20	88	74-138	ug/L	03/24/18 15:39	
m&p-Xylene	<2.000	100	83.03	83	84-124	ug/L	03/24/18 15:39	L

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032326

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151621 Matrix: Water Date Prep: 03/24/18

MB Sample Id: 70559-1-BLK LCS Sample Id: 70559-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	41.26	83	79-126	ug/L	03/24/18 15:39	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		99		86-111	%	03/24/18 15:39
Dibromofluoromethane	99		100		91-119	%	03/24/18 15:39
Toluene-D8	100		100		90-117	%	03/24/18 15:39

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032326

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151621 Matrix: Ground Water Date Prep: 03/24/18

Parent Sample Id: 18032326-001 MS Sample Id: 18032326-001 S MSD Sample Id: 18032326-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<10.00	50.00	53.59	107	58.08	116	46-138	8	25	ug/L	03/24/18 18:25	
Benzene	<1.000	50.00	51.89	104	52.64	105	77-126	1	25	ug/L	03/24/18 18:25	
Bromochloromethane	<1.000	50.00	45.97	92	46.89	94	74-133	2	25	ug/L	03/24/18 18:25	
Bromodichloromethane	<1.000	50.00	46.18	92	47.21	94	79-130	2	25	ug/L	03/24/18 18:25	
Bromoform	<5.000	50.00	44.51	89	45.52	91	69-120	2	25	ug/L	03/24/18 18:25	
Bromomethane	<1.000	50.00	42.28	85	41.72	83	64-130	1	25	ug/L	03/24/18 18:25	
2-Butanone (MEK)	<10.00	50.00	41.84	84	44.47	89	34-126	6	25	ug/L	03/24/18 18:25	
Carbon Disulfide	<10.00	50.00	51.74	103	52.24	104	76-126	1	25	ug/L	03/24/18 18:25	
Carbon tetrachloride	<1.000	50.00	46.10	92	46.57	93	77-137	1	25	ug/L	03/24/18 18:25	
Chlorobenzene	<1.000	50.00	50.52	101	51.03	102	74-120	1	25	ug/L	03/24/18 18:25	
Chloroethane	<1.000	50.00	50.74	101	51.24	102	68-133	1	25	ug/L	03/24/18 18:25	
Chloroform	<1.000	50.00	47.02	94	47.15	94	77-127	0	25	ug/L	03/24/18 18:25	
Chloromethane	<1.000	50.00	44.53	89	46.14	92	50-143	4	25	ug/L	03/24/18 18:25	
Cyclohexane	<10.00	50.00	44.70	89	45.27	91	53-139	1	25	ug/L	03/24/18 18:25	
1,2-Dibromo-3-chloropropane	<5.000	50.00	44.26	89	46.65	93	56-123	5	25	ug/L	03/24/18 18:25	
Dibromochloromethane	<1.000	50.00	45.47	91	46.17	92	70-125	2	25	ug/L	03/24/18 18:25	
1,2-Dibromoethane	<1.000	50.00	45.14	90	46.60	93	69-121	3	25	ug/L	03/24/18 18:25	
1,2-Dichlorobenzene	<1.000	50.00	44.84	90	45.35	91	69-118	1	25	ug/L	03/24/18 18:25	
1,3-Dichlorobenzene	<1.000	50.00	50.23	100	50.36	101	68-119	0	25	ug/L	03/24/18 18:25	
1,4-Dichlorobenzene	<1.000	50.00	49.07	98	49.35	99	67-117	1	25	ug/L	03/24/18 18:25	
Dichlorodifluoromethane	<1.000	50.00	43.92	88	44.73	89	68-139	2	25	ug/L	03/24/18 18:25	
1,1-Dichloroethane	<1.000	50.00	50.98	102	52.30	105	78-126	3	25	ug/L	03/24/18 18:25	
1,2-Dichloroethane	<1.000	50.00	51.23	102	52.05	104	78-134	2	25	ug/L	03/24/18 18:25	
1,1-Dichloroethene	<1.000	50.00	51.01	102	51.62	103	78-125	1	25	ug/L	03/24/18 18:25	
cis-1,2-Dichloroethene	<1.000	50.00	50.84	102	51.90	104	78-128	2	25	ug/L	03/24/18 18:25	
1,2-Dichloropropane	<1.000	50.00	46.21	92	47.27	95	73-126	2	25	ug/L	03/24/18 18:25	
cis-1,3-Dichloropropene	<1.000	50.00	44.49	89	45.74	91	67-126	3	25	ug/L	03/24/18 18:25	
trans-1,3-Dichloropropene	<1.000	50.00	44.81	90	45.82	92	68-129	2	25	ug/L	03/24/18 18:25	
trans-1,2-Dichloroethene	<1.000	50.00	50.84	102	51.85	104	76-128	2	25	ug/L	03/24/18 18:25	
Ethylbenzene	<1.000	50.00	45.42	91	45.82	92	74-123	1	25	ug/L	03/24/18 18:25	
2-Hexanone (MBK)	<5.000	50.00	41.77	84	44.23	88	38-125	6	25	ug/L	03/24/18 18:25	
Isopropylbenzene	<1.000	50.00	44.87	90	45.07	90	58-129	0	25	ug/L	03/24/18 18:25	
Methyl Acetate	<10.00	50.00	42.30	85	44.60	89	63-115	5	25	ug/L	03/24/18 18:25	
Methylcyclohexane	<10.00	50.00	43.42	87	43.79	88	69-130	1	25	ug/L	03/24/18 18:25	
Methylene chloride	<1.000	50.00	50.11	100	50.95	102	76-124	2	25	ug/L	03/24/18 18:25	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	41.78	84	43.38	87	35-123	4	25	ug/L	03/24/18 18:25	
Methyl-t-Butyl Ether	<1.000	50.00	44.48	89	46.33	93	64-129	4	25	ug/L	03/24/18 18:25	
Naphthalene	<1.000	50.00	43.24	86	45.38	91	45-109	5	25	ug/L	03/24/18 18:25	
Styrene	<1.000	50.00	44.16	88	44.64	89	61-124	1	25	ug/L	03/24/18 18:25	
1,1,2,2-Tetrachloroethane	<1.000	50.00	48.70	97	50.63	101	47-130	4	25	ug/L	03/24/18 18:25	
Tetrachloroethene	<1.000	50.00	50.04	100	49.84	100	68-139	0	25	ug/L	03/24/18 18:25	
Toluene	<1.000	50.00	46.10	92	46.73	93	79-128	1	25	ug/L	03/24/18 18:25	
1,2,3-Trichlorobenzene	<1.000	50.00	43.02	86	43.91	88	48-122	2	25	ug/L	03/24/18 18:25	
1,2,4-Trichlorobenzene	<1.000	50.00	40.90	82	44.36	89	54-124	8	25	ug/L	03/24/18 18:25	
1,1,1-Trichloroethane	<1.000	50.00	51.48	103	52.10	104	73-140	1	25	ug/L	03/24/18 18:25	
1,1,2-Trichloroethane	<1.000	50.00	49.80	100	51.17	102	78-124	3	25	ug/L	03/24/18 18:25	
Trichloroethene	<1.000	50.00	51.01	102	51.26	103	77-131	0	25	ug/L	03/24/18 18:25	
Trichlorofluoromethane	<5.000	50.00	50.85	102	51.20	102	73-144	1	25	ug/L	03/24/18 18:25	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	44.87	90	45.29	91	65-140	1	25	ug/L	03/24/18 18:25	
Vinyl chloride	<1.000	50.00	48.93	98	49.09	98	60-146	0	25	ug/L	03/24/18 18:25	
m&p-Xylene	<2.000	100	90.35	90	91.13	91	75-125	1	25	ug/L	03/24/18 18:25	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032326

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151621 Matrix: Ground Water Date Prep: 03/24/18

Parent Sample Id: 18032326-001 MS Sample Id: 18032326-001 S MSD Sample Id: 18032326-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	45.54	91	46.04	92	69-126	1	25	ug/L	03/24/18 18:25	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		98		86-111	%	03/24/18 18:25
Dibromofluoromethane	101		100		91-119	%	03/24/18 18:25
Toluene-D8	100		99		90-117	%	03/24/18 18:25

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500
EMAIL: eric.johnson@wsp.com FAX NO.: ( )
*PROJECT NAME: Kopflex PROJECT NO.: 34003891
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 18032326 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: HCl	Analysis/ Method Required (3): VOCs *	REMARKS
	MW-36 (281-286)	3/23/18	1135	GW	3	G	X		
	Trip Blank (lab provided)				2		X		

(5)

Relinquished By: (1)	Date	Time	Received By:
	3/23/18	1240	1235
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ☐

# of Coolers: 1 - temp blank 3 °C
Custody Seal: ABS
Ice Present: PRES Temp: 6-7°C
Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE:
STATE RESULTS REPORTED TO: MD ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ☐

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032326	**Received By**	Amber Confer
Client Name	WSP USA - Herndon	**Date Received**	03/23/2018 12:35:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/1	**Tracking No**	Not Applicable
Disposal Date	04/27/2018	**Logged In By**	Barb Weber

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	7
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	ML
COC agrees with sample labels?	No	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 2 Total No. of Containers Received 5

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Containers received labeled with sampling date of 3/22/18.

Samples Inspected/Checklist Completed By: Barb Weber Date: 03/23/2018

Barb Weber

PM Review and Approval: Amber J Confer Date: 03/23/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032701

Project Manager: Eric Johnson

Project Name : Kop-Fex

Project Location: Hanover, MD

Project ID : 31400389/01

March 27, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 27, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032701**
Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032701**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 1, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Fex

Work Order Number(s): 18032701

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/27/2018 at 07:50 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032701-001	MW-36 (346-356)	WATER	03/26/18 15:20
18032701-002	MW-36 (356-366)	WATER	03/26/18 17:50
18032701-003	Trip Blank	WATER	03/27/18 07:50

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-36 (346-356) **Date/Time Sampled: 03/26/2018 15:20** **PSS Sample ID: 18032701-001**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
Benzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Bromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Bromodichloromethane	**1.1**	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Bromoform	ND	ug/L	5.0		1	03/27/18	03/27/18 11:34	1011
Bromomethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
Carbon Disulfide	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Chlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Chloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Chloroform	**3.0**	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Chloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Cyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:34	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Ethylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-36 (346-356) **Date/Time Sampled: 03/26/2018 15:20** **PSS Sample ID: 18032701-001**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:34	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Methyl Acetate	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
Methylcyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:34	1011
Methylene chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:34	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Naphthalene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Styrene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Toluene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Trichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:34	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
Vinyl chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011
m&p-Xylene	ND	ug/L	2.0		1	03/27/18	03/27/18 11:34	1011
o-Xylene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:34	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-36 (356-366) **Date/Time Sampled: 03/26/2018 17:50** **PSS Sample ID: 18032701-002**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
Benzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Bromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Bromoform	ND	ug/L	5.0		1	03/27/18	03/27/18 11:55	1011
Bromomethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
Carbon Disulfide	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Chlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Chloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Chloroform	**3.1**	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Chloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Cyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:55	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Ethylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW-36 (356-366) **Date/Time Sampled: 03/26/2018 17:50** **PSS Sample ID: 18032701-002**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:55	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Methyl Acetate	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
Methylcyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:55	1011
Methylene chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:55	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Naphthalene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Styrene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Toluene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Trichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:55	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
Vinyl chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011
m&p-Xylene	ND	ug/L	2.0		1	03/27/18	03/27/18 11:55	1011
o-Xylene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:55	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/27/2018 07:50** **PSS Sample ID: 18032701-003**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
Benzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Bromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Bromoform	ND	ug/L	5.0		1	03/27/18	03/27/18 11:13	1011
Bromomethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
Carbon Disulfide	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Chlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Chloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Chloroform	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Chloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Cyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:13	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Ethylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032701

WSP USA - Herndon, Herndon, VA

March 27, 2018

Project Name: Kop-Fex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 03/27/2018 07:50** **PSS Sample ID: 18032701-003**
Matrix: WATER **Date/Time Received: 03/27/2018 07:50**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:13	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Methyl Acetate	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
Methylcyclohexane	ND	ug/L	10		1	03/27/18	03/27/18 11:13	1011
Methylene chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/27/18	03/27/18 11:13	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Naphthalene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Styrene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Toluene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Trichloroethene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/27/18	03/27/18 11:13	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
Vinyl chloride	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011
m&p-Xylene	ND	ug/L	2.0		1	03/27/18	03/27/18 11:13	1011
o-Xylene	ND	ug/L	1.0		1	03/27/18	03/27/18 11:13	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop-Fex

Work Order Number(s): 18032701

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032701**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop-Fex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-36 (346-356)	Initial	18032701-001	1011	W	70598	151704	03/26/2018	03/27/2018 08:07	03/27/2018 11:34
	MW-36 (356-366)	Initial	18032701-002	1011	W	70598	151704	03/26/2018	03/27/2018 08:07	03/27/2018 11:55
	Trip Blank	Initial	18032701-003	1011	W	70598	151704	03/27/2018	03/27/2018 08:07	03/27/2018 11:13
	70598-1-BKS	BKS	70598-1-BKS	1011	W	70598	151704	--------	03/27/2018 08:07	03/27/2018 09:47
	70598-1-BLK	BLK	70598-1-BLK	1011	W	70598	151704	--------	03/27/2018 08:07	03/27/2018 10:52

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032701

WSP USA - Herndon
Kop-Fex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151704 Matrix: Water Date Prep: 03/27/2018
PSS Sample ID: 18032701-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	93		86-111	%	03/27/18 11:34
Dibromofluoromethane	101		91-119	%	03/27/18 11:34
Toluene-D8	101		90-117	%	03/27/18 11:34

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151704 Matrix: Water Date Prep: 03/27/2018
PSS Sample ID: 18032701-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		86-111	%	03/27/18 11:55
Dibromofluoromethane	101		91-119	%	03/27/18 11:55
Toluene-D8	101		90-117	%	03/27/18 11:55

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151704 Matrix: Water Date Prep: 03/27/2018
PSS Sample ID: 18032701-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	114	*	86-111	%	03/27/18 11:13
Dibromofluoromethane	101		91-119	%	03/27/18 11:13
Toluene-D8	100		90-117	%	03/27/18 11:13

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032701

WSP USA - Herndon

Kop-Fex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151704 Matrix: Water Date Prep: 03/27/18

MB Sample Id: 70598-1-BLK LCS Sample Id: 70598-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	36.83	74	29-149	ug/L	03/27/18 09:47	
Benzene	<1.000	50.00	58.60	117	85-123	ug/L	03/27/18 09:47	
Bromochloromethane	<1.000	50.00	53.03	106	82-136	ug/L	03/27/18 09:47	
Bromodichloromethane	<1.000	50.00	53.23	106	88-133	ug/L	03/27/18 09:47	
Bromoform	<5.000	50.00	54.31	109	80-126	ug/L	03/27/18 09:47	
Bromomethane	<1.000	50.00	34.26	69	64-139	ug/L	03/27/18 09:47	
2-Butanone (MEK)	<10.00	50.00	35.38	71	39-135	ug/L	03/27/18 09:47	
Carbon Disulfide	<10.00	50.00	59.04	118	85-124	ug/L	03/27/18 09:47	
Carbon tetrachloride	<1.000	50.00	52.69	105	81-138	ug/L	03/27/18 09:47	
Chlorobenzene	<1.000	50.00	58.16	116	85-120	ug/L	03/27/18 09:47	
Chloroethane	<1.000	50.00	55.42	111	75-129	ug/L	03/27/18 09:47	
Chloroform	<1.000	50.00	51.91	104	85-128	ug/L	03/27/18 09:47	
Chloromethane	<1.000	50.00	40.15	80	60-139	ug/L	03/27/18 09:47	
Cyclohexane	<10.00	50.00	53.89	108	55-131	ug/L	03/27/18 09:47	
1,2-Dibromo-3-chloropropane	<5.000	50.00	52.08	104	69-127	ug/L	03/27/18 09:47	
Dibromochloromethane	<1.000	50.00	53.90	108	82-127	ug/L	03/27/18 09:47	
1,2-Dibromoethane	<1.000	50.00	53.22	106	82-121	ug/L	03/27/18 09:47	
1,2-Dichlorobenzene	<1.000	50.00	53.24	106	82-123	ug/L	03/27/18 09:47	
1,3-Dichlorobenzene	<1.000	50.00	59.57	119	81-123	ug/L	03/27/18 09:47	
1,4-Dichlorobenzene	<1.000	50.00	58.34	117	81-121	ug/L	03/27/18 09:47	
Dichlorodifluoromethane	<1.000	50.00	43.82	88	69-147	ug/L	03/27/18 09:47	
1,1-Dichloroethane	<1.000	50.00	57.54	115	83-123	ug/L	03/27/18 09:47	
1,2-Dichloroethane	<1.000	50.00	58.10	116	86-138	ug/L	03/27/18 09:47	
1,1-Dichloroethene	<1.000	50.00	57.58	115	85-127	ug/L	03/27/18 09:47	
cis-1,2-Dichloroethene	<1.000	50.00	57.65	115	87-127	ug/L	03/27/18 09:47	
1,2-Dichloropropane	<1.000	50.00	52.85	106	79-125	ug/L	03/27/18 09:47	
cis-1,3-Dichloropropene	<1.000	50.00	53.10	106	79-131	ug/L	03/27/18 09:47	
trans-1,3-Dichloropropene	<1.000	50.00	53.83	108	82-133	ug/L	03/27/18 09:47	
trans-1,2-Dichloroethene	<1.000	50.00	58.13	116	85-125	ug/L	03/27/18 09:47	
Ethylbenzene	<1.000	50.00	52.40	105	83-123	ug/L	03/27/18 09:47	
2-Hexanone (MBK)	<5.000	50.00	35.96	72	37-137	ug/L	03/27/18 09:47	
Isopropylbenzene	<1.000	50.00	52.04	104	70-131	ug/L	03/27/18 09:47	
Methyl Acetate	<10.00	50.00	53.36	107	69-127	ug/L	03/27/18 09:47	
Methylcyclohexane	<10.00	50.00	55.55	111	75-129	ug/L	03/27/18 09:47	
Methylene chloride	<1.000	50.00	56.37	113	86-124	ug/L	03/27/18 09:47	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	35.89	72	39-143	ug/L	03/27/18 09:47	
Methyl-t-Butyl Ether	<1.000	50.00	52.36	105	75-134	ug/L	03/27/18 09:47	
Naphthalene	<1.000	50.00	53.63	107	61-118	ug/L	03/27/18 09:47	
Styrene	<1.000	50.00	53.07	106	80-120	ug/L	03/27/18 09:47	
1,1,2,2-Tetrachloroethane	<1.000	50.00	57.85	116	64-125	ug/L	03/27/18 09:47	
Tetrachloroethene	<1.000	50.00	58.75	118	83-138	ug/L	03/27/18 09:47	
Toluene	<1.000	50.00	52.93	106	88-126	ug/L	03/27/18 09:47	
1,2,3-Trichlorobenzene	<1.000	50.00	53.87	108	75-124	ug/L	03/27/18 09:47	
1,2,4-Trichlorobenzene	<1.000	50.00	55.37	111	77-131	ug/L	03/27/18 09:47	
1,1,1-Trichloroethane	<1.000	50.00	58.33	117	68-146	ug/L	03/27/18 09:47	
1,1,2-Trichloroethane	<1.000	50.00	58.35	117	85-124	ug/L	03/27/18 09:47	
Trichloroethene	<1.000	50.00	58.11	116	87-127	ug/L	03/27/18 09:47	
Trichlorofluoromethane	<5.000	50.00	57.91	116	77-147	ug/L	03/27/18 09:47	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	54.03	108	68-135	ug/L	03/27/18 09:47	
Vinyl chloride	<1.000	50.00	51.61	103	74-138	ug/L	03/27/18 09:47	
m&p-Xylene	<2.000	100	105.3	105	84-124	ug/L	03/27/18 09:47	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032701

WSP USA - Herndon
Kop-Fex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151704 Matrix: Water Date Prep: 03/27/18

MB Sample Id: 70598-1-BLK LCS Sample Id: 70598-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	52.50	105	79-126	ug/L	03/27/18 09:47	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		97		86-111	%	03/27/18 09:47
Dibromofluoromethane	101		100		91-119	%	03/27/18 09:47
Toluene-D8	100		99		90-117	%	03/27/18 09:47

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD

18032701

No. 008030 wsp

WSP USA Office Address	13530 Dulles Technology Drive Suite 300 Herndon, VA
Project Name	Kop-Flex
WSP USA Contact Name	Eric Johnson
Project Location	~~3/400389/~~ Hanover, MD
WSP USA Contact E-mail	Eric.Johnson @wsp.com
Project Number & Task	3/400389/01
WSP USA Contact Phone	703-709-6500
Sampler(s) Name(s)	Chris Cresa
Sampler(s) Signature(s)	[signature]
Laboratory Name & Location	Phase Separation
Laboratory Project Manager	Amber Confer
Requested Turn-Around-Time	☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR * Emergency #

Requested Analyses & Preservatives: VOCs By 8260

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs By 8260	Sample Comments
MW-36 (346-356)	AQ	3/26/18		1520		3	X	
MW-36 (356-366)	AQ	3/26/18		1750		3	X	
Trip Blank						2	X	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES . Temp: 5-6°C
Shipping Carrier: Client

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	3/27/18	0750	[signature]				
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Version 1.000

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032701	**Received By**	Amber Confer
Client Name	WSP USA - Herndon	**Date Received**	03/27/2018 07:50:00 AM
Project Name	Kop-Fex	**Delivered By**	Client
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/01/2018	**Logged In By**	Amber Confer

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	6
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 8

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Amber Confer Date: 03/27/2018

Amber Confer

PM Review and Approval: Lynn Jackson Date: 03/27/2018

Lynn Jackson

APPENDIX D – WELL DEVELOPMENT LOGS

Well Development Log
MW-29D
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Submersible Pump

Initial Depth to Water = 65.32 ft TOC Total Well Depth = 151 ft TOC
Total Volume Purged = 180 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
April 4, 2018	1655		14.34	9.38	0.418	>1,000	1.50	-370
	1700		14.76	9.25	0.412	>1,000	0.65	-398
	1705		15.02	9.24	0.411	>1,000	0.44	-407
	1710		15.05	9.18	0.406	>1,000	0.19	-409
	1715		15.21	9.17	0.395	>1,000	0.09	-408
	1720		15.13	7.33	0.119	>1,000	1.59	-186
	1725		14.5	5.53	0.057	>1,000	4.30	-15
	1730		14.41	5.19	0.054	>1,000	4.47	15
	1735		14.33	5.11	0.055	>1,000	4.47	22
	1740		14.35	5.08	0.054	>1,000	4.65	34
	1745		14.36	5.09	0.055	>1,000	4.69	38
	1750		14.38	5.08	0.054	>1,000	4.72	41
	1755		14.39	5.06	0.054	>1,000	4.75	45
	1800		14.37	5.07	0.054	>1,000	4.78	46
	1805		14.40	5.03	0.053	>1,000	4.79	51
	1810		14.43	5.07	0.054	>1,000	4.74	45
	1815		14.46	5.05	0.052	>1,000	4.72	51
	1820		14.49	5.06	0.052	>1,000	4.67	49
(a)	1825	~80	14.45	5.04	0.077	>1,000	3.96	-21
April 26, 2018	1200		15.03	8.99	0.263	>1,000	0.81	-263
	1205		15.71	7.14	0.214	>1,000	2.10	-162
	1210		16.02	6.06	0.171	>1,000	3.18	-73
	1215		16.48	5.53	0.134	>1,000	4.50	18
	1220		16.94	5.39	0.101	962	5.43	24
	1225		17.03	5.12	0.083	>1,000	7.46	61
	1230		17.16	5.02	0.08	>1,000	8.10	56
	1235		17.13	5.03	0.073	914	8.70	66
	1240		16.96	5.01	0.077	>1,000	8.60	61
	1245		16.95	5.40	0.070	>1,000	8.93	63
	1255		16.70	4.97	0.068	914	8.87	70
	1300		16.58	4.93	0.065	>1,000	9.05	67
	1310		16.54	4.92	0.067	813	9.38	63
	1315		16.53	4.91	0.064	619	9.51	62
	1320		16.51	4.89	0.065	330	9.54	60
	1325		16.49	4.88	0.069	117	9.57	57
	1330		16.50	4.86	0.070	106	9.53	56
	1335		16.48	4.85	0.070	110	9.56	57
	1340		16.48	4.85	0.070	113	9.57	56
	1345		16.47	4.85	0.070	107	9.55	58
	1350	~100	16.47	4.85	0.071	104	9.54	55

a/ Pump not working properly.

Well Development Log
MW-30D-273
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Submersible Pump

Initial Depth to Water = ft TOC Total Well Depth = 273 ft TOC
Total Volume Purged = 160 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
April 25, 2018	1355		17.17	8.70	0.284	>1,000	4.63	97
	1425		17.54	7.71	0.146	>1,000	6.93	-1
	1430		18.14	6.73	0.131	>1,000	3.29	-8
	1435		18.41	5.91	0.101	786	3.41	23
	1440		18.5	5.52	0.088	341	3.42	36
	1445		18.55	5.32	0.082	193	3.13	49
	1450		18.6	5.28	0.077	150	3.45	54
	1455		18.6	5.24	0.074	104	3.50	60
	1500		18.64	6.43	0.074	92.2	3.55	-5
	1505		18.68	5.38	0.066	>1,000	3.78	43
	1510		18.59	5.30	0.062	462	3.92	50
	1520		18.47	5.15	0.085	116	4.19	64
	1525		18.48	5.14	0.052	82.4	4.30	66
	1530		18.43	5.12	0.050	64	4.37	69
	1535		18.27	5.83	0.049	>1,000	4.81	28
	1540		18.98	6.05	0.050	790	4.23	20
	1545		18.79	5.89	0.046	113	4.31	27
	1550		18.96	5.90	0.044	88.9	4.50	75
	1555		18.74	6.39	0.084	>1,000	4.50	13
	1600		18.33	5.69	0.070	>1,000	2.71	24
	1605		18.28	5.75	0.039	421	4.96	48
	1610		18.53	5.56	0.039	166	4.71	52
	1615		18.61	5.32	0.040	58.8	4.65	66
	1620		18.58	5.01	0.038	40.4	4.72	83
	1625		18.57	5.45	0.037	70.8	4.66	61
	1630		18.58	5.29	0.039	25.3	4.68	71
	1635		18.55	5.45	0.036	42.7	4.71	63
	1640		18.54	5.23	0.034	16.9	4.73	76
	1645		18.52	5.46	0.033	13.0	4.77	66
	1650		18.53	5.11	0.034	13.3	4.76	85
	1655		18.55	5.14	0.033	19.2	4.79	85
	1700		18.45	4.94	0.032	21.3	4.84	99
	1705	~160	18.38	4.95	0.032	25	4.89	100

Well Development Log
MW-30D-413
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Airlifting

Initial Depth to Water = 136.70 ft TOC Total Well Depth = 413 ft TOC
Total Volume Purged = 200 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)
April 26, 2018	0835		16.05	5.52	0.218	316
	0840		16.34	6.38	0.222	>1,000
	0845		16.41	6.95	0.185	>1,000
	0850		16.47	7.11	0.146	>1,000
	0855		16.53	7.05	0.129	>1,000
	0900		16.64	6.97	0.120	>1,000
	0905		16.39	6.99	0.107	>1,000
	0910		16.40	6.97	0.099	>1,000
	0915		16.32	6.91	0.098	>1,000
	0920		16.28	6.85	0.089	>1,000
	0925		16.28	6.50	0.084	>1,000
	0930		16.28	6.74	0.082	>1,000
	0935		16.34	6.68	0.080	>1,000
	0940		16.22	6.66	0.077	>1,000
	0950		16.03	6.54	0.075	977
	1005		16.18	6.55	0.072	>1,000
	1010		16.31	6.49	0.071	946
	1015		16.39	6.43	0.071	930
	1020		16.40	6.37	0.069	859
	1025		16.53	6.42	0.067	746
	1030		16.58	6.42	0.066	676
	1035		16.58	6.39	0.066	690
	1040		16.59	6.42	0.064	670
	1045		16.64	6.42	0.061	566
	1050		16.64	6.39	0.061	558
	1055		16.45	6.38	0.060	562
	1100		16.65	6.30	0.060	533
	1105		16.75	6.34	0.059	519
	1110		16.78	6.35	0.058	500
	1115		16.82	6.36	0.057	452
	1120		16.80	6.33	0.058	450
	1125		16.86	6.34	0.056	457
	1130	~200	16.86	6.32	0.055	438

Well Development Log
MW-32D
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Submersible Pump

Initial Depth to Water = 85.75 ft TOC Total Well Depth = 236 ft TOC
Total Volume Purged = 160 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)
April 24, 2018	1415		16.05	12.70	4.28	>1,000	8.28	-206
	1420		16.38	12.65	4.01	>1,000	3.02	-448
	1425		16.37	12.66	3.82	>1,000	1.59	-534
	1430		16.37	12.67	3.33	>1,000	1.11	-567
	1435		16.60	12.70	3.17	>1,000	0.52	-567
	1440		16.42	12.66	2.94	>1,000	0.57	-536
	1445		16.43	12.62	2.77	>1,000	0.60	-477
	1450		16.41	12.58	2.63	>1,000	0.80	-440
	1455		16.28	12.56	2.39	>1,000	1.49	-400
	1500		16.32	12.53	2.30	>1,000	1.63	-372
	1505		16.16	12.60	2.24	>1,000	1.81	-353
	1510		16.06	12.57	2.09	689	2.21	-313
	1515		16.18	12.41	2.05	>1,000	4.65	-299
	1525		16.01	12.48	1.93	908	2.32	-283
	1530		16.13	12.46	1.87	890	2.42	-270
	1535		16.03	12.46	1.84	7.96	2.46	-262
	1540		16.01	12.42	1.81	740	2.44	-253
	1545		15.93	12.47	1.76	641	2.46	-247
	1550		15.00	12.45	1.73	59	2.46	-243
	1600		15.93	12.42	1.60	583	2.57	-233
	1610		16.04	12.42	1.55	481	2.61	-229
	1615		16.00	12.40	1.48	563	2.63	-223
	1620		15.97	12.80	1.45	589	2.62	-214
	1625		15.96	12.22	1.42	700	2.69	-206
	1630		16.03	12.22	1.40	582	2.74	-201
	1635		15.89	12.21	1.36	543	2.85	-199
	1640	~160	15.81	12.20	1.33	567	2.80	-199

Well Development Log
MW-34D
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Airlifting

Initial Depth to Water = ft TOC Total Well Depth = 385 ft TOC
Total Volume Purged = 330 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)
April 26, 2018	1350		20.56	7.94	0.263	>1,000
	1355		19.71	8.66	0.179	>1,000
	1400		19.19	8.43	0.154	>1,000
	1405		18.98	8.19	0.143	>1,000
	1410		18.88	7.91	0.131	>1,000
	1430		20.28	7.57	0.109	>1,000
	1435		19.54	7.28	0.100	963
	1445		19.44	7.02	0.095	900
	1450		19.05	6.96	0.094	887
	1455		18.93	6.78	0.087	820
	1500		18.81	6.64	0.086	750
	1505		18.58	6.56	0.083	717
	1510		18.61	6.52	0.080	709
	1515		18.58	6.44	0.078	703
	1520		19.07	6.37	0.076	664
	1525		19.09	6.39	0.076	630
	1535		18.98	6.29	0.072	609
	1540		48.75	6.20	0.071	508
	1545		18.70	6.17	0.069	484
	1550		18.43	6.15	0.068	485
	1555		18.38	6.15	0.076	450
	1600		18.40	6.16	0.07	439
	1605		18.27	6.15	0.065	398
	1615		19.16	6.08	0.066	394
	1620	~330	18.69	6.15	0.063	392

Well Development Log
MW-36D
Former Kop-Flex Facility
Hanover, Maryland

Development Method = Airlifting

Initial Depth to Water = 140.15 ft TOC Total Well Depth = 360 ft TOC
Total Volume Purged = 100 gal

Date	Reading Time	Volume Purged (Gallon)	Temperature (C)	pH	Specific Conductance (S/cm)	Turbidity (NTU)
April 30, 2018	0815		14.24	5.56	0.158	>1,000
	0820		13.44	6.12	0.072	620
	0830		13.67	6.46	0.059	412
	0835		13.96	6.58	0.054	301
	0840		14.06	6.57	0.049	317
	0845		14.11	6.61	0.047	269
	0855		14.50	6.60	0.043	229
	0900		14.23	6.56	0.041	205
	0905	~100	14.28	6.50	0.039	240

APPENDIX E – LABORATORY ANALYTICAL REPORTS FOR WASTE CHARACTERIZATION SAMPLES

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031317

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400359

March 14, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 14, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18031317**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400359

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031317**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 17, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031317

Project ID: 31400359

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/13/2018 at 05:15 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031317-001	MW-32 IDW soil	SOIL	03/13/18 16:30

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

OFFICES:
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ROUTE 40 WEST
BALTIMORE, MD 21228
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800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031317

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400359

Sample ID: MW-32 IDW soil **Date/Time Sampled: 03/13/2018 16:30** **PSS Sample ID: 18031317-001**
Matrix: SOIL **Date/Time Received: 03/13/2018 17:15** **% Solids: 84**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Benzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Bromochloromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Bromodichloromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Bromoform	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Bromomethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
2-Butanone (MEK)	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Carbon Disulfide	ND	ug/kg	11		1	03/13/18	03/13/18 16:50	1035
Carbon tetrachloride	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Chlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Chloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Chloroform	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Chloromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Cyclohexane	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
1,2-Dibromo-3-chloropropane	ND	ug/kg	43		1	03/13/18	03/13/18 16:50	1035
Dibromochloromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2-Dibromoethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2-Dichlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,3-Dichlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,4-Dichlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Dichlorodifluoromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1-Dichloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2-Dichloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1-Dichloroethene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2-Dichloropropane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
cis-1,2-Dichloroethene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
cis-1,3-Dichloropropene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
trans-1,2-Dichloroethene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
trans-1,3-Dichloropropene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Ethylbenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031317

WSP USA - Herndon, Herndon, VA

March 14, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400359

Sample ID: MW-32 IDW soil **Date/Time Sampled: 03/13/2018 16:30** **PSS Sample ID: 18031317-001**
Matrix: SOIL **Date/Time Received: 03/13/2018 17:15** **% Solids: 84**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Isopropylbenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Methyl Acetate	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Methylcyclohexane	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Methylene chloride	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	21		1	03/13/18	03/13/18 16:50	1035
Methyl-t-Butyl Ether	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Naphthalene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Styrene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Tetrachloroethene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Toluene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2,3-Trichlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,2,4-Trichlorobenzene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1,1-Trichloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1,2-Trichloroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Trichloroethene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Trichlorofluoromethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
Vinyl chloride	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035
m&p-Xylene	ND	ug/kg	11		1	03/13/18	03/13/18 16:50	1035
o-Xylene	ND	ug/kg	5.3		1	03/13/18	03/13/18 16:50	1035

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031317

Project ID: 31400359

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18031317**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM2540G	MW-32 IDW soil	Initial	18031317-001	1067	S	151304	151304	03/13/2018	03/14/2018 08:15	03/14/2018 08:15
SW-846 8260 B	MW-32 IDW soil	Initial	18031317-001	1035	S	70390	151302	03/13/2018	03/13/2018 08:58	03/13/2018 16:50
	70390-1-BKS	BKS	70390-1-BKS	1035	S	70390	151302	--------	03/13/2018 08:58	03/13/2018 13:53
	70390-1-BLK	BLK	70390-1-BLK	1035	S	70390	151302	--------	03/13/2018 08:58	03/13/2018 11:13
	1251271 S	MS	18031303-001 S	1035	S	70390	151302	03/08/2018	03/13/2018 08:58	03/13/2018 14:34
	1251271 SD	MSD	18031303-001 SD	1035	S	70390	151302	03/08/2018	03/13/2018 08:58	03/13/2018 15:14

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031317

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035
Seq Number: 151302 Matrix: Soil Date Prep: 03/13/2018
PSS Sample ID: 18031317-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	122		82-126	%	03/13/18 16:50
Dibromofluoromethane	104		92-113	%	03/13/18 16:50
Toluene-D8	98		94-105	%	03/13/18 16:50

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031317

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151302 Matrix: Solid Date Prep: 03/13/18

MB Sample Id: 70390-1-BLK LCS Sample Id: 70390-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<20	60	63	105	46-127	ug/kg	03/13/18 13:53	
Benzene	<5.0	60	70	117	70-127	ug/kg	03/13/18 13:53	
Bromochloromethane	<5.0	60	66	110	68-122	ug/kg	03/13/18 13:53	
Bromodichloromethane	<5.0	60	69	115	68-122	ug/kg	03/13/18 13:53	
Bromoform	<5.0	60	65	108	57-127	ug/kg	03/13/18 13:53	
Bromomethane	<5.0	60	68	113	68-123	ug/kg	03/13/18 13:53	
2-Butanone (MEK)	<20	60	61	102	41-136	ug/kg	03/13/18 13:53	
Carbon Disulfide	<10	60	74	123	66-135	ug/kg	03/13/18 13:53	
Carbon tetrachloride	<5.0	60	72	120	64-147	ug/kg	03/13/18 13:53	
Chlorobenzene	<5.0	60	68	113	70-121	ug/kg	03/13/18 13:53	
Chloroethane	<5.0	60	71	118	66-142	ug/kg	03/13/18 13:53	
Chloroform	<5.0	60	69	115	68-123	ug/kg	03/13/18 13:53	
Chloromethane	<5.0	60	68	113	65-136	ug/kg	03/13/18 13:53	
Cyclohexane	<20	60	73	122	62-138	ug/kg	03/13/18 13:53	
1,2-Dibromo-3-chloropropane	<40	60	63	105	55-122	ug/kg	03/13/18 13:53	
Dibromochloromethane	<5.0	60	65	108	61-122	ug/kg	03/13/18 13:53	
1,2-Dibromoethane	<5.0	60	65	108	63-119	ug/kg	03/13/18 13:53	
1,2-Dichlorobenzene	<5.0	60	65	108	65-121	ug/kg	03/13/18 13:53	
1,3-Dichlorobenzene	<5.0	60	66	110	69-121	ug/kg	03/13/18 13:53	
1,4-Dichlorobenzene	<5.0	60	66	110	69-118	ug/kg	03/13/18 13:53	
Dichlorodifluoromethane	<5.0	60	75	125	53-162	ug/kg	03/13/18 13:53	
1,1-Dichloroethane	<5.0	60	69	115	70-127	ug/kg	03/13/18 13:53	
1,2-Dichloroethane	<5.0	60	67	112	68-118	ug/kg	03/13/18 13:53	
1,1-Dichloroethene	<5.0	60	70	117	69-133	ug/kg	03/13/18 13:53	
1,2-Dichloropropane	<5.0	60	70	117	70-122	ug/kg	03/13/18 13:53	
cis-1,2-Dichloroethene	<5.0	60	69	115	68-126	ug/kg	03/13/18 13:53	
cis-1,3-Dichloropropene	<5.0	60	71	118	68-121	ug/kg	03/13/18 13:53	
trans-1,2-Dichloroethene	<5.0	60	69	115	70-132	ug/kg	03/13/18 13:53	
trans-1,3-Dichloropropene	<5.0	60	70	117	67-115	ug/kg	03/13/18 13:53	H
Ethylbenzene	<5.0	60	72	120	70-125	ug/kg	03/13/18 13:53	
2-Hexanone (MBK)	<20	60	67	112	40-121	ug/kg	03/13/18 13:53	
Isopropylbenzene	<5.0	60	74	123	68-130	ug/kg	03/13/18 13:53	
Methyl Acetate	<20	60	68	113	60-125	ug/kg	03/13/18 13:53	
Methylcyclohexane	<20	60	74	123	62-150	ug/kg	03/13/18 13:53	
Methylene chloride	<5.0	60	65	108	67-121	ug/kg	03/13/18 13:53	
4-Methyl-2-Pentanone (MIBK)	<20	60	61	102	48-117	ug/kg	03/13/18 13:53	
Methyl-t-Butyl Ether	<5.0	60	64	107	66-119	ug/kg	03/13/18 13:53	
Naphthalene	<5.0	60	58	97	54-115	ug/kg	03/13/18 13:53	
Styrene	<5.0	60	70	117	71-120	ug/kg	03/13/18 13:53	
1,1,2,2-Tetrachloroethane	<5.0	60	63	105	59-122	ug/kg	03/13/18 13:53	
Tetrachloroethene	<5.0	60	72	120	65-145	ug/kg	03/13/18 13:53	
Toluene	<5.0	60	71	118	69-129	ug/kg	03/13/18 13:53	
1,2,3-Trichlorobenzene	<5.0	60	63	105	60-114	ug/kg	03/13/18 13:53	
1,2,4-Trichlorobenzene	<5.0	60	63	105	64-115	ug/kg	03/13/18 13:53	
1,1,1-Trichloroethane	<5.0	60	72	120	65-139	ug/kg	03/13/18 13:53	
1,1,2-Trichloroethane	<5.0	60	69	115	64-125	ug/kg	03/13/18 13:53	
Trichloroethene	<5.0	60	69	115	69-133	ug/kg	03/13/18 13:53	
Trichlorofluoromethane	<5.0	60	74	123	59-153	ug/kg	03/13/18 13:53	
1,1,2-Trichlorotrifluoroethane	<5.0	60	70	117	62-139	ug/kg	03/13/18 13:53	
Vinyl chloride	<5.0	60	75	125	69-142	ug/kg	03/13/18 13:53	
m&p-Xylene	<10	120	140	117	71-124	ug/kg	03/13/18 13:53	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031317

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151302 Matrix: Solid Date Prep: 03/13/18

MB Sample Id: 70390-1-BLK LCS Sample Id: 70390-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<5.0	60	70	117	72-123	ug/kg	03/13/18 13:53	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	126		94		82-126	%	03/13/18 13:53
Dibromofluoromethane	96		100		92-113	%	03/13/18 13:53
Toluene-D8	98		102		94-105	%	03/13/18 13:53

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC.: Herndon VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709-6730
EMAIL: eric.johnson@wsp.com FAX NO.: ( )
*PROJECT NAME: LooFlex PROJECT NO.: 31400359
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MK DW CERT NO.:

PSS Work Order #: 1803131 7 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis/ Method Required (3) * VOC	REMARKS
	MW-32 IDW 50,1	3/13/18	1630	S	4	G	X		

(4) *Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☒ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER _____

# of Coolers: 1 Temp Blank 3°C
Custody Seal: ABS
Ice Present: PRES Temp: 8°-9°C
Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: _____
STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER _____

(5)

Relinquished By:	Date	Time	Received By:
(1) R Gilman	3/13/18	1715	
(2)			
(3)			
(4)			

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031317	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/13/2018 05:15:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400359	**Tracking No**	Not Applicable
Disposal Date	04/17/2018	**Logged In By**	Amber Confer

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	9
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	Not Provided
COC agrees with sample labels?	Yes		N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 1 Total No. of Containers Received 4

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Amber Confer Date: 03/14/2018

Amber Confer

PM Review and Approval: Lynn Jackson Date: 03/14/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18031512

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389

March 16, 2018

Phase Separation Science, Inc.

6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

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PHASE SEPARATION SCIENCE, INC.

March 16, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18031512**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18031512**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 19, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031512

Project ID: 31400389

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/15/2018 at 01:30 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18031512-001	MW-32 IDW Water	GROUND WATER	03/15/18 09:15

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031512

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 IDW Water **Date/Time Sampled: 03/15/2018 09:15** **PSS Sample ID: 18031512-001**
Matrix: GROUND WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/15/18	03/15/18 17:21	1011
Benzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Bromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Bromoform	ND	ug/L	5.0		1	03/15/18	03/15/18 17:21	1011
Bromomethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
2-Butanone (MEK)	**24**	ug/L	10		1	03/15/18	03/15/18 17:21	1011
Carbon Disulfide	ND	ug/L	10		1	03/15/18	03/15/18 17:21	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Chlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Chloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Chloroform	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Chloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Cyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 17:21	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/15/18	03/15/18 17:21	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Ethylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18031512

WSP USA - Herndon, Herndon, VA

March 16, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-32 IDW Water **Date/Time Sampled: 03/15/2018 09:15** **PSS Sample ID: 18031512-001**
Matrix: GROUND WATER **Date/Time Received: 03/15/2018 13:30**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 17:21	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Methyl Acetate	ND	ug/L	10		1	03/15/18	03/15/18 17:21	1011
Methylcyclohexane	ND	ug/L	10		1	03/15/18	03/15/18 17:21	1011
Methylene chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/15/18	03/15/18 17:21	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Naphthalene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Styrene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Toluene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Trichloroethene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/15/18	03/15/18 17:21	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
Vinyl chloride	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011
m&p-Xylene	ND	ug/L	2.0		1	03/15/18	03/15/18 17:21	1011
o-Xylene	ND	ug/L	1.0		1	03/15/18	03/15/18 17:21	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18031512

Project ID: 31400389

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18031512
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-32 IDW Water	Initial	18031512-001	1011	W	70433	151416	03/15/2018	03/15/2018 08:12	03/15/2018 17:21
	70433-1-BKS	BKS	70433-1-BKS	1011	W	70433	151416	--------	03/15/2018 08:12	03/15/2018 10:37
	70433-1-BLK	BLK	70433-1-BLK	1011	W	70433	151416	--------	03/15/2018 08:12	03/15/2018 11:39
	Sinclair DW S	MS	18031508-001 S	1011	W	70433	151416	03/14/2018	03/15/2018 08:12	03/15/2018 15:16
	Sinclair DW SD	MSD	18031508-001 SD	1011	W	70433	151416	03/14/2018	03/15/2018 08:12	03/15/2018 15:37

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031512

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151416 Matrix: Ground Water Date Prep: 03/15/2018
PSS Sample ID: 18031512-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		86-111	%	03/15/18 17:21
Dibromofluoromethane	100		91-119	%	03/15/18 17:21
Toluene-D8	105		90-117	%	03/15/18 17:21

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031512

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151416 Matrix: Water Date Prep: 03/15/18

MB Sample Id: 70433-1-BLK LCS Sample Id: 70433-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	47.39	95	29-149	ug/L	03/15/18 10:37	
Benzene	<1.000	50.00	49.80	100	85-123	ug/L	03/15/18 10:37	
Bromochloromethane	<1.000	50.00	48.55	97	82-136	ug/L	03/15/18 10:37	
Bromodichloromethane	<1.000	50.00	52.05	104	88-133	ug/L	03/15/18 10:37	
Bromoform	<5.000	50.00	45.46	91	80-126	ug/L	03/15/18 10:37	
Bromomethane	<1.000	50.00	48.98	98	64-139	ug/L	03/15/18 10:37	
2-Butanone (MEK)	<10.00	50.00	43.88	88	39-135	ug/L	03/15/18 10:37	
Carbon Disulfide	<10.00	50.00	49.80	100	85-124	ug/L	03/15/18 10:37	
Carbon tetrachloride	<1.000	50.00	50.61	101	81-138	ug/L	03/15/18 10:37	
Chlorobenzene	<1.000	50.00	51.68	103	85-120	ug/L	03/15/18 10:37	
Chloroethane	<1.000	50.00	49.46	99	75-129	ug/L	03/15/18 10:37	
Chloroform	<1.000	50.00	48.35	97	85-128	ug/L	03/15/18 10:37	
Chloromethane	<1.000	50.00	49.54	99	60-139	ug/L	03/15/18 10:37	
Cyclohexane	<10.00	50.00	47.69	95	55-131	ug/L	03/15/18 10:37	
1,2-Dibromo-3-chloropropane	<5.000	50.00	46.68	93	69-127	ug/L	03/15/18 10:37	
Dibromochloromethane	<1.000	50.00	47.35	95	82-127	ug/L	03/15/18 10:37	
1,2-Dibromoethane	<1.000	50.00	53.07	106	82-121	ug/L	03/15/18 10:37	
1,2-Dichlorobenzene	<1.000	50.00	51.06	102	82-123	ug/L	03/15/18 10:37	
1,3-Dichlorobenzene	<1.000	50.00	52.03	104	81-123	ug/L	03/15/18 10:37	
1,4-Dichlorobenzene	<1.000	50.00	51.03	102	81-121	ug/L	03/15/18 10:37	
Dichlorodifluoromethane	<1.000	50.00	48.46	97	69-147	ug/L	03/15/18 10:37	
1,1-Dichloroethane	<1.000	50.00	48.81	98	83-123	ug/L	03/15/18 10:37	
1,2-Dichloroethane	<1.000	50.00	51.91	104	86-138	ug/L	03/15/18 10:37	
1,1-Dichloroethene	<1.000	50.00	50.05	100	85-127	ug/L	03/15/18 10:37	
cis-1,2-Dichloroethene	<1.000	50.00	50.70	101	87-127	ug/L	03/15/18 10:37	
1,2-Dichloropropane	<1.000	50.00	50.60	101	79-125	ug/L	03/15/18 10:37	
cis-1,3-Dichloropropene	<1.000	50.00	54.04	108	79-131	ug/L	03/15/18 10:37	
trans-1,3-Dichloropropene	<1.000	50.00	49.35	99	82-133	ug/L	03/15/18 10:37	
trans-1,2-Dichloroethene	<1.000	50.00	50.05	100	85-125	ug/L	03/15/18 10:37	
Ethylbenzene	<1.000	50.00	51.81	104	83-123	ug/L	03/15/18 10:37	
2-Hexanone (MBK)	<5.000	50.00	48.98	98	37-137	ug/L	03/15/18 10:37	
Isopropylbenzene	<1.000	50.00	51.83	104	70-131	ug/L	03/15/18 10:37	
Methyl Acetate	<10.00	50.00	47.08	94	69-127	ug/L	03/15/18 10:37	
Methylcyclohexane	<10.00	50.00	50.30	101	75-129	ug/L	03/15/18 10:37	
Methylene chloride	<1.000	50.00	52.33	105	86-124	ug/L	03/15/18 10:37	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	45.45	91	39-143	ug/L	03/15/18 10:37	
Methyl-t-Butyl Ether	<1.000	50.00	51.15	102	75-134	ug/L	03/15/18 10:37	
Naphthalene	<1.000	50.00	45.02	90	61-118	ug/L	03/15/18 10:37	
Styrene	<1.000	50.00	47.08	94	80-120	ug/L	03/15/18 10:37	
1,1,2,2-Tetrachloroethane	<1.000	50.00	52.26	105	64-125	ug/L	03/15/18 10:37	
Tetrachloroethene	<1.000	50.00	55.00	110	83-138	ug/L	03/15/18 10:37	
Toluene	<1.000	50.00	53.67	107	88-126	ug/L	03/15/18 10:37	
1,2,3-Trichlorobenzene	<1.000	50.00	50.76	102	75-124	ug/L	03/15/18 10:37	
1,2,4-Trichlorobenzene	<1.000	50.00	50.21	100	77-131	ug/L	03/15/18 10:37	
1,1,1-Trichloroethane	<1.000	50.00	49.98	100	68-146	ug/L	03/15/18 10:37	
1,1,2-Trichloroethane	<1.000	50.00	54.79	110	85-124	ug/L	03/15/18 10:37	
Trichloroethene	<1.000	50.00	50.89	102	87-127	ug/L	03/15/18 10:37	
Trichlorofluoromethane	<5.000	50.00	49.65	99	77-147	ug/L	03/15/18 10:37	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	50.50	101	68-135	ug/L	03/15/18 10:37	
Vinyl chloride	<1.000	50.00	40.26	81	74-138	ug/L	03/15/18 10:37	
m&p-Xylene	<2.000	100	93.34	93	84-124	ug/L	03/15/18 10:37	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18031512

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151416 Matrix: Water Date Prep: 03/15/18

MB Sample Id: 70433-1-BLK LCS Sample Id: 70433-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	46.69	93	79-126	ug/L	03/15/18 10:37	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	105		97		86-111	%	03/15/18 10:37
Dibromofluoromethane	99		100		91-119	%	03/15/18 10:37
Toluene-D8	105		104		90-117	%	03/15/18 10:37

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC. Herndon, VA

*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709-6500

EMAIL: eric.johnson@wsp.com FAX NO.: ———

*PROJECT NAME: Kopflex PROJECT NO.: 31400389

SITE LOCATION: Hanover, MD P.O. NO.:

SAMPLER(S): MML DW CERT NO.:

PSS Work Order #: 1803512 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used: HCl	Analysis/ Method Required (3) * VOCs	REMARKS
1	MW-32 IDW Water	3/15/18	0915	GW	3	G	X		

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☒ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER ———

# of Coolers: 1 Temp Blank=1°C

Custody Seal: ABS

Ice Present: PRES Temp: 5° - 10°C

Shipping Carrier: Client

Special Instructions: 24hr TAT

DW COMPLIANCE? YES ☐

EDD FORMAT TYPE ———

STATE RESULTS REPORTED TO:
MD ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER ———

(5)

Relinquished By:	Date	Time	Received By:
(1)	3/15/18	1330	
(2)			
(3)			
(4)			

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18031512	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/15/2018 01:30:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389	**Tracking No**	Not Applicable
Disposal Date	04/19/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	10
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	ML
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 1 Total No. of Containers Received 3

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/15/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 03/15/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032036

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389

March 22, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 22, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032036**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032036**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 24, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032036

Project ID: 31400389

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/20/2018 at 05:10 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032036-001	MW-36 IDW Soil	SOIL	03/20/18 16:35

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032036

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-36 IDW Soil **Date/Time Sampled: 03/20/2018 16:35** **PSS Sample ID: 18032036-001**
Matrix: SOIL **Date/Time Received: 03/20/2018 17:10** **% Solids: 83**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Benzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Bromochloromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Bromodichloromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Bromoform	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Bromomethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
2-Butanone (MEK)	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Carbon Disulfide	ND	ug/kg	9.1		1	03/20/18	03/20/18 18:21	1035
Carbon tetrachloride	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Chlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Chloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Chloroform	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Chloromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Cyclohexane	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
1,2-Dibromo-3-chloropropane	ND	ug/kg	36		1	03/20/18	03/20/18 18:21	1035
Dibromochloromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2-Dibromoethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2-Dichlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,3-Dichlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,4-Dichlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Dichlorodifluoromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1-Dichloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2-Dichloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1-Dichloroethene	**5.3**	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2-Dichloropropane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
cis-1,2-Dichloroethene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
cis-1,3-Dichloropropene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
trans-1,2-Dichloroethene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
trans-1,3-Dichloropropene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Ethylbenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032036

WSP USA - Herndon, Herndon, VA

March 22, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389

Sample ID: MW-36 IDW Soil **Date/Time Sampled: 03/20/2018 16:35** **PSS Sample ID: 18032036-001**
Matrix: SOIL **Date/Time Received: 03/20/2018 17:10** **% Solids: 83**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Isopropylbenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Methyl Acetate	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Methylcyclohexane	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Methylene chloride	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	18		1	03/20/18	03/20/18 18:21	1035
Methyl-t-Butyl Ether	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Naphthalene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Styrene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Tetrachloroethene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Toluene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2,3-Trichlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,2,4-Trichlorobenzene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1,1-Trichloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1,2-Trichloroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Trichloroethene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Trichlorofluoromethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
Vinyl chloride	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035
m&p-Xylene	ND	ug/kg	9.1		1	03/20/18	03/20/18 18:21	1035
o-Xylene	ND	ug/kg	4.5		1	03/20/18	03/20/18 18:21	1035

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032036

Project ID: 31400389

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032036**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM2540G	MW-36 IDW Soil	Initial	18032036-001	1067	S	151516	151516	03/20/2018	03/20/2018 17:20	03/20/2018 17:20
SW-846 8260 B	MW-36 IDW Soil	Initial	18032036-001	1035	S	70510	151551	03/20/2018	03/20/2018 16:35	03/20/2018 18:21
	70510-1-BKS	BKS	70510-1-BKS	1035	S	70510	151551	--------	03/20/2018 16:35	03/20/2018 16:20
	70510-1-BLK	BLK	70510-1-BLK	1035	S	70510	151551	--------	03/20/2018 16:35	03/20/2018 12:20
	70510-1-BSD	BSD	70510-1-BSD	1035	S	70510	151551	--------	03/20/2018 16:35	03/20/2018 17:01

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032036

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035
Seq Number: 151551 Matrix: Soil Date Prep: 03/20/2018
PSS Sample ID: 18032036-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	118		82-126	%	03/20/18 18:21
Dibromofluoromethane	106		92-113	%	03/20/18 18:21
Toluene-D8	100		94-105	%	03/20/18 18:21

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032036

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035

Seq Number: 151551 Matrix: Solid Date Prep: 03/20/18

MB Sample Id: 70510-1-BLK LCS Sample Id: 70510-1-BKS LCSD Sample Id: 70510-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20	60	57	95	58	97	46-127	2	25	ug/kg	03/20/18 16:20	
Benzene	<5.0	60	66	110	68	113	70-127	3	25	ug/kg	03/20/18 16:20	
Bromochloromethane	<5.0	60	66	110	67	112	68-122	2	25	ug/kg	03/20/18 16:20	
Bromodichloromethane	<5.0	60	65	108	66	110	68-122	2	25	ug/kg	03/20/18 16:20	
Bromoform	<5.0	60	63	105	64	107	57-127	2	25	ug/kg	03/20/18 16:20	
Bromomethane	<5.0	60	67	112	67	112	68-123	0	25	ug/kg	03/20/18 16:20	
2-Butanone (MEK)	<20	60	62	103	61	102	41-136	2	25	ug/kg	03/20/18 16:20	
Carbon Disulfide	<10	60	68	113	72	120	66-135	6	25	ug/kg	03/20/18 16:20	
Carbon tetrachloride	<5.0	60	63	105	66	110	64-147	5	25	ug/kg	03/20/18 16:20	
Chlorobenzene	<5.0	60	65	108	64	107	70-121	2	25	ug/kg	03/20/18 16:20	
Chloroethane	<5.0	60	68	113	70	117	66-142	3	25	ug/kg	03/20/18 16:20	
Chloroform	<5.0	60	64	107	65	108	68-123	2	25	ug/kg	03/20/18 16:20	
Chloromethane	<5.0	60	66	110	62	103	65-136	6	25	ug/kg	03/20/18 16:20	
Cyclohexane	<20	60	60	100	64	107	62-138	6	25	ug/kg	03/20/18 16:20	
1,2-Dibromo-3-chloropropane	<40	60	59	98	61	102	55-122	3	25	ug/kg	03/20/18 16:20	
Dibromochloromethane	<5.0	60	63	105	63	105	61-122	0	25	ug/kg	03/20/18 16:20	
1,2-Dibromoethane	<5.0	60	63	105	63	105	63-119	0	25	ug/kg	03/20/18 16:20	
1,2-Dichlorobenzene	<5.0	60	62	103	62	103	65-121	0	25	ug/kg	03/20/18 16:20	
1,3-Dichlorobenzene	<5.0	60	63	105	63	105	69-121	0	25	ug/kg	03/20/18 16:20	
1,4-Dichlorobenzene	<5.0	60	63	105	62	103	69-118	2	25	ug/kg	03/20/18 16:20	
Dichlorodifluoromethane	<5.0	60	55	92	69	115	53-162	23	25	ug/kg	03/20/18 16:20	
1,1-Dichloroethane	<5.0	60	64	107	64	107	70-127	0	25	ug/kg	03/20/18 16:20	
1,2-Dichloroethane	<5.0	60	62	103	63	105	68-118	2	25	ug/kg	03/20/18 16:20	
1,1-Dichloroethene	<5.0	60	50	83	52	87	69-133	4	25	ug/kg	03/20/18 16:20	
1,2-Dichloropropane	<5.0	60	66	110	67	112	70-122	2	25	ug/kg	03/20/18 16:20	
cis-1,2-Dichloroethene	<5.0	60	65	108	65	108	68-126	0	25	ug/kg	03/20/18 16:20	
cis-1,3-Dichloropropene	<5.0	60	66	110	67	112	68-121	2	25	ug/kg	03/20/18 16:20	
trans-1,2-Dichloroethene	<5.0	60	63	105	65	108	70-132	3	25	ug/kg	03/20/18 16:20	
trans-1,3-Dichloropropene	<5.0	60	67	112	69	115	67-115	3	25	ug/kg	03/20/18 16:20	
Ethylbenzene	<5.0	60	65	108	66	110	70-125	2	25	ug/kg	03/20/18 16:20	
2-Hexanone (MBK)	<20	60	64	107	66	110	40-121	3	25	ug/kg	03/20/18 16:20	
Isopropylbenzene	<5.0	60	63	105	67	112	68-130	6	25	ug/kg	03/20/18 16:20	
Methyl Acetate	<20	60	67	112	68	113	60-125	1	25	ug/kg	03/20/18 16:20	
Methylcyclohexane	<20	60	64	107	68	113	62-150	6	25	ug/kg	03/20/18 16:20	
Methylene chloride	<5.0	60	64	107	65	108	67-121	2	25	ug/kg	03/20/18 16:20	
4-Methyl-2-Pentanone (MIBK)	<20	60	63	105	65	108	48-117	3	25	ug/kg	03/20/18 16:20	
Methyl-t-Butyl Ether	<5.0	60	59	98	60	100	66-119	2	25	ug/kg	03/20/18 16:20	
Naphthalene	<5.0	60	52	87	52	87	54-115	0	25	ug/kg	03/20/18 16:20	
Styrene	<5.0	60	65	108	65	108	71-120	0	25	ug/kg	03/20/18 16:20	
1,1,2,2-Tetrachloroethane	<5.0	60	60	100	61	102	59-122	2	25	ug/kg	03/20/18 16:20	
Tetrachloroethene	<5.0	60	65	108	68	113	65-145	5	25	ug/kg	03/20/18 16:20	
Toluene	<5.0	60	66	110	67	112	69-129	2	25	ug/kg	03/20/18 16:20	
1,2,3-Trichlorobenzene	<5.0	60	58	97	57	95	60-114	2	25	ug/kg	03/20/18 16:20	
1,2,4-Trichlorobenzene	<5.0	60	56	93	55	92	64-115	2	25	ug/kg	03/20/18 16:20	
1,1,1-Trichloroethane	<5.0	60	63	105	65	108	65-139	3	25	ug/kg	03/20/18 16:20	
1,1,2-Trichloroethane	<5.0	60	67	112	69	115	64-125	3	25	ug/kg	03/20/18 16:20	
Trichloroethene	<5.0	60	64	107	66	110	69-133	3	25	ug/kg	03/20/18 16:20	
Trichlorofluoromethane	<5.0	60	65	108	67	112	59-153	3	25	ug/kg	03/20/18 16:20	
1,1,2-Trichlorotrifluoroethane	<5.0	60	56	93	60	100	62-139	7	25	ug/kg	03/20/18 16:20	
Vinyl chloride	<5.0	60	66	110	68	113	69-142	3	25	ug/kg	03/20/18 16:20	
m&p-Xylene	<10	120	130	108	130	108	71-124	0	25	ug/kg	03/20/18 16:20	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032036

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035
Seq Number: 151551 Matrix: Solid Date Prep: 03/20/18
MB Sample Id: 70510-1-BLK LCS Sample Id: 70510-1-BKS LCSD Sample Id: 70510-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<5.0	60	65	108	65	108	72-123	0	25	ug/kg	03/20/18 16:20	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	116		90		92		82-126	%	03/20/18 16:20
Dibromofluoromethane	100		100		100		92-113	%	03/20/18 16:20
Toluene-D8	102		102		102		94-105	%	03/20/18 16:20

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: WSP *OFFICE LOC.: Herndon, VA
*PROJECT MGR: Eric Johnson *PHONE NO.: (703) 709 6500
EMAIL: eric.johnson@wsp.com FAX NO.: ( )
*PROJECT NAME: Kapflex PROJECT NO.: 31403359
SITE LOCATION: Hanover, MD P.O. NO.:
SAMPLER(S): MML/RET DW CERT NO.:

PSS Work Order #: 18032036 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wtr **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **L**=Liquid **SOL**=Solid **A**=Air **WI**=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analysis/ Method Required (3) * VOC	REMARKS
	MW-36 IDW Soil	3/20/18	1635	S	4	G		X	

(5)

Relinquished By: (1)	Date	Time	Received By:
R. Ryan	3/20	1710	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:
COA ☐ QC SUMM ☐ CLP LIKE ☐ OTHER _____

# of Coolers: 1 Temp Blank 3°C
Custody Seal: ABS
Ice Present: PRES ~~ABS~~ Temp: 1°-4°C
Shipping Carrier: Client

Special Instructions:

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: _____
STATE RESULTS REPORTED TO: ~~MD~~ ☒ DE ☐ PA ☐ VA ☐ WV ☐ OTHER _____

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The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. * = REQUIRED

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032036	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/20/2018 05:10:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389	**Tracking No**	Not Applicable
Disposal Date	04/24/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	4
Seal(s) Signed / Dated?	N/A	Temp Blank Present	Yes

Documentation

		Sampler Name	MML/REJ
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 1 Total No. of Containers Received 4

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/20/2018

Thomas Wingate

PM Review and Approval: N Y Jackson Date: 03/20/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032205

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/1

March 23, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 23, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032205**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032205**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on April 26, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032205

Project ID: 31400389/1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/22/2018 at 10:25 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032205-001	MW-36 IDW Water	WATER	03/22/18 08:15

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032205

WSP USA - Herndon, Herndon, VA

March 23, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 IDW Water **Date/Time Sampled: 03/22/2018 08:15** **PSS Sample ID: 18032205-001**
Matrix: WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
Benzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Bromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Bromoform	ND	ug/L	5.0		1	03/22/18	03/22/18 13:02	1011
Bromomethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
2-Butanone (MEK)	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
Carbon Disulfide	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Chlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Chloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Chloroform	**1.4**	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Chloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Cyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:02	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,1-Dichloroethene	**4.0**	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Ethylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032205

WSP USA - Herndon, Herndon, VA

March 23, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/1

Sample ID: MW-36 IDW Water **Date/Time Sampled: 03/22/2018 08:15** **PSS Sample ID: 18032205-001**
Matrix: WATER **Date/Time Received: 03/22/2018 10:25**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:02	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Methyl Acetate	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
Methylcyclohexane	ND	ug/L	10		1	03/22/18	03/22/18 13:02	1011
Methylene chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/22/18	03/22/18 13:02	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Naphthalene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Styrene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Toluene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Trichloroethene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/22/18	03/22/18 13:02	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
Vinyl chloride	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011
m&p-Xylene	ND	ug/L	2.0		1	03/22/18	03/22/18 13:02	1011
o-Xylene	ND	ug/L	1.0		1	03/22/18	03/22/18 13:02	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032205
Project ID: 31400389/1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032205**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SW-846 8260 B	MW-36 IDW Water	Initial	18032205-001	1011	W	70520	151557	03/22/2018	03/22/2018 09:08	03/22/2018 13:02
	70520-1-BKS	BKS	70520-1-BKS	1011	W	70520	151557	--------	03/22/2018 09:08	03/22/2018 11:07
	70520-1-BLK	BLK	70520-1-BLK	1011	W	70520	151557	--------	03/22/2018 09:08	03/22/2018 11:49

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032205

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151557 Matrix: Water Date Prep: 03/22/2018
PSS Sample ID: 18032205-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	98		86-111	%	03/22/18 13:02
Dibromofluoromethane	99		91-119	%	03/22/18 13:02
Toluene-D8	104		90-117	%	03/22/18 13:02

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032205

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151557 Matrix: Water Date Prep: 03/22/18

MB Sample Id: 70520-1-BLK LCS Sample Id: 70520-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	44.72	89	29-149	ug/L	03/22/18 11:07	
Benzene	<1.000	50.00	48.48	97	85-123	ug/L	03/22/18 11:07	
Bromochloromethane	<1.000	50.00	46.66	93	82-136	ug/L	03/22/18 11:07	
Bromodichloromethane	<1.000	50.00	49.50	99	88-133	ug/L	03/22/18 11:07	
Bromoform	<5.000	50.00	42.64	85	80-126	ug/L	03/22/18 11:07	
Bromomethane	<1.000	50.00	49.59	99	64-139	ug/L	03/22/18 11:07	
2-Butanone (MEK)	<10.00	50.00	41.30	83	39-135	ug/L	03/22/18 11:07	
Carbon Disulfide	<10.00	50.00	50.63	101	85-124	ug/L	03/22/18 11:07	
Carbon tetrachloride	<1.000	50.00	50.61	101	81-138	ug/L	03/22/18 11:07	
Chlorobenzene	<1.000	50.00	50.39	101	85-120	ug/L	03/22/18 11:07	
Chloroethane	<1.000	50.00	48.98	98	75-129	ug/L	03/22/18 11:07	
Chloroform	<1.000	50.00	46.79	94	85-128	ug/L	03/22/18 11:07	
Chloromethane	<1.000	50.00	49.84	100	60-139	ug/L	03/22/18 11:07	
Cyclohexane	<10.00	50.00	48.01	96	55-131	ug/L	03/22/18 11:07	
1,2-Dibromo-3-chloropropane	<5.000	50.00	39.90	80	69-127	ug/L	03/22/18 11:07	
Dibromochloromethane	<1.000	50.00	44.24	88	82-127	ug/L	03/22/18 11:07	
1,2-Dibromoethane	<1.000	50.00	48.89	98	82-121	ug/L	03/22/18 11:07	
1,2-Dichlorobenzene	<1.000	50.00	49.88	100	82-123	ug/L	03/22/18 11:07	
1,3-Dichlorobenzene	<1.000	50.00	50.37	101	81-123	ug/L	03/22/18 11:07	
1,4-Dichlorobenzene	<1.000	50.00	49.44	99	81-121	ug/L	03/22/18 11:07	
Dichlorodifluoromethane	<1.000	50.00	51.12	102	69-147	ug/L	03/22/18 11:07	
1,1-Dichloroethane	<1.000	50.00	46.94	94	83-123	ug/L	03/22/18 11:07	
1,2-Dichloroethane	<1.000	50.00	47.66	95	86-138	ug/L	03/22/18 11:07	
1,1-Dichloroethene	<1.000	50.00	48.17	96	85-127	ug/L	03/22/18 11:07	
cis-1,2-Dichloroethene	<1.000	50.00	49.30	99	87-127	ug/L	03/22/18 11:07	
1,2-Dichloropropane	<1.000	50.00	48.12	96	79-125	ug/L	03/22/18 11:07	
cis-1,3-Dichloropropene	<1.000	50.00	51.04	102	79-131	ug/L	03/22/18 11:07	
trans-1,3-Dichloropropene	<1.000	50.00	46.21	92	82-133	ug/L	03/22/18 11:07	
trans-1,2-Dichloroethene	<1.000	50.00	49.00	98	85-125	ug/L	03/22/18 11:07	
Ethylbenzene	<1.000	50.00	50.40	101	83-123	ug/L	03/22/18 11:07	
2-Hexanone (MBK)	<5.000	50.00	47.43	95	37-137	ug/L	03/22/18 11:07	
Isopropylbenzene	<1.000	50.00	50.39	101	70-131	ug/L	03/22/18 11:07	
Methyl Acetate	<10.00	50.00	44.04	88	69-127	ug/L	03/22/18 11:07	
Methylcyclohexane	<10.00	50.00	53.33	107	75-129	ug/L	03/22/18 11:07	
Methylene chloride	<1.000	50.00	49.09	98	86-124	ug/L	03/22/18 11:07	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	43.87	88	39-143	ug/L	03/22/18 11:07	
Methyl-t-Butyl Ether	<1.000	50.00	46.02	92	75-134	ug/L	03/22/18 11:07	
Naphthalene	<1.000	50.00	43.09	86	61-118	ug/L	03/22/18 11:07	
Styrene	<1.000	50.00	45.66	91	80-120	ug/L	03/22/18 11:07	
1,1,2,2-Tetrachloroethane	<1.000	50.00	46.69	93	64-125	ug/L	03/22/18 11:07	
Tetrachloroethene	<1.000	50.00	56.90	114	83-138	ug/L	03/22/18 11:07	
Toluene	<1.000	50.00	52.58	105	88-126	ug/L	03/22/18 11:07	
1,2,3-Trichlorobenzene	<1.000	50.00	50.88	102	75-124	ug/L	03/22/18 11:07	
1,2,4-Trichlorobenzene	<1.000	50.00	51.50	103	77-131	ug/L	03/22/18 11:07	
1,1,1-Trichloroethane	<1.000	50.00	48.70	97	68-146	ug/L	03/22/18 11:07	
1,1,2-Trichloroethane	<1.000	50.00	51.87	104	85-124	ug/L	03/22/18 11:07	
Trichloroethene	<1.000	50.00	50.49	101	87-127	ug/L	03/22/18 11:07	
Trichlorofluoromethane	<5.000	50.00	50.94	102	77-147	ug/L	03/22/18 11:07	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	54.35	109	68-135	ug/L	03/22/18 11:07	
Vinyl chloride	<1.000	50.00	39.70	79	74-138	ug/L	03/22/18 11:07	
m&p-Xylene	<2.000	100	90.91	91	84-124	ug/L	03/22/18 11:07	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032205

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151557 Matrix: Water Date Prep: 03/22/18

MB Sample Id: 70520-1-BLK LCS Sample Id: 70520-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	45.26	91	79-126	ug/L	03/22/18 11:07	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	97		96		86-111	%	03/22/18 11:07
Dibromofluoromethane	99		100		91-119	%	03/22/18 11:07
Toluene-D8	105		105		90-117	%	03/22/18 11:07

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 18032205

Page 1 of 1

WSP USA Office Address: Herndon, VA

Project Name: Kopflex	WSP USA Contact Name: Eric Johnson
Project Location: Hanover, MD	WSP USA Contact E-mail: eric.johnson@wsp.com
Project Number & Task: 31400359/1	WSP USA Contact Phone: 703 709 6500
Sampler(s) Name(s): Molly Coy	Sampler(s) Signature(s):

No. 008251 WSP

Laboratory Name & Location: Phase

Laboratory Project Manager: Amber

Requested Turn-Around-Time: ~~Standard~~ [X] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection ~~Stop~~* ~~Date~~	Collection ~~Stop~~* Time	Number of Containers	VOC	Sample Comments
MW-36 IDW water	AQ	3/22/18			0815		X	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES
Shipping Carrier: Client
Temp: 1°-2°C

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/22/18	1025					
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
						1	

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032205	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/22/2018 10:25:00 AM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/1	**Tracking No**	Not Applicable
Disposal Date	04/26/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	2
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Molly Long
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 1 Total No. of Containers Received 3

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/22/2018

Thomas Wingate

PM Review and Approval: Amber J Confer Date: 03/22/2018

Amber Confer

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18032922

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/Task 1

March 30, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

March 30, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18032922**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/Task 1

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18032922**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 3, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032922

Project ID: 31400389/Task 1

The following samples were received under chain of custody by Phase Separation Science (PSS) on 03/29/2018 at 04:28 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18032922-001	MW-30(1)-IDW Soil	SOIL	03/29/18 10:45
18032922-002	MW-30(1)-IDW Drill Water	WATER	03/29/18 13:55
18032922-003	Trip Blank	WATER	03/29/18 16:28

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-IDW Soil **Date/Time Sampled: 03/29/2018 10:45** **PSS Sample ID: 18032922-001**
Matrix: SOIL **Date/Time Received: 03/29/2018 16:28** **% Solids: 86**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Benzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Bromochloromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Bromodichloromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Bromoform	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Bromomethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
2-Butanone	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Carbon Disulfide	ND	ug/kg	9.5		1	03/30/18	03/30/18 11:08	1011
Carbon tetrachloride	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Chlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Chloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Chloroform	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Chloromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Cyclohexane	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	38		1	03/30/18	03/30/18 11:08	1011
Dibromochloromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2-Dibromoethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2-Dichlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,3-Dichlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,4-Dichlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Dichlorodifluoromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1-Dichloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2-Dichloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1-Dichloroethene	**5.8**	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2-Dichloropropane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
cis-1,2-Dichloroethene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
cis-1,3-Dichloropropene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
trans-1,2-Dichloroethene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
trans-1,3-Dichloropropene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Ethylbenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-IDW Soil **Date/Time Sampled: 03/29/2018 10:45** **PSS Sample ID: 18032922-001**
Matrix: SOIL **Date/Time Received: 03/29/2018 16:28** **% Solids: 86**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Isopropylbenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Methyl Acetate	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Methylcyclohexane	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Methylene chloride	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	19		1	03/30/18	03/30/18 11:08	1011
Methyl-t-Butyl Ether	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Naphthalene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Styrene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Tetrachloroethene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Toluene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2,3-Trichlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,2,4-Trichlorobenzene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1,1-Trichloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1,2-Trichloroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Trichloroethene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Trichlorofluoromethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
Vinyl chloride	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011
m&p-Xylene	ND	ug/kg	9.5		1	03/30/18	03/30/18 11:08	1011
o-Xylene	ND	ug/kg	4.8		1	03/30/18	03/30/18 11:08	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-IDW Drill Water **Date/Time Sampled: 03/29/2018 13:55** **PSS Sample ID: 18032922-002**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 10:54	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Chloroform	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:54	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: MW-30(1)-IDW Drill Water **Date/Time Sampled: 03/29/2018 13:55** **PSS Sample ID: 18032922-002**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:54	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 10:54	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 10:54	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 10:54	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 10:54	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 10:54	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: Trip Blank **Date/Time Sampled: 03/29/2018 16:28** **PSS Sample ID: 18032922-003**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
Benzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Bromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Bromodichloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Bromoform	ND	ug/L	5.0		1	03/30/18	03/30/18 11:14	1011
Bromomethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
2-Butanone	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
Carbon Disulfide	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
Carbon tetrachloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Chlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Chloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Chloroform	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Chloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Cyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:14	1011
Dibromochloromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Ethylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18032922

WSP USA - Herndon, Herndon, VA

March 30, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/Task 1

Sample ID: Trip Blank **Date/Time Sampled: 03/29/2018 16:28** **PSS Sample ID: 18032922-003**
Matrix: WATER **Date/Time Received: 03/29/2018 16:28**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:14	1011
Isopropylbenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Methyl Acetate	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
Methylcyclohexane	ND	ug/L	10		1	03/30/18	03/30/18 11:14	1011
Methylene chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	03/30/18	03/30/18 11:14	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Naphthalene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Styrene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Tetrachloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Toluene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Trichloroethene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	03/30/18	03/30/18 11:14	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
Vinyl chloride	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011
m&p-Xylene	ND	ug/L	2.0		1	03/30/18	03/30/18 11:14	1011
o-Xylene	ND	ug/L	1.0		1	03/30/18	03/30/18 11:14	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18032922

Project ID: 31400389/Task 1

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): **18032922**
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM2540G	MW-30(1)-IDW Soil	Initial	18032922-001	1051	S	151863	151863	03/29/2018	03/29/2018 16:45	03/29/2018 16:45
SW-846 8260 B	MW-30(1)-IDW Drill Water	Initial	18032922-002	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 10:54
	Trip Blank	Initial	18032922-003	1011	W	70672	151874	03/29/2018	03/30/2018 08:05	03/30/2018 11:14
	70672-1-BKS	BKS	70672-1-BKS	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:10
	70672-1-BLK	BLK	70672-1-BLK	1011	W	70672	151874	--------	03/30/2018 08:05	03/30/2018 09:51
	MW-30(1)-IDW Soil	Initial	18032922-001	1011	S	70677	151886	03/29/2018	03/30/2018 08:06	03/30/2018 11:08
	70677-1-BKS	BKS	70677-1-BKS	1011	S	70677	151886	--------	03/30/2018 08:06	03/30/2018 09:14
	70677-1-BLK	BLK	70677-1-BLK	1011	S	70677	151886	--------	03/30/2018 08:06	03/30/2018 10:44

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032922

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035
Seq Number: 151886 Matrix: Soil Date Prep: 03/30/2018
PSS Sample ID: 18032922-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	106		82-126	%	03/30/18 11:08
Dibromofluoromethane	100		92-113	%	03/30/18 11:08
Toluene-D8	98		94-105	%	03/30/18 11:08

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18032922-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		86-111	%	03/30/18 10:54
Dibromofluoromethane	100		91-119	%	03/30/18 10:54
Toluene-D8	100		90-117	%	03/30/18 10:54

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 151874 Matrix: Water Date Prep: 03/30/2018
PSS Sample ID: 18032922-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	103		86-111	%	03/30/18 11:14
Dibromofluoromethane	101		91-119	%	03/30/18 11:14
Toluene-D8	100		90-117	%	03/30/18 11:14

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032922

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	35.66	71	29-149	ug/L	03/30/18 09:10	
Benzene	<1.000	50.00	47.98	96	85-123	ug/L	03/30/18 09:10	
Bromochloromethane	<1.000	50.00	43.75	88	82-136	ug/L	03/30/18 09:10	
Bromodichloromethane	<1.000	50.00	43.78	88	88-133	ug/L	03/30/18 09:10	
Bromoform	<5.000	50.00	44.66	89	80-126	ug/L	03/30/18 09:10	
Bromomethane	<1.000	50.00	34.27	69	64-139	ug/L	03/30/18 09:10	
2-Butanone	<10.00	50.00	34.32	69	39-135	ug/L	03/30/18 09:10	
Carbon Disulfide	<10.00	50.00	47.47	95	85-124	ug/L	03/30/18 09:10	
Carbon tetrachloride	<1.000	50.00	44.31	89	81-138	ug/L	03/30/18 09:10	
Chlorobenzene	<1.000	50.00	48.75	98	85-120	ug/L	03/30/18 09:10	
Chloroethane	<1.000	50.00	44.99	90	75-129	ug/L	03/30/18 09:10	
Chloroform	<1.000	50.00	43.01	86	85-128	ug/L	03/30/18 09:10	
Chloromethane	<1.000	50.00	33.35	67	60-139	ug/L	03/30/18 09:10	
Cyclohexane	<10.00	50.00	45.72	91	55-131	ug/L	03/30/18 09:10	
1,2-Dibromo-3-chloropropane	<5.000	50.00	41.15	82	69-127	ug/L	03/30/18 09:10	
Dibromochloromethane	<1.000	50.00	44.21	88	82-127	ug/L	03/30/18 09:10	
1,2-Dibromoethane	<1.000	50.00	42.73	85	82-121	ug/L	03/30/18 09:10	
1,2-Dichlorobenzene	<1.000	50.00	44.21	88	82-123	ug/L	03/30/18 09:10	
1,3-Dichlorobenzene	<1.000	50.00	49.48	99	81-123	ug/L	03/30/18 09:10	
1,4-Dichlorobenzene	<1.000	50.00	48.38	97	81-121	ug/L	03/30/18 09:10	
Dichlorodifluoromethane	<1.000	50.00	41.41	83	69-147	ug/L	03/30/18 09:10	
1,1-Dichloroethane	<1.000	50.00	47.50	95	83-123	ug/L	03/30/18 09:10	
1,2-Dichloroethane	<1.000	50.00	47.33	95	86-138	ug/L	03/30/18 09:10	
1,1-Dichloroethene	<1.000	50.00	48.63	97	85-127	ug/L	03/30/18 09:10	
cis-1,2-Dichloroethene	<1.000	50.00	47.65	95	87-127	ug/L	03/30/18 09:10	
1,2-Dichloropropane	<1.000	50.00	43.51	87	79-125	ug/L	03/30/18 09:10	
cis-1,3-Dichloropropene	<1.000	50.00	43.07	86	79-131	ug/L	03/30/18 09:10	
trans-1,3-Dichloropropene	<1.000	50.00	43.34	87	82-133	ug/L	03/30/18 09:10	
trans-1,2-Dichloroethene	<1.000	50.00	48.11	96	85-125	ug/L	03/30/18 09:10	
Ethylbenzene	<1.000	50.00	43.55	87	83-123	ug/L	03/30/18 09:10	
2-Hexanone (MBK)	<5.000	50.00	34.22	68	37-137	ug/L	03/30/18 09:10	
Isopropylbenzene	<1.000	50.00	43.34	87	70-131	ug/L	03/30/18 09:10	
Methyl Acetate	<10.00	50.00	40.10	80	69-127	ug/L	03/30/18 09:10	
Methylcyclohexane	<10.00	50.00	46.54	93	75-129	ug/L	03/30/18 09:10	
Methylene chloride	<1.000	50.00	46.43	93	86-124	ug/L	03/30/18 09:10	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.25	69	39-143	ug/L	03/30/18 09:10	
Methyl-t-Butyl Ether	<1.000	50.00	42.05	84	75-134	ug/L	03/30/18 09:10	
Naphthalene	<1.000	50.00	41.93	84	61-118	ug/L	03/30/18 09:10	
Styrene	<1.000	50.00	44.06	88	80-120	ug/L	03/30/18 09:10	
1,1,2,2-Tetrachloroethane	<1.000	50.00	45.46	91	64-125	ug/L	03/30/18 09:10	
Tetrachloroethene	<1.000	50.00	48.97	98	83-138	ug/L	03/30/18 09:10	
Toluene	<1.000	50.00	43.37	87	88-126	ug/L	03/30/18 09:10	L
1,2,3-Trichlorobenzene	<1.000	50.00	44.34	89	75-124	ug/L	03/30/18 09:10	
1,2,4-Trichlorobenzene	<1.000	50.00	44.85	90	77-131	ug/L	03/30/18 09:10	
1,1,1-Trichloroethane	<1.000	50.00	48.73	97	68-146	ug/L	03/30/18 09:10	
1,1,2-Trichloroethane	<1.000	50.00	48.10	96	85-124	ug/L	03/30/18 09:10	
Trichloroethene	<1.000	50.00	47.90	96	87-127	ug/L	03/30/18 09:10	
Trichlorofluoromethane	<5.000	50.00	48.73	97	77-147	ug/L	03/30/18 09:10	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	45.29	91	68-135	ug/L	03/30/18 09:10	
Vinyl chloride	<1.000	50.00	42.01	84	74-138	ug/L	03/30/18 09:10	
m&p-Xylene	<2.000	100	88.26	88	84-124	ug/L	03/30/18 09:10	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032922

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 151874 Matrix: Water Date Prep: 03/30/18

MB Sample Id: 70672-1-BLK LCS Sample Id: 70672-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.20	88	79-126	ug/L	03/30/18 09:10	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	104		95		86-111	%	03/30/18 09:10
Dibromofluoromethane	101		100		91-119	%	03/30/18 09:10
Toluene-D8	100		99		90-117	%	03/30/18 09:10

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032922

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151886 Matrix: Solid Date Prep: 03/30/18

MB Sample Id: 70677-1-BLK LCS Sample Id: 70677-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<20	61	59	97	46-127	ug/kg	03/30/18 09:14	
Benzene	<5.1	61	61	100	70-127	ug/kg	03/30/18 09:14	
Bromochloromethane	<5.1	61	59	97	68-122	ug/kg	03/30/18 09:14	
Bromodichloromethane	<5.1	61	57	93	68-122	ug/kg	03/30/18 09:14	
Bromoform	<5.1	61	60	98	57-127	ug/kg	03/30/18 09:14	
Bromomethane	<5.1	61	58	95	68-123	ug/kg	03/30/18 09:14	
2-Butanone	<20	61	63	103	41-136	ug/kg	03/30/18 09:14	
Carbon Disulfide	<10	61	58	95	66-135	ug/kg	03/30/18 09:14	
Carbon tetrachloride	<5.1	61	59	97	64-147	ug/kg	03/30/18 09:14	
Chlorobenzene	<5.1	61	58	95	70-121	ug/kg	03/30/18 09:14	
Chloroethane	<5.1	61	61	100	66-142	ug/kg	03/30/18 09:14	
Chloroform	<5.1	61	56	92	68-123	ug/kg	03/30/18 09:14	
Chloromethane	<5.1	61	55	90	65-136	ug/kg	03/30/18 09:14	
Cyclohexane	<20	61	61	100	62-138	ug/kg	03/30/18 09:14	
1,2-Dibromo-3-chloropropane	<40	61	65	107	55-122	ug/kg	03/30/18 09:14	
Dibromochloromethane	<5.1	61	58	95	61-122	ug/kg	03/30/18 09:14	
1,2-Dibromoethane	<5.1	61	57	93	63-119	ug/kg	03/30/18 09:14	
1,2-Dichlorobenzene	<5.1	61	59	97	65-121	ug/kg	03/30/18 09:14	
1,3-Dichlorobenzene	<5.1	61	60	98	69-121	ug/kg	03/30/18 09:14	
1,4-Dichlorobenzene	<5.1	61	61	100	69-118	ug/kg	03/30/18 09:14	
Dichlorodifluoromethane	<5.1	61	47	77	53-162	ug/kg	03/30/18 09:14	
1,1-Dichloroethane	<5.1	61	61	100	70-127	ug/kg	03/30/18 09:14	
1,2-Dichloroethane	<5.1	61	61	100	68-118	ug/kg	03/30/18 09:14	
1,1-Dichloroethene	<5.1	61	60	98	69-133	ug/kg	03/30/18 09:14	
1,2-Dichloropropane	<5.1	61	58	95	70-122	ug/kg	03/30/18 09:14	
cis-1,2-Dichloroethene	<5.1	61	60	98	68-126	ug/kg	03/30/18 09:14	
cis-1,3-Dichloropropene	<5.1	61	57	93	68-121	ug/kg	03/30/18 09:14	
trans-1,2-Dichloroethene	<5.1	61	61	100	70-132	ug/kg	03/30/18 09:14	
trans-1,3-Dichloropropene	<5.1	61	56	92	67-115	ug/kg	03/30/18 09:14	
Ethylbenzene	<5.1	61	59	97	70-125	ug/kg	03/30/18 09:14	
2-Hexanone (MBK)	<20	61	62	102	40-121	ug/kg	03/30/18 09:14	
Isopropylbenzene	<5.1	61	59	97	68-130	ug/kg	03/30/18 09:14	
Methyl Acetate	<20	61	60	98	60-125	ug/kg	03/30/18 09:14	
Methylcyclohexane	<20	61	59	97	62-150	ug/kg	03/30/18 09:14	
Methylene chloride	<5.1	61	55	90	67-121	ug/kg	03/30/18 09:14	
4-Methyl-2-Pentanone (MIBK)	<20	61	60	98	48-117	ug/kg	03/30/18 09:14	
Methyl-t-Butyl Ether	<5.1	61	61	100	66-119	ug/kg	03/30/18 09:14	
Naphthalene	<5.1	61	61	100	54-115	ug/kg	03/30/18 09:14	
Styrene	<5.1	61	58	95	71-120	ug/kg	03/30/18 09:14	
1,1,2,2-Tetrachloroethane	<5.1	61	64	105	59-122	ug/kg	03/30/18 09:14	
Tetrachloroethene	<5.1	61	54	89	65-145	ug/kg	03/30/18 09:14	
Toluene	<5.1	61	57	93	69-129	ug/kg	03/30/18 09:14	
1,2,3-Trichlorobenzene	<5.1	61	61	100	60-114	ug/kg	03/30/18 09:14	
1,2,4-Trichlorobenzene	<5.1	61	60	98	64-115	ug/kg	03/30/18 09:14	
1,1,1-Trichloroethane	<5.1	61	62	102	65-139	ug/kg	03/30/18 09:14	
1,1,2-Trichloroethane	<5.1	61	56	92	64-125	ug/kg	03/30/18 09:14	
Trichloroethene	<5.1	61	57	93	69-133	ug/kg	03/30/18 09:14	
Trichlorofluoromethane	<5.1	61	61	100	59-153	ug/kg	03/30/18 09:14	
1,1,2-Trichlorotrifluoroethane	<5.1	61	60	98	62-139	ug/kg	03/30/18 09:14	
Vinyl chloride	<5.1	61	66	108	69-142	ug/kg	03/30/18 09:14	
m&p-Xylene	<10	120	120	100	71-124	ug/kg	03/30/18 09:14	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18032922

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 151886 Matrix: Solid Date Prep: 03/30/18

MB Sample Id: 70677-1-BLK LCS Sample Id: 70677-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<5.1	61	58	95	72-123	ug/kg	03/30/18 09:14	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	108		108		82-126	%	03/30/18 09:14
Dibromofluoromethane	98		102		92-113	%	03/30/18 09:14
Toluene-D8	98		98		94-105	%	03/30/18 09:14

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

CHAIN-OF-CUSTODY RECORD 18032922

WSP USA Office Address: 13530 Dulles Technology Dr. Suite 300 Herndon, VA

Project Name: Kup-Flex

Project Location: Hanover, MD

Project Number & Task: 31400389/Task R1

WSP USA Contact Name: Eric Johnson

WSP USA Contact E-mail: Eric.Johnson@wsp.com

WSP USA Contact Phone: 703-709-6500

Sampler(s) Name(s): Chris Cresa

Sampler(s) Signature(s):

No. 008029

Laboratory Name & Location: Pdaso Separation

Laboratory Project Manager: Amber Confer

Requested Turn-Around-Time: ☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR Emergency / 24 HR

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs By 8260	Sample Comments
MW30(1)-Towson	S	3/29/18		1045		4	X	24 HR
MW30(1)-206-216	AQ	3/29/18		1140		3	X	*Emergency*
MW-30(1)-216-226	AQ	3/29/18		1345		3	X	*Emergency*
MW30(1)-Towson water	AQ	3/29/18		1355		3	X	24 HR
Trip Blank						2	X	

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES
Shipping Carrier: Client
Temp: 2°-12°C

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	3/29/18	1628					
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**	**Number of Packages**	**Custody Seal Number(s)**

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18032922	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	03/29/2018 04:28:00 PM
Project Name	Kop Flex	**Delivered By**	Client
Project Number	31400389/Task 1	**Tracking No**	Not Applicable
Disposal Date	05/03/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	12
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 9

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 03/29/2018

Thomas Wingate

PM Review and Approval: Lynn Jackson Date: 03/29/2018

Lynn Jackson

Analytical Report for

WSP USA - Herndon

Certificate of Analysis No.: 18041703

Project Manager: Eric Johnson

Project Name : Kop Flex

Project Location: Hanover, MD

Project ID : 31400389/01

April 17, 2018

Phase Separation Science, Inc.

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PHASE SEPARATION SCIENCE, INC.

April 17, 2018

Eric Johnson
WSP USA - Herndon
13530 Dulles Technology Dr, Ste 300
Herndon, VA 20171

Reference: PSS Work Order(s) No: **18041703**
Project Name: Kop Flex
Project Location: Hanover, MD
Project ID.: 31400389/01

Dear Eric Johnson :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **18041703**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 22, 2018, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Dan Prucnal
Laboratory Manager

Sample Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041703

Project ID: 31400389/01

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/17/2018 at 09:45 am

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
18041703-001	MW34 IDW Soil	SOIL	04/16/18 09:55
18041703-002	MW34 IDW Drill Water	WATER	04/16/18 10:45
18041703-003	Trip Blank	WATER	04/17/18 09:45

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW34 IDW Soil **Date/Time Sampled: 04/16/2018 09:55** **PSS Sample ID: 18041703-001**
Matrix: SOIL **Date/Time Received: 04/17/2018 09:45** **% Solids: 88**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Benzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Bromochloromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Bromodichloromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Bromoform	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Bromomethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
2-Butanone (MEK)	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Carbon Disulfide	ND	ug/kg	9.1		1	04/17/18	04/17/18 12:40	1011
Carbon tetrachloride	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Chlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Chloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Chloroform	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Chloromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Cyclohexane	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	36		1	04/17/18	04/17/18 12:40	1011
Dibromochloromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2-Dibromoethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2-Dichlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,3-Dichlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,4-Dichlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Dichlorodifluoromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1-Dichloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2-Dichloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1-Dichloroethene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
cis-1,2-Dichloroethene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2-Dichloropropane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
cis-1,3-Dichloropropene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
trans-1,2-Dichloroethene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
trans-1,3-Dichloropropene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Ethylbenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW34 IDW Soil **Date/Time Sampled: 04/16/2018 09:55** **PSS Sample ID: 18041703-001**
Matrix: SOIL **Date/Time Received: 04/17/2018 09:45** **% Solids: 88**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5035A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Isopropylbenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Methyl Acetate	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Methylcyclohexane	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Methylene chloride	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	18		1	04/17/18	04/17/18 12:40	1011
Methyl-t-Butyl Ether	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Naphthalene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Styrene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Tetrachloroethene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Toluene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2,3-Trichlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,2,4-Trichlorobenzene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1,1-Trichloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1,2-Trichloroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Trichloroethene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Trichlorofluoromethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
Vinyl chloride	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011
m&p-Xylene	ND	ug/kg	9.1		1	04/17/18	04/17/18 12:40	1011
o-Xylene	ND	ug/kg	4.6		1	04/17/18	04/17/18 12:40	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW34 IDW Drill Water **Date/Time Sampled: 04/16/2018 10:45** **PSS Sample ID: 18041703-002**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
Benzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Bromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Bromoform	ND	ug/L	5.0		1	04/17/18	04/17/18 11:31	1011
Bromomethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
Carbon Disulfide	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Chlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Chloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Chloroform	**2.0**	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Chloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Cyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/17/18	04/17/18 11:31	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Ethylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: MW34 IDW Drill Water **Date/Time Sampled: 04/16/2018 10:45** **PSS Sample ID: 18041703-002**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 11:31	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Methyl Acetate	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
Methylcyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 11:31	1011
Methylene chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 11:31	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Naphthalene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Styrene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Toluene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Trichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/17/18	04/17/18 11:31	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
Vinyl chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011
m&p-Xylene	ND	ug/L	2.0		1	04/17/18	04/17/18 11:31	1011
o-Xylene	ND	ug/L	1.0		1	04/17/18	04/17/18 11:31	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 04/17/2018 09:45** **PSS Sample ID: 18041703-003**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
Benzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Bromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Bromodichloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Bromoform	ND	ug/L	5.0		1	04/17/18	04/17/18 13:45	1011
Bromomethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
2-Butanone (MEK)	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
Carbon Disulfide	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
Carbon tetrachloride	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Chlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Chloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Chloroform	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Chloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Cyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0		1	04/17/18	04/17/18 13:45	1011
Dibromochloromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2-Dibromoethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,3-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Dichlorodifluoromethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,4-Dichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,1-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2-Dichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
cis-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,1-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2-Dichloropropane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
cis-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
trans-1,3-Dichloropropene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
trans-1,2-Dichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Ethylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011

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PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 18041703

WSP USA - Herndon, Herndon, VA

April 17, 2018

Project Name: Kop Flex
Project Location: Hanover, MD
Project ID: 31400389/01

Sample ID: Trip Blank **Date/Time Sampled: 04/17/2018 09:45** **PSS Sample ID: 18041703-003**
Matrix: WATER **Date/Time Received: 04/17/2018 09:45**

TCL Volatile Organic Compounds — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Hexanone (MBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 13:45	1011
Isopropylbenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Methyl Acetate	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
Methylcyclohexane	ND	ug/L	10		1	04/17/18	04/17/18 13:45	1011
Methylene chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/L	5.0		1	04/17/18	04/17/18 13:45	1011
Methyl-t-Butyl Ether	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Naphthalene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Styrene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Tetrachloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Toluene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,1,1-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Trichloroethene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
1,1,2-Trichloroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Trichlorofluoromethane	ND	ug/L	5.0		1	04/17/18	04/17/18 13:45	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
Vinyl chloride	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011
m&p-Xylene	ND	ug/L	2.0		1	04/17/18	04/17/18 13:45	1011
o-Xylene	ND	ug/L	1.0		1	04/17/18	04/17/18 13:45	1011

Case Narrative Summary

Client Name: WSP USA - Herndon

Project Name: Kop Flex

Work Order Number(s): 18041703

Project ID: 31400389/01

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

All sample receipt conditions were acceptable.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

Analytical Data Package Information Summary

Work Order(s): 18041703
Report Prepared For: WSP USA - Herndon, Herndon, VA
Project Name: Kop Flex
Project Manager: Eric Johnson

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
SM2540G	MW34 IDW Soil	Initial	18041703-001	1066	S	152345	152345	04/16/2018	04/17/2018 11:02	04/17/2018 11:02
SW-846 8260 B	MW34 IDW Soil	Initial	18041703-001	1011	S	70919	152349	04/16/2018	04/17/2018 07:52	04/17/2018 12:40
	70919-1-BKS	BKS	70919-1-BKS	1011	S	70919	152349	--------	04/17/2018 07:52	04/17/2018 08:59
	70919-1-BLK	BLK	70919-1-BLK	1011	S	70919	152349	--------	04/17/2018 07:52	04/17/2018 12:10
	70919-1-BSD	BSD	70919-1-BSD	1011	S	70919	152349	--------	04/17/2018 07:52	04/17/2018 09:20
	MW34 IDW Drill Water	Initial	18041703-002	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 11:31
	Trip Blank	Initial	18041703-003	1011	W	70925	152361	04/17/2018	04/17/2018 07:47	04/17/2018 13:45
	70925-1-BKS	BKS	70925-1-BKS	1011	W	70925	152361	--------	04/17/2018 07:47	04/17/2018 08:55
	70925-1-BLK	BLK	70925-1-BLK	1011	W	70925	152361	--------	04/17/2018 07:47	04/17/2018 10:17
	MW-34 (315-325) S	MS	18041702-001 S	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 12:01
	MW-34 (315-325) SD	MSD	18041702-001 SD	1011	W	70925	152361	04/16/2018	04/17/2018 07:47	04/17/2018 12:21

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041703

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5035
Seq Number: 152349 Matrix: Soil Date Prep: 04/17/2018
PSS Sample ID: 18041703-001

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	102		81-146	%	04/17/18 12:40
Dibromofluoromethane	104		89-120	%	04/17/18 12:40
Toluene-D8	102		86-116	%	04/17/18 12:40

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/2018
PSS Sample ID: 18041703-002

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	101		87-109	%	04/17/18 11:31
Dibromofluoromethane	101		93-111	%	04/17/18 11:31
Toluene-D8	100		91-109	%	04/17/18 11:31

Analytical Method: SW-846 8260 B Prep Method: SW5030B
Seq Number: 152361 Matrix: Water Date Prep: 04/17/2018
PSS Sample ID: 18041703-003

Surrogate	%Rec	Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		87-109	%	04/17/18 13:45
Dibromofluoromethane	100		93-111	%	04/17/18 13:45
Toluene-D8	100		91-109	%	04/17/18 13:45

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041703

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030

Seq Number: 152349 Matrix: Solid Date Prep: 04/17/18

MB Sample Id: 70919-1-BLK LCS Sample Id: 70919-1-BKS LCSD Sample Id: 70919-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20	61	67	110	73	120	66-136	9	25	ug/kg	04/17/18 08:59	
Benzene	<5.1	61	65	107	63	103	79-131	3	25	ug/kg	04/17/18 08:59	
Bromochloromethane	<5.1	61	63	103	64	105	82-124	2	25	ug/kg	04/17/18 08:59	
Bromodichloromethane	<5.1	61	63	103	62	102	81-128	2	25	ug/kg	04/17/18 08:59	
Bromoform	<5.1	61	60	98	64	105	75-128	6	25	ug/kg	04/17/18 08:59	
Bromomethane	<5.1	61	69	113	65	107	71-135	6	25	ug/kg	04/17/18 08:59	
2-Butanone (MEK)	<20	61	70	115	80	131	63-135	13	25	ug/kg	04/17/18 08:59	
Carbon Disulfide	<10	61	66	108	65	107	73-134	2	25	ug/kg	04/17/18 08:59	
Carbon tetrachloride	<5.1	61	63	103	60	98	73-130	5	25	ug/kg	04/17/18 08:59	
Chlorobenzene	<5.1	61	57	93	56	92	80-126	2	25	ug/kg	04/17/18 08:59	
Chloroethane	<5.1	61	69	113	68	111	77-133	1	25	ug/kg	04/17/18 08:59	
Chloroform	<5.1	61	62	102	61	100	79-125	2	25	ug/kg	04/17/18 08:59	
Chloromethane	<5.1	61	69	113	66	108	73-127	4	25	ug/kg	04/17/18 08:59	
Cyclohexane	<20	61	63	103	62	102	70-126	2	25	ug/kg	04/17/18 08:59	
1,2-Dibromo-3-chloropropane	<40	61	57	93	63	103	61-127	10	25	ug/kg	04/17/18 08:59	
Dibromochloromethane	<5.1	61	61	100	62	102	82-123	2	25	ug/kg	04/17/18 08:59	
1,2-Dibromoethane	<5.1	61	60	98	62	102	73-122	3	25	ug/kg	04/17/18 08:59	
1,2-Dichlorobenzene	<5.1	61	57	93	57	93	64-125	0	25	ug/kg	04/17/18 08:59	
1,3-Dichlorobenzene	<5.1	61	57	93	57	93	65-125	0	25	ug/kg	04/17/18 08:59	
1,4-Dichlorobenzene	<5.1	61	56	92	58	95	81-122	4	25	ug/kg	04/17/18 08:59	
Dichlorodifluoromethane	<5.1	61	68	111	66	108	62-134	3	25	ug/kg	04/17/18 08:59	
1,1-Dichloroethane	<5.1	61	65	107	65	107	80-128	0	25	ug/kg	04/17/18 08:59	
1,2-Dichloroethane	<5.1	61	63	103	63	103	81-124	0	25	ug/kg	04/17/18 08:59	
1,1-Dichloroethene	<5.1	61	65	107	64	105	75-124	2	25	ug/kg	04/17/18 08:59	
1,2-Dichloropropane	<5.1	61	62	102	63	103	77-134	2	25	ug/kg	04/17/18 08:59	
cis-1,2-Dichloroethene	<5.1	61	63	103	62	102	79-122	2	25	ug/kg	04/17/18 08:59	
cis-1,3-Dichloropropene	<5.1	61	62	102	61	100	71-123	2	25	ug/kg	04/17/18 08:59	
trans-1,2-Dichloroethene	<5.1	61	65	107	65	107	79-127	0	25	ug/kg	04/17/18 08:59	
trans-1,3-Dichloropropene	<5.1	61	58	95	59	97	68-126	2	25	ug/kg	04/17/18 08:59	
Ethylbenzene	<5.1	61	60	98	56	92	77-123	7	25	ug/kg	04/17/18 08:59	
2-Hexanone (MBK)	<20	61	65	107	73	120	58-136	12	25	ug/kg	04/17/18 08:59	
Isopropylbenzene	<5.1	61	58	95	58	95	78-134	0	25	ug/kg	04/17/18 08:59	
Methyl Acetate	<20	61	61	100	70	115	76-127	14	25	ug/kg	04/17/18 08:59	
Methylcyclohexane	<20	61	61	100	63	103	73-124	3	25	ug/kg	04/17/18 08:59	
Methylene chloride	<5.1	61	57	93	59	97	75-117	3	25	ug/kg	04/17/18 08:59	
4-Methyl-2-Pentanone (MIBK)	<20	61	67	110	73	120	67-130	9	25	ug/kg	04/17/18 08:59	
Methyl-t-Butyl Ether	<5.1	61	61	100	64	105	72-124	5	25	ug/kg	04/17/18 08:59	
Naphthalene	<5.1	61	56	92	56	92	27-128	0	25	ug/kg	04/17/18 08:59	
Styrene	<5.1	61	56	92	57	93	71-125	2	25	ug/kg	04/17/18 08:59	
1,1,2,2-Tetrachloroethane	<5.1	61	57	93	63	103	76-130	10	25	ug/kg	04/17/18 08:59	
Tetrachloroethene	<5.1	61	60	98	58	95	72-129	3	25	ug/kg	04/17/18 08:59	
Toluene	<5.1	61	61	100	60	98	76-132	2	25	ug/kg	04/17/18 08:59	
1,2,3-Trichlorobenzene	<5.1	61	56	92	57	93	35-131	2	25	ug/kg	04/17/18 08:59	
1,2,4-Trichlorobenzene	<5.1	61	56	92	56	92	67-114	0	25	ug/kg	04/17/18 08:59	
1,1,1-Trichloroethane	<5.1	61	65	107	62	102	77-129	5	25	ug/kg	04/17/18 08:59	
1,1,2-Trichloroethane	<5.1	61	59	97	63	103	77-132	7	25	ug/kg	04/17/18 08:59	
Trichloroethene	<5.1	61	60	98	61	100	78-129	2	25	ug/kg	04/17/18 08:59	
Trichlorofluoromethane	<5.1	61	69	113	67	110	73-135	3	25	ug/kg	04/17/18 08:59	
1,1,2-Trichlorotrifluoroethane	<5.1	61	65	107	65	107	73-129	0	25	ug/kg	04/17/18 08:59	
Vinyl chloride	<5.1	61	78	128	71	116	76-138	9	25	ug/kg	04/17/18 08:59	
m&p-Xylene	<10	120	120	100	120	100	79-121	0	25	ug/kg	04/17/18 08:59	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041703

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030
Seq Number: 152349 Matrix: Solid Date Prep: 04/17/18
MB Sample Id: 70919-1-BLK LCS Sample Id: 70919-1-BKS LCSD Sample Id: 70919-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
o-Xylene	<5.1	61	59	97	59	97	75-124	0	25	ug/kg	04/17/18 08:59	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	114		100		104		81-146	%	04/17/18 08:59
Dibromofluoromethane	104		104		108		89-120	%	04/17/18 08:59
Toluene-D8	102		102		100		86-116	%	04/17/18 08:59

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041703

WSP USA - Herndon

Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152361 Matrix: Water Date Prep: 04/17/18

MB Sample Id: 70925-1-BLK LCS Sample Id: 70925-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Acetone	<10.00	50.00	32.37	65	55-120	ug/L	04/17/18 08:55	
Benzene	<1.000	50.00	49.04	98	87-123	ug/L	04/17/18 08:55	
Bromochloromethane	<1.000	50.00	44.80	90	74-136	ug/L	04/17/18 08:55	
Bromodichloromethane	<1.000	50.00	44.01	88	83-125	ug/L	04/17/18 08:55	
Bromoform	<5.000	50.00	43.69	87	72-129	ug/L	04/17/18 08:55	
Bromomethane	<1.000	50.00	39.05	78	45-167	ug/L	04/17/18 08:55	
2-Butanone (MEK)	<10.00	50.00	36.28	73	45-136	ug/L	04/17/18 08:55	
Carbon Disulfide	<10.00	50.00	49.17	98	87-123	ug/L	04/17/18 08:55	
Carbon tetrachloride	<1.000	50.00	44.52	89	79-133	ug/L	04/17/18 08:55	
Chlorobenzene	<1.000	50.00	49.26	99	87-127	ug/L	04/17/18 08:55	
Chloroethane	<1.000	50.00	49.18	98	81-122	ug/L	04/17/18 08:55	
Chloroform	<1.000	50.00	43.36	87	76-129	ug/L	04/17/18 08:55	
Chloromethane	<1.000	50.00	48.81	98	59-121	ug/L	04/17/18 08:55	
Cyclohexane	<10.00	50.00	45.42	91	83-122	ug/L	04/17/18 08:55	
1,2-Dibromo-3-chloropropane	<5.000	50.00	38.82	78	63-140	ug/L	04/17/18 08:55	
Dibromochloromethane	<1.000	50.00	43.43	87	73-139	ug/L	04/17/18 08:55	
1,2-Dibromoethane	<1.000	50.00	43.12	86	80-127	ug/L	04/17/18 08:55	
1,2-Dichlorobenzene	<1.000	50.00	44.25	89	82-129	ug/L	04/17/18 08:55	
1,3-Dichlorobenzene	<1.000	50.00	49.75	100	88-127	ug/L	04/17/18 08:55	
1,4-Dichlorobenzene	<1.000	50.00	47.85	96	84-129	ug/L	04/17/18 08:55	
Dichlorodifluoromethane	<1.000	50.00	57.73	115	70-131	ug/L	04/17/18 08:55	
1,1-Dichloroethane	<1.000	50.00	47.86	96	85-120	ug/L	04/17/18 08:55	
1,2-Dichloroethane	<1.000	50.00	48.29	97	86-125	ug/L	04/17/18 08:55	
1,1-Dichloroethene	<1.000	50.00	45.80	92	85-123	ug/L	04/17/18 08:55	
cis-1,2-Dichloroethene	<1.000	50.00	48.53	97	86-126	ug/L	04/17/18 08:55	
1,2-Dichloropropane	<1.000	50.00	43.58	87	83-120	ug/L	04/17/18 08:55	
cis-1,3-Dichloropropene	<1.000	50.00	43.57	87	81-125	ug/L	04/17/18 08:55	
trans-1,3-Dichloropropene	<1.000	50.00	42.88	86	79-121	ug/L	04/17/18 08:55	
trans-1,2-Dichloroethene	<1.000	50.00	48.97	98	87-120	ug/L	04/17/18 08:55	
Ethylbenzene	<1.000	50.00	44.06	88	82-128	ug/L	04/17/18 08:55	
2-Hexanone (MBK)	<5.000	50.00	35.39	71	56-116	ug/L	04/17/18 08:55	
Isopropylbenzene	<1.000	50.00	42.88	86	81-128	ug/L	04/17/18 08:55	
Methyl Acetate	<10.00	50.00	39.57	79	68-129	ug/L	04/17/18 08:55	
Methylcyclohexane	<10.00	50.00	48.63	97	84-127	ug/L	04/17/18 08:55	
Methylene chloride	<1.000	50.00	45.55	91	85-119	ug/L	04/17/18 08:55	
4-Methyl-2-Pentanone (MIBK)	<5.000	50.00	34.94	70	57-116	ug/L	04/17/18 08:55	
Methyl-t-Butyl Ether	<1.000	50.00	41.92	84	61-130	ug/L	04/17/18 08:55	
Naphthalene	<1.000	50.00	43.15	86	74-114	ug/L	04/17/18 08:55	
Styrene	<1.000	50.00	43.90	88	76-130	ug/L	04/17/18 08:55	
1,1,2,2-Tetrachloroethane	<1.000	50.00	43.63	87	79-131	ug/L	04/17/18 08:55	
Tetrachloroethene	<1.000	50.00	52.51	105	85-131	ug/L	04/17/18 08:55	
Toluene	<1.000	50.00	45.12	90	82-127	ug/L	04/17/18 08:55	
1,2,3-Trichlorobenzene	<1.000	50.00	45.94	92	79-123	ug/L	04/17/18 08:55	
1,2,4-Trichlorobenzene	<1.000	50.00	46.71	93	78-123	ug/L	04/17/18 08:55	
1,1,1-Trichloroethane	<1.000	50.00	48.86	98	87-125	ug/L	04/17/18 08:55	
1,1,2-Trichloroethane	<1.000	50.00	48.42	97	84-127	ug/L	04/17/18 08:55	
Trichloroethene	<1.000	50.00	47.95	96	87-124	ug/L	04/17/18 08:55	
Trichlorofluoromethane	<5.000	50.00	51.73	103	85-130	ug/L	04/17/18 08:55	
1,1,2-Trichlorotrifluoroethane	<1.000	50.00	44.44	89	81-132	ug/L	04/17/18 08:55	
Vinyl chloride	<1.000	50.00	49.66	99	66-133	ug/L	04/17/18 08:55	
m&p-Xylene	<2.000	100	88.70	89	78-126	ug/L	04/17/18 08:55	

PHASE SEPARATION SCIENCE, INC.

QC Summary 18041703

WSP USA - Herndon
Kop Flex

Analytical Method: SW-846 8260 B Prep Method: SW5030B

Seq Number: 152361 Matrix: Water Date Prep: 04/17/18

MB Sample Id: 70925-1-BLK LCS Sample Id: 70925-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
o-Xylene	<1.000	50.00	44.65	89	75-130	ug/L	04/17/18 08:55	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	100		96		87-109	%	04/17/18 08:55
Dibromofluoromethane	99		100		93-111	%	04/17/18 08:55
Toluene-D8	101		100		91-109	%	04/17/18 08:55

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

18041703

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

No. 008038 wsp

WSP USA Office Address	13530 Dulles Technology Drive Suite 300 Herndon VA
Project Name	Kop-Flex
WSP USA Contact Name	Eric Johnson
Project Location	Hanover, MD
WSP USA Contact E-mail	Eric.Johnson @wsp.com
Project Number & Task	31400389/01
WSP USA Contact Phone	703-209-6500
Sampler(s) Name(s)	Chris Cresci
Sampler(s) Signature(s)	[signature]
Laboratory Name & Location	Phase Separation
Laboratory Project Manager	Amber Confer
Requested Turn-Around-Time	☐ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR See Below

Requested Analyses & Preservatives: VOCs 8260

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs 8260	Sample Comments
MW34 IDW Soil	S	4/16/18		0955		4	X	*24 HR TAT*
MW-34 IDW Drill water	AQ	4/16/18		1045		3	X	*24 HR TAT*
MW-34 (315-325)	AQ	4/16/18		1215		3	X	* Emergency *
MW-34 (325-335)	AQ	4/16/18		1710		3	X	* Emergency *
Trip Blank						2	X	24 HR TAT

# of Coolers: 1
Custody Seal: ABS
Ice Present: PRES Temp: 1°-3°C
Shipping Carrier: TTE

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	04/17/18	0830	[signature]				
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
[signature]	04/17/18	0945	[signature]				

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	18041703	**Received By**	Thomas Wingate
Client Name	WSP USA - Herndon	**Date Received**	04/17/2018 09:45:00 AM
Project Name	Kop Flex	**Delivered By**	Trans Time Express
Project Number	31400389/01	**Tracking No**	Not Applicable
Disposal Date	05/22/2018	**Logged In By**	Thomas Wingate

Shipping Container(s)

No. of Coolers 1

		Ice	Present
Custody Seal(s) Intact?	N/A	Temp (deg C)	3
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Chris Cresci
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 3 Total No. of Containers Received 9

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	Yes
Do VOA vials have zero headspace?		Yes
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By: Thomas Wingate Date: 04/17/2018

Thomas Wingate

PM Review and Approval: Amber Confer Date: 04/17/2018

Amber Confer

APPENDIX F – WASTE DISPOSAL MANIFESTS

5261

348540

NON-HAZARDOUS WASTE MANIFEST

BOX 1801444950

Please print or type (Form designed for use on elite (12 pitch) typewriter)

D4 1801444950

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No.

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171
(703) 709-6500 ATTN:James Edwards

Site Address:
7565 Harmans Road
Hanover,MD 21076

4. Generator's Phone ( )

5. Transporter 1 Company Name
Clean Harbors Environmental Services, Inc.

6. US EPA ID Number
MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232

10. US EPA ID Number
OHD000816629

E. State Facility's ID

F. Facility's Phone
(513) 681-5738

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL CUTTINGS)	28	DM	14,000	P
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1519274
27 x 55gal DM
1 x 85 DM

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

NON-HAZARDOUS WASTE

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Shannon Burke on behalf of EMERSUB 16	Shannon Burke	3	22	18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Bernard Stewart		3	22	18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
LaKiesha Mason		4	2	18

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NON-HAZARDOUS WASTE MANIFEST

#55292

D4 1801445082

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No. CP2 NH04028-

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171

Site Address:
7565 Harmans Road
Hanover, MD 21076

4. Generator's Phone ((703) 709-6500) ATTN: James Edwards

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.

6. US EPA ID Number: MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone: (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors of Baltimore Inc
1910 Russell Street
Baltimore, MD 21230

10. US EPA ID Number: MDD980555189

E. State Facility's ID: A-151

F. Facility's Phone: (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	001	TT	1810	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Maria Kaplan on behalf of Emersub 16 LLC	[signature] o.b.o. Emersub 16 LLC	4	2	18

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
CHEA PHAY	[signature]	4	2	18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
James C. Yiemon	[signature]	04	2	18

GENERATOR

TRANSPORTER

FACILITY

NON-HAZARDOUS WASTE

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Clean Harbors of Baltimore, Inc.
1910 Russell St.
Baltimore, MD 21230

(410) 244-8200

Date - 4-2-18

Generator -		H.W.F.
Kop-Flex Inc		
Trailer #/Can # 553292	Gross	
	TARE	Fm 44210
Manifest # MH040218-CP2	NET	MT 28040
Drivers Name - Co #		
	Driver	Recorded
SW	ON OFF	

NON-HAZARDOUS WASTE MANIFEST

#55292

Please print or type (Form designed for use on elite (12 pitch) typewriter)

D41801445082

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No. NH040218-CP

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171

Site Address:
7565 Harmans Road
Hanover, MD 21076

4. Generator's Phone (703) 709-6500 ATTN: James Edwards

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.

6. US EPA ID Number: MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors of Baltimore Inc
1910 Russell Street
Baltimore, MD 21230

10. US EPA ID Number: MDD980555189

E. State Facility's ID: A-151

F. Facility's Phone: (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	001	TT	2725	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Molly Long on behalf of Emerson 16	Molly Long on behalf of Emerson 16	4	2	18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
CHEA PHAY		4	2	18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
Valerie Saliba	Valerie Saliba	4	2	18

NON-HAZARDOUS WASTE

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Clean Harbors of Baltimore, Inc. (410) 244-8200
1910 Russell St.
Baltimore, MD 21230

Date - 2 Apnl 2018

Generator - Kop-Flex Inc		H.W.F.
Trailer #/Can # 55292	Gross	
	TARE	
Manifest # NH040218-CP	NET	
Drivers Name - Co # Chea Pray		Fuel 49700 MT 28040
SW	Driver ON OFF	Recorded

NON-HAZARDOUS WASTE MANIFEST

55292

Please print or type (Form designed for use on elite (12 pitch) typewriter)

D4 1801742638

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No. 1801742638-1

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171

Site Address :
7565 Harmans Road
Hanover, MD 21076

4. Generator's Phone ((703) 709-6500 ATTN: James Edwards

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.

6. US EPA ID Number: MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors of Baltimore Inc
1910 Russell Street
Baltimore, MD 21230

10. US EPA ID Number: MDD980555189

E. State Facility's ID: A-151

F. Facility's Phone: (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	001	TT	2185	G
b.			2003	
c. 415 - 655				
d. Code 645	949		279	

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Molly Long on behalf of Emerson 16

Signature: Molly Long on behalf of Emerson 16

Date: Month 4 Day 6 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: CESARE VOSOPIA

Signature

Date: Month 4 Day 6 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: GEORGE E JOHNSON

Signature

Date: Month 04 Day 06 Year 18

NON-HAZARDOUS WASTE

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NON-HAZARDOUS WASTE MANIFEST

#40154

Please print or type (Form designed for use on elite (12 pitch) typewriter)

D41801742638

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No. NH04118CP

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171

Site Address :
7565 Harmans Road
Hanover,MD 21076

4. Generator's Phone ((703) 709-6500 ATTN:James Edwards

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.

6. US EPA ID Number: MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors of Baltimore Inc
1910 Russell Street
Baltimore, MD 21230

10. US EPA ID Number: MDD980555189

E. State Facility's ID: A-151

F. Facility's Phone: (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	001	TT	2085	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Chris Crescenzo on Behalf of Emerson 16 | Signature | Date: Month 4 Day 11 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: CHEA PHAY | Signature | Date: Month 4 Day 11 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: James Wideman | Signature | Date: Month 04 Day 11 Year 18

NON-HAZARDOUS WASTE

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Clean Harbors of Baltimore, Inc.
1910 Russell St.
Baltimore, MD 21230

(410) 244-820

Date - 4-11-A

Kop-
Generator -

H.W.F.

Kop-Flex Inc

Trailer #/Can # 40154

Manifest # 11H04111BCP

Drivers Name - Co #

Gross	full 57720
TARE	MT 38460
NET	

SW

Driver ON OFF

Recorded

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MDD043373935
2. Page 1 of 1
3. Emergency Response Phone: (800) 483-3748
4. Manifest Tracking Number: 011799244 FLE

5. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon, VA 20171
Generator's Phone: (703) 709-6500 ATTN:James Edwards

Generator's Site Address (if different than mailing address)
7565 Harmans Road
Hanover,MD 21076

6. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc
U.S. EPA ID Number: MAD039322250

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232
Facility's Phone: (513) 681-5738
U.S. EPA ID Number: OHD000816629

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL CUTTINGS)	23	DM	1500	P	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1.CB1519274 23 X DM

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Shannon Burke [illegible] 16
Signature: Shannon Burke
Month 4 Day 12 Year 18

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [illegible]
Signature: [illegible]
Month 4 Day 12 Year 18

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name
Signature
Month Day Year

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping.

NON-HAZARDOUS WASTE MANIFEST

55292

04 1801742638

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MDD043373935	Manifest Document No. NH041818CP	2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171
4. Generator's Phone ((703) 709-6500 ATTN:James Edwards

Site Address :
7565 Harmans Road
Hanover,MD 21076

5. Transporter 1 Company Name	6. US EPA ID Number	A. State Transporter's ID
Clean Harbors Environmental Services, Inc.	MAD039322250	B. Transporter 1 Phone (781) 792-5000
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID
		D. Transporter 2 Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	E. State Facility's ID
Clean Harbors of Baltimore Inc 1910 Russell Street Baltimore, MD 21230	MDD980555189	A-151
		F. Facility's Phone (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	001	TT	2630	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date (Month / Day / Year)
Chris Cresa		4 / 18 / 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials		
Printed/Typed Name: CHEA PHAY	Signature	Date: 4 / 18 / 18
18. Transporter 2 Acknowledgement of Receipt of Materials		Date
Printed/Typed Name	Signature	Month / Day / Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date (Month / Day / Year)
James Wileman		04 / 18 / 18

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MDD043373935
2. Page 1 of 1
3. Emergency Response Phone: (800) 483-3718
4. Manifest Tracking Number: 011204101 FLE

5. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon, VA 20171
Generator's Phone: (703) 709-6500 ATTN:James Edwards

Generator's Site Address (if different than mailing address)
7565 Harmans Road
Hanover, MD 21076

6. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.
U.S. EPA ID Number: MAD039322250

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232
Facility's Phone: (513) 681-5738
U.S. EPA ID Number: OHD000816629

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL CUTTINGS)	~~DM~~ 20	DM	11,000	P	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1.CH1519274 20 x 55 DM

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ben Lingey on behalf of Emergub 16
Signature: [signature]
Month 4 Day 19 Year 18

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Crasbie Montague
Signature: [signature]
Month 4 Day 19 Year 18
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H141 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Lakiesha Mason
Signature: [signature]
Month 4 Day 30 Year 18

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO GENERATOR

Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping.

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

D41801742638

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No. 04262018- 001

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
13530 Dulles Technology DR STE# 300
Herndon VA 20171
ATTN: James Edwards - Kirstin Dolan

Site Address:
7565 Harmans Road
Hanover, MD 21076

4. Generator's Phone (703) 709-6500

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.

6. US EPA ID Number: MAD039322250

A. State Transporter's ID

B. Transporter 1 Phone (781) 792-5000

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors of Baltimore Inc
1910 Russell Street
Baltimore, MD 21230

10. US EPA ID Number: MDD980555189

E. State Facility's ID: A-151

F. Facility's Phone: (410) 244-8200

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON DOT REGULATED, (GROUNDWATER)	01	TT	1744	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1529060

Molly

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

Truck # 40041

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: X Molly Long on behalf of Enersub16

Signature: X Molly Long on behalf of Enersub16

Date: Month 4 Day 26 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Patrick P. Spears

Signature: Patrick P. Spears

Date: Month 04 Day 26 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Valerie Saliba

Signature: Valerie Saliba

Date: Month 4 Day 26 Year 18

NON-HAZARDOUS WASTE

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5261

348540

NON-HAZARDOUS WASTE MANIFEST

D41801444950 BOX1801444950

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NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MDD043373935

Manifest Document No.

2. Page 1 of 1

3. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon VA 20171
4. Generator's Phone (703) 709-6500 ATTN:James Edwards

Site Address:
7565 Harmans Road
Hanover,MD 21076

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.
6. US EPA ID Number: MAD039322250
A. State Transporter's ID
B. Transporter 1 Phone: (781) 792-5000

7. Transporter 2 Company Name
8. US EPA ID Number
C. State Transporter's ID
D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232
10. US EPA ID Number: OHD000816629
E. State Facility's ID
F. Facility's Phone: (513) 681-5738

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL CUTTINGS)	28	DM	14,000	P
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above
11a.CH1519274
27 x 55gal DM
1 x 85 DM

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 483-3718
GENERATOR: Kop-Flex Inc

NON-HAZARDOUS WASTE

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date (Month / Day / Year)
Shannon Burke on behalf of EMERSUB 16	Shannon Burke	3 / 22 / 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)
Bernard Stewart		3 / 22 / 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)
		/ /

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date (Month / Day / Year)
LaKiesha Mason		4 / 2 / 18

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MDD043373935
2. Page 1 of: 1
3. Emergency Response Phone: (800) 483-3718
4. Manifest Tracking Number: 011204101 FLE

GENERATOR

5. Generator's Name and Mailing Address
Kop-Flex Inc
16530 Dulles Technology DR STE# 300
Herndon, VA 20171
Generator's Phone: (703) 709-6500 ATTN: James Edwards

Generator's Site Address (if different than mailing address)
7565 Harmans Road
Hanover, MD 21076

6. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.
U.S. EPA ID Number: MAD039322250

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232
Facility's Phone: (513) 681-5738
U.S. EPA ID Number: OHD000816629

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL CUTTINGS)	~~DM~~ 20	DM	11,000	P	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1. CR1519274 20 x 55 DM

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ben Lingey on behalf of Emerson 16
Signature: Ben Lingey
Month: 4 Day: 19 Year: 18

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Crosbie Montague
Signature:
Month: 4 Day: 19 Year: 18

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Lakiesha Mason
Signature:
Month: 4 Day: 30 Year: 18

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. DESIGNATED FACILITY TO GENERATOR

Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping.

ENCLOSURE C – LABORATORY ANALYTICAL REPORT FOR OFFSITE GROUNDWATER MONITORING WELL SAMPLES (MAY 2018)

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

June 08, 2018

Eric Johnson
WSP USA
13530 Dulles Technology Drive
Suite 300
Herndon, VA 20171

RE: Project: Kop FLex
Pace Project No.: 92386848

Dear Eric Johnson:
Enclosed are the analytical results for sample(s) received by the laboratory on June 01, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

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without the written consent of Pace Analytical Services, LLC.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Kop FLex
Pace Project No.: 92386848

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

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Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Kop FLex
Pace Project No.: 92386848

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92386848001	**TRIP BLANK**	Water	06/01/18 00:00	06/01/18 11:07
92386848002	**MW-33D-295**	Water	05/31/18 11:25	06/01/18 11:07
92386848003	**MW-33D-235**	Water	05/31/18 11:15	06/01/18 11:07
92386848004	**MW-31D**	Water	05/31/18 10:50	06/01/18 11:07
92386848005	**MW-34D**	Water	05/31/18 10:35	06/01/18 11:07
92386848006	**MW-35D**	Water	05/31/18 10:20	06/01/18 11:07
92386848007	**MW-29D**	Water	05/31/18 09:20	06/01/18 11:07
92386848008	**MW-30D-413**	Water	05/31/18 09:05	06/01/18 11:07
92386848009	**MW-30D-273**	Water	05/31/18 08:55	06/01/18 11:07
92386848010	**MW-32D**	Water	05/31/18 08:40	06/01/18 11:07
92386848011	**MW-28D**	Water	05/30/18 16:30	06/01/18 11:07
92386848012	**MW-28**	Water	05/30/18 16:20	06/01/18 11:07
92386848013	**MW-36D**	Water	05/30/18 16:10	06/01/18 11:07
92386848014	**DUP 053018B**	Water	05/30/18 10:00	06/01/18 11:07
92386848015	**MW-25D-190**	Water	05/30/18 15:40	06/01/18 11:07
92386848016	**MW-25D-130**	Water	05/30/18 15:25	06/01/18 11:07
92386848017	**MW-25**	Water	05/30/18 15:15	06/01/18 11:07

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SAMPLE ANALYTE COUNT

Project: Kop FLex
Pace Project No.: 92386848

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92386848001	TRIP BLANK	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848002	MW-33D-295	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848003	MW-33D-235	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848004	MW-31D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848005	MW-34D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848006	MW-35D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848007	MW-29D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848008	MW-30D-413	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848009	MW-30D-273	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848010	MW-32D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848011	MW-28D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848012	MW-28	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848013	MW-36D	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848014	DUP 053018B	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848015	MW-25D-190	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848016	MW-25D-130	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92386848017	MW-25	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: TRIP BLANK **Lab ID: 92386848001** Collected: 06/01/18 00:00 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/06/18 03:57	67-64-1	
Benzene	ND	ug/L	1.0	1		06/06/18 03:57	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/06/18 03:57	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/06/18 03:57	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/06/18 03:57	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/06/18 03:57	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/06/18 03:57	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/06/18 03:57	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/06/18 03:57	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/06/18 03:57	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/06/18 03:57	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/06/18 03:57	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 03:57	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 03:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/06/18 03:57	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/06/18 03:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/06/18 03:57	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/06/18 03:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/06/18 03:57	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/06/18 03:57	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/06/18 03:57	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/06/18 03:57	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 03:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 03:57	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 03:57	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/06/18 03:57	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 03:57	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/06/18 03:57	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 03:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 03:57	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/06/18 03:57	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/06/18 03:57	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/06/18 03:57	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/06/18 03:57	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/06/18 03:57	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/06/18 03:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/06/18 03:57	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/06/18 03:57	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/06/18 03:57	91-20-3	
Styrene	ND	ug/L	1.0	1		06/06/18 03:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 03:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 03:57	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/06/18 03:57	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: TRIP BLANK **Lab ID: 92386848001** Collected: 06/01/18 00:00 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/06/18 03:57	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 03:57	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/06/18 03:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/06/18 03:57	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/06/18 03:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/06/18 03:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/06/18 03:57	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/06/18 03:57	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/06/18 03:57	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/06/18 03:57	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/06/18 03:57	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/06/18 03:57	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		06/06/18 03:57	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130	1		06/06/18 03:57	17060-07-0	
Toluene-d8 (S)	112	%	70-130	1		06/06/18 03:57	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 17:06	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	112	%	50-150	1		06/04/18 17:06	17060-07-0	
Toluene-d8 (S)	110	%	50-150	1		06/04/18 17:06	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-33D-295 **Lab ID: 92386848002** Collected: 05/31/18 11:25 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/02/18 23:40	67-64-1	
Benzene	ND	ug/L	1.0	1		06/02/18 23:40	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/02/18 23:40	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/02/18 23:40	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/02/18 23:40	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/02/18 23:40	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/02/18 23:40	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/02/18 23:40	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/02/18 23:40	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/02/18 23:40	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/02/18 23:40	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/02/18 23:40	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/02/18 23:40	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/02/18 23:40	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/02/18 23:40	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/02/18 23:40	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/02/18 23:40	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/02/18 23:40	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/02/18 23:40	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/02/18 23:40	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/02/18 23:40	107-06-2	
1,1-Dichloroethene	**4.6**	ug/L	1.0	1		06/02/18 23:40	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/02/18 23:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/02/18 23:40	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:40	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:40	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:40	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:40	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:40	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:40	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/02/18 23:40	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/02/18 23:40	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/02/18 23:40	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/02/18 23:40	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/02/18 23:40	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/02/18 23:40	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/02/18 23:40	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/02/18 23:40	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/02/18 23:40	91-20-3	
Styrene	ND	ug/L	1.0	1		06/02/18 23:40	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/02/18 23:40	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/02/18 23:40	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/02/18 23:40	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-33D-295 **Lab ID: 92386848002** Collected: 05/31/18 11:25 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/02/18 23:40	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:40	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/02/18 23:40	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/02/18 23:40	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/02/18 23:40	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/02/18 23:40	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/02/18 23:40	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/02/18 23:40	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/02/18 23:40	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/02/18 23:40	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/02/18 23:40	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/02/18 23:40	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		06/02/18 23:40	460-00-4	
1,2-Dichloroethane-d4 (S)	80	%	70-130	1		06/02/18 23:40	17060-07-0	
Toluene-d8 (S)	118	%	70-130	1		06/02/18 23:40	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**6.9**	ug/L	2.0	1		06/04/18 18:24	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 18:24	17060-07-0	
Toluene-d8 (S)	116	%	50-150	1		06/04/18 18:24	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-33D-235 **Lab ID: 92386848003** Collected: 05/31/18 11:15 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/02/18 23:57	67-64-1	
Benzene	ND	ug/L	1.0	1		06/02/18 23:57	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/02/18 23:57	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/02/18 23:57	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/02/18 23:57	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/02/18 23:57	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/02/18 23:57	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/02/18 23:57	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/02/18 23:57	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/02/18 23:57	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/02/18 23:57	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/02/18 23:57	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/02/18 23:57	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/02/18 23:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/02/18 23:57	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/02/18 23:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/02/18 23:57	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/02/18 23:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/02/18 23:57	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/02/18 23:57	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/02/18 23:57	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/02/18 23:57	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/02/18 23:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/02/18 23:57	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:57	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:57	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/02/18 23:57	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:57	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/02/18 23:57	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/02/18 23:57	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/02/18 23:57	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/02/18 23:57	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/02/18 23:57	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/02/18 23:57	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/02/18 23:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/02/18 23:57	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/02/18 23:57	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/02/18 23:57	91-20-3	
Styrene	ND	ug/L	1.0	1		06/02/18 23:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/02/18 23:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/02/18 23:57	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/02/18 23:57	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-33D-235 **Lab ID: 92386848003** Collected: 05/31/18 11:15 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/02/18 23:57	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/02/18 23:57	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/02/18 23:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/02/18 23:57	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/02/18 23:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/02/18 23:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/02/18 23:57	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/02/18 23:57	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/02/18 23:57	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/02/18 23:57	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/02/18 23:57	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/02/18 23:57	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	108	%	70-130	1		06/02/18 23:57	460-00-4	
1,2-Dichloroethane-d4 (S)	82	%	70-130	1		06/02/18 23:57	17060-07-0	
Toluene-d8 (S)	118	%	70-130	1		06/02/18 23:57	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 19:23	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	118	%	50-150	1		06/04/18 19:23	17060-07-0	
Toluene-d8 (S)	115	%	50-150	1		06/04/18 19:23	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-31D **Lab ID: 92386848004** Collected: 05/31/18 10:50 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 00:13	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 00:13	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 00:13	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 00:13	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 00:13	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 00:13	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 00:13	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 00:13	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 00:13	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 00:13	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 00:13	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 00:13	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:13	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:13	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 00:13	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 00:13	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 00:13	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 00:13	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 00:13	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 00:13	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 00:13	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:13	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:13	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:13	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:13	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:13	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:13	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:13	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:13	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:13	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 00:13	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 00:13	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 00:13	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 00:13	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 00:13	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 00:13	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 00:13	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 00:13	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 00:13	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 00:13	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:13	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:13	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 00:13	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-31D **Lab ID: 92386848004** Collected: 05/31/18 10:50 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 00:13	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:13	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 00:13	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 00:13	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 00:13	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 00:13	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 00:13	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 00:13	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 00:13	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 00:13	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 00:13	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 00:13	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	103	%	70-130	1		06/03/18 00:13	460-00-4	
1,2-Dichloroethane-d4 (S)	74	%	70-130	1		06/03/18 00:13	17060-07-0	
Toluene-d8 (S)	118	%	70-130	1		06/03/18 00:13	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 19:42	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 19:42	17060-07-0	
Toluene-d8 (S)	117	%	50-150	1		06/04/18 19:42	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-34D **Lab ID: 92386848005** Collected: 05/31/18 10:35 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/06/18 04:14	67-64-1	
Benzene	ND	ug/L	1.0	1		06/06/18 04:14	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/06/18 04:14	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/06/18 04:14	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/06/18 04:14	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/06/18 04:14	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/06/18 04:14	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/06/18 04:14	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/06/18 04:14	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/06/18 04:14	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/06/18 04:14	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/06/18 04:14	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 04:14	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 04:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/06/18 04:14	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/06/18 04:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/06/18 04:14	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/06/18 04:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/06/18 04:14	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/06/18 04:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/06/18 04:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:14	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:14	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:14	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:14	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/06/18 04:14	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/06/18 04:14	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/06/18 04:14	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/06/18 04:14	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/06/18 04:14	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/06/18 04:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/06/18 04:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/06/18 04:14	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/06/18 04:14	91-20-3	
Styrene	ND	ug/L	1.0	1		06/06/18 04:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 04:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 04:14	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/06/18 04:14	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-34D **Lab ID: 92386848005** Collected: 05/31/18 10:35 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/06/18 04:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/06/18 04:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/06/18 04:14	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/06/18 04:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/06/18 04:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/06/18 04:14	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/06/18 04:14	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/06/18 04:14	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/06/18 04:14	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/06/18 04:14	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/06/18 04:14	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		06/06/18 04:14	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	70-130	1		06/06/18 04:14	17060-07-0	
Toluene-d8 (S)	113	%	70-130	1		06/06/18 04:14	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 20:02	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	120	%	50-150	1		06/04/18 20:02	17060-07-0	
Toluene-d8 (S)	116	%	50-150	1		06/04/18 20:02	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-35D **Lab ID: 92386848006** Collected: 05/31/18 10:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 00:47	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 00:47	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 00:47	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 00:47	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 00:47	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 00:47	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 00:47	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 00:47	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 00:47	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 00:47	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 00:47	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 00:47	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:47	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:47	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 00:47	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 00:47	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 00:47	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 00:47	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 00:47	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 00:47	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 00:47	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:47	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:47	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:47	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:47	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:47	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:47	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 00:47	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 00:47	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 00:47	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 00:47	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 00:47	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 00:47	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 00:47	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 00:47	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 00:47	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 00:47	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:47	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:47	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 00:47	127-18-4	

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(704)875-9092

ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-35D **Lab ID: 92386848006** Collected: 05/31/18 10:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 00:47	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:47	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 00:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 00:47	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 00:47	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 00:47	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 00:47	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 00:47	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 00:47	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 00:47	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 00:47	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 00:47	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	107	%	70-130	1		06/03/18 00:47	460-00-4	
1,2-Dichloroethane-d4 (S)	75	%	70-130	1		06/03/18 00:47	17060-07-0	
Toluene-d8 (S)	122	%	70-130	1		06/03/18 00:47	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 20:21	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	120	%	50-150	1		06/04/18 20:21	17060-07-0	
Toluene-d8 (S)	115	%	50-150	1		06/04/18 20:21	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-29D **Lab ID: 92386848007** Collected: 05/31/18 09:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/07/18 14:50	67-64-1	
Benzene	ND	ug/L	1.0	1		06/07/18 14:50	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/07/18 14:50	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/07/18 14:50	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/07/18 14:50	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/07/18 14:50	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/07/18 14:50	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/07/18 14:50	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/07/18 14:50	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/07/18 14:50	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/07/18 14:50	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/07/18 14:50	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/07/18 14:50	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/07/18 14:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/07/18 14:50	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/07/18 14:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/07/18 14:50	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/07/18 14:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/07/18 14:50	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/07/18 14:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/07/18 14:50	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/07/18 14:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/07/18 14:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/07/18 14:50	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/07/18 14:50	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/07/18 14:50	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/07/18 14:50	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/07/18 14:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/07/18 14:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/07/18 14:50	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/07/18 14:50	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/07/18 14:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/07/18 14:50	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/07/18 14:50	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/07/18 14:50	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/07/18 14:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/07/18 14:50	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/07/18 14:50	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/07/18 14:50	91-20-3	
Styrene	ND	ug/L	1.0	1		06/07/18 14:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/07/18 14:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/07/18 14:50	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/07/18 14:50	127-18-4	

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-29D **Lab ID: 92386848007** Collected: 05/31/18 09:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/07/18 14:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/07/18 14:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/07/18 14:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/07/18 14:50	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/07/18 14:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/07/18 14:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/07/18 14:50	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/07/18 14:50	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/07/18 14:50	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/07/18 14:50	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/07/18 14:50	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/07/18 14:50	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		06/07/18 14:50	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		06/07/18 14:50	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		06/07/18 14:50	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 20:41	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	123	%	50-150	1		06/04/18 20:41	17060-07-0	
Toluene-d8 (S)	116	%	50-150	1		06/04/18 20:41	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-30D-413 **Lab ID: 92386848008** Collected: 05/31/18 09:05 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/06/18 04:31	67-64-1	
Benzene	ND	ug/L	1.0	1		06/06/18 04:31	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/06/18 04:31	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/06/18 04:31	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/06/18 04:31	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/06/18 04:31	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/06/18 04:31	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/06/18 04:31	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/06/18 04:31	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/06/18 04:31	75-00-3	
Chloroform	**1.6**	ug/L	1.0	1		06/06/18 04:31	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/06/18 04:31	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 04:31	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/06/18 04:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/06/18 04:31	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/06/18 04:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/06/18 04:31	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/06/18 04:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/06/18 04:31	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/06/18 04:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/06/18 04:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/06/18 04:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:31	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:31	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/06/18 04:31	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/06/18 04:31	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/06/18 04:31	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/06/18 04:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/06/18 04:31	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/06/18 04:31	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/06/18 04:31	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/06/18 04:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/06/18 04:31	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/06/18 04:31	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/06/18 04:31	91-20-3	
Styrene	ND	ug/L	1.0	1		06/06/18 04:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 04:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/06/18 04:31	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/06/18 04:31	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-30D-413 **Lab ID: 92386848008** Collected: 05/31/18 09:05 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/06/18 04:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/06/18 04:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/06/18 04:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/06/18 04:31	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/06/18 04:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/06/18 04:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/06/18 04:31	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/06/18 04:31	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/06/18 04:31	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/06/18 04:31	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/06/18 04:31	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/06/18 04:31	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		06/06/18 04:31	460-00-4	
1,2-Dichloroethane-d4 (S)	86	%	70-130	1		06/06/18 04:31	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		06/06/18 04:31	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 21:00	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	116	%	50-150	1		06/04/18 21:00	17060-07-0	
Toluene-d8 (S)	114	%	50-150	1		06/04/18 21:00	2037-26-5	

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(704)875-9092

ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-30D-273 **Lab ID: 92386848009** Collected: 05/31/18 08:55 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 01:04	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 01:04	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 01:04	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 01:04	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 01:04	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 01:04	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 01:04	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 01:04	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 01:04	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 01:04	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 01:04	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 01:04	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:04	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 01:04	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 01:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 01:04	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 01:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 01:04	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:04	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:04	107-06-2	
1,1-Dichloroethene	**27.4**	ug/L	1.0	1		06/03/18 01:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:04	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:04	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:04	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:04	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:04	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 01:04	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 01:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 01:04	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 01:04	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 01:04	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 01:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 01:04	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 01:04	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 01:04	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 01:04	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:04	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 01:04	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-30D-273 **Lab ID: 92386848009** Collected: 05/31/18 08:55 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 01:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:04	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 01:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 01:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 01:04	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 01:04	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 01:04	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 01:04	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 01:04	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 01:04	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		06/03/18 01:04	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%	70-130	1		06/03/18 01:04	17060-07-0	
Toluene-d8 (S)	120	%	70-130	1		06/03/18 01:04	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**16.4**	ug/L	2.0	1		06/04/18 21:19	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	121	%	50-150	1		06/04/18 21:19	17060-07-0	
Toluene-d8 (S)	117	%	50-150	1		06/04/18 21:19	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-32D **Lab ID: 92386848010** Collected: 05/31/18 08:40 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 01:21	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 01:21	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 01:21	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 01:21	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 01:21	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 01:21	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 01:21	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 01:21	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 01:21	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 01:21	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 01:21	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 01:21	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:21	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 01:21	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 01:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 01:21	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 01:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 01:21	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:21	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:21	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:21	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:21	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:21	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:21	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:21	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:21	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:21	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 01:21	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 01:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 01:21	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 01:21	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 01:21	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 01:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 01:21	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 01:21	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 01:21	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 01:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:21	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 01:21	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-32D **Lab ID: 92386848010** Collected: 05/31/18 08:40 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 01:21	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:21	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:21	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 01:21	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 01:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 01:21	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 01:21	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 01:21	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 01:21	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 01:21	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 01:21	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	104	%	70-130	1		06/03/18 01:21	460-00-4	
1,2-Dichloroethane-d4 (S)	74	%	70-130	1		06/03/18 01:21	17060-07-0	
Toluene-d8 (S)	124	%	70-130	1		06/03/18 01:21	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 21:39	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 21:39	17060-07-0	
Toluene-d8 (S)	115	%	50-150	1		06/04/18 21:39	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-28D **Lab ID: 92386848011** Collected: 05/30/18 16:30 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 03:20	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 03:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 03:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 03:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 03:20	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 03:20	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 03:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 03:20	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 03:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 03:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 03:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 03:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 03:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 03:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 03:20	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 03:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 03:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 03:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 03:20	107-06-2	
1,1-Dichloroethene	**6.1**	ug/L	1.0	1		06/03/18 03:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:20	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 03:20	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 03:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 03:20	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 03:20	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 03:20	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 03:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 03:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 03:20	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 03:20	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 03:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 03:20	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-28D **Lab ID: 92386848011** Collected: 05/30/18 16:30 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 03:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 03:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 03:20	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 03:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 03:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 03:20	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 03:20	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 03:20	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 03:20	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 03:20	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 03:20	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	104	%	70-130	1		06/03/18 03:20	460-00-4	
1,2-Dichloroethane-d4 (S)	76	%	70-130	1		06/03/18 03:20	17060-07-0	
Toluene-d8 (S)	119	%	70-130	1		06/03/18 03:20	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**2.4**	ug/L	2.0	1		06/04/18 21:58	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 21:58	17060-07-0	
Toluene-d8 (S)	117	%	50-150	1		06/04/18 21:58	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-28 **Lab ID: 92386848012** Collected: 05/30/18 16:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 03:03	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 03:03	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 03:03	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 03:03	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 03:03	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 03:03	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 03:03	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 03:03	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 03:03	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 03:03	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 03:03	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 03:03	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:03	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:03	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 03:03	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 03:03	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 03:03	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 03:03	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 03:03	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 03:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 03:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:03	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:03	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:03	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:03	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:03	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:03	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 03:03	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 03:03	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 03:03	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 03:03	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 03:03	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 03:03	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 03:03	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 03:03	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 03:03	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 03:03	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:03	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:03	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 03:03	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-28 **Lab ID: 92386848012** Collected: 05/30/18 16:20 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 03:03	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:03	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 03:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 03:03	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 03:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 03:03	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 03:03	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 03:03	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 03:03	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 03:03	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 03:03	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 03:03	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	103	%	70-130	1		06/03/18 03:03	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%	70-130	1		06/03/18 03:03	17060-07-0	
Toluene-d8 (S)	119	%	70-130	1		06/03/18 03:03	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 22:18	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	121	%	50-150	1		06/04/18 22:18	17060-07-0	
Toluene-d8 (S)	116	%	50-150	1		06/04/18 22:18	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-36D **Lab ID: 92386848013** Collected: 05/30/18 16:10 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 01:55	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 01:55	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 01:55	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 01:55	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 01:55	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 01:55	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 01:55	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 01:55	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 01:55	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 01:55	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 01:55	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 01:55	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:55	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 01:55	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 01:55	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 01:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 01:55	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 01:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 01:55	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 01:55	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:55	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 01:55	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:55	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:55	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 01:55	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 01:55	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 01:55	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 01:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 01:55	87-68-3	L2,M0
2-Hexanone	ND	ug/L	5.0	1		06/03/18 01:55	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 01:55	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 01:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 01:55	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 01:55	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 01:55	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 01:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 01:55	79-34-5	
Tetrachloroethene	**2.3**	ug/L	1.0	1		06/03/18 01:55	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-36D **Lab ID: 92386848013** Collected: 05/30/18 16:10 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 01:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 01:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 01:55	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 01:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 01:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 01:55	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 01:55	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 01:55	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 01:55	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 01:55	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 01:55	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	107	%	70-130	1		06/03/18 01:55	460-00-4	
1,2-Dichloroethane-d4 (S)	83	%	70-130	1		06/03/18 01:55	17060-07-0	
Toluene-d8 (S)	121	%	70-130	1		06/03/18 01:55	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 22:37	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	116	%	50-150	1		06/04/18 22:37	17060-07-0	
Toluene-d8 (S)	113	%	50-150	1		06/04/18 22:37	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: DUP 053018B **Lab ID: 92386848014** Collected: 05/30/18 10:00 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 03:37	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 03:37	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 03:37	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 03:37	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 03:37	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 03:37	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 03:37	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 03:37	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 03:37	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 03:37	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 03:37	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 03:37	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:37	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 03:37	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 03:37	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 03:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 03:37	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 03:37	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 03:37	75-71-8	
1,1-Dichloroethane	**11.5**	ug/L	1.0	1		06/03/18 03:37	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 03:37	107-06-2	
1,1-Dichloroethene	**54.6**	ug/L	1.0	1		06/03/18 03:37	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 03:37	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:37	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:37	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 03:37	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:37	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 03:37	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 03:37	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 03:37	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 03:37	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 03:37	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 03:37	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 03:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 03:37	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 03:37	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 03:37	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 03:37	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:37	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 03:37	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 03:37	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: DUP 053018B **Lab ID: 92386848014** Collected: 05/30/18 10:00 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 03:37	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 03:37	120-82-1	
1,1,1-Trichloroethane	**6.6**	ug/L	1.0	1		06/03/18 03:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 03:37	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 03:37	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 03:37	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 03:37	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 03:37	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 03:37	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 03:37	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 03:37	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 03:37	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		06/03/18 03:37	460-00-4	
1,2-Dichloroethane-d4 (S)	77	%	70-130	1		06/03/18 03:37	17060-07-0	
Toluene-d8 (S)	121	%	70-130	1		06/03/18 03:37	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**51.0**	ug/L	2.0	1		06/04/18 22:56	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 22:56	17060-07-0	
Toluene-d8 (S)	115	%	50-150	1		06/04/18 22:56	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25D-190 **Lab ID: 92386848015** Collected: 05/30/18 15:40 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 00:30	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 00:30	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 00:30	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 00:30	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 00:30	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 00:30	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 00:30	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 00:30	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 00:30	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 00:30	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 00:30	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 00:30	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:30	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 00:30	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 00:30	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 00:30	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 00:30	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 00:30	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 00:30	75-71-8	
1,1-Dichloroethane	**10.8**	ug/L	1.0	1		06/03/18 00:30	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 00:30	107-06-2	
1,1-Dichloroethene	**58.3**	ug/L	1.0	1		06/03/18 00:30	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:30	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 00:30	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:30	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:30	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 00:30	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:30	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:30	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 00:30	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 00:30	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 00:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 00:30	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 00:30	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 00:30	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 00:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 00:30	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 00:30	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 00:30	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 00:30	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:30	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 00:30	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 00:30	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25D-190 **Lab ID: 92386848015** Collected: 05/30/18 15:40 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 00:30	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 00:30	120-82-1	
1,1,1-Trichloroethane	**7.2**	ug/L	1.0	1		06/03/18 00:30	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 00:30	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 00:30	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 00:30	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 00:30	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 00:30	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 00:30	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 00:30	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 00:30	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 00:30	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	103	%	70-130	1		06/03/18 00:30	460-00-4	
1,2-Dichloroethane-d4 (S)	84	%	70-130	1		06/03/18 00:30	17060-07-0	
Toluene-d8 (S)	116	%	70-130	1		06/03/18 00:30	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**50.8**	ug/L	2.0	1		06/04/18 23:16	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	119	%	50-150	1		06/04/18 23:16	17060-07-0	
Toluene-d8 (S)	113	%	50-150	1		06/04/18 23:16	2037-26-5	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25D-130 **Lab ID: 92386848016** Collected: 05/30/18 15:25 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/07/18 15:06	67-64-1	
Benzene	ND	ug/L	1.0	1		06/07/18 15:06	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/07/18 15:06	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/07/18 15:06	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/07/18 15:06	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/07/18 15:06	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/07/18 15:06	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/07/18 15:06	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/07/18 15:06	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/07/18 15:06	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/07/18 15:06	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/07/18 15:06	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/07/18 15:06	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/07/18 15:06	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/07/18 15:06	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/07/18 15:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/07/18 15:06	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/07/18 15:06	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/07/18 15:06	75-71-8	
1,1-Dichloroethane	**5.0**	ug/L	1.0	1		06/07/18 15:06	75-34-3	
1,2-Dichloroethane	**1.4**	ug/L	1.0	1		06/07/18 15:06	107-06-2	
1,1-Dichloroethene	**144**	ug/L	1.0	1		06/07/18 15:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/07/18 15:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/07/18 15:06	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/07/18 15:06	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/07/18 15:06	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/07/18 15:06	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/07/18 15:06	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/07/18 15:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/07/18 15:06	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/07/18 15:06	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/07/18 15:06	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/07/18 15:06	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/07/18 15:06	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/07/18 15:06	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/07/18 15:06	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/07/18 15:06	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/07/18 15:06	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/07/18 15:06	91-20-3	
Styrene	ND	ug/L	1.0	1		06/07/18 15:06	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/07/18 15:06	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/07/18 15:06	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/07/18 15:06	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25D-130 **Lab ID: 92386848016** Collected: 05/30/18 15:25 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/07/18 15:06	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/07/18 15:06	120-82-1	
1,1,1-Trichloroethane	**5.3**	ug/L	1.0	1		06/07/18 15:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/07/18 15:06	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/07/18 15:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/07/18 15:06	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/07/18 15:06	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/07/18 15:06	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/07/18 15:06	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/07/18 15:06	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/07/18 15:06	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/07/18 15:06	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		06/07/18 15:06	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		06/07/18 15:06	17060-07-0	
Toluene-d8 (S)	105	%	70-130	1		06/07/18 15:06	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	**53.9**	ug/L	2.0	1		06/04/18 23:35	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	118	%	50-150	1		06/04/18 23:35	17060-07-0	
Toluene-d8 (S)	113	%	50-150	1		06/04/18 23:35	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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(704)875-9092

ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25 **Lab ID: 92386848017** Collected: 05/30/18 15:15 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		06/03/18 02:29	67-64-1	
Benzene	ND	ug/L	1.0	1		06/03/18 02:29	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/03/18 02:29	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/03/18 02:29	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/03/18 02:29	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/03/18 02:29	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/03/18 02:29	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/03/18 02:29	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/03/18 02:29	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/03/18 02:29	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/03/18 02:29	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/03/18 02:29	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 02:29	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/03/18 02:29	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/03/18 02:29	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/03/18 02:29	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/03/18 02:29	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/03/18 02:29	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/03/18 02:29	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/03/18 02:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/03/18 02:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/03/18 02:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 02:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/03/18 02:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 02:29	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/03/18 02:29	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/03/18 02:29	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/03/18 02:29	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 02:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/03/18 02:29	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/03/18 02:29	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/03/18 02:29	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/03/18 02:29	87-68-3	L2
2-Hexanone	ND	ug/L	5.0	1		06/03/18 02:29	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/03/18 02:29	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/03/18 02:29	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/03/18 02:29	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/03/18 02:29	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/03/18 02:29	91-20-3	
Styrene	ND	ug/L	1.0	1		06/03/18 02:29	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 02:29	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/03/18 02:29	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/03/18 02:29	127-18-4	

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ANALYTICAL RESULTS

Project: Kop FLex
Pace Project No.: 92386848

Sample: MW-25 **Lab ID: 92386848017** Collected: 05/30/18 15:15 Received: 06/01/18 11:07 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/03/18 02:29	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/03/18 02:29	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/03/18 02:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/03/18 02:29	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/03/18 02:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/03/18 02:29	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/03/18 02:29	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/03/18 02:29	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/03/18 02:29	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/03/18 02:29	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/03/18 02:29	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/03/18 02:29	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	106	%	70-130	1		06/03/18 02:29	460-00-4	
1,2-Dichloroethane-d4 (S)	82	%	70-130	1		06/03/18 02:29	17060-07-0	
Toluene-d8 (S)	117	%	70-130	1		06/03/18 02:29	2037-26-5	
8260 MSV SIM	Analytical Method: EPA 8260B Mod.							
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/04/18 23:55	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	114	%	50-150	1		06/04/18 23:55	17060-07-0	
Toluene-d8 (S)	111	%	50-150	1		06/04/18 23:55	2037-26-5	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

QC Batch: 413518 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92386848002, 92386848003, 92386848004, 92386848006, 92386848009, 92386848010, 92386848011, 92386848012, 92386848013, 92386848014, 92386848015, 92386848017

METHOD BLANK: 2293248 Matrix: Water
Associated Lab Samples: 92386848002, 92386848003, 92386848004, 92386848006, 92386848009, 92386848010, 92386848011, 92386848012, 92386848013, 92386848014, 92386848015, 92386848017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,1-Dichloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,1-Dichloroethene	ug/L	ND	1.0	06/02/18 23:06	
1,1-Dichloropropene	ug/L	ND	1.0	06/02/18 23:06	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/02/18 23:06	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/02/18 23:06	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/02/18 23:06	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
1,2-Dichloroethane	ug/L	ND	1.0	06/02/18 23:06	
1,2-Dichloropropane	ug/L	ND	1.0	06/02/18 23:06	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
1,3-Dichloropropane	ug/L	ND	1.0	06/02/18 23:06	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
2,2-Dichloropropane	ug/L	ND	1.0	06/02/18 23:06	
2-Butanone (MEK)	ug/L	ND	5.0	06/02/18 23:06	
2-Chlorotoluene	ug/L	ND	1.0	06/02/18 23:06	
2-Hexanone	ug/L	ND	5.0	06/02/18 23:06	
4-Chlorotoluene	ug/L	ND	1.0	06/02/18 23:06	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/02/18 23:06	
Acetone	ug/L	ND	25.0	06/02/18 23:06	
Benzene	ug/L	ND	1.0	06/02/18 23:06	
Bromobenzene	ug/L	ND	1.0	06/02/18 23:06	
Bromochloromethane	ug/L	ND	1.0	06/02/18 23:06	
Bromodichloromethane	ug/L	ND	1.0	06/02/18 23:06	
Bromoform	ug/L	ND	1.0	06/02/18 23:06	
Bromomethane	ug/L	ND	2.0	06/02/18 23:06	
Carbon tetrachloride	ug/L	ND	1.0	06/02/18 23:06	
Chlorobenzene	ug/L	ND	1.0	06/02/18 23:06	
Chloroethane	ug/L	ND	1.0	06/02/18 23:06	
Chloroform	ug/L	ND	1.0	06/02/18 23:06	
Chloromethane	ug/L	ND	1.0	06/02/18 23:06	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/02/18 23:06	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/02/18 23:06	
Dibromochloromethane	ug/L	ND	1.0	06/02/18 23:06	
Dibromomethane	ug/L	ND	1.0	06/02/18 23:06	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

METHOD BLANK: 2293248 Matrix: Water

Associated Lab Samples: 92386848002, 92386848003, 92386848004, 92386848006, 92386848009, 92386848010, 92386848011, 92386848012, 92386848013, 92386848014, 92386848015, 92386848017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/L	ND	1.0	06/02/18 23:06	
Diisopropyl ether	ug/L	ND	1.0	06/02/18 23:06	
Ethylbenzene	ug/L	ND	1.0	06/02/18 23:06	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/02/18 23:06	
m&p-Xylene	ug/L	ND	2.0	06/02/18 23:06	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/02/18 23:06	
Methylene Chloride	ug/L	ND	2.0	06/02/18 23:06	
Naphthalene	ug/L	ND	1.0	06/02/18 23:06	
o-Xylene	ug/L	ND	1.0	06/02/18 23:06	
p-Isopropyltoluene	ug/L	ND	1.0	06/02/18 23:06	
Styrene	ug/L	ND	1.0	06/02/18 23:06	
Tetrachloroethene	ug/L	ND	1.0	06/02/18 23:06	
Toluene	ug/L	ND	1.0	06/02/18 23:06	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/02/18 23:06	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/02/18 23:06	
Trichloroethene	ug/L	ND	1.0	06/02/18 23:06	
Trichlorofluoromethane	ug/L	ND	1.0	06/02/18 23:06	
Vinyl acetate	ug/L	ND	2.0	06/02/18 23:06	
Vinyl chloride	ug/L	ND	1.0	06/02/18 23:06	
Xylene (Total)	ug/L	ND	1.0	06/02/18 23:06	
1,2-Dichloroethane-d4 (S)	%	80	70-130	06/02/18 23:06	
4-Bromofluorobenzene (S)	%	100	70-130	06/02/18 23:06	
Toluene-d8 (S)	%	117	70-130	06/02/18 23:06	

LABORATORY CONTROL SAMPLE: 2293249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	46.1	92	80-125	
1,1,1-Trichloroethane	ug/L	50	53.9	108	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	42.6	85	79-124	
1,1,2-Trichloroethane	ug/L	50	48.3	97	85-125	
1,1-Dichloroethane	ug/L	50	44.9	90	73-126	
1,1-Dichloroethene	ug/L	50	51.6	103	66-135	
1,1-Dichloropropene	ug/L	50	48.1	96	74-135	
1,2,3-Trichlorobenzene	ug/L	50	43.1	86	73-135	
1,2,3-Trichloropropane	ug/L	50	43.9	88	75-130	
1,2,4-Trichlorobenzene	ug/L	50	42.6	85	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	43.3	87	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	48.3	97	83-124	
1,2-Dichlorobenzene	ug/L	50	46.6	93	80-133	
1,2-Dichloroethane	ug/L	50	51.4	103	67-128	
1,2-Dichloropropane	ug/L	50	51.3	103	75-132	
1,3-Dichlorobenzene	ug/L	50	45.6	91	77-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

LABORATORY CONTROL SAMPLE: 2293249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichloropropane	ug/L	50	48.5	97	76-131	
1,4-Dichlorobenzene	ug/L	50	45.0	90	78-130	
2,2-Dichloropropane	ug/L	50	46.4	93	40-160	
2-Butanone (MEK)	ug/L	100	76.4	76	61-144	
2-Chlorotoluene	ug/L	50	45.1	90	74-132	
2-Hexanone	ug/L	100	75.5	75	68-143	
4-Chlorotoluene	ug/L	50	45.0	90	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	83.8	84	72-135	
Acetone	ug/L	100	92.9	93	48-146	
Benzene	ug/L	50	50.0	100	80-125	
Bromobenzene	ug/L	50	46.0	92	75-125	
Bromochloromethane	ug/L	50	52.7	105	71-125	
Bromodichloromethane	ug/L	50	48.5	97	78-124	
Bromoform	ug/L	50	40.9	82	71-128	
Bromomethane	ug/L	50	35.3	71	40-160	
Carbon tetrachloride	ug/L	50	50.0	100	69-131	
Chlorobenzene	ug/L	50	45.5	91	81-122	
Chloroethane	ug/L	50	40.6	81	39-148	
Chloroform	ug/L	50	48.8	98	73-127	
Chloromethane	ug/L	50	42.0	84	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.2	94	74-124	
cis-1,3-Dichloropropene	ug/L	50	49.6	99	72-132	
Dibromochloromethane	ug/L	50	45.4	91	78-125	
Dibromomethane	ug/L	50	49.0	98	82-120	
Dichlorodifluoromethane	ug/L	50	51.5	103	34-157	
Diisopropyl ether	ug/L	50	42.9	86	69-135	
Ethylbenzene	ug/L	50	45.2	90	79-121	
Hexachloro-1,3-butadiene	ug/L	50	35.6	71	72-131	L2
m&p-Xylene	ug/L	100	91.6	92	81-124	
Methyl-tert-butyl ether	ug/L	50	43.3	87	74-131	
Methylene Chloride	ug/L	50	50.4	101	64-133	
Naphthalene	ug/L	50	45.2	90	73-133	
o-Xylene	ug/L	50	46.3	93	79-131	
p-Isopropyltoluene	ug/L	50	43.2	86	80-131	
Styrene	ug/L	50	46.1	92	84-126	
Tetrachloroethene	ug/L	50	43.4	87	78-122	
Toluene	ug/L	50	49.5	99	80-121	
trans-1,2-Dichloroethene	ug/L	50	47.8	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	48.1	96	69-141	
Trichloroethene	ug/L	50	49.3	99	78-122	
Trichlorofluoromethane	ug/L	50	49.2	98	53-137	
Vinyl acetate	ug/L	100	91.7	92	40-160	
Vinyl chloride	ug/L	50	47.7	95	50-150	
Xylene (Total)	ug/L	150	138	92	81-126	
1,2-Dichloroethane-d4 (S)	%			109	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			101	70-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2293251

Parameter	Units	92386848013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	17.8	89	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	21.4	107	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	18.2	91	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	18.6	93	70-130	
1,1-Dichloroethane	ug/L	ND	20	19.5	98	70-130	
1,1-Dichloroethene	ug/L	ND	20	24.1	121	70-166	
1,1-Dichloropropene	ug/L	ND	20	19.9	100	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	17.0	85	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	18.5	92	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	17.3	87	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.3	91	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	18.2	91	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	19.4	97	70-130	
1,2-Dichloroethane	ug/L	ND	20	19.8	99	70-130	
1,2-Dichloropropane	ug/L	ND	20	20.5	102	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	19.4	97	70-130	
1,3-Dichloropropane	ug/L	ND	20	18.1	90	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	19.2	96	70-130	
2,2-Dichloropropane	ug/L	ND	20	21.1	106	70-130	
2-Butanone (MEK)	ug/L	ND	40	33.9	85	70-130	
2-Chlorotoluene	ug/L	ND	20	19.6	98	70-130	
2-Hexanone	ug/L	ND	40	35.2	88	70-130	
4-Chlorotoluene	ug/L	ND	20	19.2	96	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	37.6	94	70-130	
Acetone	ug/L	ND	40	43.4	109	70-130	
Benzene	ug/L	ND	20	20.9	104	70-148	
Bromobenzene	ug/L	ND	20	19.8	99	70-130	
Bromochloromethane	ug/L	ND	20	21.2	106	70-130	
Bromodichloromethane	ug/L	ND	20	20.5	102	70-130	
Bromoform	ug/L	ND	20	16.1	81	70-130	
Bromomethane	ug/L	ND	20	16.2	81	70-130	
Carbon tetrachloride	ug/L	ND	20	21.1	105	70-130	
Chlorobenzene	ug/L	ND	20	20.2	101	70-146	
Chloroethane	ug/L	ND	20	20.2	101	70-130	
Chloroform	ug/L	ND	20	21.3	102	70-130	
Chloromethane	ug/L	ND	20	18.4	92	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	20.7	103	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	19.6	98	70-130	
Dibromochloromethane	ug/L	ND	20	17.5	88	70-130	
Dibromomethane	ug/L	ND	20	20.1	101	70-130	
Dichlorodifluoromethane	ug/L	ND	20	23.5	117	70-130	
Diisopropyl ether	ug/L	ND	20	16.8	84	70-130	
Ethylbenzene	ug/L	ND	20	20.7	104	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	13.8	69	70-130	M0
m&p-Xylene	ug/L	ND	40	42.2	105	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	16.8	84	70-130	
Methylene Chloride	ug/L	ND	20	19.2	96	70-130	

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(704)875-9092

QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2293251

Parameter	Units	92386848013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	18.1	91	70-130	
o-Xylene	ug/L	ND	20	20.4	102	70-130	
p-Isopropyltoluene	ug/L	ND	20	17.6	88	70-130	
Styrene	ug/L	ND	20	20.4	102	70-130	
Tetrachloroethene	ug/L	2.3	20	21.4	96	70-130	
Toluene	ug/L	ND	20	22.4	112	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	20.0	100	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	18.1	90	70-130	
Trichloroethene	ug/L	ND	20	20.5	103	69-151	
Trichlorofluoromethane	ug/L	ND	20	23.8	119	70-130	
Vinyl acetate	ug/L	ND	40	36.1	90	70-130	
Vinyl chloride	ug/L	ND	20	22.2	111	70-130	
Xylene (Total)	ug/L	ND	60	62.5	104	70-130	
1,2-Dichloroethane-d4 (S)	%				104	70-130	
4-Bromofluorobenzene (S)	%				105	70-130	
Toluene-d8 (S)	%				104	70-130	

SAMPLE DUPLICATE: 2293250

Parameter	Units	92386883003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	11.5	10.4	10	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	.34J		30	
1,1-Dichloroethane	ug/L	27.1	24.6	10	30	
1,1-Dichloroethene	ug/L	188	157	18	30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	1.8	1.7	3	30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

SAMPLE DUPLICATE: 2293250

Parameter	Units	92386883003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	.25J		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	3.4	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	.6J		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	88	84	5		
4-Bromofluorobenzene (S)	%	102	102	0		
Toluene-d8 (S)	%	122	114	7		

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

QC Batch: 413923 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92386848001, 92386848005, 92386848008

METHOD BLANK: 2295305 Matrix: Water
Associated Lab Samples: 92386848001, 92386848005, 92386848008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,1-Dichloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,1-Dichloroethene	ug/L	ND	1.0	06/06/18 03:40	
1,1-Dichloropropene	ug/L	ND	1.0	06/06/18 03:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/06/18 03:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/06/18 03:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/06/18 03:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
1,2-Dichloroethane	ug/L	ND	1.0	06/06/18 03:40	
1,2-Dichloropropane	ug/L	ND	1.0	06/06/18 03:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
1,3-Dichloropropane	ug/L	ND	1.0	06/06/18 03:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
2,2-Dichloropropane	ug/L	ND	1.0	06/06/18 03:40	
2-Butanone (MEK)	ug/L	ND	5.0	06/06/18 03:40	
2-Chlorotoluene	ug/L	ND	1.0	06/06/18 03:40	
2-Hexanone	ug/L	ND	5.0	06/06/18 03:40	
4-Chlorotoluene	ug/L	ND	1.0	06/06/18 03:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/06/18 03:40	
Acetone	ug/L	ND	25.0	06/06/18 03:40	
Benzene	ug/L	ND	1.0	06/06/18 03:40	
Bromobenzene	ug/L	ND	1.0	06/06/18 03:40	
Bromochloromethane	ug/L	ND	1.0	06/06/18 03:40	
Bromodichloromethane	ug/L	ND	1.0	06/06/18 03:40	
Bromoform	ug/L	ND	1.0	06/06/18 03:40	
Bromomethane	ug/L	ND	2.0	06/06/18 03:40	
Carbon tetrachloride	ug/L	ND	1.0	06/06/18 03:40	
Chlorobenzene	ug/L	ND	1.0	06/06/18 03:40	
Chloroethane	ug/L	ND	1.0	06/06/18 03:40	
Chloroform	ug/L	ND	1.0	06/06/18 03:40	
Chloromethane	ug/L	ND	1.0	06/06/18 03:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/06/18 03:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/06/18 03:40	
Dibromochloromethane	ug/L	ND	1.0	06/06/18 03:40	
Dibromomethane	ug/L	ND	1.0	06/06/18 03:40	
Dichlorodifluoromethane	ug/L	ND	1.0	06/06/18 03:40	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

METHOD BLANK: 2295305 Matrix: Water
Associated Lab Samples: 92386848001, 92386848005, 92386848008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/06/18 03:40	
Ethylbenzene	ug/L	ND	1.0	06/06/18 03:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/06/18 03:40	
m&p-Xylene	ug/L	ND	2.0	06/06/18 03:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/06/18 03:40	
Methylene Chloride	ug/L	ND	2.0	06/06/18 03:40	
Naphthalene	ug/L	ND	1.0	06/06/18 03:40	
o-Xylene	ug/L	ND	1.0	06/06/18 03:40	
p-Isopropyltoluene	ug/L	ND	1.0	06/06/18 03:40	
Styrene	ug/L	ND	1.0	06/06/18 03:40	
Tetrachloroethene	ug/L	ND	1.0	06/06/18 03:40	
Toluene	ug/L	ND	1.0	06/06/18 03:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/06/18 03:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/06/18 03:40	
Trichloroethene	ug/L	ND	1.0	06/06/18 03:40	
Trichlorofluoromethane	ug/L	ND	1.0	06/06/18 03:40	
Vinyl acetate	ug/L	ND	2.0	06/06/18 03:40	
Vinyl chloride	ug/L	ND	1.0	06/06/18 03:40	
Xylene (Total)	ug/L	ND	1.0	06/06/18 03:40	
1,2-Dichloroethane-d4 (S)	%	90	70-130	06/06/18 03:40	
4-Bromofluorobenzene (S)	%	104	70-130	06/06/18 03:40	
Toluene-d8 (S)	%	114	70-130	06/06/18 03:40	

LABORATORY CONTROL SAMPLE: 2295306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.6	95	80-125	
1,1,1-Trichloroethane	ug/L	50	52.8	106	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	46.1	92	79-124	
1,1,2-Trichloroethane	ug/L	50	48.1	96	85-125	
1,1-Dichloroethane	ug/L	50	46.1	92	73-126	
1,1-Dichloroethene	ug/L	50	51.5	103	66-135	
1,1-Dichloropropene	ug/L	50	49.3	99	74-135	
1,2,3-Trichlorobenzene	ug/L	50	42.4	85	73-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	43.5	87	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	46.3	93	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	50.6	101	83-124	
1,2-Dichlorobenzene	ug/L	50	47.5	95	80-133	
1,2-Dichloroethane	ug/L	50	50.9	102	67-128	
1,2-Dichloropropane	ug/L	50	49.9	100	75-132	
1,3-Dichlorobenzene	ug/L	50	46.5	93	77-130	
1,3-Dichloropropane	ug/L	50	50.7	101	76-131	
1,4-Dichlorobenzene	ug/L	50	46.2	92	78-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

LABORATORY CONTROL SAMPLE: 2295306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	45.3	91	40-160	
2-Butanone (MEK)	ug/L	100	93.8	94	61-144	
2-Chlorotoluene	ug/L	50	45.8	92	74-132	
2-Hexanone	ug/L	100	89.8	90	68-143	
4-Chlorotoluene	ug/L	50	46.0	92	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.5	91	72-135	
Acetone	ug/L	100	111	111	48-146	
Benzene	ug/L	50	48.8	98	80-125	
Bromobenzene	ug/L	50	46.7	93	75-125	
Bromochloromethane	ug/L	50	50.7	101	71-125	
Bromodichloromethane	ug/L	50	47.2	94	78-124	
Bromoform	ug/L	50	41.1	82	71-128	
Bromomethane	ug/L	50	32.9	66	40-160	
Carbon tetrachloride	ug/L	50	48.2	96	69-131	
Chlorobenzene	ug/L	50	46.1	92	81-122	
Chloroethane	ug/L	50	37.9	76	39-148	
Chloroform	ug/L	50	53.4	107	73-127	
Chloromethane	ug/L	50	39.7	79	44-146	
cis-1,2-Dichloroethene	ug/L	50	48.0	96	74-124	
cis-1,3-Dichloropropene	ug/L	50	48.5	97	72-132	
Dibromochloromethane	ug/L	50	47.4	95	78-125	
Dibromomethane	ug/L	50	47.6	95	82-120	
Dichlorodifluoromethane	ug/L	50	47.8	96	34-157	
Diisopropyl ether	ug/L	50	44.8	90	69-135	
Ethylbenzene	ug/L	50	46.2	92	79-121	
Hexachloro-1,3-butadiene	ug/L	50	35.3	71	72-131	L2
m&p-Xylene	ug/L	100	93.2	93	81-124	
Methyl-tert-butyl ether	ug/L	50	45.0	90	74-131	
Methylene Chloride	ug/L	50	49.9	100	64-133	
Naphthalene	ug/L	50	47.5	95	73-133	
o-Xylene	ug/L	50	47.6	95	79-131	
p-Isopropyltoluene	ug/L	50	41.5	83	80-131	
Styrene	ug/L	50	45.5	91	84-126	
Tetrachloroethene	ug/L	50	44.7	89	78-122	
Toluene	ug/L	50	49.0	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	46.1	92	71-127	
trans-1,3-Dichloropropene	ug/L	50	48.0	96	69-141	
Trichloroethene	ug/L	50	49.2	98	78-122	
Trichlorofluoromethane	ug/L	50	45.2	90	53-137	
Vinyl acetate	ug/L	100	101	101	40-160	
Vinyl chloride	ug/L	50	45.9	92	50-150	
Xylene (Total)	ug/L	150	141	94	81-126	
1,2-Dichloroethane-d4 (S)	%			109	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			98	70-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2296625

Parameter	Units	92386883023 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	19.3	97	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	22.2	111	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.5	97	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	20.5	103	70-130	
1,1-Dichloroethane	ug/L	4.3	20	23.9	98	70-130	
1,1-Dichloroethene	ug/L	ND	20	22.0	110	70-166	
1,1-Dichloropropene	ug/L	ND	20	19.7	99	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	17.8	89	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	20.4	102	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	18.1	90	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.8	94	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20.2	101	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	20.7	104	70-130	
1,2-Dichloroethane	ug/L	ND	20	21.4	107	70-130	
1,2-Dichloropropane	ug/L	ND	20	20.8	104	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	20.2	101	70-130	
1,3-Dichloropropane	ug/L	ND	20	20.5	102	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	19.9	99	70-130	
2,2-Dichloropropane	ug/L	ND	20	19.2	96	70-130	
2-Butanone (MEK)	ug/L	ND	40	40.2	101	70-130	
2-Chlorotoluene	ug/L	ND	20	21.4	107	70-130	
2-Hexanone	ug/L	ND	40	39.3	98	70-130	
4-Chlorotoluene	ug/L	ND	20	21.1	105	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	41.1	103	70-130	
Acetone	ug/L	ND	40	44.2	111	70-130	
Benzene	ug/L	ND	20	21.5	108	70-148	
Bromobenzene	ug/L	ND	20	21.1	106	70-130	
Bromochloromethane	ug/L	ND	20	22.8	114	70-130	
Bromodichloromethane	ug/L	ND	20	19.7	98	70-130	
Bromoform	ug/L	ND	20	15.8	79	70-130	
Bromomethane	ug/L	ND	20	9.4	47	70-130	M1
Carbon tetrachloride	ug/L	ND	20	20.2	101	70-130	
Chlorobenzene	ug/L	ND	20	20.6	103	70-146	
Chloroethane	ug/L	ND	20	16.3	81	70-130	
Chloroform	ug/L	ND	20	20.3	102	70-130	
Chloromethane	ug/L	ND	20	12.9	64	70-130	M1
cis-1,2-Dichloroethene	ug/L	ND	20	21.0	105	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	20.3	101	70-130	
Dibromochloromethane	ug/L	ND	20	17.5	88	70-130	
Dibromomethane	ug/L	ND	20	20.4	102	70-130	
Dichlorodifluoromethane	ug/L	ND	20	11.1	55	70-130	M1
Diisopropyl ether	ug/L	ND	20	19.7	98	70-130	
Ethylbenzene	ug/L	ND	20	20.6	103	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	15.0	75	70-130	
m&p-Xylene	ug/L	ND	40	42.1	105	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	17.9	90	70-130	
Methylene Chloride	ug/L	ND	20	19.2	96	70-130	

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(704)875-9092

QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2296625

Parameter	Units	92386883023 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	20.0	100	70-130	
o-Xylene	ug/L	ND	20	21.4	107	70-130	
p-Isopropyltoluene	ug/L	ND	20	19.3	97	70-130	
Styrene	ug/L	ND	20	20.0	100	70-130	
Tetrachloroethene	ug/L	ND	20	19.0	95	70-130	
Toluene	ug/L	ND	20	22.2	111	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	19.7	98	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	18.6	93	70-130	
Trichloroethene	ug/L	ND	20	20.2	101	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.6	103	70-130	
Vinyl acetate	ug/L	ND	40	37.8	94	70-130	
Vinyl chloride	ug/L	ND	20	16.9	84	70-130	
Xylene (Total)	ug/L	ND	60	63.4	106	70-130	
1,2-Dichloroethane-d4 (S)	%				105	70-130	
4-Bromofluorobenzene (S)	%				98	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2296624

Parameter	Units	92386883022 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	6.1	5.9	3	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	1.9	2.0	3	30	
1,1-Dichloroethene	ug/L	2.6	2.4	8	30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

SAMPLE DUPLICATE: 2296624

Parameter	Units	92386883022 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	87	97	10		
4-Bromofluorobenzene (S)	%	100	103	3		
Toluene-d8 (S)	%	116	113	3		

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

QC Batch: 414292 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92386848007, 92386848016

METHOD BLANK: 2297375 Matrix: Water
Associated Lab Samples: 92386848007, 92386848016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,1-Dichloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,1-Dichloroethene	ug/L	ND	1.0	06/07/18 13:42	
1,1-Dichloropropene	ug/L	ND	1.0	06/07/18 13:42	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/07/18 13:42	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/07/18 13:42	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/07/18 13:42	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
1,2-Dichloroethane	ug/L	ND	1.0	06/07/18 13:42	
1,2-Dichloropropane	ug/L	ND	1.0	06/07/18 13:42	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
1,3-Dichloropropane	ug/L	ND	1.0	06/07/18 13:42	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
2,2-Dichloropropane	ug/L	ND	1.0	06/07/18 13:42	
2-Butanone (MEK)	ug/L	ND	5.0	06/07/18 13:42	
2-Chlorotoluene	ug/L	ND	1.0	06/07/18 13:42	
2-Hexanone	ug/L	ND	5.0	06/07/18 13:42	
4-Chlorotoluene	ug/L	ND	1.0	06/07/18 13:42	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/07/18 13:42	
Acetone	ug/L	ND	25.0	06/07/18 13:42	
Benzene	ug/L	ND	1.0	06/07/18 13:42	
Bromobenzene	ug/L	ND	1.0	06/07/18 13:42	
Bromochloromethane	ug/L	ND	1.0	06/07/18 13:42	
Bromodichloromethane	ug/L	ND	1.0	06/07/18 13:42	
Bromoform	ug/L	ND	1.0	06/07/18 13:42	
Bromomethane	ug/L	ND	2.0	06/07/18 13:42	
Carbon tetrachloride	ug/L	ND	1.0	06/07/18 13:42	
Chlorobenzene	ug/L	ND	1.0	06/07/18 13:42	
Chloroethane	ug/L	ND	1.0	06/07/18 13:42	
Chloroform	ug/L	ND	1.0	06/07/18 13:42	
Chloromethane	ug/L	ND	1.0	06/07/18 13:42	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/07/18 13:42	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/07/18 13:42	
Dibromochloromethane	ug/L	ND	1.0	06/07/18 13:42	
Dibromomethane	ug/L	ND	1.0	06/07/18 13:42	
Dichlorodifluoromethane	ug/L	ND	1.0	06/07/18 13:42	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

METHOD BLANK: 2297375 Matrix: Water
Associated Lab Samples: 92386848007, 92386848016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/07/18 13:42	
Ethylbenzene	ug/L	ND	1.0	06/07/18 13:42	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/07/18 13:42	
m&p-Xylene	ug/L	ND	2.0	06/07/18 13:42	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/07/18 13:42	
Methylene Chloride	ug/L	ND	2.0	06/07/18 13:42	
Naphthalene	ug/L	ND	1.0	06/07/18 13:42	
o-Xylene	ug/L	ND	1.0	06/07/18 13:42	
p-Isopropyltoluene	ug/L	ND	1.0	06/07/18 13:42	
Styrene	ug/L	ND	1.0	06/07/18 13:42	
Tetrachloroethene	ug/L	ND	1.0	06/07/18 13:42	
Toluene	ug/L	ND	1.0	06/07/18 13:42	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/07/18 13:42	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/07/18 13:42	
Trichloroethene	ug/L	ND	1.0	06/07/18 13:42	
Trichlorofluoromethane	ug/L	ND	1.0	06/07/18 13:42	
Vinyl acetate	ug/L	ND	2.0	06/07/18 13:42	
Vinyl chloride	ug/L	ND	1.0	06/07/18 13:42	
Xylene (Total)	ug/L	ND	1.0	06/07/18 13:42	
1,2-Dichloroethane-d4 (S)	%	101	70-130	06/07/18 13:42	
4-Bromofluorobenzene (S)	%	103	70-130	06/07/18 13:42	
Toluene-d8 (S)	%	106	70-130	06/07/18 13:42	

LABORATORY CONTROL SAMPLE: 2297376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.4	99	80-125	
1,1,1-Trichloroethane	ug/L	50	52.4	105	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	48.6	97	79-124	
1,1,2-Trichloroethane	ug/L	50	50.7	101	85-125	
1,1-Dichloroethane	ug/L	50	45.6	91	73-126	
1,1-Dichloroethene	ug/L	50	53.7	107	66-135	
1,1-Dichloropropene	ug/L	50	54.1	108	74-135	
1,2,3-Trichlorobenzene	ug/L	50	49.9	100	73-135	
1,2,3-Trichloropropane	ug/L	50	49.4	99	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.7	97	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	44.4	89	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	50.5	101	83-124	
1,2-Dichlorobenzene	ug/L	50	50.9	102	80-133	
1,2-Dichloroethane	ug/L	50	48.4	97	67-128	
1,2-Dichloropropane	ug/L	50	50.6	101	75-132	
1,3-Dichlorobenzene	ug/L	50	49.7	99	77-130	
1,3-Dichloropropane	ug/L	50	50.9	102	76-131	
1,4-Dichlorobenzene	ug/L	50	49.8	100	78-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

LABORATORY CONTROL SAMPLE: 2297376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	47.2	94	40-160	
2-Butanone (MEK)	ug/L	100	102	102	61-144	
2-Chlorotoluene	ug/L	50	48.8	98	74-132	
2-Hexanone	ug/L	100	92.8	93	68-143	
4-Chlorotoluene	ug/L	50	48.7	97	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	95.4	95	72-135	
Acetone	ug/L	100	101	101	48-146	
Benzene	ug/L	50	50.3	101	80-125	
Bromobenzene	ug/L	50	50.8	102	75-125	
Bromochloromethane	ug/L	50	49.7	99	71-125	
Bromodichloromethane	ug/L	50	46.1	92	78-124	
Bromoform	ug/L	50	42.0	84	71-128	
Bromomethane	ug/L	50	39.0	78	40-160	
Carbon tetrachloride	ug/L	50	46.8	94	69-131	
Chlorobenzene	ug/L	50	49.5	99	81-122	
Chloroethane	ug/L	50	39.4	79	39-148	
Chloroform	ug/L	50	52.0	104	73-127	
Chloromethane	ug/L	50	42.4	85	44-146	
cis-1,2-Dichloroethene	ug/L	50	50.1	100	74-124	
cis-1,3-Dichloropropene	ug/L	50	48.7	97	72-132	
Dibromochloromethane	ug/L	50	47.1	94	78-125	
Dibromomethane	ug/L	50	49.1	98	82-120	
Dichlorodifluoromethane	ug/L	50	51.6	103	34-157	
Diisopropyl ether	ug/L	50	53.4	107	69-135	
Ethylbenzene	ug/L	50	49.1	98	79-121	
Hexachloro-1,3-butadiene	ug/L	50	48.1	96	72-131	
m&p-Xylene	ug/L	100	98.0	98	81-124	
Methyl-tert-butyl ether	ug/L	50	51.6	103	74-131	
Methylene Chloride	ug/L	50	47.2	94	64-133	
Naphthalene	ug/L	50	49.1	98	73-133	
o-Xylene	ug/L	50	49.8	100	79-131	
p-Isopropyltoluene	ug/L	50	49.4	99	80-131	
Styrene	ug/L	50	47.2	94	84-126	
Tetrachloroethene	ug/L	50	49.3	99	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	50.6	101	71-127	
trans-1,3-Dichloropropene	ug/L	50	48.4	97	69-141	
Trichloroethene	ug/L	50	52.6	105	78-122	
Trichlorofluoromethane	ug/L	50	49.0	98	53-137	
Vinyl acetate	ug/L	100	113	113	40-160	
Vinyl chloride	ug/L	50	48.1	96	50-150	
Xylene (Total)	ug/L	150	148	99	81-126	
1,2-Dichloroethane-d4 (S)	%			87	70-130	
4-Bromofluorobenzene (S)	%			96	70-130	
Toluene-d8 (S)	%			96	70-130	

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QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2297378

Parameter	Units	92387035007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	17.1	86	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	20.3	102	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	17.3	87	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	18.5	93	70-130	
1,1-Dichloroethane	ug/L	ND	20	19.0	95	70-130	
1,1-Dichloroethene	ug/L	ND	20	20.7	103	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.2	106	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	18.3	91	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	18.0	90	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	18.2	91	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	14.9	74	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	17.7	88	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	18.7	94	70-130	
1,2-Dichloroethane	ug/L	ND	20	18.7	94	70-130	
1,2-Dichloropropane	ug/L	ND	20	19.6	98	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	19.0	95	70-130	
1,3-Dichloropropane	ug/L	ND	20	18.6	93	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	18.8	94	70-130	
2,2-Dichloropropane	ug/L	ND	20	19.8	99	70-130	
2-Butanone (MEK)	ug/L	11.5	40	45.1	84	70-130	
2-Chlorotoluene	ug/L	ND	20	19.4	97	70-130	
2-Hexanone	ug/L	ND	40	33.1	79	70-130	
4-Chlorotoluene	ug/L	ND	20	18.5	92	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	34.3	84	70-130	
Acetone	ug/L	ND	40	30.3	76	70-130	
Benzene	ug/L	4.2	20	23.4	96	70-148	
Bromobenzene	ug/L	ND	20	18.8	94	70-130	
Bromochloromethane	ug/L	ND	20	19.0	95	70-130	
Bromodichloromethane	ug/L	ND	20	16.8	84	70-130	
Bromoform	ug/L	ND	20	13.6	68	70-130	M1
Bromomethane	ug/L	ND	20	13.3	67	70-130	M1
Carbon tetrachloride	ug/L	ND	20	17.5	87	70-130	
Chlorobenzene	ug/L	ND	20	18.4	92	70-146	
Chloroethane	ug/L	ND	20	17.9	90	70-130	
Chloroform	ug/L	ND	20	19.8	99	70-130	
Chloromethane	ug/L	ND	20	14.3	71	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	19.0	95	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	17.4	87	70-130	
Dibromochloromethane	ug/L	ND	20	15.9	80	70-130	
Dibromomethane	ug/L	ND	20	18.1	91	70-130	
Dichlorodifluoromethane	ug/L	ND	20	17.5	87	70-130	
Diisopropyl ether	ug/L	ND	20	18.9	94	70-130	
Ethylbenzene	ug/L	1.4	20	19.8	92	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	18.5	92	70-130	
m&p-Xylene	ug/L	ND	40	38.3	94	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	18.8	94	70-130	
Methylene Chloride	ug/L	ND	20	12.3	62	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

MATRIX SPIKE SAMPLE: 2297378

Parameter	Units	92387035007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	1.2	20	19.0	89	70-130	
o-Xylene	ug/L	ND	20	19.3	95	70-130	
p-Isopropyltoluene	ug/L	1.7	20	21.5	99	70-130	
Styrene	ug/L	ND	20	17.7	89	70-130	
Tetrachloroethene	ug/L	ND	20	18.4	92	70-130	
Toluene	ug/L	ND	20	19.3	91	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	20.4	102	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	17.4	87	70-130	
Trichloroethene	ug/L	ND	20	19.9	100	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.9	104	70-130	
Vinyl acetate	ug/L	ND	40	41.5	104	70-130	
Vinyl chloride	ug/L	ND	20	17.5	88	70-130	
Xylene (Total)	ug/L	ND	60	57.6	96	70-130	
1,2-Dichloroethane-d4 (S)	%				106	70-130	
4-Bromofluorobenzene (S)	%				97	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2297377

Parameter	Units	92387035006 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	2.8J		30	
2-Chlorotoluene	ug/L	ND	ND		30	
2-Hexanone	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	

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(704)875-9092

QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

SAMPLE DUPLICATE: 2297377

Parameter	Units	92387035006 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	5.7	5.6	2	30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	.85J		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	2.1	1.9J		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	1.7	1.5	10	30	
p-Isopropyltoluene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Toluene	ug/L	7.1	6.9	3	30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl acetate	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	3.8	1.5	87	30	
1,2-Dichloroethane-d4 (S)	%	104	107	3		
4-Bromofluorobenzene (S)	%	100	101	1		
Toluene-d8 (S)	%	99	100	1		

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(704)875-9092

QUALITY CONTROL DATA

Project: Kop FLex
Pace Project No.: 92386848

QC Batch: 413701 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92386848001, 92386848002, 92386848003, 92386848004, 92386848005, 92386848006, 92386848007, 92386848008, 92386848009, 92386848010, 92386848011, 92386848012, 92386848013, 92386848014, 92386848015, 92386848016, 92386848017

METHOD BLANK: 2294137 Matrix: Water
Associated Lab Samples: 92386848001, 92386848002, 92386848003, 92386848004, 92386848005, 92386848006, 92386848007, 92386848008, 92386848009, 92386848010, 92386848011, 92386848012, 92386848013, 92386848014, 92386848015, 92386848016, 92386848017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	06/04/18 16:46	
1,2-Dichloroethane-d4 (S)	%	114	50-150	06/04/18 16:46	
Toluene-d8 (S)	%	111	50-150	06/04/18 16:46	

LABORATORY CONTROL SAMPLE: 2294138

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	21.3	107	71-125	
1,2-Dichloroethane-d4 (S)	%			115	50-150	
Toluene-d8 (S)	%			109	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2294139 2294140

Parameter	Units	92386848002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dioxane (p-Dioxane)	ug/L	6.9	20	20	20.8	21.6	70	74	50-150	4	30	
1,2-Dichloroethane-d4 (S)	%						118	119	50-150		150	
Toluene-d8 (S)	%						115	117	50-150		150	

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(704)875-9092

QUALIFIERS

Project: Kop FLex
Pace Project No.: 92386848

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Kop FLex
Pace Project No.: 92386848

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92386848001	**TRIP BLANK**	EPA 8260	413923		
92386848002	**MW-33D-295**	EPA 8260	413518		
92386848003	**MW-33D-235**	EPA 8260	413518		
92386848004	**MW-31D**	EPA 8260	413518		
92386848005	**MW-34D**	EPA 8260	413923		
92386848006	**MW-35D**	EPA 8260	413518		
92386848007	**MW-29D**	EPA 8260	414292		
92386848008	**MW-30D-413**	EPA 8260	413923		
92386848009	**MW-30D-273**	EPA 8260	413518		
92386848010	**MW-32D**	EPA 8260	413518		
92386848011	**MW-28D**	EPA 8260	413518		
92386848012	**MW-28**	EPA 8260	413518		
92386848013	**MW-36D**	EPA 8260	413518		
92386848014	**DUP 053018B**	EPA 8260	413518		
92386848015	**MW-25D-190**	EPA 8260	413518		
92386848016	**MW-25D-130**	EPA 8260	414292		
92386848017	**MW-25**	EPA 8260	413518		
92386848001	**TRIP BLANK**	EPA 8260B Mod.	413701		
92386848002	**MW-33D-295**	EPA 8260B Mod.	413701		
92386848003	**MW-33D-235**	EPA 8260B Mod.	413701		
92386848004	**MW-31D**	EPA 8260B Mod.	413701		
92386848005	**MW-34D**	EPA 8260B Mod.	413701		
92386848006	**MW-35D**	EPA 8260B Mod.	413701		
92386848007	**MW-29D**	EPA 8260B Mod.	413701		
92386848008	**MW-30D-413**	EPA 8260B Mod.	413701		
92386848009	**MW-30D-273**	EPA 8260B Mod.	413701		
92386848010	**MW-32D**	EPA 8260B Mod.	413701		
92386848011	**MW-28D**	EPA 8260B Mod.	413701		
92386848012	**MW-28**	EPA 8260B Mod.	413701		
92386848013	**MW-36D**	EPA 8260B Mod.	413701		
92386848014	**DUP 053018B**	EPA 8260B Mod.	413701		
92386848015	**MW-25D-190**	EPA 8260B Mod.	413701		
92386848016	**MW-25D-130**	EPA 8260B Mod.	413701		
92386848017	**MW-25**	EPA 8260B Mod.	413701		

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Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: WSP Environment & Energy **Project #:**

WO# : 92386848

92386848

Courier: ☐ Commercial ☑ Fed Ex ☐ Pace ☐ UPS ☐ USPS ☐ Other:____ ☐ Client

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: VD 6-1-18

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☑ IR Gun ID: 92T040

Type of Ice: ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 2.0 – 2.3 – 2.8 **Correction Factor:** Add/Subtract (°C) +0.4

Cooler Temp Corrected (°C): 2.4 – 2.7 – 3.2

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on Ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	9. COC has sample 32 D Received Sample 32 times match
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: TE **Date:** 6/1

Project Manager SRF Review: TE **Date:** 6/1

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # **WO# : 92386848**

(1)

PM: PTE Due Date: 06/08/18

CLIENT: 92-WSP

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																4												
2																6												
3																6												
4																6												
5																6												
6																6												
7																6												
8																6												
9																6												
10																6												
11																6												
12																6												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, Incorrect preservative, out of temp, Incorrect containers.

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # WO# : 92386848

PM: PTE Due Date: 06/08/18

CLIENT: 92-WSP

(2)

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																6													
2																6													
3																													
4																													
5																													
6																													
7																													
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9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, Incorrect preservative, out of temp, Incorrect containers.

Offsite

CHAIN-OF-CUSTODY RECORD

WSP USA Office Address: Herndon, VA

Project Name: Kop flex

Project Location: Hanover, MD

Project Number & Task: 31400389

Sampler(s) Name(s): Molly Long, Chris Cresci

WSP USA Contact Name: Eric Johnson

WSP USA Contact E-mail: Eric.Johnson@wsp.com

WSP USA Contact Phone: 703 709 6500

Sampler(s) Signature(s):

No. 008044

Laboratory Name & Location: Pace, NC

Laboratory Project Manager: Taylor Ezell

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

92386848

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	VOCs (8260D)	1,4-Dioxane (8260 SIMS)	Sample Comments
Trip Blank	lab provided						X	X	001
MW-33D-295	GW	5/31/18		11	25	6	X	X	002
MW-33D-235				11	15	6	X	X	003
MW-31D				10	50	6	X	X	004
MW-34D				10	35	6	X	X	005
MW-35D				10	20	6	X	X	006
MW-29D				09	20	6	X	X	007
MW-30D-413				09	05	6	X	X	008
MW-30D-273				08	55	6	X	X	009
MW-32D				08	40	6	X	X	bottle ID: MW-32. Please report as MW-32D 010
MW-28D		5/30/18		16	30	6	X	X	011
MW-28				16	20	6	X	X	012
MW-36D				16	10	6	X	X	013
DUP053018B				10	00	6	X	X	014
MW-25D-190				15	40	6	X	X	015

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	5/31/18	1630					
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
			Jarad Pace	6-1-18	11:07	3 (2.4, 2.7, 3.2)	

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

GW = ground water

CHAIN-OF-CUSTODY RECORD

Offsite

Page 2 of 2

No. 008046 wsp

WSP USA Office Address	Herndon, VA
Project Name	Kopflex
WSP USA Contact Name	Eric Johnson
Project Location	Hanover MD
WSP USA Contact E-mail	eric.johnson @wsp.com
Project Number & Task	
WSP USA Contact Phone	703 709 6500
Sampler(s) Name(s)	
Sampler(s) Signature(s)	
Laboratory Name & Location	Pace, NC
Laboratory Project Manager	Taylor Ezell
Requested Turn-Around-Time	☒ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR 92386848

Requested Analyses & Preservatives

Sample Identification	Matrix	~~Collection Start*~~ Date	~~Time~~	~~Collection Stop*~~ ~~Date~~	~~Time~~	Number of Containers	VOCs (8260)	1,4-Dioxane (8260 SIM3)	Sample Comments
MW-25D-130	GW	5/30	16	15	25	6	X	X	016
MW-25				15	15	6	X	X	017

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	5/31/18	1630	Fedex				
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
			Laurel Pace	6-1-18	11:07	2 2.4 2.7 3.2	

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)