LiRo Engineers, Inc.
A LiRo Group Company
690 Delaware Avenue, Buffalo, NY 14209 Telephone 716.882.5476 Facsimile 716.882.9640 www.liro.com

Mr. Benjamin McPherson
New York State Department of Environmental Conservation
Division of Environmental Remediation
Region 9
270 Michigan Avenue
Buffalo, NY 14203

August 4, 2020

Re: Groundwater Sampling Report: October 1, 2019 to December 31, 2019
Western New York Workforce Training Center, 683 Delavan Avenue, Buffalo, NY
C915310 Buffalo (C), Erie County

Dear Mr. McPherson,

LiRo Engineers, Inc. (LiRo) has prepared this *Groundwater Sampling Report: October 1, 2019 to December 31, 2019*, on the behalf of 683 Northland LLC for the Western New York Workforce Training Center located at 683 Northland Avenue, Buffalo, NY (Site), see Figures 1 and 2. The installation of sampling of observations well is a required element of the Site Management Plan (SMP), dated December 2018, for the remedial program at the Site. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) Site No. C915310, which is administered by New York State Department of Environmental Conservation (NYSDEC).

SITE BACKGROUND

The Site is located in Buffalo, Erie County, New York and is identified as Section 21, Block 5, and Lots 1.1 and 1.22 on the Erie County Tax Map. The regulated land parcel is an approximately 8.5-acre area and is bounded by Northland Avenue to the north, a CSX rail line to the south, a commercial property to the east, and an industrial property to the west.

The Site consists of the following: a four-story office area on the north side along Northland Avenue; a series of connecting training/manufacturing spaces; a detached one-story shed; and, parking areas. The Site is zoned industrial in the City of Buffalo and was remediated under the BCP for commercial use. The Site is currently utilized for job training and advanced manufacturing. The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial, industrial, and residential properties.

Historically, buildings were constructed on the property between 1911 and 1983 and comprise approximately 235,000 square feet (sf) or 5.4 acres of the Site. The Site was originally developed by and used by the former Niagara Machine and Tool Co. until the 1990s. The buildings were subsequently used for storage through 2015. The northern portion of the complex (aka Phase I construction area) currently houses the Western New York Workforce Training Center which opened in 2018. Phase II construction is ongoing in the southern portion of the facility.

The property was remediated between 2017 and 2018 under the BCP and the Final Engineering Report/Certificate of Completion were issued in December 2018. The SMP, dated December 2018, specified that four on-site observation wells (one at the location of the transformer pad area oil seep [OW-1], one at the underground storage tank (UST) area oil seep [OW-2], one in the storm sewer bedding down gradient of the detention basin seep [OW-3], and one down gradient of LW-06 [OW-5]) and one off-site observation well (near the down gradient site boundary [OW-4]) will be installed, sampled, and monitored to evaluate groundwater quality and potential off-site migration of contamination.

These five observation wells were installed between September 13 and 17, 2019 in accordance with the Observation Well Work Plan, dated January 30, 2019. Observation well development was completed between

December 13 and 17, 2019 and groundwater sampling of the newly installed observation wells and select existing monitoring wells was completed between December 18 and 23, 2019. The locations of the newly installed observation wells and existing monitoring wells are shown on Figure 2.

SITE SETTING AND GEOLOGY

The majority of the Site is covered by buildings or paved with concrete or asphalt, with a ground elevation ranging from approximately 645 feet AMSL to the northeast to 644 feet AMSL to the southwest.

Ground surface is underlain by unconsolidated anthropogenic fill to a depth of 0.2 to 10.3 feet bgs. Natural soils identified below the fill consist of brown/tan silty clay extending from the bottom of the fill to the top of bedrock located 1.5 to 10.5 feet bgs. Near surface bedrock is fractured Onondaga Limestone Formation.

Bedrock Observation Well Installation

Four of the observation wells (OW-01, OW-02, OW-04 and OW-05) were completed in bedrock. A truck mounted drill rig was used to advance 6-1/4-inch inside diameter (ID) hollow stem augers (HSA) to the top of bedrock. Upon confirming competent bedrock (as defined by auger refusal), an approximately 6-inch diameter rock socket was advanced approximately 6 inches into bedrock using a roller bit. A 4-inch diameter permanent casing was then installed through the augers into the rock socket and was secured using a cement/bentonite grout mix:

The cement/bentonite grout slurry was placed via tremie method from the bottom of the borehole. The augers were then removed following grout placement and the grout was allowed to cure for a minimum of 24 hours before additional work was performed.

The bedrock portion of the borehole was then advanced using an HQ size coring bit to an approximate depth of three feet below the first water bearing fracture. The first water-bearing fracture was identified by field observations during drilling (i.e., drilling water re-circulation loss, sudden drop in tooling, etc.).

Boring and installation logs are provided in Attachment 1.

Overburden Observation Well Installation

A truck mounted drill rig was used to advance 4-1/4-inch inside diameter (ID) hollow stem augers (HSA) to the bottom of the gravel bedding (approximately 8.4 feet below grade) of the storm sewer line at location OW-03. A 5-foot long, 2-inch diameter, #20 slot well screen and schedule 40 riser was installed to the bottom of the borehole. A sandpack consisting of #2 graded sand was installed around the well screen to depth of 1 foot above the top of the screen. A 1.5-foot thick bentonite pellet seal was placed above the sandpack and the remainder of the borehole was backfilled with cement/bentonite grout.

Well Completion

Each of the newly installed observation wells was completed with a lockable watertight cap and at-grade protective cover with concrete pad. The concrete pads were sloped away from the protective cover to prevent surface water from ponding.

Observation Well Development

The newly installed observation wells were developed between December 13, 2019 and December 17, 2019. Well development was accomplished using surge and pump methods. Between 2 to 36 gallons of liquid were pumped from the wells. Well OW-3 initially contained some water but purged to dryness after 2 gallons of

liquid was removed from the well on December 13, 2019. The well did not recharge and remained dry when gauged on December 23, 2019. Well development logs are provided in Attachment 2.

Site Hydrogeology

Groundwater is typically first encountered at the Site within the bedrock. The depth to groundwater in December 2019 ranged from approximately 7 to 12 feet below grade (ftbg) across the Site. In April 2017, the groundwater flow direction was generally to the southwest. Studies at other properties in the Site area suggest that area-wide groundwater flow is generally toward the southwest. Hydraulic conductivity in the bedrock is expected to be highly variable depending on the density and interconnectedness of water-bearing bedrock fracture zones.

One overburden well was installed to a depth of 8.4 ftbg in sewer line bedding near the detention basin. The overburden well was dry in December 2019.

Site Groundwater Contamination

There are two primary environmental concerns for groundwater at the Site:

Free phase immiscible liquid (Free Product)
A mixture of oil and groundwater was observed seeping into excavations during construction of a detention basin and during remedial excavation work around former fuel oil USTs and a former transformer pad. In response to this observation, five observation wells (OW-1 through OW-5) were installed, developed, purged, gauged and sampled, during this monitoring period. No measurable oil (free phase immiscible liquid) was recorded during the installation and subsequent development, gauging, purging or sampling of the wells.

Dissolved Phase Groundwater Quality
Historical laboratory analysis of groundwater from the Site has reported volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, or polychlorinated biphenyl (PCBs) as not detected above laboratory reporting limits or at concentrations less than NYS ambient water quality standards and guidance values (AWQSGVs) for class GA waters found in the NYSDEC Division of Water Technical Operations Guidance Series (TOGS 1.1.1).

Historically four inorganic analytes (Metals), iron, magnesium, manganese and sodium were reported at concentrations greater than the AWQSGVs.

QUARTERLY MONITORING

Quarterly monitoring at the Site for the 4Q2019 period of October 1, 2019, through December 30, 2019, included quarterly water level gauging from all accessible Site wells (LW-03, LW-04, LW-05, OW-1, OW-2, OW-3, OW-4 and OW-5). Well OW-3 was found to remain dry. Wells MW-1 and LW-06 were not accessible due to ongoing construction. There was no free product observed in any of the other wells.

Table 1 presents a summary of the groundwater elevations measured during the fourth quarter of 2019. Figure 3 presents a groundwater contour map generated from the fourth quarter 2019 water levels. Groundwater flow direction (south and southeasterly) is consistent with groundwater flow directions observed during monitoring performed during the RI phase of this project.

GROUNDWATER SAMPLING

Groundwater samples were collected from the water-bearing wells and submitted for the following analysis:

1) Volatile Organic Compound (VOCs): USEPA Target Compound List (TCL) Method 8260C
2) Semi-Volatile Organic Compound (SVOCs): USEPA Target Compound List (TCL) Method 8270D
3) Total Metals: USEPA Method 3005 (preparation) USEPA Method 6010 (analysis)
    a. Mercury: USEPA Method 7470A (preparation and analysis)
4) Polychlorinated Biphenyls (PCBs): USEPA Method 8082A

All field activities and laboratory analysis were completed following the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) of the NYSDEC approved SMP dated December 2018. When well LW-05 was opened for purging, a black grease-like residue was noted on tubing that was present in the well from the prior sampling event. Groundwater purge logs for the 4Q2019 sampling event are provided in Attachment 3.

All groundwater samples were preserved in the field and submitted under chain of custody to Chemtech of Mountainside, New Jersey, a NYSDOH laboratory (#11376) for analysis. Laboratory reports are provided in Attachment 4.

The data collected for this quarterly monitoring report was subjected to a third party review, following the SMP requirements. The data usability summary report (DUSR) is provided as Attachment 5.

Where applicable, laboratory results are compared to the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) (TOGS) Ambient Water Quality Standards and Guidance Values (AWQSGVs), 1998, with addenda through 2004

For the sampling event, there were ten environmental and/or quality control samples submitted for laboratory analysis. Seven groundwater environmental samples were collected from the 7 of the 8 well locations identified in the Work Plan. Well location OW-3 was found dry at the time of sampling and consequently no groundwater sample was collected from this well. Three quality control samples were analyzed (field blank, duplicate and trip blank) Sampling was completed on December 18, 2019, December 19, 2019, December 20, 2019 and December 23, 2019. Sampling purge logs are provided in Attachment 3, Laboratory data reports are found in Attachment 4 and the DUSR is provided in Attachment 5.

All samples were collected following the procedures and methods documented in the FSP and QAPP as found in the SMP dated December 2018.

VOCs

The groundwater results reported one or more VOCs at concentrations below the NYSDEC AWQSGVs in two of seven groundwater samples (see Table 2). All VOCs were reported at concentrations less than their NYSDEC AWQSGVs. This finding is consistent with sampling conducted during the RI phase of the project

SVOCs

There were no reported SVOC detections above reporting limits in the groundwater results. This finding is consistent with sampling conducted during the RI phase of the project.

Poly-Chlorinated Biphenyl (PCB) Compounds

There were no reported PCB detections above reporting limits in the groundwater results. This finding is consistent with sampling conducted during the RI phase of the project.

Metals

The groundwater results reported one or more metals concentrations above NYSDEC AWQSGVs in all 7 groundwater samples (see Table 3). The metals with concentrations reported above AWQSGVs are Antimony, Iron, Magnesium, Manganese, Selenium and Sodium. Iron, Magnesium, Manganese and Sodium are typical constituents of natural groundwater geochemistry and are not indicative of impacts from the Site. The Antimony and Selenium detections are not consistent with previous sampling at wells LW-03, LW-04 and LW-05 which had not previously reported detections of those metals.

CONCLUSIONS

No measureable free product (oil) was reported during well purging or sampling. Well OW-2 did report observance of a slight sheen and petroleum odor during the well development on December 12, 2019, however, subsequent well purging and sampling did not duplicate these observances. Additionally the detection of low concentrations <0.85 µg/L (less than AWQSGVs) of petroleum related VOCs (Benzene, Toluene, 1,2,4 Trimethylbenzene, and Xylene) supports the conclusion that free product (oil) is not widely distributed at the Site and the IRM performed to reduce/mitigate the free product (oil) noted during construction was successful.

Concentrations of VOC, SVOCs, and PCBs in groundwater continue to be reported below AWQSGVs or not detected above laboratory reporting limits.

Concentrations of the Metals Iron, Magnesium, Manganese, and Sodium continue to be reported at concentrations greater than AWQSGVs, however these concentrations may be indicative of natural groundwater quality in bedrock. Antimony and selenium were detected for the first time in Site monitoring wells, however, based on similarity in concentrations between upgradient-onsite-downgradient concentrations, these metals may not be site-related. Because there is no use of groundwater permitted within the City of Buffalo, the metals condition in groundwater does not pose a health risk.

Groundwater flow direction remains consistent with the flow direction observed during the RI phase of the project.

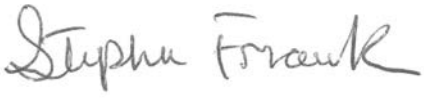
RECOMMENDATIONS

Barring future observation of free product in the observation wells, LiRo recommends that the findings of the groundwater sampling do not warrant further action or sampling of groundwater at this time. However, NYSDEC has requested that the new observation wells be re-sampled and that wells that were inaccessible (LW-06 and MW-1) should be re-sampled. LiRo will sample these wells and prepare an addendum to this report. Quarterly groundwater gauging of the monitoring/observation wells as required by the SMP will be continued.

Should you have any questions regarding this report please contact me anytime at 716-882-5476 ext. 423.

Sincerely,

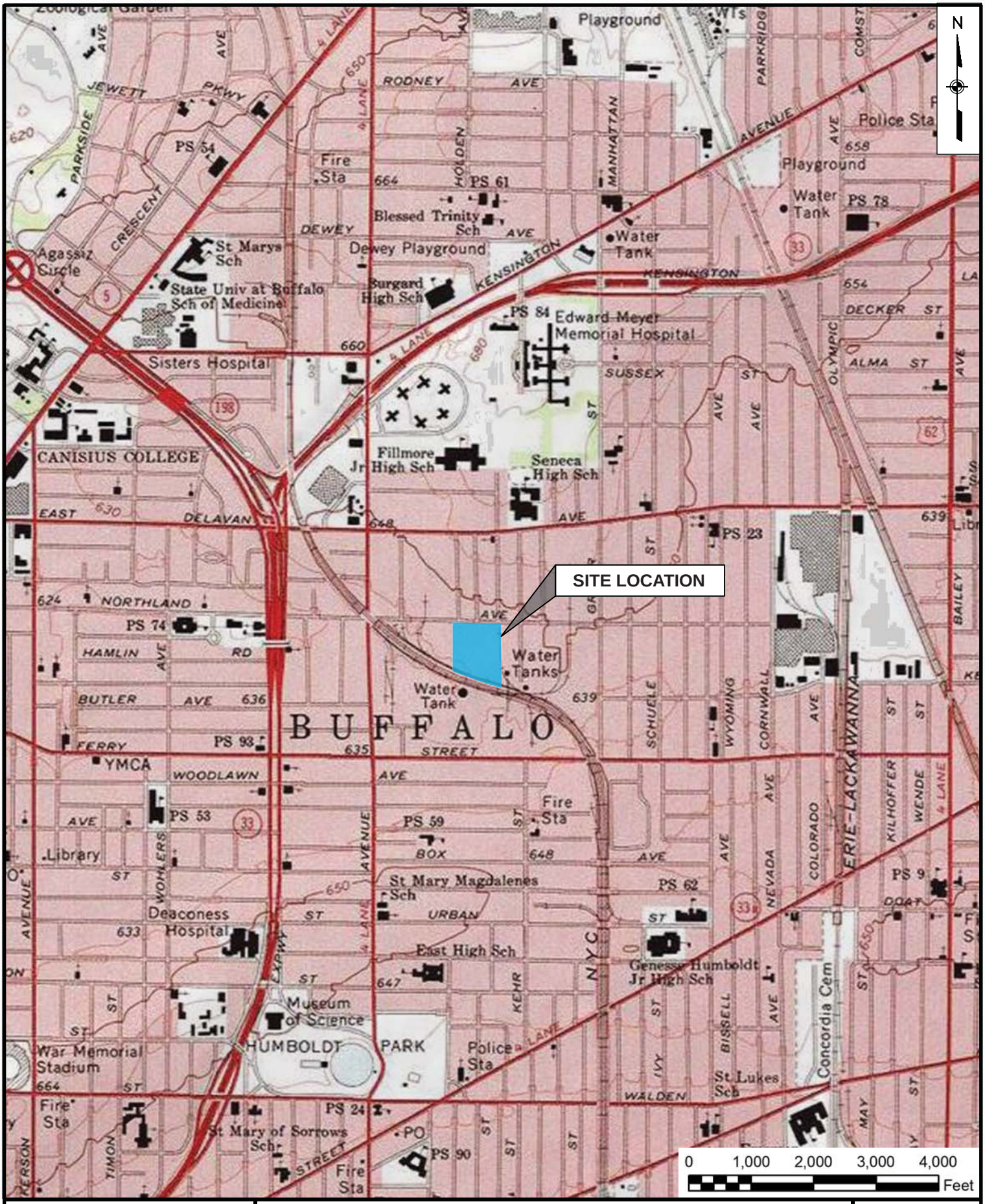
LiRo Engineers, Inc.



Stephen Frank, **PG**
Project Manager

LiRo Engineers, Inc.
A LiRo Group Company
690 Delaware Avenue, Buffalo, NY 14209 Telephone 716.882.5476 Facsimile 716.882.9640 www.liro.com

Figures



LiRo-Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

683 NORTHLAND AVENUE
TOPOGRAPHIC SITE LOCATION MAP

FIGURE NO.
1

J:\15-029-1054 BUDC\CAD\683 Site Management Plan\1 NORTHLAND TOPO MAP.AI

N

NORTHLAND AVE

LW-04

LW-05

LW-06

OW-1

OW-2

OW-3

OW-4

OW-5

LW-03

MW-01 (FISHER)

STAIRWELL

ELEVATOR

MED DEPT

ELEVATOR

STAIRWELL

STEEL FRAME BUILDING

DETENTION BASIN AREA

SEEP LOCATION

12" PVC STORM OUTFALL

ST MH4A

SITE BOUNDARY FOR 683 NORTHLAND

631 NORTHLAND AVENUE

LEGEND:

⊕ MONITORING WELL

× SEEP LOCATION

----- SITE BOUNDARY FOR 683 NORTHLAND

40 0 40

SCALE IN FEET

NOTE:
FLOOR PLANS DERIVED FROM HISTORICAL DRAWINGS AND FIELD OBSERVATIONS OF CURRENT CONDITIONS. THE FLOOR PLANS ARE PROVIDED FOR PLANNING PURPOSES. INTERIOR WALLS AND PARTITIONS WERE NOT SURVEYED AND LOCATIONS ARE APPROXIMATED BASED ON FIELD MEASUREMENTS.

NO.	DATE	DESCRIPTION
		REVISIONS

LiRo Engineers, Inc.
690 Delaware Avenue
Buffalo, New York

PROJ. ENG.:	
DESIGNED BY:	
CHECKED BY:	
DRAWN BY:	A.M.K.
CLIENT:	683 NORTHLAND, LLC
DATE:	MARCH 2020
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	WESTERN NEW YORK WORKFORCE TRAINING CENTER
LIRO JOB NO.:	15-029-1054
SHEET	OF
DRAWING TITLE:	GROUNDWATER MONITORING NETWORK
FIGURE NO.	2

N

NORTHLAND AVE

635.00
634.00
633.00
632.00
631.00
630.00
629.00
637.00
636.00

LW-04
LW-05
LW-06
LW-03
OW-1
OW-2
OW-3
OW-4
OW-5
MW-01 (FISHER)
ST MH4A

STAIRWELL
ELEVATOR
MED DEPT
ELEVATOR
STAIRWELL
STEEL FRAME BUILDING
DETENTION BASIN AREA
SEEP LOCATION
12" PVC STORM OUTFALL
SITE BOUNDARY 683 NORTHLAND

631 NORTHLAND AVENUE

NOTE:
FLOOR PLANS DERIVED FROM HISTORICAL DRAWINGS AND FIELD OBSERVATIONS OF CURRENT CONDITIONS. THE FLOOR PLANS ARE PROVIDED FOR PLANNING PURPOSES. INTERIOR WALLS AND PARTITIONS WERE NOT SURVEYED AND LOCATIONS ARE APPROXIMATED BASED ON FIELD MEASUREMENTS.

LEGEND:
- MONITORING WELL
- SEEP LOCATION
- SITE BOUNDARY FOR 683 NORTHLAND
- INTERPRETED GROUNDWATER FLOW DIRECTION
- 641.00 GROUNDWATER CONTOUR (FT. MSL) (DASHED WHERE INFERRED)

40 0 40
SCALE IN FEET

NO.	DATE	DESCRIPTION
		REVISIONS

LiRo Engineers, Inc.
690 Delaware Avenue
Buffalo, New York

PROJ. ENG.:	
DESIGNED BY:	
CHECKED BY:	
DRAWN BY:	A.M.K.
CLIENT:	683 NORTHLAND, LLC
DATE:	MARCH 2020
SCALE:	AS SHOWN
JOB TITLE AND LOCATION:	WESTERN NEW YORK WORKFORCE TRAINING CENTER
LIRO JOB NO.:	15-029-1054
SHEET	OF
DRAWING TITLE:	GROUNDWATER CONTOUR MAP FOURTH QUARTER 2019
FIGURE NO.	3

Tables

TABLE 1

SUMMARY OF FREE PRODUCT MEASUREMENTS AND GROUNDWATER ELEVATIONS
DECEMBER 2019 MONITORING REPORT

Western New York Workforce Training Center
683 Northland Avenue
Buffalo, New York
(Site No. C915310)

Well ID	Date	Top of Casing Elevation (ft. AMSL)	Depth to Water (ft. BTOC)	Depth to Free Product (ft. BTOC)	Free Product Thickness (ft.)	Groundwater Elevation (ft. AMSL)
LW-03	12/18/2019	644.29	9.74	none observed	0	634.55
LW-04	12/18/2019	644.47	9.53	none observed	0	634.94
LW-05	12/19/2019	644.28	6.92	none observed	0	637.36
OW-01	12/23/2019	644.21	7.73	none observed	0	636.48
OW-02	12/23/2019	645.82	9.09	none observed	0	636.73
OW-03	12/23/2019	643.61	Dry @ 8.43	none observed	0	NA
OW-04	12/23/2019	643.77	11.95	none observed	0	631.82
OW-05	12/23/2019	640.54	11.66	none observed	0	628.88

Notes:
ft. - feet
ft. AMSL - feet above mean sea level.
ft. BTOC - feet below top of casing.
NA = not available
Wells MW-01 and LW-06 were not accessible due to ongoing construction

TABLE 2

SUMMARY OF VOCs DETECTED IN GROUNDWATER
DECEMBER 2019

Western New York Workforce Training Center
683 Northland Avenue
Buffalo, New York
(Site No. C915310)

Parameters	*Units*	*NYS TOGS 1.1.1 Ambient Water Quality Standards/Guidance Values*	Location ID, Sample ID, and Sample Date and Time						
			LW-04	LW-03	LW-05	OW-4	OW-5	OW-2	OW-1
			LW-04	LW-03	LW-05	OW-4	OW-5	OW-2	OW-1
			12/18/19	12/18/19	12/19/19	12/20/19	12/23/19	12/23/19	12/23/19
Volatile Organic Analytes									
Acetone	ug/L	50	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/L	1	ND	ND	ND	ND	ND	0.32 J	ND
Cis-1,2-Dichloroethylene	ug/L	5	0.53 J	ND	ND	ND	ND	ND	ND
Toluene	ug/L	5	ND	ND	ND	ND	ND	0.34 J	ND
Trichloroethylene (TCE)	ug/L	5	1 J	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ug/L	5	ND	ND	ND	ND	ND	0.48 J	ND
Total Xylenes	ug/L	5	ND	ND	ND	ND	ND	0.85 J	ND

Notes:

ug/L - microgramsgrams Per Liter (parts per billion)

NC - No Criteria

ND - Not Detected

TABLE 2

SUMMARY OF VOCs DETECTED IN GROUNDWATER
DECEMBER 2019

Western New York Workforce Training Center
683 Northland Avenue
Buffalo, New York
(Site No. C915310)

Parameters	***Units***	***NYS TOGS 1.1.1 Ambient Water Quality Standards/Guidance Values***	**Location ID, Sample ID, and Sample Date and Time**		
			Field Blank	**Duplicate**	**Trip Blank**
			Field Blank	**Duplicate**	**Trip Blank**
			12/23/19	**12/23/19**	**12/23/19**
Volatile Organic Analytes					
Acetone	ug/L	50	4.3 J	ND	ND
Benzene	ug/L	1	ND	ND	ND
Cis-1,2-Dichloroethylene	ug/L	5	ND	ND	ND
Toluene	ug/L	5	ND	ND	ND
Trichloroethylene (TCE)	ug/L	5	ND	ND	ND
1,2,4-Trimethylbenzene	ug/L	5	ND	ND	ND
Total Xylenes	ug/L	5	ND	ND	ND

Notes:

ug/L - microgramsgrams Per Liter (parts per billion)

NC - No Criteria

ND - Not Detected

TABLE 3

SUMMARY OF METALs DETECTED IN GROUNDWATER
DECEMBER 2019

Western New York Workforce Training Center
683 Northland Avenue
Buffalo, New York
(Site No. C915310)

Parameters	*Units*	*NYS TOGS 1.1.1 Ambient Water Quality Standards/Guidance Values*	Location ID, Sample ID, and Sample Date								
			LW-04	**LW-03**	**LW-05**	**OW-4**	**OW-5**	**OW-2**	**OW-1**	**Field Blank**	**Duplicate**
			LW-04	**LW-03**	**LW-05**	**OW-4**	**OW-5**	**OW-2**	**OW-1**	**Field Blank**	**Duplicate**
			12/18/19	**12/18/19**	**12/19/19**	**12/20/19**	**12/23/19**	**12/23/19**	**12/23/19**	**12/23/19**	**12/23/19**
Metals Analytes											
Aluminum	ug/L	NC	ND	ND	ND	ND	565 JH	17.1 JH	142	ND	ND
Antimony	ug/L	3	**9.68 JH**	**12.2 JH**	**13.5 JH**	**12.1 JH**	**11.2 JH**	**12.4 JH**	**13.6 JH**	ND	**11.5 JH**
Arsenic	ug/L	25	ND	ND	13.4 JH	ND	ND	ND	ND	ND	ND
Barium	ug/L	1,000	22.5 J	76.3	182	78.9	125	100	87.6	ND	79.7
Calcium	ug/L	NC	86,600	124,000	191,000	120,000	140,000	111,000	182,000	ND	127,000
Cobalt	ug/L	NC	ND	1.53 J	1.65 J	2.32 J	2.23 J	1.73 J	2.2 J	ND	1.62 J
Copper	ug/L	200	3.4 JH	4.73 JH	3.32 JH	3.49 JH	4.52 JH	5.9 JH	19.1 JH	ND	5.1 JH
Iron	ug/L	300	122	128	**2,160**	224	**2,240**	**1,760**	**4,090**	ND	136
Lead	ug/L	25	ND	ND	1.55 J	ND	1.79 J	ND	5.15 J	ND	ND
Magnesium	ug/L	35,000	15,500	24,700	31,600	**48,500**	**41,900**	11,700	31,900	ND	25,300
Manganese	ug/L	300	20.3 JH	259 JH	**509 JH**	**587 JH**	286 JH	**308 JH**	**3,140 JH**	ND	273 JH
Nickel	ug/L	100	ND	3.04 JH	1.96 JH	7.46 JH	8.15 JH	5.61 JH	7.42 JH	ND	3.55 JH
Potassium	ug/L	NC	2,570	9,500	11,300	2,030	3,880	37,500	18,400	ND	9,830
Selenium	ug/L	10	**44.4**	**49.3**	**52.5**	**51.8**	**47.7**	**47.9**	**49.6**	ND	**49.9**
Silver	ug/L	50	ND	ND	ND	ND	ND	ND	ND	0.177 J	ND
Sodium	ug/L	20,000	**42,000**	**61,300**	**783,000**	**30,200**	**59,300**	**136,000**	**120,000**	ND	**62,800**
Vanadium	ug/L	NC	ND	ND	ND	ND	2.06 J	ND	ND	ND	ND
Zinc	ug/L	2,000	9.87 JH	12.8 JH	11.9 JH	91.7 JH	53.9	22.7 JH	31 JH	ND	16.5 JH

Notes:

ug/L - Micrograms Per Liter

NC - No Criteria

ND - Not Detected

Bold Font and Boxed Cell - Exceeds Criteria

Attachment 1
Well Boring and Construction Logs

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**OW-1**
SHEET:	**1 of 5**
JOB NO.:	**15-029-1054**
LOCATION:	**As per plan**
GROUND ELEVATION:	**NA**
DATE STARTED:	**September 13, 2019**
DATE FINISHED:	**September 16, 2019**
DRILLER:	**Carl**
GEOLOGIST:	**Jon Williams**
REVIEWED BY:	

PROJECT: Western New York Workforce Training Center

CLIENT: BUDC

BORING CONTRACTOR: SJB Services, Inc.

GROUNDWATER: NA

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
1						Black	Hard	0 - 1': Asphalt and Gravel.	FILL	Dry
						Dark brown	Dense	1 - 5': SILT and CLAY, some gravel.		moist
5										moist
						Gray	Hard	5 - 6': angular Gravel.		
						Dark gray	Dense	6 - 11.4': SILT and CLAY.		moist
10										moist
										moist
								Core bedrock to 15.4 ft		
15										
20										
25										
30										
35										

COMMENTS: Soil was classified according to the Unified Soil Classification System (USCS)

15-029-1054

BORING NO.: OW-1

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**OW-2**
SHEET:	**2 of 5**
JOB NO.:	**15-029-1054**
LOCATION:	**As per plan**
GROUND ELEVATION:	**NA**
DATE STARTED:	**September 12, 2019**
DATE FINISHED:	**September 18, 2019**
DRILLER:	**Carl**
GEOLOGIST:	**Jon Williams**
REVIEWED BY:	

PROJECT: Western New York Workforce Training Center

CLIENT: BUDC

BORING CONTRACTOR: SJB Services, Inc.

GROUNDWATER: NA

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
1						Brown	Dense	0 - 3': Topsoil (fill).	FILL	moist
										moist
						Dark brown	Dense	3 - 12': Gravel, sand, silt, and brick fragments.		moist
5										moist
										moist
										moist
										moist
10										moist
										moist
						Gray	Hard	12 - 16.1': Cobbles.		wet
15										
								Core bedrock to 21.7 ft		
20										
25										
30										
35										

COMMENTS: Soil was classified according to the Unified Soil Classification System (USCS)

15-029-1054

BORING NO.: OW-2

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**OW-3**
SHEET:	**3 of 5**
JOB NO.:	**15-029-1054**
LOCATION:	**As per plan**
GROUND ELEVATION:	**NA**
DATE STARTED:	**September 18, 2019**
DATE FINISHED:	**September 18, 2019**
DRILLER:	**Carl**
GEOLOGIST:	**Jon Williams**
REVIEWED BY:	

PROJECT: Western New York Workforce Training Center

CLIENT: BUDC

BORING CONTRACTOR: SJB Services, Inc.

GROUNDWATER: NA

	CAS.	SAMPLER	TUBE
TYPE			
DIA.			
WT.			
FALL			

DATE	TIME	LEVEL	TYPE
			NA

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
1						Black	Hard	0 - 1': Asphalt.	FILL	dry
						Dark brown	Dense	1 - 4': GRAVEL with some coarse Sand.		dry
5						Dark brown	Dense	4 - 9': GRAVEL with some Silt.		moist
										moist
										moist
10						Tan	Dense	9 - 10': CLAY	CL	
15										
20										
25										
30										
35										

COMMENTS: Soil was classified according to the Unified Soil Classification System (USCS)

15-029-1054

BORING NO.: OW-3

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**OW-4**
SHEET:	**4 of 5**
JOB NO.:	**15-029-1054**
LOCATION:	**As per plan**
GROUND ELEVATION:	**NA**
DATE STARTED:	**September 12, 2019**
DATE FINISHED:	**September 16, 2019**
DRILLER:	**Carl**
GEOLOGIST:	**Jon Williams**
REVIEWED BY:	

PROJECT: Western New York Workforce Training Center

CLIENT: BUDC

BORING CONTRACTOR: SJB Services, Inc.

GROUNDWATER: NA

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
1						Dark gray to black	Dense	0 - 3': Gravel, Slag, and Metal debris.	FILL	moist
										moist
						Dark brown	Med. Dense	3 - 4.5': medium to coarse SAND and Gravel.		moist
5										
						Tan	Firm	4.5 - 11': CLAY, some silt.	CL	moist
										moist
10										
										moist
								Core bedrock to 29 ft		
15										
20										
25										
30										
35										

COMMENTS: Soil was classified according to the Unified Soil Classification System (USCS)

15-029-1054

BORING NO.: OW-4

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**OW-5**
SHEET:	**5 of 5**
JOB NO.:	**15-029-1054**
LOCATION:	**As per plan**
GROUND ELEVATION:	**NA**
DATE STARTED:	**September 13, 2019**
DATE FINISHED:	**September 17, 2019**
DRILLER:	**Carl**
GEOLOGIST:	**Jon Williams**
REVIEWED BY:	

PROJECT: Western New York Workforce Training Center

CLIENT: BUDC

BORING CONTRACTOR: SJB Services, Inc.

GROUNDWATER: NA

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	TUBE
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
1						Gray	Hard	0 - 10": Concrete.	FILL	Dry
						Black	Dense	10" - 5': GRAVEL with some Sand, and cinders.		moist
5										moist
						Tan	Stiff	5 - 9': CLAY, some Silt.	CL	moist
										moist
10								Core bedrock to 27 ft		
15										
20										
25										
30										
35										

COMMENTS: Soil was classified according to the Unified Soil Classification System (USCS)

15-029-1054

BORING NO.: OW-5

DRILLING SUMMARY

Geologist:
Jon Williams

Drilling Company:
SJB/Empire Geo Services, Inc.

Driller:
N/A

Rig Make/Model:
N/A

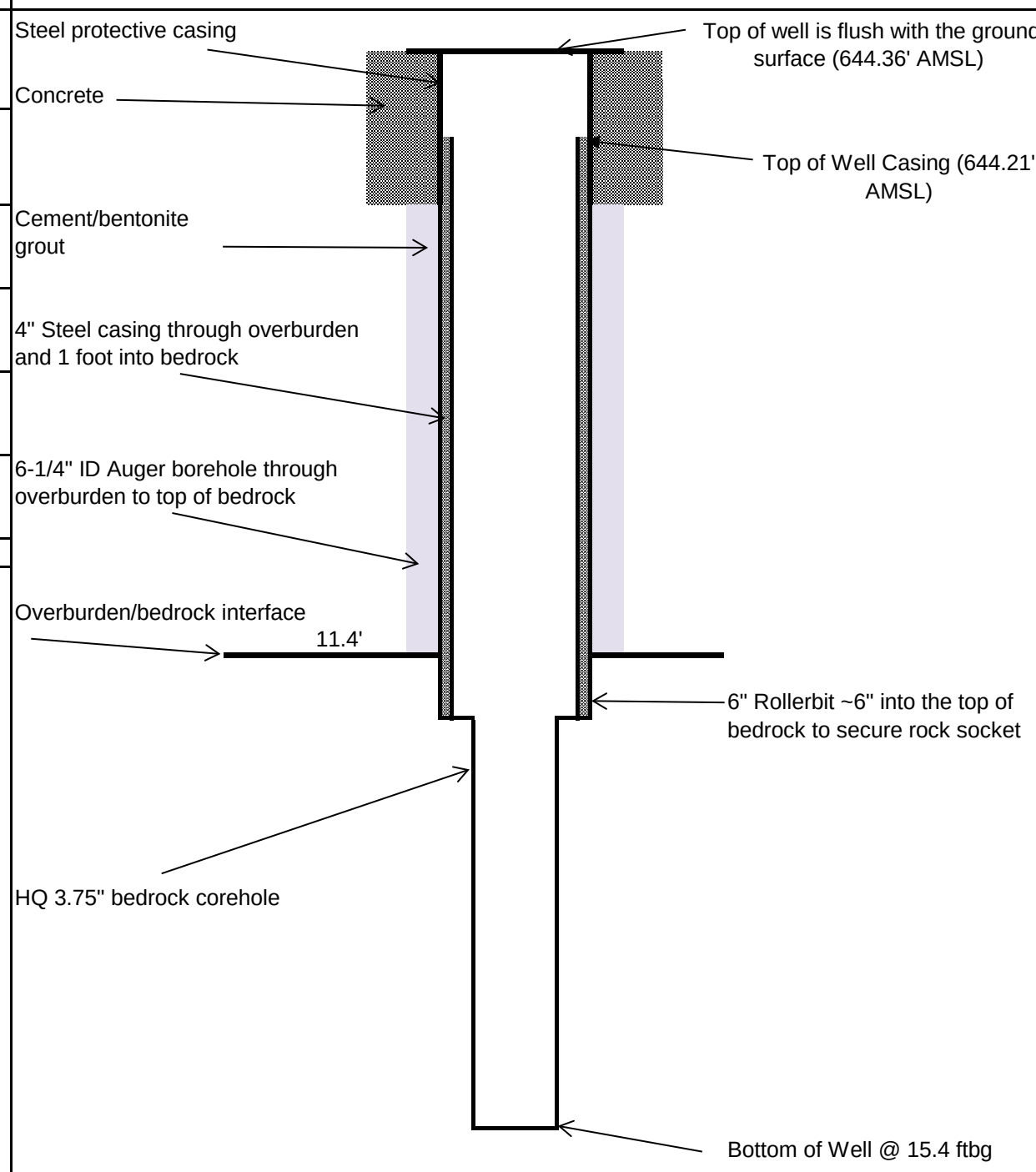
Date:
2/16-3/16/2017

GEOLOGIC LOG

Depth (ft.)	Description
0-11.4'	FILL
11.4-15.4'	Onondaga Formation Limestone bedrock

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL

Surface: Concrete

Monitor: Open Bedrock Corehole

FILL MATERIAL

SEAL MATERIAL

Type: Concrete Pad Setting: GRADE

COMMENTS:

ftbg = feet below grade

LEGEND:

Cement/Bentonite Grout

Concrete

CLIENT:
Buffalo Urban Development Corporation

LOCATION:
683 Northland Avenue

Project No.
15-029-1054

LiRo Engineers, Inc.

Monitoring Well Construction Details

Well Number:
OW-1

DRILLING SUMMARY

Geologist:
Jon Williams

Drilling Company:
SJB/Empire Geo Services, Inc.

Driller:
N/A

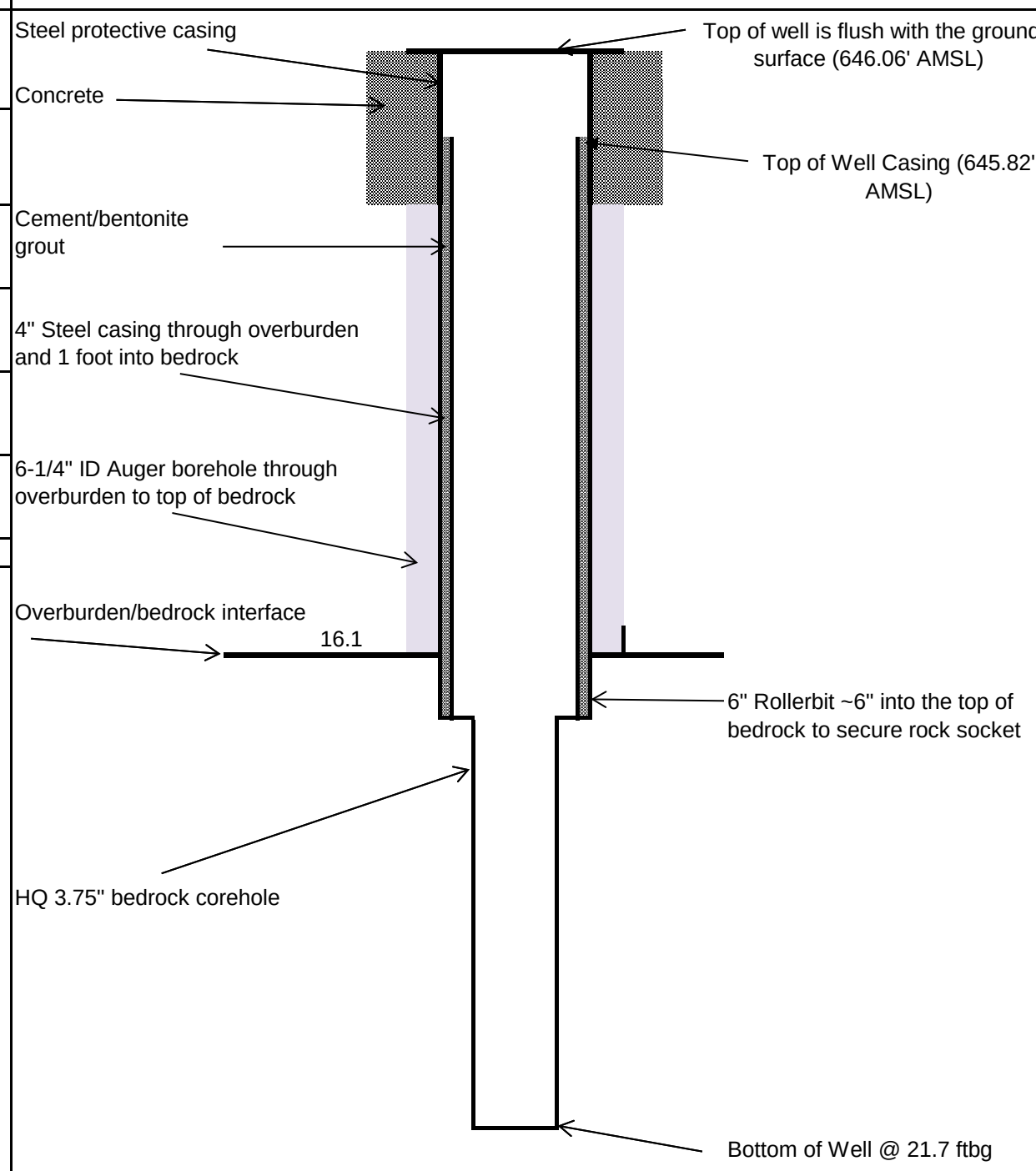
Rig Make/Model:
N/A

Date:
2/16-3/16/2017

GEOLOGIC LOG

Depth (ft.)	Description
0-16.1'	FILL
16.1-21.7'	Onondaga Formation Limestone bedrock

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL

Surface: Concrete

Monitor: Open Bedrock Corehole

FILL MATERIAL

SEAL MATERIAL

Type: Concrete Pad Setting: GRADE

COMMENTS:

ftbg = feet below grade

LEGEND:

Cement/Bentonite Grout

Concrete

CLIENT:	LOCATION:	Project No.
Buffalo Urban Development Corporation	683 Northland Avenue	15-029-1054
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-2**

DRILLING SUMMARY

Geologist:
Jon Williams

Drilling Company:
SJB/Empire Geo Services, Inc.

Driller:
N/A

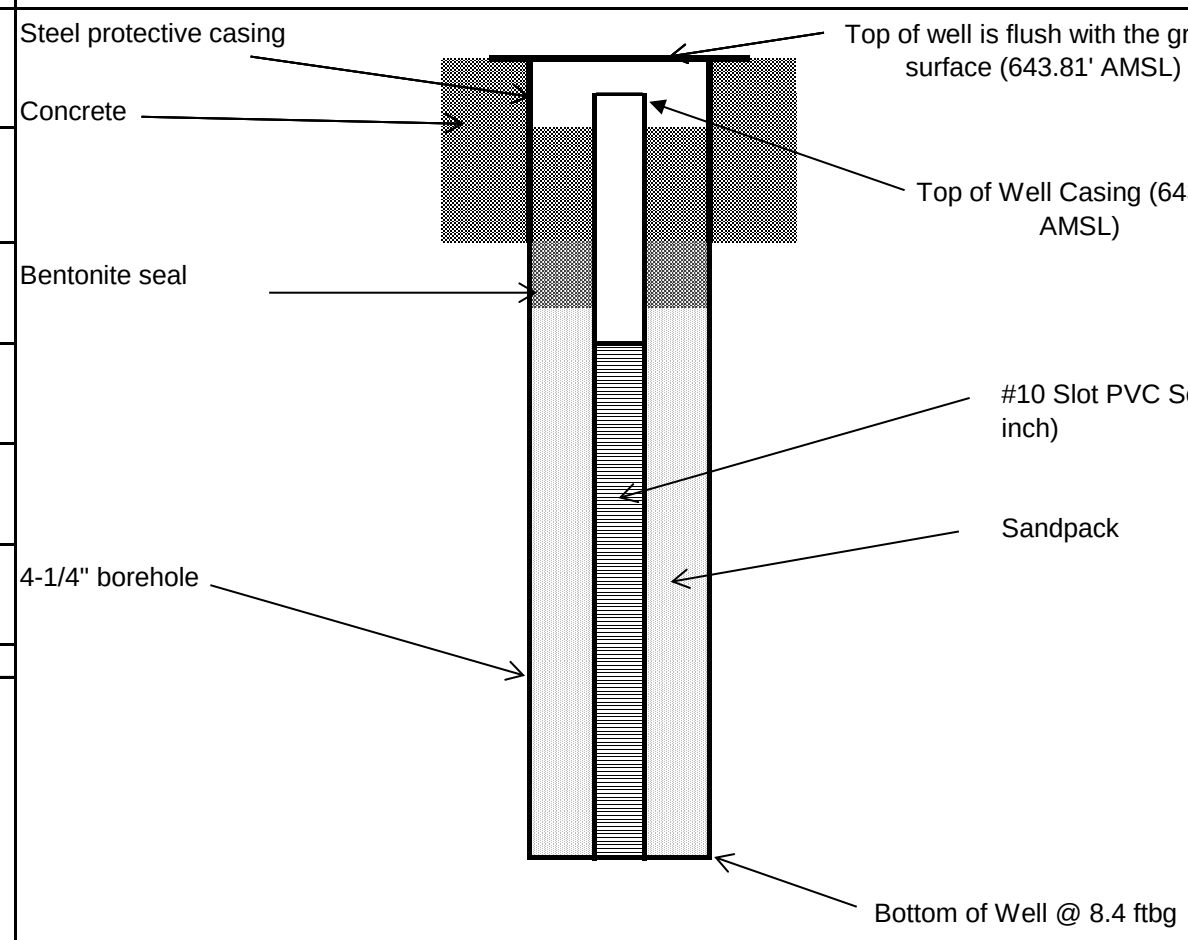
Rig Make/Model:
N/A

Date:
2/16-3/16/2017

GEOLOGIC LOG

Depth (ft.)	Description
0-9'	FILL
9-10'	Native Clay

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL

Surface: Concrete

Monitor: Open Bedrock Corehole

FILL MATERIAL

SEAL MATERIAL

Type: Concrete Pad Setting: GRADE

COMMENTS:

ftbg = feet below grade

LEGEND:

#2 Sand

Bentonite

Concrete

CLIENT:	**LOCATION:**	Project No.
Buffalo Urban Development Corporation	683 Northland Avenue	15-029-1054
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-3**

DRILLING SUMMARY

Geologist:
Jon Williams

Drilling Company:
SJB/Empire Geo Services, Inc.

Driller:
N/A

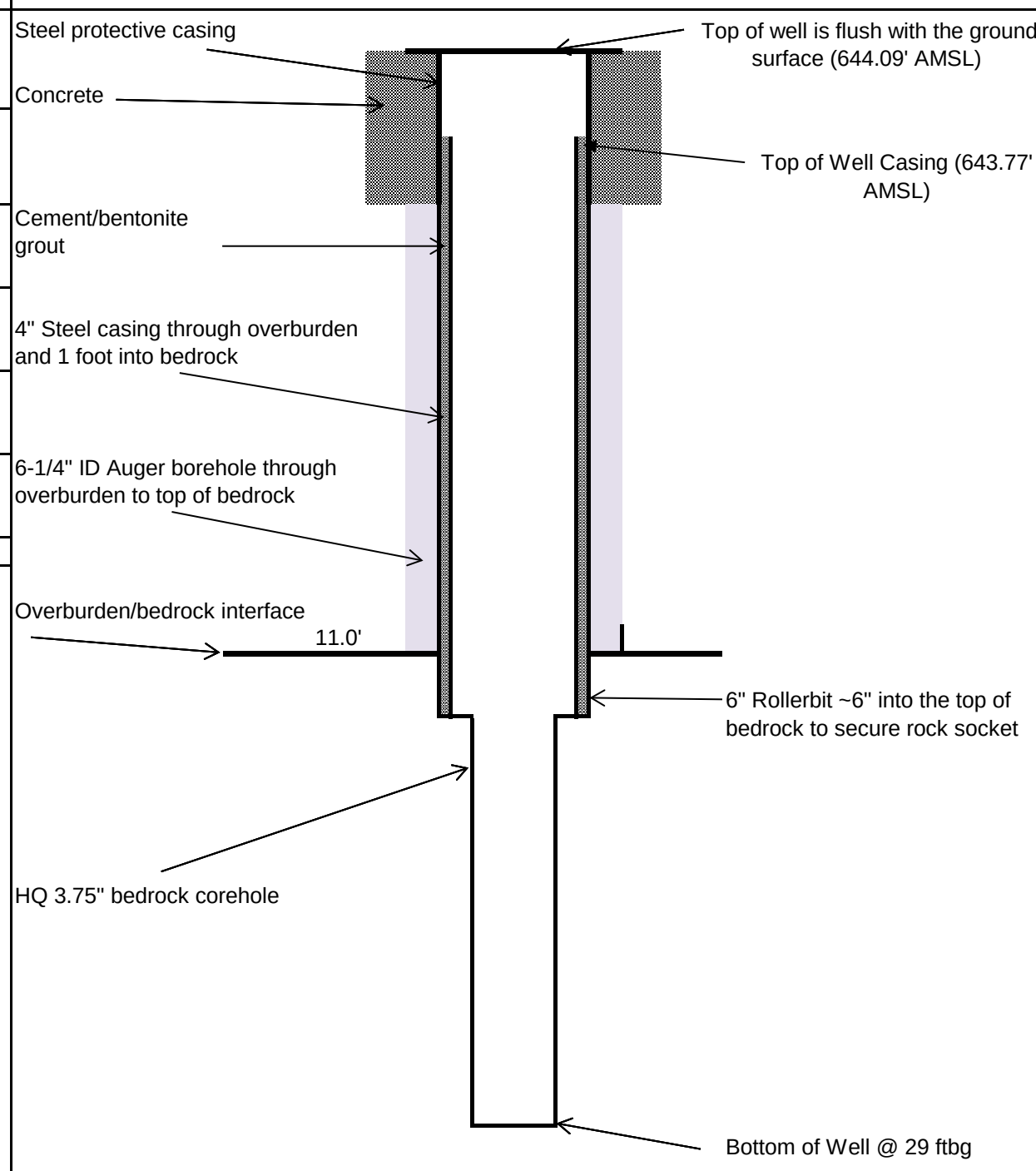
Rig Make/Model:
N/A

Date:
2/16-3/16/2017

GEOLOGIC LOG

Depth (ft.)	Description
0-4.5'	FILL
4.5-11'	Native Clay
11-29'	Onondaga Formation Limestone bedrock

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL		*FILL MATERIAL*
Surface: Concrete		
Monitor: Open Bedrock Corehole		*SEAL MATERIAL*
		Type: Concrete Pad Setting: GRADE

COMMENTS:

ftbg = feet below grade

LEGEND:
Cement/Bentonite Grout
Concrete

CLIENT:	**LOCATION:**	Project No.
Buffalo Urban Development Corporation	683 Northland Avenue	15-029-1054
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-4**

DRILLING SUMMARY

Geologist:
Jon Williams

Drilling Company:
SJB/Empire Geo Services, Inc.

Driller:
N/A

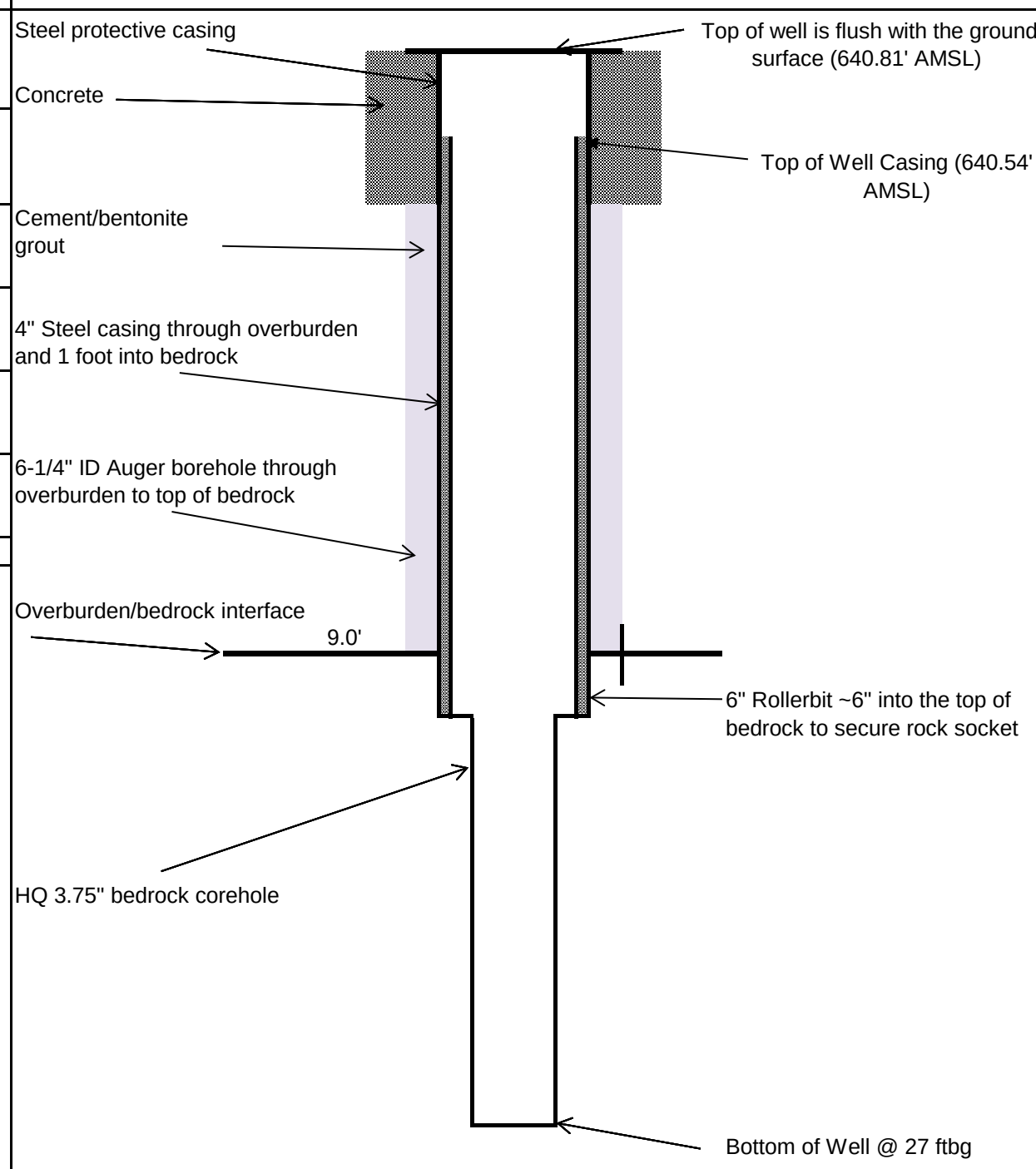
Rig Make/Model:
N/A

Date:
2/16-3/16/2017

GEOLOGIC LOG

Depth (ft.)	Description
0-5'	FILL
5-9'	Native Clay
11-29'	Onandaga Formation Limestone Bedrock

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL		*FILL MATERIAL*
Surface: Concrete		
Monitor: Open Bedrock Corehole		*SEAL MATERIAL*
		Type: Concrete Pad Setting: GRADE

COMMENTS:

ftbg = feet below grade

LEGEND:
Cement/Bentonite Grout
Concrete

CLIENT:	**LOCATION:**	Project No.
Buffalo Urban Development Corporation	683 Northland Avenue	15-029-1054
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-5**

Attachment 2
Observation Well Development Logs

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: OW-1

Site Name: 683 Northland Ave.

Date: 12/17/2019

Staff: Kris Charney

A). Total casing and screen length in feet: 14.31

B). Water level below top of casing in feet: 6.59

C). Number of feet standing water [A-B]: 7.72

D). Volume of water/foot of casing (gal.): 0.66

E). Volume of water in casing (gal. [CxD]: 5.0952

F). Volume of water to remove (gal.) [Ex3]: 15.2856

G). Volume of water actually removed (gal.): ~16

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Appearance
4	9:00 AM	-	-	-	-	-	-	very turbid
4	9:05 AM	-	-	-	-	-	-	black
4	9:10 AM	-	-	-	-	-	-	grey
4	9:15 AM	-	-	-	-	-	-	somewhat clear

Comments: surge and pump

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: OW-2

Site Name: 683 Northland Ave.

Date: 12/16/2019

Staff: Kris Charney

A). Total casing and screen length in feet: 20.59

B). Water level below top of casing in feet: 8.82

C). Number of feet standing water [A-B]: 11.77

D). Volume of water/foot of casing (gal.): 0.66

E). Volume of water in casing (gal. [CxD]: 7.7682

F). Volume of water to remove (gal.) [Ex3]: 23.3046

G). Volume of water actually removed (gal.): ~30

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Appearance
10	9:00 AM	11.43	10.17	-17	0.884	969	9.30	grey
10	9:15 AM	10.66	9.82	-6	0.902	-	0.00	muddy
10	9:30 AM	11.92	9.62	-70	0.934	631	9.15	cloudy

Comments: surge and pump
slight sheen
petroleum odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: OW-3

Site Name: 683 Northland Ave.

Date: 12/13/2019

Staff: Kris Charney

A). Total casing and screen length in feet: 8.43

B). Water level below top of casing in feet: 5.11

C). Number of feet standing water [A-B]: 3.32

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.5644

F). Volume of water to remove (gal.) [Ex3]: 1.6932

G). Volume of water actually removed (gal.): ~2

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Appearance

Comments: hand bailed until dry, did not recharge fast enough to evacuate well of full water purge amount

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: OW-4

Site Name: 683 Northland Ave.

Date: 12/13/2019

Staff: Kris Charney

A). Total casing and screen length in feet: 26.95

B). Water level below top of casing in feet: 11.76

C). Number of feet standing water [A-B]: 15.19

D). Volume of water/foot of casing (gal.): 0.66

E). Volume of water in casing (gal. [CxD]: 10.0254

F). Volume of water to remove (gal.) [Ex3]: 30.0762

G). Volume of water actually removed (gal.): ~36

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Appearance
12	10:00 AM	10.54	7.46	56	0.714	662	0.00	grey
12	10:15 AM	11.65	7.73	84	0.716	929	8.75	muddy
12	10:30 AM	12.06	7.67	73	0.710	1000	9.41	cloudy

Comments: surge and pump
Horiba turbidity meter wouldn't read correctly

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: OW-5

Site Name: 683 Northland Ave.

Date: 12/16/2019

Staff: Kris Charney

A). Total casing and screen length in feet: 27.61

B). Water level below top of casing in feet: 9.58

C). Number of feet standing water [A-B]: 18.03

D). Volume of water/foot of casing (gal.): 0.66

E). Volume of water in casing (gal. [CxD]: 11.8998

F). Volume of water to remove (gal.) [Ex3]: 35.6994

G). Volume of water actually removed (gal.): ~36

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Appearance
12	11:05 AM	10.62	8.21	-114	0.612	-	22.66	tan
12	11:15 AM	8.62	7.82	-4	0.879	-	6.58	muddy
12	11:30 AM	10.94	7.73	28	0.940	-	-	cloudy

Comments: surge and pump

Attachment 3
Observation Well Purge Logs

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **OW-1**

Site Name: 683 Northland Ave.

Date: 12/23/19

Staff: Kris Charney

A). Total casing and screen length in feet:	14.39
B). Water level below top of casing in feet:	7.73
C). Number of feet standing water [A-B]:	6.66
D). Volume of water/foot of casing (gal.):	0.66
E). Volume of water in casing (gal. [CxD]:	4.3956
F). Volume of water to remove (gal.) [Ex3]:	13.1868
G). Volume of water actually removed (gal.):	6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
12:46 PM	11.01	7.29	-171	1.410	257.0	5.10	NR	brown
12:50 PM	11.07	7.29	-226	1.420	152.0	4.27	NR	cloudy
12:54 PM	11.10	7.30	-229	1.420	196.0	4.74	NR	cloudy
12:58 PM	11.16	7.35	-240	1.430	94.9	4.58	NR	clear
1:02 AM	11.10	7.56	-257	1.440	77.6	4.36	NR	clear
1:06 AM	10.99	7.65	-236	1.450	68.7	4.44	NR	clear
1:10 AM	10.94	7.57	-242	1.450	53.2	4.59	NR	clear
1:14 AM	11.00	7.51	-241	1.450	47.4	4.38	NR	clear
1:18 AM	11.04	7.45	-242	1.460	42.1	4.41	NR	clear

Comments: Sample OW-01 @ 1:20 PM on 12/23/19
VOCs, SVOCs, TAL Metals, PCBs

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **OW-2**

Site Name: 683 Northland Ave.

Date: 12/23/19

Staff: Kris Charney

A). Total casing and screen length in feet:	20.54
B). Water level below top of casing in feet:	9.09
C). Number of feet standing water [A-B]:	11.45
D). Volume of water/foot of casing (gal.):	0.66
E). Volume of water in casing (gal. [CxD]:	7.5570
F). Volume of water to remove (gal.) [Ex3]:	22.6710
G). Volume of water actually removed (gal.):	6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
11:46 PM	12.70	7.13	-35	1.080	-	7.31	NR	brown
11:50 PM	12.38	7.06	-58	1.100	584.0	6.29	NR	brown
11:54 PM	12.21	7.07	-83	1.160	190.0	5.71	NR	cloudy
11:58 PM	12.04	7.11	-104	1.240	126.0	5.46	NR	cloudy
12:02 AM	12.04	7.15	-120	1.290	117.0	5.19	NR	cloudy
12:06 AM	11.80	7.19	-133	1.320	121.0	5.02	NR	cloudy
12:10 AM	11.09	7.24	-146	1.310	118.0	5.33	NR	cloudy
12:14 AM	11.01	7.20	-151	1.340	119.0	5.26	NR	cloudy
12:18 AM	11.14	7.20	-153	1.340	117.0	5.29	NR	cloudy
12:22 AM	12.06	7.16	-145	1.320	53.4	5.10	NR	clear
12:26 AM	11.98	7.03	-141	1.320	39.1	5.06	NR	clear
12:30 AM	12.00	7.06	-144	1.320	37.0	5.04	NR	clear

Comments: Sample OW-02 @ 12:30 PM on 12/23/19
VOCs, SVOCs, TAL Metals, PCBs

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **OW-4**

Site Name: 683 Northland Ave.

Date: 12/20/19

Staff: Kris Charney

A). Total casing and screen length in feet:	27.09
B). Water level below top of casing in feet:	11.95
C). Number of feet standing water [A-B]:	15.14
D). Volume of water/foot of casing (gal.):	0.66
E). Volume of water in casing (gal. [CxD]:	9.9924
F). Volume of water to remove (gal.) [Ex3]:	29.9772
G). Volume of water actually removed (gal.):	6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
2:06 PM	8.96	7.19	80	1.080	638.0	9.87	NR	brown
2:10 PM	9.88	7.03	74	1.050	120.0	8.90	NR	cloudy
2:14 PM	9.94	6.96	66	1.050	84.1	8.32	NR	clear
2:18 PM	10.17	7.14	42	1.050	80.5	7.61	NR	clear
2:22 PM	10.15	7.36	8	1.050	45.7	7.15	NR	clear
2:26 PM	10.35	7.42	-1	1.040	30.8	6.82	NR	clear
2:30 PM	10.45	7.46	-9	1.040	27.5	6.46	NR	clear
2:34 PM	10.24	7.47	-9	1.040	25.2	6.36	NR	clear
2:38 PM	10.44	7.54	-12	1.020	19.4	6.32	NR	clear
2:42 PM	10.29	7.55	-14	1.020	18.8	6.31	NR	clear

Comments: Sample OW-04 @ 2:45 PM on 12/20/19
VOCs, SVOCs, TAL Metals, PCBs

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **OW-5**

Site Name: 683 Northland Ave.

Date: 12/23/19

Staff: Kris Charney

A). Total casing and screen length in feet:	27.68
B). Water level below top of casing in feet:	11.66
C). Number of feet standing water [A-B]:	16.02
D). Volume of water/foot of casing (gal.):	0.66
E). Volume of water in casing (gal. [CxD]:	10.5732
F). Volume of water to remove (gal.) [Ex3]:	31.7196
G). Volume of water actually removed (gal.):	6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
9:08 AM	8.31	6.89	-56	0.958	-	13.91	NR	brown
9:12 AM	10.66	7.08	-114	0.905	59.6	4.31	NR	cloudy
9:16 AM	11.20	7.12	-119	0.944	31.1	3.69	NR	clear
9:20 AM	11.31	7.12	-120	0.950	25.5	3.56	NR	clear
9:24 AM	11.50	7.17	-123	0.966	29.7	3.30	NR	clear
9:28 AM	11.71	7.20	-123	0.980	31.0	3.18	NR	clear
9:32 AM	11.89	7.22	-124	0.999	25.3	3.07	NR	clear
9:36 AM	11.98	7.23	-123	1.020	23.8	3.01	NR	clear
9:40 AM	12.18	7.26	-119	1.060	23.0	2.99	NR	clear
9:44 AM	12.20	7.27	-117	1.060	22.1	2.89	NR	clear

Comments: Sample OW-05 @ 9:50 AM on 12/23/19
VOCs, SVOCs, TAL Metals, PCBs

MS/MSD collected

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **LW-03**

Site Name: 683 Northland Ave.

Date: 12/18/19

Staff: Kris Charney

A). Total casing and screen length in feet:	23.93
B). Water level below top of casing in feet:	9.74
C). Number of feet standing water [A-B]:	14.19
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	2.4123
F). Volume of water to remove (gal.) [Ex3]:	7.2369
G). Volume of water actually removed (gal.):	3.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
2:54 PM	11.80	7.30	36	1.190	29.2	7.84	NR	clear
2:58 PM	11.86	7.43	18	1.160	25.6	7.56	NR	clear
3:02 PM	11.77	7.46	15	1.110	18.9	6.99	NR	clear
3:06 PM	11.39	7.47	12	1.150	10.4	6.45	NR	clear
3:10 PM	11.32	7.47	12	1.150	7.9	6.38	NR	clear

Comments: Sample LW-03 @ 3:15 PM on 12/18/19
VOCs, SVOCs, TAL Metals, PCBs
Duplicate Collected

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **LW-04**

Site Name: 683 Northland Ave.

Date: 12/18/19

Staff: Kris Charney

A). Total casing and screen length in feet:	25.24
B). Water level below top of casing in feet:	9.53
C). Number of feet standing water [A-B]:	15.71
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	2.6707
F). Volume of water to remove (gal.) [Ex3]:	8.0121
G). Volume of water actually removed (gal.):	4.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
11:34 AM	11.47	7.53	60	0.954	15.0	11.87	NR	clear
11:38 AM	12.25	7.20	-5	0.944	4.5	8.03	NR	clear
11:42 AM	12.50	7.03	-31	0.871	3.8	7.50	NR	clear
11:46 AM	12.56	6.98	-44	0.818	3.9	6.72	NR	clear
11:50 AM	12.52	6.99	-49	0.802	4.0	6.29	NR	clear
11:54 AM	12.66	6.99	-51	0.784	3.6	6.25	NR	clear
11:58 AM	12.75	7.01	-53	0.758	3.3	5.84	NR	clear
12:02 PM	12.66	7.02	-55	0.750	3.1	5.53	NR	clear
12:06 PM	12.75	7.03	-56	0.746	2.9	6.75	NR	clear
12:10 PM	12.79	7.10	-58	0.748	2.9	5.14	NR	clear
12:14 PM	12.72	7.12	-58	0.740	2.6	5.01	NR	clear
12:18 PM	12.72	7.09	-56	0.743	2.8	4.97	NR	clear

Comments: Sample LW-04 @ 12:32 PM on 12/18/19
VOCs, SVOCs, TAL Metals, PCBs

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: WNY Workforce Training Center

Well Number: **LW-05**

Site Name: 683 Northland Ave.

Date: 12/19/19

Staff: Kris Charney

A). Total casing and screen length in feet:	23.04
B). Water level below top of casing in feet:	6.92
C). Number of feet standing water [A-B]:	16.12
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	2.7404
F). Volume of water to remove (gal.) [Ex3]:	8.2212
G). Volume of water actually removed (gal.):	4.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH (SU)	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Salinity	Appearance
12:50 PM	12.75	7.38	-78	4.200	116.0	9.79	NR	cloudy
1:00 PM	15.60	7.54	-115	4.170	32.1	7.22	NR	clear
1:04 PM	15.69	7.51	-115	4.180	32.2	6.80	NR	clear
1:08 PM	15.94	7.52	-117	4.210	21.3	6.23	NR	clear
1:12 PM	16.05	7.52	-118	4.240	8.6	5.71	NR	clear
1:16 PM	16.22	7.52	-118	4.250	9.9	5.35	NR	clear
1:20 PM	16.30	7.53	-119	4.250	10.2	5.33	NR	clear
1:24 PM	16.37	7.53	-119	4.260	10.1	4.90	NR	clear

Comments: Sample LW-05 @ 1:30 PM on 12/19/19
VOCs, SVOCs, TAL Metals, PCBs

Open well cover, standing water above J plug. Pumped out and also pumped down along rock socket. J-plug popped off under pressure. Removed old tubing which was covered with a black grease like substance with petroleum odor.

Attachment 4
Laboratory Analytical Reports

CHEMTECH

ANALYTICAL RESULTS SUMMARY

VOLATILE ORGANICS
METALS
GC SEMI-VOLATILES
SEMI-VOLATILE ORGANICS

PROJECT NAME : BUDC - 683 NORTHLAND AVENUE

LIRO ENGINEERS, INC.

690 Delaware Ave.

Buffalo, NY - 14209

Phone No: 716-882-5476

ORDER ID : K6449

ATTENTION : Jon Williams

Table Of Contents for K6449

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
FORM S-I

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

NYSDEC Sample ID/Code	Laboratory Sampl ID/Code	VOA GC/MS (Method #)	BNA GC/MS (Method #)	VOA GC (Method #)	Pest PCBs (Method #)	Metals (Method #)	Other (Method #)
LW-04	K6449-01	8260C	8270D		8082A	6010D, 7470A	
LW-03	K6449-02	8260C	8270D		8082A	6010D, 7470A	
LW-05	K6449-03	8260C	8270D		8082A	6010D, 7470A	
OW-4	K6449-04	8260C	8270D		8082A	6010D, 7470A	
OW-5	K6449-05	8260C	8270D		8082A	6010D, 7470A	
OW-2	K6449-08	8260C	8270D		8082A	6010D, 7470A	
OW-1	K6449-09	8260C	8270D		8082A	6010D, 7470A	
FIELD-BLANK	K6449-10	8260C	8270D		8082A	6010D, 7470A	
DUPLICATE	K6449-11	8260C	8270D		8082A	6010D, 7470A	
TRIP-BLANK	K6449-12	8260C	8270D		8082A	6010D, 7470A	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-IIa

SAMPLE PREPARATION AND ANALYSIS SUMMARY SEMIVOLATILE (BNA) ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
K6449-01	Water	12/18/19	12/27/19	12/27/19	01/03/20
K6449-02	Water	12/18/19	12/27/19	12/27/19	01/04/20
K6449-03	Water	12/19/19	12/27/19	12/27/19	01/04/20
K6449-04	Water	12/20/19	12/27/19	12/27/19	01/04/20
K6449-05	Water	12/23/19	12/27/19	12/27/19	01/04/20
K6449-08	Water	12/23/19	12/27/19	12/27/19	01/03/20
K6449-09	Water	12/23/19	12/27/19	12/27/19	01/03/20
K6449-10	Water	12/23/19	12/27/19	12/27/19	01/03/20
K6449-11	Water	12/23/19	12/27/19	12/27/19	01/03/20

*** Details For Test :** SVOCMS Group1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-IIb

SAMPLE PREPARATION AND ANALYSIS SUMMARY VOLATILE (VOA) ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
K6449-01	Water	12/18/19	12/27/19		12/27/19
K6449-02	Water	12/18/19	12/27/19		12/27/19
K6449-03	Water	12/19/19	12/27/19		12/27/19
K6449-04	Water	12/20/19	12/27/19		12/27/19
K6449-05	Water	12/23/19	12/27/19		12/27/19
K6449-08	Water	12/23/19	12/27/19		12/27/19
K6449-09	Water	12/23/19	12/27/19		12/27/19
K6449-10	Water	12/23/19	12/27/19		12/27/19
K6449-11	Water	12/23/19	12/27/19		12/27/19
K6449-12	Water	12/23/19	12/27/19		12/30/19

*** Details For Test :** VOCMS Group1

CHEMTECH

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-IIc

SAMPLE PREPARATION AND ANALYSIS SUMMARY PESTICIDE/PCB ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
K6449-01	WATER	12/18/19	12/27/19	12/27/19	12/31/19
K6449-02	WATER	12/18/19	12/27/19	12/27/19	12/30/19
K6449-03	WATER	12/19/19	12/27/19	12/27/19	12/30/19
K6449-04	WATER	12/20/19	12/27/19	12/27/19	12/30/19
K6449-05	WATER	12/23/19	12/27/19	12/27/19	12/30/19
K6449-08	WATER	12/23/19	12/27/19	12/27/19	12/30/19
K6449-09	WATER	12/23/19	12/27/19	12/27/19	12/30/19
K6449-10	WATER	12/23/19	12/27/19	12/27/19	12/30/19
K6449-11	WATER	12/23/19	12/27/19	12/27/19	12/30/19

*** Details For Test :** PCB

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-III

SAMPLE PREPARATION AND ANALYSIS SUMMARY MISCELLANEOUS ORGANIC ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
K6449-01	Water	8260C	5030		
K6449-02	Water	8260C	5030		
K6449-03	Water	8260C	5030		
K6449-04	Water	8260C	5030		
K6449-05	Water	8260C	5030		
K6449-06	Water	8260C	5030		
K6449-07	Water	8260C	5030		
K6449-08	Water	8260C	5030		
K6449-09	Water	8260C	5030		
K6449-10	Water	8260C	5030		
K6449-11	Water	8260C	5030		
K6449-12	Water	8260C	5030		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-III

SAMPLE PREPARATION AND ANALYSIS SUMMARY MISCELLANEOUS ORGANIC ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
K6449-01	Water	8270D	NA		
K6449-02	Water	8270D	NA		
K6449-03	Water	8270D	NA		
K6449-04	Water	8270D	NA		
K6449-05	Water	8270D	NA		
K6449-06	Water	8270D	NA		
K6449-07	Water	8270D	NA		
K6449-08	Water	8270D	NA		
K6449-09	Water	8270D	NA		
K6449-10	Water	8270D	NA		
K6449-11	Water	8270D	NA		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-III

SAMPLE PREPARATION AND ANALYSIS SUMMARY MISCELLANEOUS ORGANIC ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
K6449-01	Water	8082A	3510C		
K6449-02	Water	8082A	3510C		
K6449-03	Water	8082A	3510C		
K6449-04	Water	8082A	3510C		
K6449-05	Water	8082A	3510C		
K6449-06	Water	8082A	3510C		
K6449-07	Water	8082A	3510C		
K6449-08	Water	8082A	3510C		
K6449-09	Water	8082A	3510C		
K6449-10	Water	8082A	3510C		
K6449-11	Water	8082A	3510C		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-IV

SAMPLE PREPARATION AND ANALYSIS SUMMARY INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
K6449-01	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-02	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-03	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-04	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-05	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-08	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-09	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-10	Water	Mercury	12/27/19	12/30/19	12/30/19
K6449-11	Water	Mercury	12/27/19	12/30/19	12/30/19

*** Details For Test :** Mercury

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORM S-IV

SAMPLE PREPARATION AND ANALYSIS SUMMARY INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
K6449-01	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-02	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-03	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-04	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-05	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-08	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-09	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-10	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19
K6449-11	Water	Metals ICP-TAL	12/27/19	12/30/19	12/30/19

*** Details For Test :** Metals ICP-TAL

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Cover Page

Order ID : K6449

Project ID : BUDC - 683 Northland Avenue

Client : LiRo Engineers, Inc.

Lab Sample Number	Client Sample Number
K6449-01	LW-04
K6449-02	LW-03
K6449-03	LW-05
K6449-04	OW-4
K6449-05	OW-5
K6449-06	K6449-05MS
K6449-07	K6449-05MSD
K6449-08	OW-2
K6449-09	OW-1
K6449-10	FIELD-BLANK
K6449-11	DUPLICATE
K6449-12	TRIP-BLANK

I certify that the data package is in compliance with the terms and conditions of the contract,both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : N. N. Pandya

APPROVED

By Nimisha Pandya, QA QC Supervisor at 2:55 pm, Jan 10, 2020

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

CHEMTECH
284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: BUDC - 683 Northland Avenue
Project # N/A
Chemtech Project # K6449
Test Name: VOCMS Group1

A. Number of Samples and Date of Receipt:
12 Water samples were received on 12/27/2019.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-TAL, METALS-TAL, PCB, SVOCMS Group1 and VOCMS Group1. This data package contains results for VOCMS Group1.

C. Analytical Techniques:
The analysis performed on instrument MSVOA_X were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UIThe analysis of VOCMS Group1 was based on method 8260C.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS recoveries met the requirements for all compounds .
The MSD recoveries met the acceptable requirements .
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements .
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

E. Additional Comments:

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:

CHEMTECH
284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature N. N. Pandya

APPROVED

By Nimisha Pandya, QA QC Supervisor at 2:55 pm, Jan 10, 2020

CHEMTECH
284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: BUDC - 683 Northland Avenue
Project # N/A
Chemtech Project # K6449
Test Name: SVOCMS Group1

A. Number of Samples and Date of Receipt:
12 Water samples were received on 12/27/2019.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-TAL, METALS-TAL, PCB, SVOCMS Group1 and VOCMS Group1. This data package contains results for SVOCMS Group1.

C. Analytical Techniques:
The samples were analyzed on instrument BNA_F using GC Column DB-UI 8270D which is 20 meters, 0.18 mm ID, 0.36 um df The samples were analyzed on instrument BNA_G using GC Column ZB-SemiVolatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA The analysis of SVOCMS Group1 was based on method 8270D and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis except for LW-04, LW-03 and LW-05.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS recoveries met the requirements for all compounds .
The MSD recoveries met the acceptable requirements .
The RPD met criteria .
The Blank Spike met requirements for all samples .
The Blank analysis did not indicate the presence of lab contamination.
The %RSD is greater than 15% in the Initial Calibration (Method 8270-BF010820.M) for Pentachlorophenol, compounds are passing on Linear regression.
The %RSD is greater than 15% in the Initial Calibration (Method 8270-BG123019.M) for Terphenyl-d14, compounds are passing on Linear regression.
The Continuous Calibration met the requirements .
The Tuning criteria met requirements.

E. Additional Comments:

The Form 6 is not included in the data package because the Initial Calibration was performed using 7 points.

CHEMTECH
284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Please use %D calculated based on Avg RF and CCRF for all compounds using Average Response Factor when the %RSD value for a compound is <15% for the Initial Calibration curve and use %D calculated based on Amount added and Calculated amount for all compounds using Linear Regression when the %RSD value for a compound is > 15% for the Initial Calibration curve for SW-846 analysis.

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature___ N. N. Pandya

APPROVED
By Nimisha Pandya, QA QC Supervisor at 2:55 pm, Jan 10, 2020

CHEMTECH
284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: BUDC - 683 Northland Avenue
Project # N/A
Chemtech Project # K6449
Test Name: PCB

A. Number of Samples and Date of Receipt:
12 Water samples were received on 12/27/2019.

B. Parameters
According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-TAL, METALS-TAL, PCB, SVOCMS Group1 and VOCMS Group1. This data package contains results for PCB.

C. Analytical Techniques:
The analyses were performed on instrument GCECD_Q.The front column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0.5 um df, Catalogue # 7HM-G016-17. The rear column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25 µm; Catalogue # 7HM-G017-11.The analysis of PCBs was based on method 8082A and extraction was done based on method 3510.

D. QA/ QC Samples:
The Holding Times were met for all analysis except for LW-04, LW-03, LW-05 and OW-4 as per client.
The Surrogate recoveries met the acceptable criteria except for LW-03 [Decachlorobiphenyl(2) - 146%], OW-4 [Decachlorobiphenyl(2) - 141%], OW-5 [Tetrachloro-m-xylene(2) - 149%], OW-5MSD [Tetrachloro-m-xylene(2) - 138%] and OW-2 [Decachlorobiphenyl(2) - 137%].

The Retention Times were acceptable for all samples.
The MS {K6449-06MS} with File ID: PQ046038.D recoveries met the requirements for all compounds except for AR1260[155%] due to bad matrix interference.
The MSD {K6449-07MSD} with File ID: PQ046039.D recoveries met the acceptable requirements except for AR1016[165%], AR1260[160%] due to bad matrix interference.
The RPD met criteria.
The Blank Spike met requirements for all samples.

The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements.
The Continuous Calibration File ID PQ046051.D met the requirements except for Aroclor-1016, Aroclor-1260 are failing in 2nd column.

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E. Additional Comments:

F. Manual Integration Comments:
Please refer to the Manual integration Report included with the Run Logs for information on the manual integrations performed.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature____ N. N. Pandya

APPROVED
By Nimisha Pandya, QA QC Supervisor at 2:55 pm, Jan 10, 2020

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CASE NARRATIVE

LiRo Engineers, Inc.
Project Name: BUDC - 683 Northland Avenue
Project # N/A
Chemtech Project # K6449
Test Name: Metals ICP-TAL,Mercury

A. Number of Samples and Date of Receipt:
12 Water samples were received on 12/27/2019.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Mercury, Metals ICP-TAL, METALS-TAL, PCB, SVOCMS Group1 and VOCMS Group1. This data package contains results for Metals ICP-TAL,Mercury.

C. Analytical Techniques:
The analysis of Metals ICP-TAL was based on method 6010D, digestion based on method 3010 (waters). The analysis and digestion of Mercury was based on method 7470A.

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate analysis met criteria for all samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.
The Serial Dilution met the acceptable requirements.

E. Additional Comments:

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature__ N. N. Pandya

APPROVED
By Nimisha Pandya, QA QC Supervisor at 2:56 pm, Jan 10, 2020

DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following " Results Qualifiers" are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers **"P"** for ICP instrument **"PM"** for ICP when Microwave Digestion is used **"CV"** for Manual Cold Vapor AA **"AV"** for automated Cold Vapor AA **"CA"** for MIDI-Distillation Spectrophotometric **"AS"** for Semi –Automated Spectrophotometric **"C"** for Manual Spectrophotometric **"T"** for Titrimetric **"NR"** for analyte not required to be analyzed
OR	Indicates the analyte's concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

DATA REPORTING QUALIFIERS- ORGANIC

For reporting results, the following " Results Qualifiers" are used:

Value	If the result is a value greater than or equal to the detection limit, report the value
U	Indicates the compound was analyzed for but was not detected. Report the minimum detection limit for the sample with the U, i.e. "10 U". This is not necessarily the instrument detection limit attainable for this particular sample based on any concentration or dilution that may have been required.
ND	Indicates the analyte was analyzed for, but not detected
J	Indicates an estimated value**.** This flag is used: (1) When estimating a concentration for a tentatively identified compound (library search hits, where a 1:1 response is assumed.) (2) When the mass spectral data indicated the identification, however the result was less than the specified detection limit greater than zero. If the detection limit was 10ug/L and a concentration of 3 ug/L was calculated report as 3 J. This is flag is used when similar situation arise on any organic parameter i.e. Pest, PCB and others.
B	Indicates the analyte was found in the blank as well as the sample report as "12 B".
E	Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
P	This flag is used for Pesticide/PCB target analyte when there is >25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form 1 and flagged with a "P".
N	This flag indicates presumptive evidence of a compound. This is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It applies to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the flag is not used.
A	This flag indicates that a Tentatively Identified Compound is a suspected aldol-condensation product.
Q	Indicates the LCS did not meet the control limits requirements

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: K6449

	Completed
For thorough review, the report must have the following:	
GENERAL:	
Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)	✓
Check chain-of-custody for proper relinquish/return of samples	✓
Is the chain of custody signed and complete	✓
Check internal chain-of-custody for proper relinquish/return of samples /sample extracts	✓
Collect information for each project id from server. Were all requirements followed	✓
COVER PAGE:	
Do numbers of samples correspond to the number of samples in the Chain of Custody on login page	✓
Do lab numbers and client Ids on cover page agree with the Chain of Custody	✓
CHAIN OF CUSTODY:	
Do requested analyses on Chain of Custody agree with form I results	✓
Do requested analyses on Chain of Custody agree with the log-in page	✓
Were the correct method log-in for analysis according to the Analytical Request and Chain of Castody	✓
Were the samples received within hold time	✓
Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle	✓
ANALYTICAL:	
Was method requirement followed?	✓
Was client requirement followed?	✓
Does the case narrative summarize all QC failure?	✓
All runlogs and manual integration are reviewed for requirements	✓
All manual calculations and /or hand notations verified	✓

1st Level QA Review Signature: APARNA SONI **Date:** 01/10/2020

2nd Level QA Review Signature: N. N. Pandya **Date:**

APPROVED
By Nimisha Pandya, QA QC Supervisor at 2:56 pm, Jan 10, 2020

CHEMTECH

284 Sheffield Street, Mountainside, New Jersey - 07092

Phone: (908) 789 8900 Fax: (908) 789 8922

LAB CHRONICLE

OrderID:	K6449	**OrderDate:**	12/27/2019 9:51:00 AM
Client:	LiRo Engineers, Inc.	**Project:**	BUDC - 683 Northland Avenue
Contact:	Jon Williams	**Location:**	E61

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
K6449-01	**LW-04**	**Water**			**12/18/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-02	**LW-03**	**Water**			**12/18/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-03	**LW-05**	**Water**			**12/19/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-04	**OW-4**	**Water**			**12/20/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-05	**OW-5**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-08	**OW-2**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-09	**OW-1**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-10	**FIELD-BLANK**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-11	**DUPLICATE**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/27/19	
K6449-12	**TRIP-BLANK**	**Water**			**12/23/19**			**12/27/19**
			VOCMS Group1	8260C			12/30/19	

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Hit Summary Sheet
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID:	**LW-04**							
K6449-01	LW-04	Water	Acetone	4.60	J	0.90	25.0	ug/L
K6449-01	LW-04	Water	cis-1,2-Dichloroethene	0.53	J	0.30	5.00	ug/L
K6449-01	LW-04	Water	Trichloroethene	1.00	J	0.27	5.00	ug/L
			Total Voc :	6.13				
			Total Concentration:	6.13				
Client ID:	**LW-03**							
K6449-02	LW-03	Water	Acetone	5.20	J	0.90	25.0	ug/L
			Total Voc :	5.2				
			Total Concentration:	5.2				
Client ID:	**LW-05**							
K6449-03	LW-05	Water	Acetone	4.50	J	0.90	25.0	ug/L
			Total Voc :	4.5				
			Total Concentration:	4.5				
Client ID:	**OW-5**							
K6449-05	OW-5	Water	Acetone	2.60	J	0.90	25.0	ug/L
			Total Voc :	2.6				
			Total Concentration:	2.6				
Client ID:	**OW-2**							
K6449-08	OW-2	Water	Acetone	8.50	J	0.90	25.0	ug/L
K6449-08	OW-2	Water	Benzene	0.32	J	0.10	5.00	ug/L
K6449-08	OW-2	Water	Toluene	0.34	J	0.12	5.00	ug/L
K6449-08	OW-2	Water	Total Xylenes	0.85	J	0.33	15.0	ug/L
K6449-08	OW-2	Water	1,2,4-Trimethylbenzene	0.48	J	0.11	5.00	ug/L
			Total Voc :	10.49				
			Total Concentration:	10.49				
Client ID:	**OW-1**							
K6449-09	OW-1	Water	Acetone	3.90	J	0.90	25.0	ug/L
			Total Voc :	3.9				
			Total Concentration:	3.9				
Client ID:	**FIELD-BLANK**							
K6449-10	FIELD-BLANK	Water	Acetone	4.30	J	0.90	25.0	ug/L
			Total Voc :	4.3				
			Total Concentration:	4.3				
Client ID:	**DUPLICATE**							
K6449-11	DUPLICATE	Water	Acetone	3.00	J	0.90	25.0	ug/L
			Total Voc :	3				
			Total Concentration:	3				

SAMPLE DATA

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014317.D	1		12/27/19 18:28	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	4.60	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	0.53	J	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	1.00	J	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.0		61 - 141	98%	SPK: 50
1868-53-7	Dibromofluoromethane	50.2		69 - 133	100%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014317.D	1		12/27/19 18:28	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.4		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.1		58 - 135	90%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	503000	5.65			
540-36-3	1,4-Difluorobenzene	778000	6.85			
3114-55-4	Chlorobenzene-d5	694000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	299000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014318.D	1		12/27/19 18:51	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	5.20	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	50.5		61 - 141	101%	SPK: 50
1868-53-7	Dibromofluoromethane	49.5		69 - 133	99%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014318.D	1		12/27/19 18:51	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	49.6		65 - 126	99%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.6		58 - 135	91%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	493000	5.65			
540-36-3	1,4-Difluorobenzene	783000	6.85			
3114-55-4	Chlorobenzene-d5	709000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	304000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014319.D	1		12/27/19 19:14	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	4.50	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	50.2		61 - 141	100%	SPK: 50
1868-53-7	Dibromofluoromethane	49.0		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014319.D	1		12/27/19 19:14	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.3		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.4		58 - 135	93%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	503000	5.65			
540-36-3	1,4-Difluorobenzene	782000	6.85			
3114-55-4	Chlorobenzene-d5	703000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	310000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014320.D	1		12/27/19 19:38	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	25.0	U	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	50.1		61 - 141	100%	SPK: 50
1868-53-7	Dibromofluoromethane	49.1		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014320.D	1		12/27/19 19:38	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.3		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.7		58 - 135	93%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	498000	5.65			
540-36-3	1,4-Difluorobenzene	772000	6.86			
3114-55-4	Chlorobenzene-d5	698000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	307000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014321.D	1		12/27/19 20:01	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	2.60	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	50.4		61 - 141	101%	SPK: 50
1868-53-7	Dibromofluoromethane	49.3		69 - 133	99%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014321.D	1		12/27/19 20:01	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.0		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.4		58 - 135	91%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	511000	5.65			
540-36-3	1,4-Difluorobenzene	802000	6.85			
3114-55-4	Chlorobenzene-d5	714000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	311000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014322.D	1		12/27/19 20:24	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	8.50	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	0.32	J	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	0.34	J	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	0.85	J	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	0.48	J	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.2		61 - 141	98%	SPK: 50
1868-53-7	Dibromofluoromethane	49.5		69 - 133	99%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014322.D	1		12/27/19 20:24	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	51.4		65 - 126	103%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.9		58 - 135	94%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	507000	5.65			
540-36-3	1,4-Difluorobenzene	778000	6.85			
3114-55-4	Chlorobenzene-d5	703000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	314000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014323.D	1		12/27/19 20:48	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	3.90	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.6		61 - 141	99%	SPK: 50
1868-53-7	Dibromofluoromethane	48.9		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014323.D	1		12/27/19 20:48	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.2		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.2		58 - 135	92%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	502000	5.65			
540-36-3	1,4-Difluorobenzene	774000	6.85			
3114-55-4	Chlorobenzene-d5	697000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	307000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014324.D	1		12/27/19 21:11	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	4.30	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.0		61 - 141	98%	SPK: 50
1868-53-7	Dibromofluoromethane	49.3		69 - 133	99%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014324.D	1		12/27/19 21:11	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.3		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.1		58 - 135	92%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	508000	5.65			
540-36-3	1,4-Difluorobenzene	790000	6.85			
3114-55-4	Chlorobenzene-d5	714000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	317000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014325.D	1		12/27/19 21:34	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	3.00	J	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.3		61 - 141	99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.0		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014325.D	1		12/27/19 21:34	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.1		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.3		58 - 135	91%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	491000	5.65			
540-36-3	1,4-Difluorobenzene	760000	6.86			
3114-55-4	Chlorobenzene-d5	672000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	293000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	TRIP-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-12	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014352.D	1		12/30/19 14:36	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	5.00	U	0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	5.00	U	0.18	5.00	ug/L
67-64-1	Acetone	25.0	U	0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	5.00	U	0.070	5.00	ug/L
75-09-2	Methylene Chloride	5.00	U	0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	5.00	U	0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	5.00	U	0.17	5.00	ug/L
78-93-3	2-Butanone	25.0	U	0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	5.00	U	0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	5.00	U	0.30	5.00	ug/L
67-66-3	Chloroform	5.00	U	0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	5.00	U	0.12	5.00	ug/L
71-43-2	Benzene	5.00	U	0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	5.00	U	0.13	5.00	ug/L
79-01-6	Trichloroethene	5.00	U	0.27	5.00	ug/L
108-88-3	Toluene	5.00	U	0.12	5.00	ug/L
127-18-4	Tetrachloroethene	5.00	U	0.15	5.00	ug/L
108-90-7	Chlorobenzene	5.00	U	0.080	5.00	ug/L
100-41-4	Ethyl Benzene	5.00	U	0.080	5.00	ug/L
1330-20-7	Total Xylenes	15.0	U	0.33	15.0	ug/L
103-65-1	n-propylbenzene	5.00	U	0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	5.00	U	0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	5.00	U	0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	5.00	U	0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	5.00	U	0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	5.00	U	0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	5.00	U	0.20	5.00	ug/L
104-51-8	n-Butylbenzene	5.00	U	0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	5.00	U	0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.6		61 - 141	99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.1		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	TRIP-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-12	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014352.D	1		12/30/19 14:36	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.2		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.6		58 - 135	91%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	533000	5.65			
540-36-3	1,4-Difluorobenzene	823000	6.85			
3114-55-4	Chlorobenzene-d5	733000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	317000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

QC SUMMARY

Surrogate Summary

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260C

Lab Sample ID	Client ID	Parameter	Spike	Result	RecoveryQual	Limits Low	Limits High
K6449-01	LW-04	1,2-Dichloroethane-d4	50	49.0	98	61	141
		Dibromofluoromethane	50	50.2	100	69	133
		Toluene-d8	50	50.4	101	65	126
		4-Bromofluorobenzene	50	45.1	90	58	135
K6449-02	LW-03	1,2-Dichloroethane-d4	50	50.5	101	61	141
		Dibromofluoromethane	50	49.5	99	69	133
		Toluene-d8	50	49.6	99	65	126
		4-Bromofluorobenzene	50	45.6	91	58	135
K6449-03	LW-05	1,2-Dichloroethane-d4	50	50.2	100	61	141
		Dibromofluoromethane	50	49.0	98	69	133
		Toluene-d8	50	50.4	101	65	126
		4-Bromofluorobenzene	50	46.4	93	58	135
K6449-04	OW-4	1,2-Dichloroethane-d4	50	50.1	100	61	141
		Dibromofluoromethane	50	49.1	98	69	133
		Toluene-d8	50	50.3	101	65	126
		4-Bromofluorobenzene	50	46.7	93	58	135
K6449-05	OW-5	1,2-Dichloroethane-d4	50	50.5	101	61	141
		Dibromofluoromethane	50	49.3	99	69	133
		Toluene-d8	50	50.0	100	65	126
		4-Bromofluorobenzene	50	45.4	91	58	135
K6449-06MS	OW-5MS	1,2-Dichloroethane-d4	50	51.0	102	61	141
		Dibromofluoromethane	50	51.1	102	69	133
		Toluene-d8	50	49.8	100	65	126
		4-Bromofluorobenzene	50	48.6	97	58	135
K6449-07MSD	OW-5MSD	1,2-Dichloroethane-d4	50	52.1	104	61	141
		Dibromofluoromethane	50	50.2	100	69	133
		Toluene-d8	50	50.3	101	65	126
		4-Bromofluorobenzene	50	48.8	98	58	135
K6449-08	OW-2	1,2-Dichloroethane-d4	50	49.2	98	61	141
		Dibromofluoromethane	50	49.5	99	69	133
		Toluene-d8	50	51.4	103	65	126
		4-Bromofluorobenzene	50	46.9	94	58	135
K6449-09	OW-1	1,2-Dichloroethane-d4	50	49.6	99	61	141
		Dibromofluoromethane	50	48.9	98	69	133
		Toluene-d8	50	50.2	100	65	126
		4-Bromofluorobenzene	50	46.2	92	58	135
K6449-10	FIELD-BLANK	1,2-Dichloroethane-d4	50	49.0	98	61	141
		Dibromofluoromethane	50	49.3	99	69	133
		Toluene-d8	50	50.3	101	65	126
		4-Bromofluorobenzene	50	46.1	92	58	135
K6449-11	DUPLICATE	1,2-Dichloroethane-d4	50	49.3	99	61	141
		Dibromofluoromethane	50	49.0	98	69	133
		Toluene-d8	50	50.1	100	65	126
		4-Bromofluorobenzene	50	45.3	91	58	135
K6449-12	TRIP-BLANK	1,2-Dichloroethane-d4	50	49.6	99	61	141
		Dibromofluoromethane	50	49.1	98	69	133
		Toluene-d8	50	50.2	100	65	126
		4-Bromofluorobenzene	50	45.6	91	58	135

Surrogate Summary

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260-Low

Lab Sample ID	Client ID	Parameter	Spike	Result	RecoveryQual	Limits Low	Limits High
VX1227WBL01	VX1227WBL01	1,2-Dichloroethane-d4	50	49.0	98	61	141
		Dibromofluoromethane	50	49.5	99	69	133
		Toluene-d8	50	50.6	101	65	126
		4-Bromofluorobenzene	50	45.4	91	58	135
VX1227WBS01	VX1227WBS01	1,2-Dichloroethane-d4	50	49.1	98	61	141
		Dibromofluoromethane	50	50.7	101	69	133
		Toluene-d8	50	50.0	100	65	126
		4-Bromofluorobenzene	50	48.4	97	58	135
VX1230WBL02	VX1230WBL02	1,2-Dichloroethane-d4	50	49.7	99	61	141
		Dibromofluoromethane	50	49.0	98	69	133
		Toluene-d8	50	50.5	101	65	126
		4-Bromofluorobenzene	50	46.4	93	58	135
VX1230WBS02	VX1230WBS02	1,2-Dichloroethane-d4	50	48.2	96	61	141
		Dibromofluoromethane	50	48.8	98	69	133
		Toluene-d8	50	48.1	96	65	126
		4-Bromofluorobenzene	50	47.6	95	58	135

CHEMTECH

Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260C

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Lab Sample ID : K6449-06MS	**Client Sample ID :** OW-5MS							**Datafile :** VX014326.D			
Vinyl chloride	50	0	48.0	ug/L	96				57	149	
1,1-Dichloroethene	50	0	49.4	ug/L	99				55	148	
Acetone	250	2.60	180	ug/L	71				11	159	
Methyl tert-butyl Ether	50	0	53.5	ug/L	107				60	145	
Methylene Chloride	50	0	48.8	ug/L	98				56	146	
trans-1,2-Dichloroethene	50	0	48.9	ug/L	98				60	141	
1,1-Dichloroethane	50	0	51.7	ug/L	103				61	144	
2-Butanone	250	0	250	ug/L	100				42	145	
Carbon Tetrachloride	50	0	49.2	ug/L	98				60	140	
cis-1,2-Dichloroethene	50	0	51.0	ug/L	102				48	156	
Chloroform	50	0	52.8	ug/L	106				63	140	
1,1,1-Trichloroethane	50	0	51.0	ug/L	102				65	140	
Benzene	50	0	49.5	ug/L	99				62	134	
1,2-Dichloroethane	50	0	50.5	ug/L	101				67	136	
Trichloroethene	50	0	47.2	ug/L	94				64	131	
Toluene	50	0	48.6	ug/L	97				68	129	
Tetrachloroethene	50	0	44.4	ug/L	89				29	137	
Chlorobenzene	50	0	48.8	ug/L	98				68	126	
Ethyl Benzene	50	0	49.8	ug/L	100				61	131	
m/p-Xylenes	100	0	98.0	ug/L	98				64	125	
o-Xylene	50	0	49.1	ug/L	98				65	126	
N-propylbenzene	50	0	51.4	ug/L	103				64	126	
1,3,5-Trimethylbenzene	50	0	50.7	ug/L	101				59	127	
tert-Butylbenzene	50	0	52.0	ug/L	104				65	138	
1,2,4-Trimethylbenzene	50	0	51.1	ug/L	102				54	133	
Sec-butylbenzene	50	0	51.4	ug/L	103				65	125	
1,3-Dichlorobenzene	50	0	48.8	ug/L	98				63	125	
1,4-Dichlorobenzene	50	0	47.5	ug/L	95				64	124	
n-Butylbenzene	50	0	50.6	ug/L	101				62	127	
1,2-Dichlorobenzene	50	0	48.1	ug/L	96				64	126	

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Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260C

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Lab Sample ID : K6449-07MSD	**Client Sample ID :** OW-5MSD							**Datafile :** VX014327.D			
Vinyl chloride	50	0	47.3	ug/L	95		1		57	149	20
1,1-Dichloroethene	50	0	49.0	ug/L	98		1		55	148	20
Acetone	250	2.60	190	ug/L	75		5		11	159	20
Methyl tert-butyl Ether	50	0	53.2	ug/L	106		1		60	145	20
Methylene Chloride	50	0	49.1	ug/L	98		1		56	146	20
trans-1,2-Dichloroethene	50	0	48.3	ug/L	97		1		60	141	20
1,1-Dichloroethane	50	0	52.3	ug/L	105		1		61	144	20
2-Butanone	250	0	250	ug/L	100		0		42	145	20
Carbon Tetrachloride	50	0	49.2	ug/L	98		0		60	140	20
cis-1,2-Dichloroethene	50	0	51.1	ug/L	102		0		48	156	20
Chloroform	50	0	52.8	ug/L	106		0		63	140	20
1,1,1-Trichloroethane	50	0	50.7	ug/L	101		1		65	140	20
Benzene	50	0	49.4	ug/L	99		0		62	134	20
1,2-Dichloroethane	50	0	49.8	ug/L	100		1		67	136	20
Trichloroethene	50	0	47.4	ug/L	95		0		64	131	20
Toluene	50	0	48.5	ug/L	97		0		68	129	20
Tetrachloroethene	50	0	43.9	ug/L	88		1		29	137	20
Chlorobenzene	50	0	48.9	ug/L	98		0		68	126	20
Ethyl Benzene	50	0	50.0	ug/L	100		0		61	131	20
m/p-Xylenes	100	0	98.4	ug/L	98		0		64	125	20
o-Xylene	50	0	49.5	ug/L	99		1		65	126	20
N-propylbenzene	50	0	51.1	ug/L	102		1		64	126	20
1,3,5-Trimethylbenzene	50	0	50.2	ug/L	100		1		59	127	20
tert-Butylbenzene	50	0	51.1	ug/L	102		2		65	138	20
1,2,4-Trimethylbenzene	50	0	50.7	ug/L	101		1		54	133	20
Sec-butylbenzene	50	0	50.8	ug/L	102		1		65	125	20
1,3-Dichlorobenzene	50	0	47.9	ug/L	96		2		63	125	20
1,4-Dichlorobenzene	50	0	46.7	ug/L	93		2		64	124	20
n-Butylbenzene	50	0	50.3	ug/L	101		1		62	127	20
1,2-Dichlorobenzene	50	0	48.0	ug/L	96		0		64	126	20

Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260-Low **Datafile :** VX014304.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	Limits Low	Limits High	RPD
VX1227WBS01	Vinyl chloride	20	17.5	ug/L	88			65	137	
	1,1-Dichloroethene	20	17.4	ug/L	87			69	134	
	Acetone	100	81.1	ug/L	81			41	181	
	Methyl tert-butyl Ether	20	18.8	ug/L	94			72	136	
	Methylene Chloride	20	17.9	ug/L	90			67	138	
	trans-1,2-Dichloroethene	20	17.5	ug/L	88			72	132	
	1,1-Dichloroethane	20	18.8	ug/L	94			74	135	
	2-Butanone	100	89.8	ug/L	90			64	146	
	Carbon Tetrachloride	20	18.5	ug/L	93			71	134	
	cis-1,2-Dichloroethene	20	18.4	ug/L	92			74	130	
	Chloroform	20	19.0	ug/L	95			74	134	
	1,1,1-Trichloroethane	20	18.0	ug/L	90			74	133	
	Benzene	20	18.8	ug/L	94			75	125	
	1,2-Dichloroethane	20	18.7	ug/L	94			76	130	
	Trichloroethene	20	18.5	ug/L	93			73	127	
	Toluene	20	18.5	ug/L	93			74	125	
	Tetrachloroethene	20	19.6	ug/L	98			46	157	
	Chlorobenzene	20	18.5	ug/L	93			76	123	
	Ethyl Benzene	20	18.9	ug/L	95			75	126	
	m/p-Xylenes	40	37.8	ug/L	95			74	126	
	o-Xylene	20	18.6	ug/L	93			73	127	
	N-propylbenzene	20	19.6	ug/L	98			71	126	
	1,3,5-Trimethylbenzene	20	19.3	ug/L	97			71	127	
	tert-Butylbenzene	20	18.6	ug/L	93			66	129	
	1,2,4-Trimethylbenzene	20	19.3	ug/L	97			69	130	
	Sec-butylbenzene	20	19.6	ug/L	98			72	126	
	1,3-Dichlorobenzene	20	18.5	ug/L	93			70	125	
	1,4-Dichlorobenzene	20	18.3	ug/L	92			71	124	
	n-Butylbenzene	20	19.5	ug/L	98			68	128	
	1,2-Dichlorobenzene	20	18.2	ug/L	91			71	126	

Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8260-Low **Datafile :** VX014350.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	Limits Low	Limits High	RPD
VX1230WBS02	Vinyl chloride	20	17.5	ug/L	88			65	137	
	1,1-Dichloroethene	20	17.9	ug/L	90			69	134	
	Acetone	100	67.4	ug/L	67			41	181	
	Methyl tert-butyl Ether	20	19.2	ug/L	96			72	136	
	Methylene Chloride	20	18.6	ug/L	93			67	138	
	trans-1,2-Dichloroethene	20	17.8	ug/L	89			72	132	
	1,1-Dichloroethane	20	18.8	ug/L	94			74	135	
	2-Butanone	100	84.5	ug/L	85			64	146	
	Carbon Tetrachloride	20	18.6	ug/L	93			71	134	
	cis-1,2-Dichloroethene	20	18.3	ug/L	92			74	130	
	Chloroform	20	19.5	ug/L	98			74	134	
	1,1,1-Trichloroethane	20	18.8	ug/L	94			74	133	
	Benzene	20	18.9	ug/L	95			75	125	
	1,2-Dichloroethane	20	18.5	ug/L	93			76	130	
	Trichloroethene	20	18.5	ug/L	93			73	127	
	Toluene	20	18.6	ug/L	93			74	125	
	Tetrachloroethene	20	18.6	ug/L	93			46	157	
	Chlorobenzene	20	18.7	ug/L	94			76	123	
	Ethyl Benzene	20	18.9	ug/L	95			75	126	
	m/p-Xylenes	40	37.6	ug/L	94			74	126	
	o-Xylene	20	18.3	ug/L	92			73	127	
	N-propylbenzene	20	20.1	ug/L	101			71	126	
	1,3,5-Trimethylbenzene	20	19.7	ug/L	99			71	127	
	tert-Butylbenzene	20	19.5	ug/L	98			66	129	
	1,2,4-Trimethylbenzene	20	19.9	ug/L	100			69	130	
	Sec-butylbenzene	20	20.1	ug/L	101			72	126	
	1,3-Dichlorobenzene	20	19.0	ug/L	95			70	125	
	1,4-Dichlorobenzene	20	18.3	ug/L	92			71	124	
	n-Butylbenzene	20	19.8	ug/L	99			68	128	
	1,2-Dichlorobenzene	20	18.8	ug/L	94			71	126	

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VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VX1227WBL01

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014303.D Lab Sample ID: VX1227WBL01

Date Analyzed: 12/27/2019 Time Analyzed: 12:41

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: MSVOA_X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
VX1227WBS01	VX1227WBS01	VX014304.D	12/27/2019
LW-04	K6449-01	VX014317.D	12/27/2019
LW-03	K6449-02	VX014318.D	12/27/2019
LW-05	K6449-03	VX014319.D	12/27/2019
OW-4	K6449-04	VX014320.D	12/27/2019
OW-5	K6449-05	VX014321.D	12/27/2019
OW-2	K6449-08	VX014322.D	12/27/2019
OW-1	K6449-09	VX014323.D	12/27/2019
FIELD-BLANK	K6449-10	VX014324.D	12/27/2019
DUPLICATE	K6449-11	VX014325.D	12/27/2019
OW-5MS	K6449-06MS	VX014326.D	12/27/2019
OW-5MSD	K6449-07MSD	VX014327.D	12/27/2019

COMMENTS:

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VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VX1230WBL02

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014346.D Lab Sample ID: VX1230WBL02

Date Analyzed: 12/30/2019 Time Analyzed: 11:32

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: MSVOA_X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
VX1230WBS02	VX1230WBS02	VX014350.D	12/30/2019
TRIP-BLANK	K6449-12	VX014352.D	12/30/2019

COMMENTS:

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014005.D BFB Injection Date: 12/13/2019

Instrument ID: MSVOA_X BFB Injection Time: 12:35

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	1 (1.1) 1
174	50.0 - 100.0% of mass 95	91.7
175	5.0 - 9.0% of mass 174	6.8 (7.4) 1
176	95.0 - 101.0% of mass 174	89.8 (97.9) 1
177	5.0 - 9.0% of mass 176	5.8 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDICC001	VSTDICC001	VX014007.D	12/13/2019	14:49
VSTDICC005	VSTDICC005	VX014008.D	12/13/2019	15:12
VSTDICC020	VSTDICC020	VX014009.D	12/13/2019	15:36
VSTDICCC050	VSTDICCC050	VX014010.D	12/13/2019	15:59
VSTDICC100	VSTDICC100	VX014011.D	12/13/2019	16:22
VSTDICC150	VSTDICC150	VX014012.D	12/13/2019	16:45

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014301.D BFB Injection Date: 12/27/2019

Instrument ID: MSVOA_X BFB Injection Time: 11:31

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.2
75	30.0 - 60.0% of mass 95	49.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	1.1 (1.3) 1
174	50.0 - 100.0% of mass 95	85.3
175	5.0 - 9.0% of mass 174	6.5 (7.6) 1
176	95.0 - 101.0% of mass 174	81.3 (95.2) 1
177	5.0 - 9.0% of mass 176	5.3 (6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDCCC050	VSTDCCC050	VX014302.D	12/27/2019	12:03
VX1227WBL01	VX1227WBL01	VX014303.D	12/27/2019	12:41
VX1227WBS01	VX1227WBS01	VX014304.D	12/27/2019	13:15
LW-04	K6449-01	VX014317.D	12/27/2019	18:28
LW-03	K6449-02	VX014318.D	12/27/2019	18:51
LW-05	K6449-03	VX014319.D	12/27/2019	19:14
OW-4	K6449-04	VX014320.D	12/27/2019	19:38
OW-5	K6449-05	VX014321.D	12/27/2019	20:01
OW-2	K6449-08	VX014322.D	12/27/2019	20:24
OW-1	K6449-09	VX014323.D	12/27/2019	20:48
FIELD-BLANK	K6449-10	VX014324.D	12/27/2019	21:11
DUPLICATE	K6449-11	VX014325.D	12/27/2019	21:34
OW-5MS	K6449-06MS	VX014326.D	12/27/2019	21:57
OW-5MSD	K6449-07MSD	VX014327.D	12/27/2019	22:21

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014342.D BFB Injection Date: 12/30/2019

Instrument ID: MSVOA_X BFB Injection Time: 09:16

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: Y/N N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.2
75	30.0 - 60.0% of mass 95	48.6
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	1 (1.3) 1
174	50.0 - 100.0% of mass 95	83
175	5.0 - 9.0% of mass 174	6.4 (7.7) 1
176	95.0 - 101.0% of mass 174	81.1 (97.8) 1
177	5.0 - 9.0% of mass 176	4.8 (6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
VSTDCCC050	VSTDCCC050	VX014343.D	12/30/2019	09:48
VX1230WBL02	VX1230WBL02	VX014346.D	12/30/2019	11:32
VX1230WBS02	VX1230WBS02	VX014350.D	12/30/2019	13:37
TRIP-BLANK	K6449-12	VX014352.D	12/30/2019	14:36

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VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014302.D Date Analyzed: 12/27/2019

Instrument ID: MSVOA_X Time Analyzed: 12:03

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	510192	5.65	769144	6.85	696368	10.10
UPPER LIMIT	1020380	6.15	1538290	7.35	1392740	10.6
LOWER LIMIT	255096	5.15	384572	6.35	348184	9.6
EPA SAMPLE NO.						
LW-04	503387	5.65	777952	6.85	694420	10.11
LW-03	492959	5.65	782918	6.85	708677	10.11
LW-05	503430	5.65	782291	6.85	703283	10.11
OW-4	497638	5.65	771701	6.86	697873	10.11
OW-5	511395	5.65	801632	6.85	714042	10.11
OW-5MS	455479	5.65	725903	6.85	657674	10.11
OW-5MSD	450070	5.65	720319	6.85	648812	10.11
OW-2	507256	5.65	777778	6.85	703356	10.11
OW-1	502043	5.65	774415	6.85	697167	10.11
FIELD-BLANK	507951	5.65	790225	6.85	713834	10.11
DUPLICATE	490536	5.65	760301	6.86	672228	10.11
VX1227WBL01	544872	5.65	840483	6.84	752515	10.10
VX1227WBS01	502000	5.65	756236	6.85	675604	10.10

IS1 = Pentafluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014302.D Date Analyzed: 12/27/2019

Instrument ID: MSVOA_X Time Analyzed: 12:03

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS4 AREA #	RT #				
12 HOUR STD	361319	12.07				
UPPER LIMIT	722638	12.57				
LOWER LIMIT	180660	11.57				
EPA SAMPLE NO.						
LW-04	299085	12.07				
LW-03	304063	12.07				
LW-05	309971	12.07				
OW-4	306720	12.07				
OW-5	310684	12.07				
OW-5MS	321969	12.07				
OW-5MSD	321263	12.07				
OW-2	314310	12.07				
OW-1	307466	12.07				
FIELD-BLANK	317453	12.07				
DUPLICATE	293183	12.07				
VX1227WBL01	322319	12.07				
VX1227WBS01	335091	12.07				

IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

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VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014343.D Date Analyzed: 12/30/2019

Instrument ID: MSVOA_X Time Analyzed: 09:48

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
12 HOUR STD	509534	5.65	770716	6.84	695898	10.10
UPPER LIMIT	1019070	6.15	1541430	7.34	1391800	10.6
LOWER LIMIT	254767	5.15	385358	6.34	347949	9.6
EPA SAMPLE NO.						
TRIP-BLANK	533010	5.65	822851	6.85	732701	10.11
VX1230WBL02	542683	5.65	845249	6.85	756220	10.10
VX1230WBS02	511300	5.65	778289	6.85	703109	10.10

IS1 = Pentafluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: VX014343.D Date Analyzed: 12/30/2019

Instrument ID: MSVOA_X Time Analyzed: 09:48

GC Column: DB-624UI ID: 0.18 (mm) Heated Purge: (Y/N) N

	IS4 AREA #	RT #				
12 HOUR STD	351161	12.07				
UPPER LIMIT	702322	12.57				
LOWER LIMIT	175581	11.57				
EPA SAMPLE NO.						
TRIP-BLANK	316774	12.07				
VX1230WBL02	331507	12.07				
VX1230WBS02	340124	12.07				

IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

 # Column used to flag values outside QC limits with an asterisk.
*** Values outside of QC limits.**

QC SAMPLE DATA

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1227WBL01	SDG No.:	K6449
Lab Sample ID:	VX1227WBL01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014303.D	1		12/27/19 12:41	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	1.00	U	0.16	1.00	ug/L
75-35-4	1,1-Dichloroethene	1.00	U	0.18	1.00	ug/L
67-64-1	Acetone	5.00	U	0.90	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	1.00	U	0.070	1.00	ug/L
75-09-2	Methylene Chloride	1.00	U	0.33	1.00	ug/L
156-60-5	trans-1,2-Dichloroethene	1.00	U	0.24	1.00	ug/L
75-34-3	1,1-Dichloroethane	1.00	U	0.17	1.00	ug/L
78-93-3	2-Butanone	5.00	U	0.71	5.00	ug/L
56-23-5	Carbon Tetrachloride	1.00	U	0.22	1.00	ug/L
156-59-2	cis-1,2-Dichloroethene	1.00	U	0.30	1.00	ug/L
67-66-3	Chloroform	1.00	U	0.14	1.00	ug/L
71-55-6	1,1,1-Trichloroethane	1.00	U	0.12	1.00	ug/L
71-43-2	Benzene	1.00	U	0.10	1.00	ug/L
107-06-2	1,2-Dichloroethane	1.00	U	0.13	1.00	ug/L
79-01-6	Trichloroethene	1.00	U	0.27	1.00	ug/L
108-88-3	Toluene	1.00	U	0.12	1.00	ug/L
127-18-4	Tetrachloroethene	1.00	U	0.15	1.00	ug/L
108-90-7	Chlorobenzene	1.00	U	0.080	1.00	ug/L
100-41-4	Ethyl Benzene	1.00	U	0.080	1.00	ug/L
1330-20-7	Total Xylenes	3.00	U	0.33	3.00	ug/L
103-65-1	n-propylbenzene	1.00	U	0.11	1.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	1.00	U	0.14	1.00	ug/L
98-06-6	tert-Butylbenzene	1.00	U	0.11	1.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	1.00	U	0.11	1.00	ug/L
135-98-8	sec-Butylbenzene	1.00	U	0.12	1.00	ug/L
541-73-1	1,3-Dichlorobenzene	1.00	U	0.14	1.00	ug/L
106-46-7	1,4-Dichlorobenzene	1.00	U	0.20	1.00	ug/L
104-51-8	n-Butylbenzene	1.00	U	0.12	1.00	ug/L
95-50-1	1,2-Dichlorobenzene	1.00	U	0.12	1.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.1		61 - 141	98%	SPK: 50
1868-53-7	Dibromofluoromethane	49.5		69 - 133	99%	SPK: 50

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1227WBL01	SDG No.:	K6449
Lab Sample ID:	VX1227WBL01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014303.D	1		12/27/19 12:41	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.6		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	45.4		58 - 135	91%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	545000	5.65			
540-36-3	1,4-Difluorobenzene	840000	6.84			
3114-55-4	Chlorobenzene-d5	753000	10.1			
3855-82-1	1,4-Dichlorobenzene-d4	322000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1230WBL02	SDG No.:	K6449
Lab Sample ID:	VX1230WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014346.D	1		12/30/19 11:32	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	1.00	U	0.16	1.00	ug/L
75-35-4	1,1-Dichloroethene	1.00	U	0.18	1.00	ug/L
67-64-1	Acetone	5.00	U	0.90	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	1.00	U	0.070	1.00	ug/L
75-09-2	Methylene Chloride	1.00	U	0.33	1.00	ug/L
156-60-5	trans-1,2-Dichloroethene	1.00	U	0.24	1.00	ug/L
75-34-3	1,1-Dichloroethane	1.00	U	0.17	1.00	ug/L
78-93-3	2-Butanone	5.00	U	0.71	5.00	ug/L
56-23-5	Carbon Tetrachloride	1.00	U	0.22	1.00	ug/L
156-59-2	cis-1,2-Dichloroethene	1.00	U	0.30	1.00	ug/L
67-66-3	Chloroform	1.00	U	0.14	1.00	ug/L
71-55-6	1,1,1-Trichloroethane	1.00	U	0.12	1.00	ug/L
71-43-2	Benzene	1.00	U	0.10	1.00	ug/L
107-06-2	1,2-Dichloroethane	1.00	U	0.13	1.00	ug/L
79-01-6	Trichloroethene	1.00	U	0.27	1.00	ug/L
108-88-3	Toluene	1.00	U	0.12	1.00	ug/L
127-18-4	Tetrachloroethene	1.00	U	0.15	1.00	ug/L
108-90-7	Chlorobenzene	1.00	U	0.080	1.00	ug/L
100-41-4	Ethyl Benzene	1.00	U	0.080	1.00	ug/L
1330-20-7	Total Xylenes	3.00	U	0.33	3.00	ug/L
103-65-1	n-propylbenzene	1.00	U	0.11	1.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	1.00	U	0.14	1.00	ug/L
98-06-6	tert-Butylbenzene	1.00	U	0.11	1.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	1.00	U	0.11	1.00	ug/L
135-98-8	sec-Butylbenzene	1.00	U	0.12	1.00	ug/L
541-73-1	1,3-Dichlorobenzene	1.00	U	0.14	1.00	ug/L
106-46-7	1,4-Dichlorobenzene	1.00	U	0.20	1.00	ug/L
104-51-8	n-Butylbenzene	1.00	U	0.12	1.00	ug/L
95-50-1	1,2-Dichlorobenzene	1.00	U	0.12	1.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.7		61 - 141	99%	SPK: 50
1868-53-7	Dibromofluoromethane	49.1		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1230WBL02	SDG No.:	K6449
Lab Sample ID:	VX1230WBL02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014346.D	1		12/30/19 11:32	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.5		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	46.4		58 - 135	93%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	543000	5.65			
540-36-3	1,4-Difluorobenzene	845000	6.85			
3114-55-4	Chlorobenzene-d5	756000	10.1			
3855-82-1	1,4-Dichlorobenzene-d4	332000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1227WBS01	SDG No.:	K6449
Lab Sample ID:	VX1227WBS01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014304.D	1		12/27/19 13:15	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	17.5		0.16	1.00	ug/L
75-35-4	1,1-Dichloroethene	17.4		0.18	1.00	ug/L
67-64-1	Acetone	81.1		0.90	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	18.8		0.070	1.00	ug/L
75-09-2	Methylene Chloride	17.9		0.33	1.00	ug/L
156-60-5	trans-1,2-Dichloroethene	17.5		0.24	1.00	ug/L
75-34-3	1,1-Dichloroethane	18.8		0.17	1.00	ug/L
78-93-3	2-Butanone	89.8		0.71	5.00	ug/L
56-23-5	Carbon Tetrachloride	18.5		0.22	1.00	ug/L
156-59-2	cis-1,2-Dichloroethene	18.4		0.30	1.00	ug/L
67-66-3	Chloroform	19.0		0.14	1.00	ug/L
71-55-6	1,1,1-Trichloroethane	18.0		0.12	1.00	ug/L
71-43-2	Benzene	18.8		0.10	1.00	ug/L
107-06-2	1,2-Dichloroethane	18.7		0.13	1.00	ug/L
79-01-6	Trichloroethene	18.5		0.27	1.00	ug/L
108-88-3	Toluene	18.5		0.12	1.00	ug/L
127-18-4	Tetrachloroethene	19.6		0.15	1.00	ug/L
108-90-7	Chlorobenzene	18.5		0.080	1.00	ug/L
100-41-4	Ethyl Benzene	18.9		0.080	1.00	ug/L
1330-20-7	Total Xylenes	56.4		0.33	3.00	ug/L
103-65-1	n-propylbenzene	19.6		0.11	1.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	19.3		0.14	1.00	ug/L
98-06-6	tert-Butylbenzene	18.6		0.11	1.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	19.3		0.11	1.00	ug/L
135-98-8	sec-Butylbenzene	19.6		0.12	1.00	ug/L
541-73-1	1,3-Dichlorobenzene	18.5		0.14	1.00	ug/L
106-46-7	1,4-Dichlorobenzene	18.3		0.20	1.00	ug/L
104-51-8	n-Butylbenzene	19.5		0.12	1.00	ug/L
95-50-1	1,2-Dichlorobenzene	18.2		0.12	1.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	49.1		61 - 141	98%	SPK: 50
1868-53-7	Dibromofluoromethane	50.7		69 - 133	101%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1227WBS01	SDG No.:	K6449
Lab Sample ID:	VX1227WBS01	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014304.D	1		12/27/19 13:15	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.0		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.4		58 - 135	97%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	502000	5.65			
540-36-3	1,4-Difluorobenzene	756000	6.85			
3114-55-4	Chlorobenzene-d5	676000	10.1			
3855-82-1	1,4-Dichlorobenzene-d4	335000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1230WBS02	SDG No.:	K6449
Lab Sample ID:	VX1230WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014350.D	1		12/30/19 13:37	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	17.5		0.16	1.00	ug/L
75-35-4	1,1-Dichloroethene	17.9		0.18	1.00	ug/L
67-64-1	Acetone	67.4		0.90	5.00	ug/L
1634-04-4	Methyl tert-butyl Ether	19.2		0.070	1.00	ug/L
75-09-2	Methylene Chloride	18.6		0.33	1.00	ug/L
156-60-5	trans-1,2-Dichloroethene	17.8		0.24	1.00	ug/L
75-34-3	1,1-Dichloroethane	18.8		0.17	1.00	ug/L
78-93-3	2-Butanone	84.5		0.71	5.00	ug/L
56-23-5	Carbon Tetrachloride	18.6		0.22	1.00	ug/L
156-59-2	cis-1,2-Dichloroethene	18.3		0.30	1.00	ug/L
67-66-3	Chloroform	19.5		0.14	1.00	ug/L
71-55-6	1,1,1-Trichloroethane	18.8		0.12	1.00	ug/L
71-43-2	Benzene	18.9		0.10	1.00	ug/L
107-06-2	1,2-Dichloroethane	18.5		0.13	1.00	ug/L
79-01-6	Trichloroethene	18.5		0.27	1.00	ug/L
108-88-3	Toluene	18.6		0.12	1.00	ug/L
127-18-4	Tetrachloroethene	18.6		0.15	1.00	ug/L
108-90-7	Chlorobenzene	18.7		0.080	1.00	ug/L
100-41-4	Ethyl Benzene	18.9		0.080	1.00	ug/L
1330-20-7	Total Xylenes	55.9		0.33	3.00	ug/L
103-65-1	n-propylbenzene	20.1		0.11	1.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	19.7		0.14	1.00	ug/L
98-06-6	tert-Butylbenzene	19.5		0.11	1.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	19.9		0.11	1.00	ug/L
135-98-8	sec-Butylbenzene	20.1		0.12	1.00	ug/L
541-73-1	1,3-Dichlorobenzene	19.0		0.14	1.00	ug/L
106-46-7	1,4-Dichlorobenzene	18.3		0.20	1.00	ug/L
104-51-8	n-Butylbenzene	19.8		0.12	1.00	ug/L
95-50-1	1,2-Dichlorobenzene	18.8		0.12	1.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	48.2		61 - 141	96%	SPK: 50
1868-53-7	Dibromofluoromethane	48.8		69 - 133	98%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	VX1230WBS02	SDG No.:	K6449
Lab Sample ID:	VX1230WBS02	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014350.D	1		12/30/19 13:37	VX123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	48.1		65 - 126	96%	SPK: 50
460-00-4	4-Bromofluorobenzene	47.6		58 - 135	95%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	511000	5.65			
540-36-3	1,4-Difluorobenzene	778000	6.85			
3114-55-4	Chlorobenzene-d5	703000	10.1			
3855-82-1	1,4-Dichlorobenzene-d4	340000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MS	SDG No.:	K6449
Lab Sample ID:	K6449-06MS	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014326.D	1		12/27/19 21:57	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	48.0		0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	49.4		0.18	5.00	ug/L
67-64-1	Acetone	180		0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	53.5		0.070	5.00	ug/L
75-09-2	Methylene Chloride	48.8		0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	48.9		0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	51.7		0.17	5.00	ug/L
78-93-3	2-Butanone	250		0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	49.2		0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	51.0		0.30	5.00	ug/L
67-66-3	Chloroform	52.8		0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	51.0		0.12	5.00	ug/L
71-43-2	Benzene	49.5		0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	50.5		0.13	5.00	ug/L
79-01-6	Trichloroethene	47.2		0.27	5.00	ug/L
108-88-3	Toluene	48.6		0.12	5.00	ug/L
127-18-4	Tetrachloroethene	44.4		0.15	5.00	ug/L
108-90-7	Chlorobenzene	48.8		0.080	5.00	ug/L
100-41-4	Ethyl Benzene	49.8		0.080	5.00	ug/L
1330-20-7	Total Xylenes	147		0.33	15.0	ug/L
103-65-1	n-propylbenzene	51.4		0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	50.7		0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	52.0		0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	51.1		0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	51.4		0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	48.8		0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	47.5		0.20	5.00	ug/L
104-51-8	n-Butylbenzene	50.6		0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	48.1		0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	51.0		61 - 141	102%	SPK: 50
1868-53-7	Dibromofluoromethane	51.1		69 - 133	102%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MS	SDG No.:	K6449
Lab Sample ID:	K6449-06MS	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014326.D	1		12/27/19 21:57	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	49.8		65 - 126	100%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.6		58 - 135	97%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	455000	5.65			
540-36-3	1,4-Difluorobenzene	726000	6.85			
3114-55-4	Chlorobenzene-d5	658000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	322000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MSD	SDG No.:	K6449
Lab Sample ID:	K6449-07MSD	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014327.D	1		12/27/19 22:21	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
75-01-4	Vinyl Chloride	47.3		0.16	5.00	ug/L
75-35-4	1,1-Dichloroethene	49.0		0.18	5.00	ug/L
67-64-1	Acetone	190		0.90	25.0	ug/L
1634-04-4	Methyl tert-butyl Ether	53.2		0.070	5.00	ug/L
75-09-2	Methylene Chloride	49.1		0.33	5.00	ug/L
156-60-5	trans-1,2-Dichloroethene	48.3		0.24	5.00	ug/L
75-34-3	1,1-Dichloroethane	52.3		0.17	5.00	ug/L
78-93-3	2-Butanone	250		0.71	25.0	ug/L
56-23-5	Carbon Tetrachloride	49.2		0.22	5.00	ug/L
156-59-2	cis-1,2-Dichloroethene	51.1		0.30	5.00	ug/L
67-66-3	Chloroform	52.8		0.14	5.00	ug/L
71-55-6	1,1,1-Trichloroethane	50.7		0.12	5.00	ug/L
71-43-2	Benzene	49.4		0.10	5.00	ug/L
107-06-2	1,2-Dichloroethane	49.8		0.13	5.00	ug/L
79-01-6	Trichloroethene	47.4		0.27	5.00	ug/L
108-88-3	Toluene	48.5		0.12	5.00	ug/L
127-18-4	Tetrachloroethene	43.9		0.15	5.00	ug/L
108-90-7	Chlorobenzene	48.9		0.080	5.00	ug/L
100-41-4	Ethyl Benzene	50.0		0.080	5.00	ug/L
1330-20-7	Total Xylenes	148		0.33	15.0	ug/L
103-65-1	n-propylbenzene	51.1		0.11	5.00	ug/L
108-67-8	1,3,5-Trimethylbenzene	50.2		0.14	5.00	ug/L
98-06-6	tert-Butylbenzene	51.1		0.11	5.00	ug/L
95-63-6	1,2,4-Trimethylbenzene	50.7		0.11	5.00	ug/L
135-98-8	sec-Butylbenzene	50.8		0.12	5.00	ug/L
541-73-1	1,3-Dichlorobenzene	47.9		0.14	5.00	ug/L
106-46-7	1,4-Dichlorobenzene	46.7		0.20	5.00	ug/L
104-51-8	n-Butylbenzene	50.3		0.12	5.00	ug/L
95-50-1	1,2-Dichlorobenzene	48.0		0.12	5.00	ug/L
SURROGATES						
17060-07-0	1,2-Dichloroethane-d4	52.1		61 - 141	104%	SPK: 50
1868-53-7	Dibromofluoromethane	50.2		69 - 133	100%	SPK: 50

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MSD	SDG No.:	K6449
Lab Sample ID:	K6449-07MSD	Matrix:	Water
Analytical Method:	SW8260	% Moisture:	100
Sample Wt/Vol:	5 Units: mL	Final Vol:	5000 uL
Soil Aliquot Vol:	uL	Test:	VOCMS Group1
GC Column:	DB-624UI ID : 0.18	Level :	LOW

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
VX014327.D	1		12/27/19 22:21	VX122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
2037-26-5	Toluene-d8	50.3		65 - 126	101%	SPK: 50
460-00-4	4-Bromofluorobenzene	48.8		58 - 135	98%	SPK: 50
INTERNAL STANDARDS						
363-72-4	Pentafluorobenzene	450000	5.65			
540-36-3	1,4-Difluorobenzene	720000	6.85			
3114-55-4	Chlorobenzene-d5	649000	10.11			
3855-82-1	1,4-Dichlorobenzene-d4	321000	12.07			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CALIBRATION SUMMARY

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: MSVOA_X Calibration Date(s): 12/13/2019 12/13/2019

Heated Purge: (Y/N) N Calibration Time(s): 14:49 16:45

GC Column: DB-624UI ID: 0.18 (mm)

LAB FILE ID: RRF001 = VX014007.D RRF005 = VX014008.D RRF020 = VX014009.D
RRF050 = VX014010.D RRF100 = VX014011.D RRF150 = VX014012.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	RRF150	$\overline{RRF}$	% RSD
Vinyl Chloride	0.767	0.606	0.615	0.603	0.608	0.602	0.633	10.4
1,1-Dichloroethene	0.532	0.487	0.459	0.457	0.471	0.479	0.481	5.7
Acetone	0.397	0.332	0.394	0.366	0.365	0.354	0.368	6.7
Methyl tert-butyl Ether	1.649	1.571	1.550	1.545	1.569	1.600	1.580	2.5
Methylene Chloride	0.735	0.604	0.546	0.523	0.531	0.538	0.579	14
trans-1,2-Dichloroethene	0.629	0.532	0.502	0.496	0.509	0.511	0.530	9.4
1,1-Dichloroethane	1.111	0.946	0.903	0.899	0.922	0.932	0.952	8.4
2-Butanone	0.439	0.450	0.473	0.450	0.456	0.454	0.454	2.5
Carbon Tetrachloride	0.429	0.394	0.402	0.418	0.426	0.439	0.418	4.1
cis-1,2-Dichloroethene	0.703	0.573	0.576	0.568	0.582	0.593	0.599	8.6
Chloroform	0.989	0.885	0.883	0.878	0.882	0.898	0.903	4.8
1,1,1-Trichloroethane	0.844	0.750	0.738	0.743	0.764	0.776	0.769	5.1
Benzene	1.587	1.419	1.367	1.353	1.369	1.374	1.412	6.3
1,2-Dichloroethane	0.491	0.503	0.480	0.459	0.466	0.471	0.479	3.5
Trichloroethene	0.477	0.386	0.361	0.362	0.374	0.379	0.390	11.2
Toluene	1.011	0.885	0.870	0.858	0.860	0.870	0.892	6.6
Tetrachloroethene	0.489	0.418	0.403	0.424	0.472	0.449	0.442	7.6
Chlorobenzene	1.214	1.071	1.027	1.016	1.024	1.028	1.063	7.2
Ethyl Benzene	1.986	1.800	1.789	1.809	1.789	1.794	1.828	4.3
m/p-Xylenes	0.764	0.693	0.683	0.689	0.694	0.695	0.703	4.3
o-Xylene	0.742	0.689	0.667	0.676	0.678	0.685	0.689	3.9
n-propylbenzene	4.283	3.780	3.945	3.963	3.926	3.794	3.949	4.6
1,3,5-Trimethylbenzene	3.201	2.926	2.963	2.927	2.913	2.846	2.963	4.1
tert-Butylbenzene	3.255	2.927	2.866	2.807	2.719	2.726	2.883	6.9
1,2,4-Trimethylbenzene	3.148	2.928	2.962	2.940	2.923	2.901	2.967	3.1
sec-Butylbenzene	3.705	3.313	3.325	3.368	3.395	3.317	3.404	4.4
1,3-Dichlorobenzene	2.043	1.661	1.617	1.602	1.634	1.630	1.698	10
1,4-Dichlorobenzene	2.201	1.698	1.598	1.595	1.629	1.636	1.726	13.6
n-Butylbenzene	2.768	2.384	2.527	2.696	2.777	2.787	2.657	6.2
1,2-Dichlorobenzene	2.038	1.727	1.632	1.627	1.623	1.607	1.709	9.7
1,2-Dichloroethane-d4		0.620	0.520	0.554	0.563	0.577	0.567	6.4
Dibromofluoromethane		0.322	0.276	0.301	0.306	0.315	0.304	5.8
Toluene-d8		1.238	1.102	1.191	1.190	1.196	1.183	4.2

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: MSVOA_X Calibration Date(s): 12/13/2019 12/13/2019

Heated Purge: (Y/N) N Calibration Time(s): 14:49 16:45

GC Column: DB-624UI ID: 0.18 (mm)

LAB FILE ID: RRF001 = VX014007.D RRF005 = VX014008.D RRF020 = VX014009.D
RRF050 = VX014010.D RRF100 = VX014011.D RRF150 = VX014012.D

COMPOUND	RRF001	RRF005	RRF020	RRF050	RRF100	RRF150	$\overline{RRF}$	% RSD
4-Bromofluorobenzene		0.436	0.387	0.434	0.446	0.461	0.433	6.4

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: MSVOA_X Calibration Date/Time: 12/27/2019 12:03

Lab File ID: VX014302.D Init. Calib. Date(s): 12/13/2019 12/13/2019

Heated Purge: (Y/N) N Init. Calib. Time(s): 14:49 16:45

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Vinyl Chloride	0.633	0.579		-8.53	20
1,1-Dichloroethene	0.481	0.454		-5.61	20
Acetone	0.368	0.300		-18.48	20
Methyl tert-butyl Ether	1.580	1.556		-1.52	20
Methylene Chloride	0.579	0.531		-8.29	20
trans-1,2-Dichloroethene	0.530	0.495		-6.6	20
1,1-Dichloroethane	0.952	0.917	0.1	-3.68	20
2-Butanone	0.454	0.427		-5.95	20
Carbon Tetrachloride	0.418	0.420		0.48	20
cis-1,2-Dichloroethene	0.599	0.575		-4.01	20
Chloroform	0.903	0.897		-0.66	20
1,1,1-Trichloroethane	0.769	0.747		-2.86	20
Benzene	1.412	1.380		-2.27	20
1,2-Dichloroethane	0.479	0.471		-1.67	20
Trichloroethene	0.390	0.380		-2.56	20
Toluene	0.892	0.865		-3.03	20
Tetrachloroethene	0.442	0.433		-2.04	20
Chlorobenzene	1.063	1.039	0.3	-2.26	20
Ethyl Benzene	1.828	1.839		0.6	20
m/p-Xylenes	0.703	0.708		0.71	20
o-Xylene	0.689	0.676		-1.89	20
n-propylbenzene	3.949	4.057		2.73	20
1,3,5-Trimethylbenzene	2.963	2.935		-0.94	20
tert-Butylbenzene	2.883	2.849		-1.18	20
1,2,4-Trimethylbenzene	2.967	2.964		-0.1	20
sec-Butylbenzene	3.404	3.448		1.29	20
1,3-Dichlorobenzene	1.698	1.597		-5.95	20
1,4-Dichlorobenzene	1.726	1.612		-6.61	20
n-Butylbenzene	2.657	2.811		5.8	20
1,2-Dichlorobenzene	1.709	1.602		-6.26	20
1,2-Dichloroethane-d4	0.567	0.545		-3.88	20
Dibromofluoromethane	0.304	0.307		0.99	20
Toluene-d8	1.183	1.182		-0.09	20
4-Bromofluorobenzene	0.433	0.425		-1.85	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: MSVOA_X Calibration Date/Time: 12/30/2019 09:48

Lab File ID: VX014343.D Init. Calib. Date(s): 12/13/2019 12/13/2019

Heated Purge: (Y/N) N Init. Calib. Time(s): 14:49 16:45

GC Column: DB-624UI ID: 0.18 (mm)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX%D
Vinyl Chloride	0.633	0.583		-7.9	20
1,1-Dichloroethene	0.481	0.461		-4.16	20
Acetone	0.368	0.339		-7.88	20
Methyl tert-butyl Ether	1.580	1.605		1.58	20
Methylene Chloride	0.579	0.536		-7.43	20
trans-1,2-Dichloroethene	0.530	0.495		-6.6	20
1,1-Dichloroethane	0.952	0.948	0.1	-0.42	20
2-Butanone	0.454	0.467		2.86	20
Carbon Tetrachloride	0.418	0.426		1.91	20
cis-1,2-Dichloroethene	0.599	0.581		-3.01	20
Chloroform	0.903	0.916		1.44	20
1,1,1-Trichloroethane	0.769	0.758		-1.43	20
Benzene	1.412	1.396		-1.13	20
1,2-Dichloroethane	0.479	0.478		-0.21	20
Trichloroethene	0.390	0.381		-2.31	20
Toluene	0.892	0.879		-1.46	20
Tetrachloroethene	0.442	0.432		-2.26	20
Chlorobenzene	1.063	1.048	0.3	-1.41	20
Ethyl Benzene	1.828	1.865		2.02	20
m/p-Xylenes	0.703	0.709		0.85	20
o-Xylene	0.689	0.686		-0.44	20
n-propylbenzene	3.949	4.218		6.81	20
1,3,5-Trimethylbenzene	2.963	3.073		3.71	20
tert-Butylbenzene	2.883	2.917		1.18	20
1,2,4-Trimethylbenzene	2.967	3.062		3.2	20
sec-Butylbenzene	3.404	3.623		6.43	20
1,3-Dichlorobenzene	1.698	1.652		-2.71	20
1,4-Dichlorobenzene	1.726	1.669		-3.3	20
n-Butylbenzene	2.657	2.929		10.24	20
1,2-Dichlorobenzene	1.709	1.679		-1.75	20
1,2-Dichloroethane-d4	0.567	0.561		-1.06	20
Dibromofluoromethane	0.304	0.309		1.64	20
Toluene-d8	1.183	1.213		2.54	20
4-Bromofluorobenzene	0.433	0.438		1.15	20

All other compounds must meet a minimum RRF of 0.010.
RRF of 1,4-Dioxane = Value should be divide by 1000.

CHEMTECH

284 Sheffield Street, Mountainside, New Jersey - 07092

Phone: (908) 789 8900 Fax: (908) 789 8922

LAB CHRONICLE

OrderID:	K6449	**OrderDate:**	12/27/2019 9:51:00 AM
Client:	LiRo Engineers, Inc.	**Project:**	BUDC - 683 Northland Avenue
Contact:	Jon Williams	**Location:**	E61

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
K6449-01	**LW-04**	**Water**			**12/18/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/03/20	
K6449-02	**LW-03**	**Water**			**12/18/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/04/20	
K6449-03	**LW-05**	**Water**			**12/19/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/04/20	
K6449-04	**OW-4**	**Water**			**12/20/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/04/20	
K6449-05	**OW-5**	**Water**			**12/23/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/04/20	
K6449-08	**OW-2**	**Water**			**12/23/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/03/20	
K6449-09	**OW-1**	**Water**			**12/23/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/03/20	
K6449-10	**FIELD-BLANK**	**Water**			**12/23/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/03/20	
K6449-11	**DUPLICATE**	**Water**			**12/23/19**			**12/27/19**
			SVOCMS Group1	8270D		12/27/19	01/03/20	

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Hit Summary Sheet
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Sample ID	Client ID		Parameter	Concentration	C	MDL	RDL	Units
Client ID : LW-03								
K6449-02	LW-03	WATER	Phenol	2.300	J	2.2	10	ug/L
			Total Svoc :	**2.30**				
			Total Concentration:	**2.30**				
Client ID : LW-05								
K6449-03	LW-05	WATER	Phenol	3.500	J	2.2	10	ug/L
			Total Svoc :	**3.50**				
			Total Concentration:	**3.50**				
Client ID : OW-4								
K6449-04	OW-4	WATER	Phenol	2.800	J	2.2	10	ug/L
			Total Svoc :	**2.80**				
			Total Concentration:	**2.80**				
Client ID : OW-5								
K6449-05	OW-5	WATER	Phenol	3.300	J	2.2	10	ug/L
			Total Svoc :	**3.30**				
			Total Concentration:	**3.30**				
Client ID : OW-2								
K6449-08	OW-2	WATER	Phenol	6.000	J	2.2	10	ug/L
			Total Svoc :	**6.00**				
			Total Concentration:	**6.00**				
Client ID : OW-1								
K6449-09	OW-1	WATER	Phenol	4.600	J	2.2	10	ug/L
			Total Svoc :	**4.60**				
			Total Concentration:	**4.60**				
Client ID : FIELD-BLANK								
K6449-10	FIELD-BLANK	WATER	Phenol	2.700	J	2.2	10	ug/L
			Total Svoc :	**2.70**				
			Total Concentration:	**2.70**				
Client ID : DUPLICATE								
K6449-11	DUPLICATE	WATER	Phenol	3.900	J	2.2	10	ug/L
			Total Svoc :	**3.90**				
			Total Concentration:	**3.90**				

SAMPLE DATA

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118464.D	1	12/27/19 15:35	01/03/20 18:40	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	10.0	U	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	89.9		10 - 130	60%	SPK: 150
13127-88-3	Phenol-d6	59.4		10 - 130	40%	SPK: 150
4165-60-0	Nitrobenzene-d5	107		36 - 131	107%	SPK: 100
321-60-8	2-Fluorobiphenyl	98.8		39 - 131	99%	SPK: 100
118-79-6	2,4,6-Tribromophenol	160		25 - 155	107%	SPK: 150
1718-51-0	Terphenyl-d14	109		23 - 130	109%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118464.D	1	12/27/19 15:35	01/03/20 18:40	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	76000	6.85			
1146-65-2	Naphthalene-d8	275000	8.13			
15067-26-2	Acenaphthene-d10	150000	9.89			
1517-22-2	Phenanthrene-d10	288000	11.39			
1719-03-5	Chrysene-d12	220000	14.04			
1520-96-3	Perylene-d12	213000	15.53			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043923.D	1	12/27/19 15:35	01/04/20 15:29	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	2.30	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	100.0		10 - 130	67%	SPK: 150
13127-88-3	Phenol-d6	70.5		10 - 130	47%	SPK: 150
4165-60-0	Nitrobenzene-d5	89.7		36 - 131	90%	SPK: 100
321-60-8	2-Fluorobiphenyl	92.4		39 - 131	92%	SPK: 100
118-79-6	2,4,6-Tribromophenol	154		25 - 155	103%	SPK: 150
1718-51-0	Terphenyl-d14	95.5		23 - 130	96%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043923.D	1	12/27/19 15:35	01/04/20 15:29	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	136000	7.96			
1146-65-2	Naphthalene-d8	602000	10.77			
15067-26-2	Acenaphthene-d10	410000	14.59			
1517-22-2	Phenanthrene-d10	851000	17.34			
1719-03-5	Chrysene-d12	715000	21.59			
1520-96-3	Perylene-d12	806000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043922.D	1	12/27/19 15:35	01/04/20 14:50	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	3.50	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	99.3		10 - 130	66%	SPK: 150
13127-88-3	Phenol-d6	69.1		10 - 130	46%	SPK: 150
4165-60-0	Nitrobenzene-d5	86.5		36 - 131	86%	SPK: 100
321-60-8	2-Fluorobiphenyl	92.2		39 - 131	92%	SPK: 100
118-79-6	2,4,6-Tribromophenol	148		25 - 155	99%	SPK: 150
1718-51-0	Terphenyl-d14	94.6		23 - 130	95%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043922.D	1	12/27/19 15:35	01/04/20 14:50	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	135000	7.96			
1146-65-2	Naphthalene-d8	592000	10.76			
15067-26-2	Acenaphthene-d10	396000	14.59			
1517-22-2	Phenanthrene-d10	818000	17.34			
1719-03-5	Chrysene-d12	692000	21.59			
1520-96-3	Perylene-d12	792000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043905.D	1	12/27/19 15:35	01/04/20 02:27	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	2.80	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	98.3		10 - 130	66%	SPK: 150
13127-88-3	Phenol-d6	68.0		10 - 130	45%	SPK: 150
4165-60-0	Nitrobenzene-d5	87.0		36 - 131	87%	SPK: 100
321-60-8	2-Fluorobiphenyl	92.1		39 - 131	92%	SPK: 100
118-79-6	2,4,6-Tribromophenol	154		25 - 155	103%	SPK: 150
1718-51-0	Terphenyl-d14	96.4		23 - 130	96%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043905.D	1	12/27/19 15:35	01/04/20 02:27	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	134000	7.96			
1146-65-2	Naphthalene-d8	584000	10.77			
15067-26-2	Acenaphthene-d10	394000	14.59			
1517-22-2	Phenanthrene-d10	875000	17.34			
1719-03-5	Chrysene-d12	726000	21.59			
1520-96-3	Perylene-d12	813000	24.71			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
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D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043904.D	1	12/27/19 15:35	01/04/20 01:48	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	3.30	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	103		10 - 130	69%	SPK: 150
13127-88-3	Phenol-d6	72.1		10 - 130	48%	SPK: 150
4165-60-0	Nitrobenzene-d5	90.0		36 - 131	90%	SPK: 100
321-60-8	2-Fluorobiphenyl	93.7		39 - 131	94%	SPK: 100
118-79-6	2,4,6-Tribromophenol	155		25 - 155	104%	SPK: 150
1718-51-0	Terphenyl-d14	95.9		23 - 130	96%	SPK: 100
INTERNAL STANDARDS						

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043904.D	1	12/27/19 15:35	01/04/20 01:48	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	135000	7.96			
1146-65-2	Naphthalene-d8	591000	10.77			
15067-26-2	Acenaphthene-d10	401000	14.59			
1517-22-2	Phenanthrene-d10	854000	17.34			
1719-03-5	Chrysene-d12	714000	21.58			
1520-96-3	Perylene-d12	796000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043901.D	1	12/27/19 15:35	01/03/20 23:50	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	6.00	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	102		10 - 130	68%	SPK: 150
13127-88-3	Phenol-d6	71.6		10 - 130	48%	SPK: 150
4165-60-0	Nitrobenzene-d5	90.8		36 - 131	91%	SPK: 100
321-60-8	2-Fluorobiphenyl	93.1		39 - 131	93%	SPK: 100
118-79-6	2,4,6-Tribromophenol	156		25 - 155	104%	SPK: 150
1718-51-0	Terphenyl-d14	99.9		23 - 130	100%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043901.D	1	12/27/19 15:35	01/03/20 23:50	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	129000	7.96			
1146-65-2	Naphthalene-d8	570000	10.76			
15067-26-2	Acenaphthene-d10	385000	14.59			
1517-22-2	Phenanthrene-d10	820000	17.34			
1719-03-5	Chrysene-d12	676000	21.59			
1520-96-3	Perylene-d12	780000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043900.D	1	12/27/19 15:35	01/03/20 23:11	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	4.60	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	103		10 - 130	68%	SPK: 150
13127-88-3	Phenol-d6	72.0		10 - 130	48%	SPK: 150
4165-60-0	Nitrobenzene-d5	89.5		36 - 131	90%	SPK: 100
321-60-8	2-Fluorobiphenyl	94.1		39 - 131	94%	SPK: 100
118-79-6	2,4,6-Tribromophenol	149		25 - 155	99%	SPK: 150
1718-51-0	Terphenyl-d14	95.5		23 - 130	96%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043900.D	1	12/27/19 15:35	01/03/20 23:11	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	145000	7.97			
1146-65-2	Naphthalene-d8	644000	10.76			
15067-26-2	Acenaphthene-d10	406000	14.59			
1517-22-2	Phenanthrene-d10	784000	17.34			
1719-03-5	Chrysene-d12	668000	21.59			
1520-96-3	Perylene-d12	769000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043899.D	1	12/27/19 15:35	01/03/20 22:32	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	2.70	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	89.1		10 - 130	59%	SPK: 150
13127-88-3	Phenol-d6	61.1		10 - 130	41%	SPK: 150
4165-60-0	Nitrobenzene-d5	82.6		36 - 131	83%	SPK: 100
321-60-8	2-Fluorobiphenyl	89.7		39 - 131	90%	SPK: 100
118-79-6	2,4,6-Tribromophenol	146		25 - 155	97%	SPK: 150
1718-51-0	Terphenyl-d14	93.2		23 - 130	93%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043899.D	1	12/27/19 15:35	01/03/20 22:32	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	129000	7.96			
1146-65-2	Naphthalene-d8	565000	10.76			
15067-26-2	Acenaphthene-d10	380000	14.59			
1517-22-2	Phenanthrene-d10	860000	17.34			
1719-03-5	Chrysene-d12	726000	21.58			
1520-96-3	Perylene-d12	819000	24.71			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043898.D	1	12/27/19 15:35	01/03/20 21:52	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	3.90	J	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	103		10 - 130	68%	SPK: 150
13127-88-3	Phenol-d6	72.2		10 - 130	48%	SPK: 150
4165-60-0	Nitrobenzene-d5	90.3		36 - 131	90%	SPK: 100
321-60-8	2-Fluorobiphenyl	94.7		39 - 131	95%	SPK: 100
118-79-6	2,4,6-Tribromophenol	157		25 - 155	105%	SPK: 150
1718-51-0	Terphenyl-d14	98.3		23 - 130	98%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043898.D	1	12/27/19 15:35	01/03/20 21:52	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	130000	7.96			
1146-65-2	Naphthalene-d8	570000	10.76			
15067-26-2	Acenaphthene-d10	379000	14.59			
1517-22-2	Phenanthrene-d10	817000	17.34			
1719-03-5	Chrysene-d12	687000	21.58			
1520-96-3	Perylene-d12	797000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

QC SUMMARY

Surrogate Summary

SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8270D

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	High
K6449-01	LW-04	2-Fluorophenol	150	89.9	60		10	130
		Phenol-d6	150	59.4	40		10	130
		Nitrobenzene-d5	100	107	107		36	131
		2-Fluorobiphenyl	100	98.8	99		39	131
		2,4,6-Tribromophenol	150	160	107		25	155
		Terphenyl-d14	100	109	109		23	130
K6449-02	LW-03	2-Fluorophenol	150	100.0	67		10	130
		Phenol-d6	150	70.5	47		10	130
		Nitrobenzene-d5	100	89.7	90		36	131
		2-Fluorobiphenyl	100	92.4	92		39	131
		2,4,6-Tribromophenol	150	154	103		25	155
		Terphenyl-d14	100	95.5	96		23	130
K6449-03	LW-05	2-Fluorophenol	150	99.3	66		10	130
		Phenol-d6	150	69.1	46		10	130
		Nitrobenzene-d5	100	86.5	86		36	131
		2-Fluorobiphenyl	100	92.2	92		39	131
		2,4,6-Tribromophenol	150	148	99		25	155
		Terphenyl-d14	100	94.6	95		23	130
K6449-04	OW-4	2-Fluorophenol	150	98.3	66		10	130
		Phenol-d6	150	68.0	45		10	130
		Nitrobenzene-d5	100	87.0	87		36	131
		2-Fluorobiphenyl	100	92.1	92		39	131
		2,4,6-Tribromophenol	150	154	103		25	155
		Terphenyl-d14	100	96.4	96		23	130
K6449-05	OW-5	2-Fluorophenol	150	103	69		10	130
		Phenol-d6	150	72.1	48		10	130
		Nitrobenzene-d5	100	90.0	90		36	131
		2-Fluorobiphenyl	100	93.7	94		39	131
		2,4,6-Tribromophenol	150	155	104		25	155
		Terphenyl-d14	100	95.9	96		23	130
K6449-06MS	OW-5MS	2-Fluorophenol	150	106	71		10	130
		Phenol-d6	150	74.5	50		10	130
		Nitrobenzene-d5	100	89.8	90		36	131
		2-Fluorobiphenyl	100	92.9	93		39	131
		2,4,6-Tribromophenol	150	152	101		25	155
		Terphenyl-d14	100	99.9	100		23	130
K6449-07MSD	OW-5MSD	2-Fluorophenol	150	105	70		10	130
		Phenol-d6	150	72.9	49		10	130
		Nitrobenzene-d5	100	86.7	87		36	131
		2-Fluorobiphenyl	100	89.7	90		39	131
		2,4,6-Tribromophenol	150	146	98		25	155
		Terphenyl-d14	100	96.6	97		23	130
K6449-08	OW-2	2-Fluorophenol	150	102	68		10	130
		Phenol-d6	150	71.6	48		10	130
		Nitrobenzene-d5	100	90.8	91		36	131
		2-Fluorobiphenyl	100	93.1	93		39	131
		2,4,6-Tribromophenol	150	156	104		25	155
		Terphenyl-d14	100	99.9	100		23	130
K6449-09	OW-1	2-Fluorophenol	150	103	68		10	130
		Phenol-d6	150	72.0	48		10	130
		Nitrobenzene-d5	100	89.5	90		36	131
		2-Fluorobiphenyl	100	94.1	94		39	131

Surrogate Summary

SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8270D

Lab Sample ID	Client ID	Parameter	Spike (PPM)	Result (PPM)	Recovery (%)	Qual	Limits (%) Low	Limits (%) High
K6449-09	OW-1	2,4,6-Tribromophenol	150	149	99		25	155
		Terphenyl-d14	100	95.5	96		23	130
K6449-10	FIELD-BLANK	2-Fluorophenol	150	89.1	59		10	130
		Phenol-d6	150	61.1	41		10	130
		Nitrobenzene-d5	100	82.6	83		36	131
		2-Fluorobiphenyl	100	89.7	90		39	131
		2,4,6-Tribromophenol	150	146	97		25	155
		Terphenyl-d14	100	93.2	93		23	130
K6449-11	DUPLICATE	2-Fluorophenol	150	103	68		10	130
		Phenol-d6	150	72.2	48		10	130
		Nitrobenzene-d5	100	90.3	90		36	131
		2-Fluorobiphenyl	100	94.7	95		39	131
		2,4,6-Tribromophenol	150	157	105		25	155
		Terphenyl-d14	100	98.3	98		23	130
PB125777BL	PB125777BL	2-Fluorophenol	150	134	89		10	130
		Phenol-d6	150	146	97		10	130
		Nitrobenzene-d5	100	92.4	92		36	131
		2-Fluorobiphenyl	100	91.4	91		39	131
		2,4,6-Tribromophenol	150	136	91		25	155
		Terphenyl-d14	100	100	100		23	130
PB125777BS	PB125777BS	2-Fluorophenol	150	115	77		10	130
		Phenol-d6	150	119	79		10	130
		Nitrobenzene-d5	100	71.1	71		36	131
		2-Fluorobiphenyl	100	67.5	68		39	131
		2,4,6-Tribromophenol	150	106	71		25	155
		Terphenyl-d14	100	83.1	83		23	130

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Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8270D

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	RPD
Lab Sample ID: K6449-07MSD		**Client Sample ID: OW-5MSD**						**DataFile: BG043902.D**			
Phenol	50	3.30	29.0	ug/L	51	0			10	130	20
2-Methylphenol	50	0	46.1	ug/L	92	0			14	118	20
3+4-Methylphenols	50	0	42.5	ug/L	85	0			12	109	20
Naphthalene	50	0	42.7	ug/L	85	0			17	157	20
Acenaphthylene	50	0	46.4	ug/L	93	0			40	141	20
Acenaphthene	50	0	45.0	ug/L	90	0			37	146	20
Dibenzofuran	50	0	46.6	ug/L	93	0			41	145	20
Fluorene	50	0	47.2	ug/L	94	0			39	144	20
Hexachlorobenzene	50	0	42.8	ug/L	86	0			33	154	20
Pentachlorophenol	100	0	97.5	ug/L	98	0			28	171	20
Phenanthrene	50	0	46.0	ug/L	92	0			40	147	20
Anthracene	50	0	48.2	ug/L	96	0			41	146	20
Fluoranthene	50	0	44.7	ug/L	89	0			42	146	20
Pyrene	50	0	46.2	ug/L	92	0			41	149	20
Benzo(a)anthracene	50	0	47.0	ug/L	94	0			41	147	20
Chrysene	50	0	47.0	ug/L	94	0			44	144	20
Benzo(b)fluoranthene	50	0	45.4	ug/L	91	0			40	150	20
Benzo(k)fluoranthene	50	0	47.0	ug/L	94	0			40	147	20
Benzo(a)pyrene	50	0	45.2	ug/L	90	0			42	147	20
Indeno(1,2,3-cd)pyrene	50	0	47.1	ug/L	94	0			30	166	20
Dibenz(a,h)anthracene	50	0	47.7	ug/L	95	0			23	172	20
Benzo(g,h,i)perylene	50	0	48.6	ug/L	97	0			27	167	20
1,4-Dioxane	50	0	26.2	ug/L	52	0			38	130	20

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Matrix Spike/Matrix Spike Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: SW8270D

Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	RPD
Lab Sample ID: K6449-06MS		**Client Sample ID: OW-5MS**						**DataFile: BG043903.D**			
Phenol	50	3.30	28.4	ug/L	50				10	130	
2-Methylphenol	50	0	47.4	ug/L	95				14	118	
3+4-Methylphenols	50	0	44.4	ug/L	89				12	109	
Naphthalene	50	0	45.3	ug/L	91				17	157	
Acenaphthylene	50	0	47.8	ug/L	96				40	141	
Acenaphthene	50	0	45.3	ug/L	91				37	146	
Dibenzofuran	50	0	48.3	ug/L	97				41	145	
Fluorene	50	0	48.5	ug/L	97				39	144	
Hexachlorobenzene	50	0	44.8	ug/L	90				33	154	
Pentachlorophenol	100	0	100	ug/L	100				28	171	
Phenanthrene	50	0	47.4	ug/L	95				40	147	
Anthracene	50	0	49.3	ug/L	99				41	146	
Fluoranthene	50	0	45.7	ug/L	91				42	146	
Pyrene	50	0	47.7	ug/L	95				41	149	
Benzo(a)anthracene	50	0	48.8	ug/L	98				41	147	
Chrysene	50	0	48.4	ug/L	97				44	144	
Benzo(b)fluoranthene	50	0	47.6	ug/L	95				40	150	
Benzo(k)fluoranthene	50	0	47.4	ug/L	95				40	147	
Benzo(a)pyrene	50	0	45.9	ug/L	92				42	147	
Indeno(1,2,3-cd)pyrene	50	0	48.5	ug/L	97				30	166	
Dibenz(a,h)anthracene	50	0	49.1	ug/L	98				23	172	
Benzo(g,h,i)perylene	50	0	49.9	ug/L	100				27	167	
1,4-Dioxane	50	0	28.2	ug/L	56				38	130	

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Laboratory Control Sample/Laboratory Control Sample Duplicate Summary
SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8270D **DataFile:** BF118503.D

Lab Sample ID	Parameter	Spike	Result	Unit	Rec	RPD	Qual	RPD Qual	Limits Low	Limits High	RPD
PB125777BS	Phenol	50	44.5	ug/L	89				10	130	
	2-Methylphenol	50	42.3	ug/L	85				32	94	
	3+4-Methylphenols	50	40.6	ug/L	81				24	91	
	Naphthalene	50	40.4	ug/L	81				61	107	
	Acenaphthylene	50	35.8	ug/L	72				65	110	
	Acenaphthene	50	36.7	ug/L	73				66	114	
	Dibenzofuran	50	37.4	ug/L	75				66	111	
	Fluorene	50	37.3	ug/L	75				66	112	
	Hexachlorobenzene	50	38.7	ug/L	77				57	121	
	Pentachlorophenol	100	80.9	ug/L	81				51	128	
	Phenanthrene	50	39.2	ug/L	78				68	112	
	Anthracene	50	41.4	ug/L	83				69	112	
	Fluoranthene	50	40.6	ug/L	81				67	115	
	Pyrene	50	43.1	ug/L	86				67	116	
	Benzo(a)anthracene	50	38.5	ug/L	77				64	117	
	Chrysene	50	36.4	ug/L	73				65	116	
	Benzo(b)fluoranthene	50	43.0	ug/L	86				62	122	
	Benzo(k)fluoranthene	50	45.6	ug/L	91				60	123	
	Benzo(a)pyrene	50	42.7	ug/L	85				65	118	
	Indeno(1,2,3-cd)pyrene	50	34.9	ug/L	70				50	133	
	Dibenz(a,h)anthracene	50	42.2	ug/L	84				45	150	
	Benzo(g,h,i)perylene	50	45.1	ug/L	90				64	123	
	1,4-Dioxane	50	40.9	ug/L	82				70	130	

4B

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PB125777BL

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab File ID: BF118504.D Lab Sample ID: PB125777BL

Instrument ID: BNA_F Date Extracted: 12/27/2019

Matrix: (soil/water) Water Date Analyzed: 01/08/2020

Level: (low/med) LOW Time Analyzed: 17:39

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
PB125777BS	PB125777BS	BF118503.D	01/08/2020
OW-4	K6449-04	BG043905.D	01/04/2020
LW-05	K6449-03	BG043922.D	01/04/2020
LW-03	K6449-02	BG043923.D	01/04/2020
DUPLICATE	K6449-11	BG043898.D	01/03/2020
FIELD-BLANK	K6449-10	BG043899.D	01/03/2020
OW-1	K6449-09	BG043900.D	01/03/2020
OW-2	K6449-08	BG043901.D	01/03/2020
OW-5MSD	K6449-07MSD	BG043902.D	01/04/2020
OW-5MS	K6449-06MS	BG043903.D	01/04/2020
OW-5	K6449-05	BG043904.D	01/04/2020
LW-04	K6449-01	BF118464.D	01/03/2020

COMMENTS:

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BF118299.D DFTPP Injection Date: 12/24/2019

Instrument ID: BNA_F DFTPP Injection Time: 10:33

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	33.5
68	Less than 2.0% of mass 69	0.6 (1.6) 1
69	Mass 69 relative abundance	38.5
70	Less than 2.0% of mass 69	0.0 (0.0) 1
127	10.0 - 80.0% of mass 198	51.9
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	28.9
365	Greater than 1% of mass 198	3.7
441	Present, but less than mass 443	12.8
442	Greater than 50% of mass 198	78.6
443	15.0 - 24.0% of mass 442	14.9 (19) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDICC010	SSTDICC010	BF118300.D	12/24/2019	11:00
SSTDICC020	SSTDICC020	BF118301.D	12/24/2019	11:28
SSTDICCC040	SSTDICCC040	BF118302.D	12/24/2019	11:56
SSTDICC050	SSTDICC050	BF118303.D	12/24/2019	12:24
SSTDICC060	SSTDICC060	BF118304.D	12/24/2019	12:52
SSTDICC080	SSTDICC080	BF118305.D	12/24/2019	13:20
SSTDICC100	SSTDICC100	BF118306.D	12/24/2019	13:48

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BF118462.D DFTPP Injection Date: 01/03/2020

Instrument ID: BNA_F DFTPP Injection Time: 16:19

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	35.3
68	Less than 2.0% of mass 69	0.8 (1.9) 1
69	Mass 69 relative abundance	40.2
70	Less than 2.0% of mass 69	0.2 (0.4) 1
127	10.0 - 80.0% of mass 198	53.2
197	Less than 2.0% of mass 198	0.4
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	6.4
275	10.0 - 60.0% of mass 198	29.2
365	Greater than 1% of mass 198	4.5
441	Present, but less than mass 443	13.1
442	Greater than 50% of mass 198	83.5
443	15.0 - 24.0% of mass 442	15.4 (18.5) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDCCC040	SSTDCCC040	BF118463.D	01/03/2020	18:01
LW-04	K6449-01	BF118464.D	01/03/2020	18:40

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BF118494.D DFTPP Injection Date: 01/08/2020

Instrument ID: BNA_F DFTPP Injection Time: 11:21

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	34.8
68	Less than 2.0% of mass 69	0.5 (1.3) 1
69	Mass 69 relative abundance	39.8
70	Less than 2.0% of mass 69	0.0 (0.0) 1
127	10.0 - 80.0% of mass 198	53.5
197	Less than 2.0% of mass 198	0.2
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	28.4
365	Greater than 1% of mass 198	4.5
441	Present, but less than mass 443	12.4
442	Greater than 50% of mass 198	76.1
443	15.0 - 24.0% of mass 442	14.4 (18.9) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDICC010	SSTDICC010	BF118495.D	01/08/2020	11:49
SSTDICC020	SSTDICC020	BF118496.D	01/08/2020	12:17
SSTDICCC040	SSTDICCC040	BF118497.D	01/08/2020	12:45
SSTDICC050	SSTDICC050	BF118498.D	01/08/2020	13:13
SSTDICC060	SSTDICC060	BF118499.D	01/08/2020	13:41
SSTDICC080	SSTDICC080	BF118500.D	01/08/2020	14:09
SSTDICC100	SSTDICC100	BF118501.D	01/08/2020	14:37
PB125777BS	PB125777BS	BF118503.D	01/08/2020	17:11
PB125777BL	PB125777BL	BF118504.D	01/08/2020	17:39

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BG043858.D DFTPP Injection Date: 12/30/2019

Instrument ID: BNA_G DFTPP Injection Time: 08:48

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	37.5
68	Less than 2.0% of mass 69	0.2 (0.6) 1
69	Mass 69 relative abundance	37.7
70	Less than 2.0% of mass 69	0.1 (0.3) 1
127	10.0 - 80.0% of mass 198	47.4
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 60.0% of mass 198	24.8
365	Greater than 1% of mass 198	3
441	Present, but less than mass 443	10.4
442	Greater than 50% of mass 198	63.6
443	15.0 - 24.0% of mass 442	12.8 (20.2) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDICC010	SSTDICC010	BG043859.D	12/30/2019	09:28
SSTDICC020	SSTDICC020	BG043860.D	12/30/2019	10:07
SSTDICCC040	SSTDICCC040	BG043861.D	12/30/2019	10:46
SSTDICC050	SSTDICC050	BG043862.D	12/30/2019	11:25
SSTDICC060	SSTDICC060	BG043863.D	12/30/2019	12:04
SSTDICC080	SSTDICC080	BG043864.D	12/30/2019	15:12
SSTDICC100	SSTDICC100	BG043865.D	12/30/2019	15:51

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BG043887.D DFTPP Injection Date: 01/03/2020

Instrument ID: BNA_G DFTPP Injection Time: 14:40

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	37.3
68	Less than 2.0% of mass 69	0.0 (0.0) 1
69	Mass 69 relative abundance	37.2
70	Less than 2.0% of mass 69	0.2 (0.4) 1
127	10.0 - 80.0% of mass 198	48.5
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	25.6
365	Greater than 1% of mass 198	3.2
441	Present, but less than mass 443	11.3
442	Greater than 50% of mass 198	69.5
443	15.0 - 24.0% of mass 442	13.4 (19.2) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDCCC040	SSTDCCC040	BG043888.D	01/03/2020	15:20
DUPLICATE	K6449-11	BG043898.D	01/03/2020	21:52
FIELD-BLANK	K6449-10	BG043899.D	01/03/2020	22:32
OW-1	K6449-09	BG043900.D	01/03/2020	23:11
OW-2	K6449-08	BG043901.D	01/03/2020	23:50
OW-5MSD	K6449-07MSD	BG043902.D	01/04/2020	00:29
OW-5MS	K6449-06MS	BG043903.D	01/04/2020	01:09
OW-5	K6449-05	BG043904.D	01/04/2020	01:48
OW-4	K6449-04	BG043905.D	01/04/2020	02:27

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5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM SAS No.: K6449 SDG NO.: K6449

Lab File ID: BG043907.D DFTPP Injection Date: 01/04/2020

Instrument ID: BNA_G DFTPP Injection Time: 04:25

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	34.7
68	Less than 2.0% of mass 69	0.0 (0.0) 1
69	Mass 69 relative abundance	34.3
70	Less than 2.0% of mass 69	0.2 (0.6) 1
127	10.0 - 80.0% of mass 198	45.7
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100
199	5.0 to 9.0% of mass 198	6.9
275	10.0 - 60.0% of mass 198	25.3
365	Greater than 1% of mass 198	3.5
441	Present, but less than mass 443	12.2
442	Greater than 50% of mass 198	74.1
443	15.0 - 24.0% of mass 442	14.5 (19.5) 2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
SSTDCCC040	SSTDCCC040	BG043908.D	01/04/2020	05:43
LW-05	K6449-03	BG043922.D	01/04/2020	14:50
LW-03	K6449-02	BG043923.D	01/04/2020	15:29

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8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/03/2020

Lab File ID: BF118463.D Time Analyzed: 18:01

Instrument ID: BNA_F GC Column: DB-UI ID: 0.18 (mm)

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	77575	6.85	311677	8.14	160846	9.90
	UPPER LIMIT	155150	7.35	623354	8.64	321692	10.4
	LOWER LIMIT	38787.5	6.35	155839	7.64	80423	9.4
	EPA SAMPLE NO.						
01	LW-04	76039	6.85	275481	8.13	150076	9.89

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/03/2020

Lab File ID: BF118463.D Time Analyzed: 18:01

Instrument ID: BNA_F GC Column: DB-UI ID: 0.18 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	311256	11.39	231415	14.05	179109	15.53
	UPPER LIMIT	622512	11.89	462830	14.55	358218	16.03
	LOWER LIMIT	155628	10.89	115708	13.55	89554.5	15.03
	EPA SAMPLE NO.						
01	LW-04	288406	11.39	220397	14.04	213002	15.53

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDICCC040 Date Analyzed: 01/08/2020

Lab File ID: BF118497.D Time Analyzed: 12:45

Instrument ID: BNA_F GC Column: DB-UI ID: 0.18 (mm)

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	92261	6.83	376451	8.12	205461	9.89
	UPPER LIMIT	184522	7.33	752902	8.62	410922	10.39
	LOWER LIMIT	46130.5	6.33	188226	7.62	102731	9.39
	EPA SAMPLE NO.						
01	PB125777BS	82217	6.83	338640	8.12	210121	9.88
02	PB125777BL	87388	6.83	355123	8.12	209651	9.87

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDICCC040 Date Analyzed: 01/08/2020

Lab File ID: BF118497.D Time Analyzed: 12:45

Instrument ID: BNA_F GC Column: DB-UI ID: 0.18 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	398428	11.38	272412	14.04	227482	15.52
	UPPER LIMIT	796856	11.88	544824	14.54	454964	16.02
	LOWER LIMIT	199214	10.88	136206	13.54	113741	15.02
	EPA SAMPLE NO.						
01	PB125777BS	359238	11.37	228143	14.03	157556	15.52
02	PB125777BL	362398	11.37	233663	14.03	195054	15.51

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/03/2020

Lab File ID: BG043888.D Time Analyzed: 15:20

Instrument ID: BNA_G GC Column: ZB-GR ID: 0.25 (mm)

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	135429	7.96	585101	10.77	378653	14.60
	UPPER LIMIT	270858	8.46	1170200	11.27	757306	15.1
	LOWER LIMIT	67714.5	7.46	292551	10.27	189327	14.1
	EPA SAMPLE NO.						
01	OW-5MS	137936	7.96	610844	10.77	413875	14.60
02	OW-5MSD	134741	7.96	592650	10.76	402621	14.59
03	OW-2	129499	7.96	569623	10.76	384571	14.59
04	OW-1	145467	7.97	644140	10.76	405952	14.59
05	FIELD-BLANK	128780	7.96	565187	10.76	380466	14.59
06	DUPLICATE	129817	7.96	570051	10.76	378897	14.59
07	OW-4	133975	7.96	584349	10.77	393584	14.59
08	OW-5	134671	7.96	591184	10.77	401350	14.59

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/03/2020

Lab File ID: BG043888.D Time Analyzed: 15:20

Instrument ID: BNA_G GC Column: ZB-GR ID: 0.25 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	795162	17.34	686109	21.59	786533	24.72
	UPPER LIMIT	1590320	17.84	1372220	22.09	1573070	25.22
	LOWER LIMIT	397581	16.84	343055	21.09	393267	24.22
	EPA SAMPLE NO.						
01	OW-5MS	854254	17.34	689866	21.60	804164	24.72
02	OW-5MSD	844783	17.34	689617	21.59	795997	24.72
03	OW-2	820286	17.34	675925	21.59	780025	24.72
04	OW-1	783981	17.34	667935	21.59	769408	24.72
05	FIELD-BLANK	859946	17.34	725553	21.58	819041	24.71
06	DUPLICATE	817239	17.34	687020	21.58	797010	24.72
07	OW-4	875200	17.34	725786	21.59	812801	24.71
08	OW-5	854198	17.34	714426	21.58	795598	24.72

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/04/2020

Lab File ID: BG043908.D Time Analyzed: 05:43

Instrument ID: BNA_G GC Column: ZB-GR ID: 0.25 (mm)

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	144423	7.96	613402	10.76	399462	14.60
	UPPER LIMIT	288846	8.46	1226800	11.26	798924	15.1
	LOWER LIMIT	72211.5	7.46	306701	10.26	199731	14.1
	EPA SAMPLE NO.						
01	LW-03	136491	7.96	601913	10.77	409885	14.59
02	LW-05	134814	7.96	592206	10.76	395628	14.59

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: CHEMTECH

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

EPA Sample No.: SSTDCCC040 Date Analyzed: 01/04/2020

Lab File ID: BG043908.D Time Analyzed: 05:43

Instrument ID: BNA_G GC Column: ZB-GR ID: 0.25 (mm)

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	850559	17.34	716725	21.59	830209	24.72
	UPPER LIMIT	1701120	17.84	1433450	22.09	1660420	25.22
	LOWER LIMIT	425280	16.84	358363	21.09	415105	24.22
	EPA SAMPLE NO.						
01	LW-03	850874	17.34	715486	21.59	806205	24.72
02	LW-05	818466	17.34	692184	21.59	792385	24.72

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT UPPER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

QC SAMPLE DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125777BL	SDG No.:	K6449
Lab Sample ID:	PB125777BL	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118504.D	1	12/27/19 15:35	01/08/20 17:39	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	10.0	U	2.20	10.0	ug/L
95-48-7	2-Methylphenol	10.0	U	2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	10.0	U	3.40	10.0	ug/L
91-20-3	Naphthalene	10.0	U	2.50	10.0	ug/L
208-96-8	Acenaphthylene	10.0	U	2.70	10.0	ug/L
83-32-9	Acenaphthene	10.0	U	2.80	10.0	ug/L
132-64-9	Dibenzofuran	10.0	U	3.20	10.0	ug/L
86-73-7	Fluorene	10.0	U	2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	10.0	U	2.70	10.0	ug/L
87-86-5	Pentachlorophenol	10.0	U	4.30	10.0	ug/L
85-01-8	Phenanthrene	10.0	U	2.50	10.0	ug/L
120-12-7	Anthracene	10.0	U	2.50	10.0	ug/L
206-44-0	Fluoranthene	10.0	U	2.90	10.0	ug/L
129-00-0	Pyrene	10.0	U	2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	10.0	U	2.30	10.0	ug/L
218-01-9	Chrysene	10.0	U	2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	10.0	U	2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	10.0	U	2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	10.0	U	2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	10.0	U	3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	10.0	U	2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	10.0	U	2.60	10.0	ug/L
123-91-1	1,4-Dioxane	10.0	U	3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	134		10 - 130	89%	SPK: 150
13127-88-3	Phenol-d6	146		10 - 130	97%	SPK: 150
4165-60-0	Nitrobenzene-d5	92.4		36 - 131	92%	SPK: 100
321-60-8	2-Fluorobiphenyl	91.4		39 - 131	91%	SPK: 100
118-79-6	2,4,6-Tribromophenol	136		25 - 155	91%	SPK: 150
1718-51-0	Terphenyl-d14	100		23 - 130	100%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125777BL	SDG No.:	K6449
Lab Sample ID:	PB125777BL	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118504.D	1	12/27/19 15:35	01/08/20 17:39	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	87400	6.83			
1146-65-2	Naphthalene-d8	355000	8.12			
15067-26-2	Acenaphthene-d10	210000	9.87			
1517-22-2	Phenanthrene-d10	362000	11.37			
1719-03-5	Chrysene-d12	234000	14.03			
1520-96-3	Perylene-d12	195000	15.51			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125777BS	SDG No.:	K6449
Lab Sample ID:	PB125777BS	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118503.D	1	12/27/19 15:35	01/08/20 17:11	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	44.5		2.20	10.0	ug/L
95-48-7	2-Methylphenol	42.3		2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	40.6		3.40	10.0	ug/L
91-20-3	Naphthalene	40.4		2.50	10.0	ug/L
208-96-8	Acenaphthylene	35.8		2.70	10.0	ug/L
83-32-9	Acenaphthene	36.7		2.80	10.0	ug/L
132-64-9	Dibenzofuran	37.4		3.20	10.0	ug/L
86-73-7	Fluorene	37.3		2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	38.7		2.70	10.0	ug/L
87-86-5	Pentachlorophenol	80.9		4.30	10.0	ug/L
85-01-8	Phenanthrene	39.2		2.50	10.0	ug/L
120-12-7	Anthracene	41.4		2.50	10.0	ug/L
206-44-0	Fluoranthene	40.6		2.90	10.0	ug/L
129-00-0	Pyrene	43.1		2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	38.5		2.30	10.0	ug/L
218-01-9	Chrysene	36.4		2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	43.0		2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	45.6		2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	42.7		2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	34.9		3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	42.2		2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	45.1		2.60	10.0	ug/L
123-91-1	1,4-Dioxane	40.9		3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	115		10 - 130	77%	SPK: 150
13127-88-3	Phenol-d6	119		10 - 130	79%	SPK: 150
4165-60-0	Nitrobenzene-d5	71.1		36 - 131	71%	SPK: 100
321-60-8	2-Fluorobiphenyl	67.5		39 - 131	68%	SPK: 100
118-79-6	2,4,6-Tribromophenol	106		25 - 155	71%	SPK: 150
1718-51-0	Terphenyl-d14	83.1		23 - 130	83%	SPK: 100
INTERNAL STANDARDS						

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125777BS	SDG No.:	K6449
Lab Sample ID:	PB125777BS	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup : N	PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BF118503.D	1	12/27/19 15:35	01/08/20 17:11	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	82200	6.83			
1146-65-2	Naphthalene-d8	339000	8.12			
15067-26-2	Acenaphthene-d10	210000	9.88			
1517-22-2	Phenanthrene-d10	359000	11.37			
1719-03-5	Chrysene-d12	228000	14.03			
1520-96-3	Perylene-d12	158000	15.52			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MS	SDG No.:	K6449
Lab Sample ID:	K6449-06MS	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043903.D	1	12/27/19 15:35	01/04/20 01:09	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	28.4		2.20	10.0	ug/L
95-48-7	2-Methylphenol	47.4		2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	44.4		3.40	10.0	ug/L
91-20-3	Naphthalene	45.3		2.50	10.0	ug/L
208-96-8	Acenaphthylene	47.8		2.70	10.0	ug/L
83-32-9	Acenaphthene	45.3		2.80	10.0	ug/L
132-64-9	Dibenzofuran	48.3		3.20	10.0	ug/L
86-73-7	Fluorene	48.5		2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	44.8		2.70	10.0	ug/L
87-86-5	Pentachlorophenol	100	E	4.30	10.0	ug/L
85-01-8	Phenanthrene	47.4		2.50	10.0	ug/L
120-12-7	Anthracene	49.3		2.50	10.0	ug/L
206-44-0	Fluoranthene	45.7		2.90	10.0	ug/L
129-00-0	Pyrene	47.7		2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	48.8		2.30	10.0	ug/L
218-01-9	Chrysene	48.4		2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	47.6		2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	47.4		2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	45.9		2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	48.5		3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	49.1		2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	49.9		2.60	10.0	ug/L
123-91-1	1,4-Dioxane	28.2		3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	106		10 - 130	71%	SPK: 150
13127-88-3	Phenol-d6	74.5		10 - 130	50%	SPK: 150
4165-60-0	Nitrobenzene-d5	89.8		36 - 131	90%	SPK: 100
321-60-8	2-Fluorobiphenyl	92.9		39 - 131	93%	SPK: 100
118-79-6	2,4,6-Tribromophenol	152		25 - 155	101%	SPK: 150
1718-51-0	Terphenyl-d14	99.9		23 - 130	100%	SPK: 100
INTERNAL STANDARDS						

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MS	SDG No.:	K6449
Lab Sample ID:	K6449-06MS	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043903.D	1	12/27/19 15:35	01/04/20 01:09	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	138000	7.96			
1146-65-2	Naphthalene-d8	611000	10.77			
15067-26-2	Acenaphthene-d10	414000	14.6			
1517-22-2	Phenanthrene-d10	854000	17.34			
1719-03-5	Chrysene-d12	690000	21.6			
1520-96-3	Perylene-d12	804000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MSD	SDG No.:	K6449
Lab Sample ID:	K6449-07MSD	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043902.D	1	12/27/19 15:35	01/04/20 00:29	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
108-95-2	Phenol	29.0		2.20	10.0	ug/L
95-48-7	2-Methylphenol	46.1		2.80	10.0	ug/L
65794-96-9	3+4-Methylphenols	42.5		3.40	10.0	ug/L
91-20-3	Naphthalene	42.7		2.50	10.0	ug/L
208-96-8	Acenaphthylene	46.4		2.70	10.0	ug/L
83-32-9	Acenaphthene	45.0		2.80	10.0	ug/L
132-64-9	Dibenzofuran	46.6		3.20	10.0	ug/L
86-73-7	Fluorene	47.2		2.50	10.0	ug/L
118-74-1	Hexachlorobenzene	42.8		2.70	10.0	ug/L
87-86-5	Pentachlorophenol	97.5		4.30	10.0	ug/L
85-01-8	Phenanthrene	46.0		2.50	10.0	ug/L
120-12-7	Anthracene	48.2		2.50	10.0	ug/L
206-44-0	Fluoranthene	44.7		2.90	10.0	ug/L
129-00-0	Pyrene	46.2		2.50	10.0	ug/L
56-55-3	Benzo(a)anthracene	47.0		2.30	10.0	ug/L
218-01-9	Chrysene	47.0		2.40	10.0	ug/L
205-99-2	Benzo(b)fluoranthene	45.4		2.30	10.0	ug/L
207-08-9	Benzo(k)fluoranthene	47.0		2.30	10.0	ug/L
50-32-8	Benzo(a)pyrene	45.2		2.40	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	47.1		3.30	10.0	ug/L
53-70-3	Dibenzo(a,h)anthracene	47.7		2.60	10.0	ug/L
191-24-2	Benzo(g,h,i)perylene	48.6		2.60	10.0	ug/L
123-91-1	1,4-Dioxane	26.2		3.60	10.0	ug/L
SURROGATES						
367-12-4	2-Fluorophenol	105		10 - 130	70%	SPK: 150
13127-88-3	Phenol-d6	72.9		10 - 130	49%	SPK: 150
4165-60-0	Nitrobenzene-d5	86.7		36 - 131	87%	SPK: 100
321-60-8	2-Fluorobiphenyl	89.7		39 - 131	90%	SPK: 100
118-79-6	2,4,6-Tribromophenol	146		25 - 155	98%	SPK: 150
1718-51-0	Terphenyl-d14	96.6		23 - 130	97%	SPK: 100
INTERNAL STANDARDS						

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MSD	SDG No.:	K6449
Lab Sample ID:	K6449-07MSD	Matrix:	Water
Analytical Method:	SW8270	% Moisture:	100
Sample Wt/Vol:	1000 Units: mL	Final Vol:	1000 uL
Soil Aliquot Vol:	uL	Test:	SVOCMS Group1
Extraction Type :	Decanted : N	Level :	LOW
Injection Volume :	GPC Factor : 1.0	GPC Cleanup :	N PH :

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
BG043902.D	1	12/27/19 15:35	01/04/20 00:29	PB125777

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
3855-82-1	1,4-Dichlorobenzene-d4	135000	7.96			
1146-65-2	Naphthalene-d8	593000	10.76			
15067-26-2	Acenaphthene-d10	403000	14.59			
1517-22-2	Phenanthrene-d10	845000	17.34			
1719-03-5	Chrysene-d12	690000	21.59			
1520-96-3	Perylene-d12	796000	24.72			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements
J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
() = Laboratory InHouse Limit
A = Aldol-Condensation Reaction Products

CALIBRATION SUMMARY

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF010820.M
Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
Last Update : Mon Dec 03 04:47:00 2018
Response Via : Initial Calibration

Calibration Files
10 =BF118495.D 20 =BF118496.D 40 =BF118497.D 50 =BF118498.D 60 =BF118499.D 80 =BF118500.D 100 =BF118501.D

		Compound	10	20	40	50	60	80	100	Avg	%RSD
1)	I	1,4-Dichlorobenzen...	----------ISTD----------								
2)		1,4-Dioxane	0.462	0.426	0.367	0.413	0.391	0.380	0.388	0.404	8.00
3)		Pyridine	0.972	1.184	0.999	1.148	1.092	1.094	1.122	1.087	7.08
4)		n-Nitrosodimet...	0.552	0.559	0.502	0.568	0.548	0.545	0.539	0.545	3.93
5)	S	2-Fluorophenol	1.452	1.230	1.098	1.250	1.139	1.126	1.186	1.212	9.87
6)		Aniline	2.009	1.939	1.753	2.055	1.737	1.656	1.459	1.801	11.81
7)	S	Phenol-d6	1.630	1.560	1.386	1.640	1.393	1.345	1.186	1.449	11.58
8)		2-Chlorophenol	1.485	1.452	1.255	1.463	1.275	1.266	1.077	1.325	11.26
9)		Benzaldehyde	1.003	0.922	0.697	0.772	0.638			0.806	18.99
10)	C	Phenol	1.743	1.685	1.545	1.844	1.570	1.520	1.328	1.605	10.52
11)		bis(2-Chloroet...	1.250	1.230	1.112	1.273	1.107	1.091	0.947	1.144	10.04
12)		1,3-Dichlorobe...	1.736	1.691	1.469	1.653	1.462	1.472	1.358	1.549	9.22
13)	C	1,4-Dichlorobe...	1.780	1.709	1.513	1.665	1.487	1.490	1.416	1.580	8.64
14)		1,2-Dichlorobe...	1.772	1.670	1.459	1.613	1.434	1.399	1.342	1.527	10.42
15)		Benzyl Alcohol	1.301	1.259	1.147	1.247	1.120	1.116	1.035	1.175	8.16
16)		2,2'-oxybis(1-...	1.502	1.302	1.214	1.381	1.194	1.171	1.122	1.269	10.55
17)		2-Methylphenol	1.340	1.157	1.022	1.173	1.001	0.995	0.932	1.089	13.02
18)		Hexachloroethane	0.736	0.648	0.562	0.642	0.577	0.561	0.465	0.599	14.30
19)	P	n-Nitroso-di-n...	1.147	0.981	0.901	0.981	0.886	0.883	0.751	0.933	13.06
20)		3+4-Methylphenols	1.796	1.536	1.349	1.508	1.332	1.339		1.477	12.22
21)	I	Naphthalene-d8	----------ISTD----------								
22)		Acetophenone	0.623	0.546	0.467	0.573	0.478	0.432	0.430	0.507	14.69
23)	S	Nitrobenzene-d5	0.437	0.398	0.339	0.437	0.358	0.315		0.381	13.48
24)		Nitrobenzene	0.447	0.395	0.338	0.433	0.348	0.310		0.379	14.61
25)		Isophorone	0.715	0.670	0.578	0.645	0.577	0.576	0.508	0.610	11.51
26)	C	2-Nitrophenol	0.216	0.193	0.170	0.205	0.181	0.183	0.160	0.187	10.34
27)		2,4-Dimethylph...	0.293	0.269	0.227	0.277	0.237	0.242	0.215	0.251	11.36
28)		bis(2-Chloroet...	0.449	0.426	0.386	0.434	0.384	0.381	0.348	0.401	8.95
29)	C	2,4-Dichloroph...	0.329	0.300	0.274	0.326	0.276	0.286	0.263	0.293	8.85
30)		1,2,4-Trichlor...	0.365	0.346	0.319	0.365	0.329	0.334	0.328	0.341	5.31
31)		Naphthalene	1.166	1.093	0.987	1.126	0.989	0.993	0.969	1.046	7.64
32)		Benzoic acid	0.096	0.131	0.157	0.181	0.167	0.197	0.183	0.159	22.16
33)		4-Chloroaniline	0.478	0.458	0.382	0.472	0.420	0.405	0.400	0.431	8.91
34)	C	Hexachlorobuta...	0.222	0.218	0.187	0.234	0.204	0.195	0.206	0.209	7.84
35)		Caprolactam	0.094	0.103	0.088	0.105	0.084	0.075	0.071	0.088	14.87
36)	C	4-Chloro-3-met...	0.350	0.375	0.308	0.355	0.295	0.260	0.267	0.316	14.27
37)		2-Methylnaphth...	0.778	0.832	0.696	0.793	0.681	0.632	0.614	0.718	11.70
38)		1-Methylnaphth...	0.745	0.750	0.630	0.748	0.646	0.615	0.585	0.674	10.59

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF010820.M

39)	I	Acenaphthene-d10	----------ISTD----------								
40)		1,2,4,5-Tetrac...	0.656	0.622	0.578	0.681	0.614	0.585	0.565	0.615	6.93
41)	P	Hexachlorocycl...	0.019	0.051	0.108	0.144	0.152	0.175	0.176	0.118	52.41
42)	S	2,4,6-Tribromo...	0.253	0.242	0.215	0.243	0.239	0.233	0.226	0.236	5.24
43)	C	2,4,6-Trichlor...	0.379	0.394	0.348	0.427	0.365	0.380	0.365	0.380	6.70
44)		2,4,5-Trichlor...	0.390	0.383	0.369	0.447	0.386	0.387	0.388	0.393	6.33
45)	S	2-Fluorobiphenyl	1.576	1.471	1.304	1.532	1.343	1.264	1.273	1.395	9.28
46)		1,1'-Biphenyl	1.808	1.698	1.516	1.777	1.542	1.545	1.552	1.634	7.57
47)		2-Chloronaphth...	1.440	1.366	1.199	1.427	1.202	1.190	1.230	1.293	8.74
48)		2-Nitroaniline	0.402	0.386	0.348	0.422	0.368	0.327	0.364	0.374	8.59
49)		Acenaphthylene	2.064	2.067	1.850	2.102	1.766	1.831	1.797	1.925	7.55
50)		Dimethylphthalate	1.582	1.623	1.458	1.698	1.481	1.459	1.444	1.535	6.49
51)		2,6-Dinitrotol...	0.342	0.352	0.310	0.366	0.308	0.316	0.321	0.331	6.88
52)	C	Acenaphthene	1.271	1.289	1.103	1.264	1.120	1.119	1.064	1.176	8.07
53)		3-Nitroaniline	0.416	0.405	0.351	0.402	0.362	0.375	0.399	0.387	6.32
54)	P	2,4-Dinitrophenol	0.088	0.124	0.123	0.146	0.134	0.150	0.145	0.130	16.54
55)		Dibenzofuran	2.081	1.774	1.718	1.961	1.700	1.603	1.525	1.766	11.05
56)	P	4-Nitrophenol	0.146	0.180	0.184	0.221	0.195	0.206	0.185	0.188	12.56
57)		2,4-Dinitrotol...	0.488	0.438	0.428	0.493	0.433	0.421	0.397	0.443	8.01
58)		Fluorene	1.394	1.546	1.445	1.647	1.372	1.281	1.250	1.419	9.93
59)		2,3,4,6-Tetrac...	0.358	0.331	0.323	0.378	0.329	0.310	0.297	0.332	8.35
60)		Diethylphthalate	1.751	1.571	1.572	1.720	1.513	1.425	1.386	1.563	8.79
61)		4-Chlorophenyl...	0.691	0.755	0.736	0.824	0.682	0.647	0.630	0.709	9.50
62)		4-Nitroaniline	0.384	0.418	0.378	0.443	0.363	0.347	0.321	0.379	10.90
63)		Azobenzene	1.439	1.409	1.321	1.431	1.285	1.219	1.191	1.328	7.65
64)	I	Phenanthrene-d10	----------ISTD----------								
65)		4,6-Dinitro-2-...	0.071	0.093	0.106	0.136	0.110	0.116	0.110	0.106	19.06
66)	c	n-Nitrosodiphe...	0.608	0.664	0.626	0.798	0.633	0.629	0.601	0.651	10.39
67)		4-Bromophenyl-...	0.240	0.242	0.218	0.247	0.224	0.232	0.236	0.234	4.37
68)		Hexachlorobenzene	0.290	0.293	0.254	0.298	0.271	0.273	0.278	0.280	5.45
69)		Atrazine	0.213	0.218	0.180	0.196	0.162			0.194	12.07
70)	C	Pentachlorophenol	0.052	0.074	0.080	0.099	0.088	0.095	0.090	0.083	19.03
71)		Phenanthrene	1.236	1.187	1.035	1.215	1.078	1.059	1.032	1.120	7.93
72)		Anthracene	1.234	1.182	1.027	1.240	1.075	1.043	1.000	1.115	9.13
73)		Carbazole	1.008	0.985	0.896	1.127	0.938	0.909	0.896	0.966	8.66
74)		Di-n-butylphth...	1.353	1.313	1.319	1.395	1.180	1.184	1.272	1.288	6.34
75)	C	Fluoranthene	1.223	1.182	1.105	1.273	1.110	1.067	1.011	1.139	8.07
76)	I	Chrysene-d12	----------ISTD----------								
77)		Benzidine	0.957	0.502	0.481	0.487	0.462	0.487		0.563	34.39
78)		Pyrene	1.607	1.664	1.593	1.718	1.734	1.681	1.522	1.646	4.59
79)	S	Terphenyl-d14	1.312	1.281	1.200	1.273	1.381	1.255	1.133	1.262	6.29
80)		Butylbenzylpht...	0.740	0.709	0.789	0.767	0.778	0.754	0.738	0.754	3.60
81)		Benzo(a)anthra...	1.514	1.444	1.298	1.497	1.357	1.368	1.323	1.400	6.08
82)		3,3'-Dichlorob...	0.488	0.491	0.430	0.481	0.442	0.451	0.404	0.455	7.22
83)		Chrysene	1.546	1.366	1.251	1.455	1.298	1.318	1.289	1.360	7.72
84)		Bis(2-ethylhex...	1.010	1.015	1.041	1.057	1.019	1.029	0.992	1.023	2.09
85)	c	Di-n-octyl pht...	1.492	1.555	1.695	1.481	1.341	1.442	1.269	1.468	9.49
86)		Indeno(1,2,3-c...	0.983	0.985	1.057	0.992	1.163	1.278	1.208	1.095	11.05

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF010820.M

87)	I	Perylene-d12	----------ISTD----------							
88)		Benzo(b)fluora...	1.522	1.676	1.392	1.489	1.389	1.274	1.381	1.446	8.96
89)		Benzo(k)fluora...	1.589	1.696	1.389	1.283	1.271	1.288	1.145	1.380	14.13
90)	C	Benzo(a)pyrene	1.248	1.167	1.031	1.263	1.262	1.182	1.142	1.185	7.06
91)		Dibenzo(a,h)an...	0.950	1.111	1.062	1.144	1.171	1.139	1.201	1.111	7.53
92)		Benzo(g,h,i)pe...	0.929	0.878	0.931	1.259	1.118	1.100	1.156	1.053	13.45

(#) = Out of Range

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF122419.M
Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
Last Update : Mon Dec 03 04:47:00 2018
Response Via : Initial Calibration

Calibration Files
10 =BF118300.D 20 =BF118301.D 40 =BF118302.D 50 =BF118303.D 60 =BF118304.D 80 =BF118305.D 100 =BF118306.D

		Compound	10	20	40	50	60	80	100	Avg	%RSD
1)	I	1,4-Dichlorobenzen...	----------ISTD----------								
2)		1,4-Dioxane	0.508	0.489	0.446	0.510	0.436	0.448	0.422	0.466	7.73
3)		Pyridine	1.192	1.273	1.201	1.412	1.208	1.232	1.168	1.241	6.64
4)		n-Nitrosodimet...	0.515	0.508	0.507	0.565	0.507	0.504	0.485	0.513	4.82
5)	S	2-Fluorophenol	1.311	1.255	1.141	1.270	1.104	1.098	1.022	1.172	9.18
6)		Aniline	2.055	1.961	1.794	2.002	1.754	1.745	1.608	1.846	8.83
7)	S	Phenol-d6	1.651	1.563	1.388	1.569	1.374	1.363	1.266	1.453	9.65
8)		2-Chlorophenol	1.516	1.406	1.284	1.424	1.267	1.245	1.146	1.327	9.54
9)		Benzaldehyde	1.042	0.973	0.787	0.803	0.656			0.852	18.16
10)	C	Phenol	1.821	1.711	1.572	1.783	1.556	1.543	1.450	1.634	8.48
11)		bis(2-Chloroet...	1.306	1.246	1.128	1.253	1.101	1.100	1.045	1.168	8.45
12)		1,3-Dichlorobe...	1.742	1.645	1.470	1.645	1.440	1.424	1.332	1.528	9.76
13)	C	1,4-Dichlorobe...	1.791	1.656	1.504	1.671	1.468	1.435	1.342	1.552	10.15
14)		1,2-Dichlorobe...	1.703	1.600	1.421	1.572	1.360	1.353	1.249	1.466	11.07
15)		Benzyl Alcohol	1.214	1.197	1.076	1.209	1.048	1.045	0.958	1.107	9.05
16)		2,2'-oxybis(1-...	1.417	1.331	1.199	1.345	1.167	1.165	1.101	1.247	9.39
17)		2-Methylphenol	1.173	1.135	1.031	1.147	1.008	1.022	0.934	1.064	8.29
18)		Hexachloroethane	0.644	0.609	0.548	0.607	0.535	0.542	0.504	0.570	8.84
19)	P	n-Nitroso-di-n...	1.023	0.961	0.855	0.954	0.846	0.849	0.780	0.895	9.51
20)		3+4-Methylphenols	1.566	1.469	1.343	1.489	1.277	1.256	1.135	1.362	11.19
21)	I	Naphthalene-d8	----------ISTD----------								
22)		Acetophenone	0.538	0.515	0.464	0.523	0.465	0.468	0.460	0.490	6.84
23)	S	Nitrobenzene-d5	0.371	0.361	0.328	0.373	0.336	0.343	0.336	0.350	5.30
24)		Nitrobenzene	0.369	0.369	0.330	0.375	0.334	0.340	0.335	0.350	5.60
25)		Isophorone	0.652	0.629	0.569	0.647	0.585	0.596	0.587	0.609	5.40
26)	C	2-Nitrophenol	0.183	0.187	0.175	0.199	0.183	0.187	0.184	0.186	3.93
27)		2,4-Dimethylph...	0.267	0.261	0.237	0.272	0.246	0.247	0.242	0.253	5.34
28)		bis(2-Chloroet...	0.435	0.417	0.374	0.426	0.378	0.383	0.376	0.399	6.61
29)	C	2,4-Dichloroph...	0.313	0.304	0.273	0.311	0.278	0.284	0.276	0.291	6.04
30)		1,2,4-Trichlor...	0.371	0.355	0.318	0.359	0.327	0.327	0.319	0.339	6.37
31)		Naphthalene	1.138	1.086	0.960	1.078	0.970	0.960	0.924	1.017	8.08
32)		Benzoic acid	0.131	0.170	0.188	0.230	0.214	0.228	0.228	0.199	18.87
33)		4-Chloroaniline	0.479	0.455	0.411	0.468	0.410	0.418	0.409	0.436	7.01
34)	C	Hexachlorobuta...	0.218	0.208	0.191	0.217	0.192	0.196	0.192	0.202	6.04
35)		Caprolactam	0.095	0.096	0.087	0.099	0.089	0.089	0.081	0.091	6.77
36)	C	4-Chloro-3-met...	0.338	0.328	0.292	0.336	0.299	0.302	0.294	0.313	6.54
37)		2-Methylnaphth...	0.777	0.745	0.662	0.740	0.657	0.660	0.630	0.696	8.17
38)		1-Methylnaphth...	0.738	0.703	0.614	0.696	0.620	0.624	0.595	0.656	8.42

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF122419.M

39)	I	Acenaphthene-d10	----------ISTD----------								
40)		1,2,4,5-Tetrac...	0.635	0.630	0.568	0.649	0.581	0.581	0.563	0.601	5.94
41)	P	Hexachlorocycl...	0.099	0.153	0.190	0.244	0.235	0.258	0.261	0.206	29.80
42)	S	2,4,6-Tribromo...	0.263	0.258	0.238	0.264	0.234	0.240	0.233	0.247	5.70
43)	C	2,4,6-Trichlor...	0.415	0.406	0.381	0.435	0.391	0.399	0.383	0.401	4.76
44)		2,4,5-Trichlor...	0.428	0.420	0.394	0.451	0.403	0.409	0.387	0.413	5.32
45)	S	2-Fluorobiphenyl	1.515	1.434	1.268	1.387	1.224	1.212	1.134	1.310	10.47
46)		1,1'-Biphenyl	1.733	1.689	1.508	1.688	1.514	1.507	1.434	1.582	7.44
47)		2-Chloronaphth...	1.383	1.344	1.229	1.356	1.220	1.223	1.156	1.273	6.80
48)		2-Nitroaniline	0.376	0.372	0.343	0.389	0.346	0.358	0.334	0.360	5.58
49)		Acenaphthylene	2.127	2.021	1.818	2.027	1.788	1.782	1.654	1.888	9.04
50)		Dimethylphthalate	1.631	1.583	1.420	1.602	1.428	1.456	1.389	1.501	6.68
51)		2,6-Dinitrotol...	0.344	0.340	0.308	0.351	0.306	0.314	0.303	0.324	6.26
52)	C	Acenaphthene	1.256	1.222	1.100	1.234	1.095	1.103	1.041	1.150	7.38
53)		3-Nitroaniline	0.393	0.391	0.368	0.413	0.364	0.372	0.358	0.380	5.23
54)	P	2,4-Dinitrophenol	0.105	0.132	0.139	0.164	0.152	0.168	0.165	0.146	15.64
55)		Dibenzofuran	1.918	1.856	1.641	1.811	1.617	1.571	1.482	1.699	9.57
56)	P	4-Nitrophenol	0.202	0.232	0.226	0.263	0.238	0.245	0.236	0.235	7.93
57)		2,4-Dinitrotol...	0.443	0.463	0.414	0.473	0.423	0.420	0.393	0.432	6.54
58)		Fluorene	1.540	1.478	1.326	1.472	1.279	1.302	1.205	1.372	9.06
59)		2,3,4,6-Tetrac...	0.370	0.357	0.340	0.380	0.341	0.342	0.327	0.351	5.43
60)		Diethylphthalate	1.616	1.598	1.425	1.603	1.405	1.417	1.335	1.485	7.82
61)		4-Chlorophenyl...	0.761	0.742	0.663	0.730	0.644	0.650	0.605	0.685	8.63
62)		4-Nitroaniline	0.418	0.414	0.385	0.431	0.376	0.384	0.355	0.395	6.86
63)		Azobenzene	1.411	1.366	1.212	1.361	1.207	1.200	1.147	1.272	8.18
64)	I	Phenanthrene-d10	----------ISTD----------								
65)		4,6-Dinitro-2-...	0.088	0.100	0.105	0.120	0.110	0.117	0.116	0.108	10.53
66)	c	n-Nitrosodiphe...	0.691	0.671	0.612	0.688	0.606	0.623	0.596	0.641	6.41
67)		4-Bromophenyl-...	0.254	0.243	0.222	0.247	0.222	0.228	0.222	0.234	5.89
68)		Hexachlorobenzene	0.297	0.291	0.259	0.294	0.259	0.266	0.263	0.276	6.33
69)		Atrazine	0.228	0.214	0.196	0.207	0.186	0.182	0.172	0.198	9.96
70)	C	Pentachlorophenol	0.103	0.108	0.116	0.134	0.120	0.127	0.127	0.119	9.44
71)		Phenanthrene	1.243	1.177	1.040	1.147	1.026	1.021	0.977	1.090	9.05
72)		Anthracene	1.254	1.172	1.042	1.159	1.019	1.024	0.968	1.091	9.54
73)		Carbazole	1.098	1.041	0.919	1.032	0.911	0.904	0.872	0.968	8.97
74)		Di-n-butylphth...	1.381	1.331	1.186	1.305	1.153	1.148	1.090	1.228	8.97
75)	C	Fluoranthene	1.279	1.206	1.068	1.163	1.025	1.011	0.950	1.100	10.77
76)	I	Chrysene-d12	----------ISTD----------								
77)		Benzidine	0.636	0.537	0.569	0.564	0.434			0.548	13.39
78)		Pyrene	1.707	1.632	1.504	1.745	1.602	1.620	1.623	1.633	4.74
79)	S	Terphenyl-d14	1.319	1.240	1.126	1.266	1.159	1.166	1.163	1.206	5.83
80)		Butylbenzylpht...	0.748	0.729	0.690	0.781	0.731	0.745	0.724	0.735	3.76
81)		Benzo(a)anthra...	1.531	1.468	1.321	1.486	1.328	1.350	1.316	1.400	6.54
82)		3,3'-Dichlorob...	0.548	0.543	0.470	0.506	0.441	0.422	0.392	0.475	12.72
83)		Chrysene	1.474	1.427	1.266	1.431	1.271	1.274	1.241	1.340	7.35
84)		Bis(2-ethylhex...	1.000	0.966	0.915	1.045	0.951	0.947	0.945	0.967	4.42
85)	c	Di-n-octyl pht...	1.506	1.470	1.343	1.529	1.368	1.371	1.368	1.422	5.40
86)		Indeno(1,2,3-c...	1.140	1.051	1.007	1.199	1.104	1.218	1.275	1.142	8.35

Method Path : Z:\SVOASRV\HPCHEM1\BNA_F\METHODS\
Method File : 8270-BF122419.M

87)	I	Perylene-d12	----------ISTD----------							
88)		Benzo(b)fluora...	1.371	1.454	1.234	1.382	1.296	1.233	1.323	1.328	6.13
89)		Benzo(k)fluora...	1.495	1.329	1.251	1.395	1.167	1.210	1.077	1.275	11.16
90)	C	Benzo(a)pyrene	1.250	1.225	1.108	1.253	1.108	1.126	1.116	1.170	5.93
91)		Dibenzo(a,h)an...	0.960	0.912	0.944	1.116	1.021	1.070	1.081	1.015	7.67
92)		Benzo(g,h,i)pe...	0.892	0.861	0.913	1.075	1.006	1.052	1.064	0.980	9.17

(#) = Out of Range

Response Factor Report GC/MS Ins

Method Path : Z:\SVOASRV\HPCHEM1\BNA_G\METHODS\
Method File : 8270-BG123019.M
Title : ASP BNA STANDARDS FOR 5 POINT CALIBRATION
Last Update : Tue Dec 31 13:32:23 2019
Response Via : Initial Calibration

Calibration Files
10 =BG043859.D 20 =BG043860.D 40 =BG043861.D 50 =BG043862.D 60 =BG043863.D 80 =BG043864.D 100 =BG043865.D

		Compound	10	20	40	50	60	80	100	Avg	%RSD
1)	I	1,4-Dichlorobenzen...	----------ISTD----------								
2)		1,4-Dioxane	0.508	0.514	0.479	0.496	0.450	0.447	0.430	0.475	6.94
3)		Pyridine	1.483	1.514	1.434	1.567	1.323	1.285	1.216	1.403	9.29
4)		n-Nitrosodimet...	0.648	0.661	0.619	0.672	0.607	0.594	0.571	0.625	5.93
5)	S	2-Fluorophenol	1.181	1.174	1.127	1.185	1.045	0.988	0.925	1.089	9.59
6)		Aniline	2.145	2.123	2.011	2.199	1.919	1.844	1.756	2.000	8.33
7)	S	Phenol-d6	1.701	1.693	1.553	1.661	1.443	1.339	1.269	1.523	11.55
8)		2-Chlorophenol	1.416	1.351	1.288	1.390	1.220	1.168	1.120	1.279	8.88
9)		Benzaldehyde	1.178	1.117	0.924	0.958	0.787	0.956	0.901	0.974	13.63
10)	C	Phenol	1.705	1.686	1.582	1.719	1.495	1.431	1.365	1.569	9.05
11)		bis(2-Chloroet...	1.470	1.450	1.366	1.479	1.283	1.240	1.191	1.354	8.71
12)		1,3-Dichlorobe...	1.650	1.611	1.505	1.616	1.425	1.364	1.304	1.496	9.08
13)	C	1,4-Dichlorobe...	1.606	1.585	1.498	1.593	1.402	1.356	1.295	1.476	8.56
14)		1,2-Dichlorobe...	1.560	1.535	1.424	1.538	1.345	1.285	1.234	1.417	9.34
15)		Benzyl Alcohol	1.228	1.251	1.209	1.331	1.167	1.129	1.097	1.202	6.57
16)		2,2'-oxybis(1-...	2.297	2.235	2.072	2.288	1.986	1.923	1.863	2.095	8.56
17)		2-Methylphenol	1.198	1.183	1.131	1.250	1.091	1.062	1.030	1.135	6.99
18)		Hexachloroethane	0.599	0.612	0.576	0.621	0.553	0.540	0.522	0.575	6.60
19)	P	n-Nitroso-di-n...	1.206	1.222	1.136	1.249	1.072	1.039	1.014	1.134	8.32
20)		3+4-Methylphenols	1.670	1.662	1.595	1.752	1.527	1.468	1.412	1.584	7.66
21)	I	Naphthalene-d8	----------ISTD----------								
22)		Acetophenone	0.522	0.549	0.496	0.535	0.475	0.463	0.441	0.497	8.04
23)	S	Nitrobenzene-d5	0.375	0.394	0.361	0.391	0.345	0.383	0.368	0.374	4.62
24)		Nitrobenzene	0.383	0.397	0.365	0.397	0.354	0.355	0.343	0.370	5.89
25)		Isophorone	0.726	0.758	0.698	0.759	0.669	0.663	0.637	0.701	6.82
26)	C	2-Nitrophenol	0.149	0.173	0.169	0.197	0.175	0.183	0.180	0.175	8.41
27)		2,4-Dimethylph...	0.260	0.282	0.257	0.288	0.254	0.255	0.250	0.264	5.63
28)		bis(2-Chloroet...	0.492	0.513	0.466	0.507	0.443	0.438	0.416	0.468	7.97
29)	C	2,4-Dichloroph...	0.308	0.329	0.311	0.344	0.307	0.308	0.294	0.315	5.31
30)		1,2,4-Trichlor...	0.363	0.378	0.347	0.378	0.339	0.340	0.324	0.353	5.93
31)		Naphthalene	1.063	1.092	0.979	1.046	0.915	0.873	0.806	0.968	11.05
32)		Benzoic acid	0.119	0.162	0.174	0.243	0.222	0.230	0.229	0.197	23.34
33)		4-Chloroaniline	0.472	0.498	0.463	0.500	0.440	0.440	0.418	0.462	6.71
34)	C	Hexachlorobuta...	0.217	0.228	0.210	0.233	0.208	0.209	0.203	0.215	5.20
35)		Caprolactam	0.115	0.124	0.116	0.126	0.113	0.114	0.111	0.117	4.93
36)	C	4-Chloro-3-met...	0.344	0.356	0.331	0.364	0.320	0.320	0.309	0.335	6.09
37)		2-Methylnaphth...	0.800	0.818	0.724	0.781	0.687	0.665	0.626	0.729	10.04
38)		1-Methylnaphth...	0.752	0.777	0.687	0.747	0.647	0.629	0.596	0.691	10.07

Method Path : Z:\SVOASRV\HPCHEM1\BNA_G\METHODS\
Method File : 8270-BG123019.M

39)	I	Acenaphthene-d10	----------ISTD----------								
40)		1,2,4,5-Tetrac...	0.600	0.623	0.581	0.634	0.558	0.564	0.542	0.586	5.84
41)	P	Hexachlorocycl...	0.265	0.285	0.302	0.339	0.311	0.315	0.311	0.304	7.73
42)	S	2,4,6-Tribromo...	0.208	0.222	0.212	0.228	0.204	0.199	0.191	0.209	6.10
43)	C	2,4,6-Trichlor...	0.378	0.414	0.403	0.445	0.397	0.400	0.387	0.403	5.39
44)		2,4,5-Trichlor...	0.406	0.432	0.416	0.453	0.405	0.405	0.395	0.416	4.81
45)	S	2-Fluorobiphenyl		1.353	1.162	1.188	1.013	1.001	0.906	1.104	14.63
46)		1,1'-Biphenyl	1.589	1.613	1.473	1.550	1.346	1.287	1.180	1.434	11.57
47)		2-Chloronaphth...	1.243	1.291	1.169	1.248	1.096	1.068	0.997	1.159	9.38
48)		2-Nitroaniline	0.356	0.388	0.371	0.404	0.364	0.369	0.357	0.373	4.65
49)		Acenaphthylene	1.854	1.926	1.709	1.784	1.548	1.482	1.356	1.665	12.56
50)		Dimethylphthalate	1.614	1.645	1.458	1.521	1.316	1.233	1.154	1.420	13.38
51)		2,6-Dinitrotol...	0.323	0.343	0.317	0.348	0.304	0.311	0.301	0.321	5.72
52)	C	Acenaphthene	1.201	1.275	1.169	1.274	1.114	1.097	1.046	1.168	7.56
53)		3-Nitroaniline	0.367	0.390	0.368	0.397	0.350	0.349	0.331	0.364	6.50
54)	P	2,4-Dinitrophenol	0.096	0.123	0.143	0.165	0.154	0.165	0.166	0.145	18.22
55)		Dibenzofuran	1.862	1.882	1.657	1.716	1.485	1.384	1.269	1.608	14.67
56)	P	4-Nitrophenol	0.265	0.289	0.289	0.306	0.274	0.274	0.259	0.279	5.76
57)		2,4-Dinitrotol...	0.434	0.471	0.442	0.471	0.422	0.419	0.398	0.437	6.22
58)		Fluorene	1.475	1.479	1.303	1.358	1.169	1.109	1.028	1.274	13.94
59)		2,3,4,6-Tetrac...	0.353	0.378	0.363	0.387	0.348	0.346	0.329	0.358	5.57
60)		Diethylphthalate	1.630	1.648	1.460	1.514	1.316	1.238	1.137	1.420	13.80
61)		4-Chlorophenyl...	0.770	0.768	0.689	0.740	0.647	0.630	0.599	0.692	10.03
62)		4-Nitroaniline	0.389	0.399	0.367	0.378	0.340	0.334	0.313	0.360	8.79
63)		Azobenzene	1.495	1.511	1.352	1.407	1.221	1.161	1.074	1.317	12.81
64)	I	Phenanthrene-d10	----------ISTD----------								
65)		4,6-Dinitro-2-...	0.070	0.088	0.095	0.110	0.101	0.109	0.108	0.097	15.07
66)	c	n-Nitrosodiphe...	0.636	0.646	0.580	0.639	0.559	0.545	0.517	0.589	8.80
67)		4-Bromophenyl-...	0.228	0.236	0.218	0.244	0.217	0.217	0.214	0.225	5.18
68)		Hexachlorobenzene	0.250	0.256	0.236	0.261	0.232	0.234	0.227	0.242	5.45
69)		Atrazine	0.215	0.221	0.200	0.205	0.184	0.167	0.148	0.191	13.69
70)	C	Pentachlorophenol	0.107	0.127	0.137	0.151	0.138	0.140	0.136	0.134	10.21
71)		Phenanthrene	1.121	1.121	0.984	1.015	0.892	0.830	0.753	0.959	14.75
72)		Anthracene	1.110	1.101	0.973	1.008	0.878	0.822	0.743	0.948	14.71
73)		Carbazole	1.024	1.015	0.902	0.925	0.811	0.761	0.692	0.876	14.39
74)		Di-n-butylphth...	1.304	1.290	1.131	1.120	0.981	0.883		1.118	14.89
75)	C	Fluoranthene	1.274	1.255	1.096	1.100	0.971	0.886		1.097	13.93
76)	I	Chrysene-d12	----------ISTD----------								
77)		Benzidine	0.479	0.477	0.564	0.594	0.538	0.472	0.396	0.503	13.36
78)		Pyrene	1.521	1.498	1.288	1.316	1.153	1.057		1.305	14.10
79)	S	Terphenyl-d14	1.089	1.051	0.845	0.840	0.706	0.664	0.603	0.828	22.64
80)		Butylbenzylpht...	0.640	0.681	0.628	0.676	0.602	0.575	0.549	0.622	7.98
81)		Benzo(a)anthra...	1.417	1.426	1.258	1.330	1.148	1.081	1.021	1.240	12.99
82)		3,3'-Dichlorob...	0.511	0.530	0.501	0.537	0.478	0.452	0.421	0.490	8.66
83)		Chrysene	1.351	1.351	1.196	1.258	1.104	1.017	0.972	1.178	12.97
84)		Bis(2-ethylhex...	0.946	0.983	0.869	0.928	0.813	0.754	0.710	0.858	11.93
85)	c	Di-n-octyl pht...	1.571	1.642	1.481	1.575	1.373	1.264	1.185	1.442	11.97
86)		Indeno(1,2,3-c...	1.581	1.658	1.578	1.732	1.567	1.549	1.545	1.601	4.30

Method Path : Z:\SVOASRV\HPCHEM1\BNA_G\METHODS\
Method File : 8270-BG123019.M

87)	I	Perylene-d12	----------ISTD----------							
88)		Benzo(b)fluora...	1.245	1.332	1.169	1.272	1.135	1.090	1.033	1.182	8.96
89)		Benzo(k)fluora...	1.258	1.246	1.148	1.201	1.049	1.029	0.938	1.124	10.80
90)	C	Benzo(a)pyrene	1.170	1.216	1.122	1.207	1.066	1.047	0.984	1.116	7.84
91)		Dibenzo(a,h)an...	1.151	1.194	1.111	1.209	1.080	1.075	1.024	1.121	6.00
92)		Benzo(g,h,i)pe...	1.126	1.175	1.103	1.194	1.074	1.073	1.048	1.113	4.93

(#) = Out of Range

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7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: BNA_F Calibration Date/Time: 01/03/2020 18:01

Lab File ID: BF118463.D Init. Calib. Date(s): 12/24/2019 12/24/2019

EPA Sample No.: SSTDCCC040 Init. Calib. Time(s): 11:00 13:48

GC Column: DB-UI ID: 0.18 (mm)

COMPOUND	RRF	RRF040	MIN RRF	%D	MAX%D
2-Fluorophenol	1.172	1.083		-7.6	
Phenol-d6	1.453	1.411		-2.9	
Phenol	1.634	1.585		-3.0	20.0
2-Methylphenol	1.064	1.049		-1.4	
3+4-Methylphenols	1.362	1.364		0.1	
Nitrobenzene-d5	0.350	0.351		0.3	
Naphthalene	1.017	1.045		2.8	
2-Fluorobiphenyl	1.310	1.368		4.4	
Acenaphthylene	1.888	1.962		3.9	
Acenaphthene	1.150	1.174		2.1	20.0
Dibenzofuran	1.699	1.777		4.6	
Fluorene	1.372	1.410		2.8	
2,4,6-Tribromophenol	0.247	0.240		-2.8	
Hexachlorobenzene	0.276	0.260		-5.8	
Pentachlorophenol	0.119	0.103		-13.4	20.0
Phenanthrene	1.090	1.085		-0.5	
Anthracene	1.091	1.096		0.5	
Fluoranthene	1.100	1.128		2.5	20.0
Pyrene	1.633	1.495		-8.5	
Terphenyl-d14	1.206	1.128		-6.5	
Benzo(a)anthracene	1.400	1.360		-2.9	
Chrysene	1.340	1.341		0.1	
Benzo(b)fluoranthene	1.328	1.371		3.2	
Benzo(k)fluoranthene	1.275	1.242		-2.6	
Benzo(a)pyrene	1.170	1.181		1.0	20.0
Indeno(1,2,3-cd)pyrene	1.142	0.957		-16.2	
Dibenzo(a,h)anthracene	1.015	1.029		1.4	
Benzo(g,h,i)perylene	0.980	0.928		-5.3	
1,4-Dioxane	0.466	0.463		-0.6	20.0

All other compounds must meet a minimum RRF of 0.010.

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7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: BNA_F Calibration Date/Time: 01/08/2020 12:45

Lab File ID: BF118497.D Init. Calib. Date(s):

EPA Sample No.: SSTDICCC040 Init. Calib. Time(s):

GC Column: DB-UI ID: 0.18 (mm)

COMPOUND	RRF	RRF040	MIN RRF	%D	MAX%D
2-Fluorophenol	1.212	1.098		-9.4	
Phenol-d6	1.449	1.386		-4.3	
Phenol	1.605	1.545		-3.7	20.0
2-Methylphenol	1.089	1.022		-6.2	
3+4-Methylphenols	1.477	1.349		-8.7	
Nitrobenzene-d5	0.381	0.339		-11.0	
Naphthalene	1.046	0.987		-5.6	
2-Fluorobiphenyl	1.395	1.304		-6.5	
Acenaphthylene	1.925	1.850		-3.9	
Acenaphthene	1.176	1.103		-6.2	20.0
Dibenzofuran	1.766	1.718		-2.7	
Fluorene	1.419	1.445		1.8	
2,4,6-Tribromophenol	0.236	0.215		-8.9	
Hexachlorobenzene	0.280	0.254		-9.3	
Pentachlorophenol	0.083	0.080		-3.6	20.0
Phenanthrene	1.120	1.035		-7.6	
Anthracene	1.115	1.027		-7.9	
Fluoranthene	1.139	1.105		-3.0	20.0
Pyrene	1.646	1.593		-3.2	
Terphenyl-d14	1.262	1.200		-4.9	
Benzo(a)anthracene	1.400	1.298		-7.3	
Chrysene	1.360	1.251		-8.0	
Benzo(b)fluoranthene	1.446	1.392		-3.7	
Benzo(k)fluoranthene	1.380	1.389		0.7	
Benzo(a)pyrene	1.185	1.031		-13.0	20.0
Indeno(1,2,3-cd)pyrene	1.095	1.057		-3.5	
Dibenzo(a,h)anthracene	1.111	1.062		-4.4	
Benzo(g,h,i)perylene	1.053	0.931		-11.6	
1,4-Dioxane	0.404	0.367		-9.2	20.0

All other compounds must meet a minimum RRF of 0.010.

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7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: BNA_G Calibration Date/Time: 01/03/2020 15:20

Lab File ID: BG043888.D Init. Calib. Date(s): 12/30/2019 12/30/2019

EPA Sample No.: SSTDCCC040 Init. Calib. Time(s): 09:28 15:51

GC Column: ZB-GR ID: 0.25 (mm)

COMPOUND	RRF	RRF040	MIN RRF	%D	MAX%D
2-Fluorophenol	1.089	1.129		3.7	
Phenol-d6	1.523	1.578		3.6	
Phenol	1.569	1.592		1.5	20.0
2-Methylphenol	1.135	1.147		1.1	
3+4-Methylphenols	1.584	1.598		0.9	
Nitrobenzene-d5	0.374	0.357		-4.5	
Naphthalene	0.968	0.982		1.4	
2-Fluorobiphenyl	1.104	1.167		5.7	
Acenaphthylene	1.665	1.715		3.0	
Acenaphthene	1.168	1.190		1.9	20.0
Dibenzofuran	1.608	1.681		4.5	
Fluorene	1.274	1.333		4.6	
2,4,6-Tribromophenol	0.209	0.220		5.3	
Hexachlorobenzene	0.242	0.237		-2.1	
Pentachlorophenol	0.134	0.136		1.5	20.0
Phenanthrene	0.959	0.984		2.6	
Anthracene	0.948	0.974		2.7	
Fluoranthene	1.097	1.119		2.0	20.0
Pyrene	1.305	1.301		-0.3	
Terphenyl-d14	0.828	0.853		3.0	
Benzo(a)anthracene	1.240	1.255		1.2	
Chrysene	1.178	1.199		1.8	
Benzo(b)fluoranthene	1.182	1.188		0.5	
Benzo(k)fluoranthene	1.124	1.130		0.5	
Benzo(a)pyrene	1.116	1.120		0.4	20.0
Indeno(1,2,3-cd)pyrene	1.601	1.583		-1.1	
Dibenzo(a,h)anthracene	1.121	1.122		0.1	
Benzo(g,h,i)perylene	1.113	1.102		-1.0	
1,4-Dioxane	0.475	0.484		1.9	20.0

All other compounds must meet a minimum RRF of 0.010.

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7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG No.: K6449

Instrument ID: BNA_G Calibration Date/Time: 01/04/2020 05:43

Lab File ID: BG043908.D Init. Calib. Date(s): 12/30/2019 12/30/2019

EPA Sample No.: SSTDCCC040 Init. Calib. Time(s): 09:28 15:51

GC Column: ZB-GR ID: 0.25 (mm)

COMPOUND	RRF	RRF040	MIN RRF	%D	MAX%D
2-Fluorophenol	1.089	1.140		4.7	
Phenol-d6	1.523	1.579		3.7	
Phenol	1.569	1.611		2.7	20.0
2-Methylphenol	1.135	1.154		1.7	
3+4-Methylphenols	1.584	1.612		1.8	
Nitrobenzene-d5	0.374	0.355		-5.1	
Naphthalene	0.968	0.971		0.3	
2-Fluorobiphenyl	1.104	1.139		3.2	
Acenaphthylene	1.665	1.708		2.6	
Acenaphthene	1.168	1.182		1.2	20.0
Dibenzofuran	1.608	1.677		4.3	
Fluorene	1.274	1.325		4.0	
2,4,6-Tribromophenol	0.209	0.223		6.7	
Hexachlorobenzene	0.242	0.233		-3.7	
Pentachlorophenol	0.134	0.127		-5.2	20.0
Phenanthrene	0.959	0.975		1.7	
Anthracene	0.948	0.957		0.9	
Fluoranthene	1.097	1.084		-1.2	20.0
Pyrene	1.305	1.284		-1.6	
Terphenyl-d14	0.828	0.827		-0.1	
Benzo(a)anthracene	1.240	1.256		1.3	
Chrysene	1.178	1.200		1.9	
Benzo(b)fluoranthene	1.182	1.174		-0.7	
Benzo(k)fluoranthene	1.124	1.117		-0.6	
Benzo(a)pyrene	1.116	1.102		-1.3	20.0
Indeno(1,2,3-cd)pyrene	1.601	1.592		-0.6	
Dibenzo(a,h)anthracene	1.121	1.112		-0.8	
Benzo(g,h,i)perylene	1.113	1.097		-1.4	
1,4-Dioxane	0.475	0.481		1.3	20.0

All other compounds must meet a minimum RRF of 0.010.

CHEMTECH

284 Sheffield Street, Mountainside, New Jersey - 07092

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LAB CHRONICLE

OrderID:	K6449	**OrderDate:**	12/27/2019 9:51:00 AM
Client:	LiRo Engineers, Inc.	**Project:**	BUDC - 683 Northland Avenue
Contact:	Jon Williams	**Location:**	E61

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
K6449-01	**LW-04**	**WATER**			**12/18/19**			**12/27/19**
			PCB	8082A		12/27/19	12/31/19	
K6449-02	**LW-03**	**WATER**			**12/18/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-03	**LW-05**	**WATER**			**12/19/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-04	**OW-4**	**WATER**			**12/20/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-05	**OW-5**	**WATER**			**12/23/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-08	**OW-2**	**WATER**			**12/23/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-09	**OW-1**	**WATER**			**12/23/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-10	**FIELD-BLANK**	**WATER**			**12/23/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	
K6449-11	**DUPLICATE**	**WATER**			**12/23/19**			**12/27/19**
			PCB	8082A		12/27/19	12/30/19	

CHEMTECH

Hit Summary Sheet
SW-846

SDG No.: K6449 **Order ID:** K6449

Client: LiRo Engineers, Inc. **Project ID:** BUDC - 683 Northland Avenue

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID :								
			Total Concentration:	0.00				

SAMPLE DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046049.D	1	12/27/19 15:37	12/31/19 12:07	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	17.2		35 - 137	86%	SPK: 20
2051-24-3	Decachlorobiphenyl	20.3		40 - 135	101%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046034.D	1	12/27/19 15:37	12/30/19 17:13	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	26.6		35 - 137	133%	SPK: 20
2051-24-3	Decachlorobiphenyl	29.2	*	40 - 135	146%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046035.D	1	12/27/19 15:37	12/30/19 17:29	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	24.8		35 - 137	124%	SPK: 20
2051-24-3	Decachlorobiphenyl	25.1		40 - 135	126%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046036.D	1	12/27/19 15:37	12/30/19 17:45	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	27.2		35 - 137	136%	SPK: 20
2051-24-3	Decachlorobiphenyl	28.1	*	40 - 135	141%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046037.D	1	12/27/19 15:37	12/30/19 18:02	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	29.9	*	35 - 137	149%	SPK: 20
2051-24-3	Decachlorobiphenyl	25.3		40 - 135	126%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
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M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046040.D	1	12/27/19 15:37	12/30/19 18:51	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	26.9		35 - 137	135%	SPK: 20
2051-24-3	Decachlorobiphenyl	27.4	*	40 - 135	137%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
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Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
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S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046041.D	1	12/27/19 15:37	12/30/19 19:07	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	21.1		35 - 137	106%	SPK: 20
2051-24-3	Decachlorobiphenyl	18.9		40 - 135	94%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046042.D	1	12/27/19 15:37	12/30/19 19:23	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	26.1		35 - 137	130%	SPK: 20
2051-24-3	Decachlorobiphenyl	22.3		40 - 135	111%	SPK: 20

Comments:

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LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
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S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046043.D	1	12/27/19 15:37	12/30/19 19:40	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	20.1		35 - 137	100%	SPK: 20
2051-24-3	Decachlorobiphenyl	25.3		40 - 135	126%	SPK: 20

Comments:

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LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

QC SUMMARY

Surrogate Summary

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8082A

Lab Sample ID	Client ID	Parameter	Column	Spike	Result	Rec	Qual	Limits Low	Limits High
I.BLK-PQ045958.D	PIBLK-PQ045958.D	Tetrachloro-m-xylene	1	20	18.3	91		43	150
		Decachlorobiphenyl	1	20	17.2	86		24	154
		Tetrachloro-m-xylene	2	20	17.1	86		43	150
		Decachlorobiphenyl	2	20	16.5	83		24	154
I.BLK-PQ046025.D	PIBLK-PQ046025.D	Tetrachloro-m-xylene	1	20	21.1	106		43	150
		Decachlorobiphenyl	1	20	18.2	91		24	154
		Tetrachloro-m-xylene	2	20	22.8	114		43	150
		Decachlorobiphenyl	2	20	25.1	126		24	154
PB125778BL	PB125778BL	Tetrachloro-m-xylene	1	20	21.0	105		35	137
		Decachlorobiphenyl	1	20	19.9	100		40	135
		Tetrachloro-m-xylene	2	20	23.7	119		35	137
		Decachlorobiphenyl	2	20	23.2	116		40	135
PB125778BS	PB125778BS	Tetrachloro-m-xylene	1	20	20.8	104		35	137
		Decachlorobiphenyl	1	20	16.8	84		40	135
		Tetrachloro-m-xylene	2	20	23.1	116		35	137
		Decachlorobiphenyl	2	20	20.5	102		40	135
I.BLK-PQ046031.D	PIBLK-PQ046031.D	Tetrachloro-m-xylene	1	20	19.3	97		43	150
		Decachlorobiphenyl	1	20	17.7	89		24	154
		Tetrachloro-m-xylene	2	20	20.8	104		43	150
		Decachlorobiphenyl	2	20	22.7	114		24	154
K6449-02	LW-03	Tetrachloro-m-xylene	1	20	23.8	119		35	137
		Decachlorobiphenyl	1	20	22.4	112		40	135
		Tetrachloro-m-xylene	2	20	26.6	133		35	137
		Decachlorobiphenyl	2	20	29.2	146	*	40	135
K6449-03	LW-05	Tetrachloro-m-xylene	1	20	22.7	114		35	137
		Decachlorobiphenyl	1	20	20.8	104		40	135
		Tetrachloro-m-xylene	2	20	24.8	124		35	137
		Decachlorobiphenyl	2	20	25.1	126		40	135
K6449-04	OW-4	Tetrachloro-m-xylene	1	20	25.9	129		35	137
		Decachlorobiphenyl	1	20	21.9	109		40	135
		Tetrachloro-m-xylene	2	20	27.2	136		35	137
		Decachlorobiphenyl	2	20	28.1	141	*	40	135
K6449-05	OW-5	Tetrachloro-m-xylene	1	20	26.9	134		35	137
		Decachlorobiphenyl	1	20	19.9	100		40	135
		Tetrachloro-m-xylene	2	20	29.9	149	*	35	137
		Decachlorobiphenyl	2	20	25.3	126		40	135
K6449-06MS	OW-5MS	Tetrachloro-m-xylene	1	20	25.4	127		35	137
		Decachlorobiphenyl	1	20	20.3	102		40	135
		Tetrachloro-m-xylene	2	20	27.4	137		35	137
		Decachlorobiphenyl	2	20	25.3	127		40	135
K6449-07MSD	OW-5MSD	Tetrachloro-m-xylene	1	20	26.1	130		35	137
		Decachlorobiphenyl	1	20	20.2	101		40	135
		Tetrachloro-m-xylene	2	20	27.6	138	*	35	137

Surrogate Summary

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8082A

Lab Sample ID	Client ID	Parameter	Column	Spike	Result	Rec	Qual	Limits Low	Limits High
K6449-07MSD	OW-5MSD	Decachlorobiphenyl	2	20	25.7	129		40	135
K6449-08	OW-2	Tetrachloro-m-xylene	1	20	24.1	120		35	137
		Decachlorobiphenyl	1	20	22.5	113		40	135
		Tetrachloro-m-xylene	2	20	26.9	135		35	137
		Decachlorobiphenyl	2	20	27.4	137	*	40	135
K6449-09	OW-1	Tetrachloro-m-xylene	1	20	19.7	99		35	137
		Decachlorobiphenyl	1	20	15.1	75		40	135
		Tetrachloro-m-xylene	2	20	21.1	106		35	137
		Decachlorobiphenyl	2	20	18.9	94		40	135
K6449-10	FIELD-BLANK	Tetrachloro-m-xylene	1	20	23.9	119		35	137
		Decachlorobiphenyl	1	20	17.1	86		40	135
		Tetrachloro-m-xylene	2	20	26.1	130		35	137
		Decachlorobiphenyl	2	20	22.3	111		40	135
K6449-11	DUPLICATE	Tetrachloro-m-xylene	1	20	18.5	93		35	137
		Decachlorobiphenyl	1	20	19.5	98		40	135
		Tetrachloro-m-xylene	2	20	20.1	100		35	137
		Decachlorobiphenyl	2	20	25.3	126		40	135
I.BLK-PQ046044.D	PIBLK-PQ046044.D	Tetrachloro-m-xylene	1	20	29.3	147		43	150
		Decachlorobiphenyl	1	20	20.5	102		24	154
		Tetrachloro-m-xylene	2	20	31.2	156	*	43	150
		Decachlorobiphenyl	2	20	27.2	136		24	154
I.BLK-PQ046047.D	PIBLK-PQ046047.D	Tetrachloro-m-xylene	1	20	17.1	86		43	150
		Decachlorobiphenyl	1	20	15.4	77		24	154
		Tetrachloro-m-xylene	2	20	19.2	96		43	150
		Decachlorobiphenyl	2	20	21.4	107		24	154
K6449-01	LW-04	Tetrachloro-m-xylene	1	20	15.6	78		35	137
		Decachlorobiphenyl	1	20	14.6	73		40	135
		Tetrachloro-m-xylene	2	20	17.2	86		35	137
		Decachlorobiphenyl	2	20	20.3	101		40	135
I.BLK-PQ046050.D	PIBLK-PQ046050.D	Tetrachloro-m-xylene	1	20	16.4	82		43	150
		Decachlorobiphenyl	1	20	15.6	78		24	154
		Tetrachloro-m-xylene	2	20	17.7	88		43	150
		Decachlorobiphenyl	2	20	20.7	103		24	154

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Matrix Spike/Matrix Spike Duplicate Summary

SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8082A **DataFile :** PQ046038.D

Lab Sample ID:	Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Client Sample ID:	**OW-5MS**											
K6449-06MS	AR1016	2	0	2.80	ug/L	140				65	145	
	AR1260	2	0	3.10	ug/L	155	*			65	145	

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Matrix Spike/Matrix Spike Duplicate Summary

SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8082A **DataFile :** PQ046039.D

Lab Sample ID:	Parameter	Spike	Sample Result	Result	Units	Rec	Rec Qual	RPD	RPD Qual	Limits Low	Limits High	Limits RPD
Client Sample ID:	**OW-5MSD**											
K6449-07MSD	AR1016	2	0	3.30	ug/L	165	*	16		65	145	20
	AR1260	2	0	3.20	ug/L	160	*	3		65	145	20

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Laboratory Control Sample/Laboratory Control Sample Duplicate Summary

SW-846

SDG No.: K6449

Client: LiRo Engineers, Inc.

Analytical Method: 8082A **Datafile :** PQ046030.D

Lab Sample ID	Parameter	Spike	Result	Units	Rec	RPD	Qual	RPD Qual	Limits Low	Limits High	RPD
PB125778BS	AR1016	2	2.20	ug/L	110				56	149	
	AR1260	2	2.20	ug/L	110				66	147	

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4C

PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

PB125778BL

Lab Name: CHEMTECH Contract: LIRO01

Lab Code: CHEM Case No.: K6449 SAS No.: K6449 SDG NO.: K6449

Lab Sample ID: PB125778BL Lab File ID: PQ046029.D

Matrix: (soil/water) WATER Extraction: (Type) SEPF

Sulfur Cleanup: (Y/N) N Date Extracted: 12/27/2019

Date Analyzed (1): 12/30/2019 Date Analyzed (2): 12/30/2019

Time Analyzed (1): 14:43 Time Analyzed (2): 14:43

Instrument ID (1): ECD_Q Instrument ID (2): ECD_Q

GC Column (1): ZB-MR1 ID: 0.32 (mm) GC Column (2): ZB-MR2 ID: 0.32 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED 1	DATE ANALYZED 2
PB125778BS	PB125778BS	PQ046030.D	12/30/2019	12/30/2019
LW-03	K6449-02	PQ046034.D	12/30/2019	12/30/2019
LW-05	K6449-03	PQ046035.D	12/30/2019	12/30/2019
OW-4	K6449-04	PQ046036.D	12/30/2019	12/30/2019
OW-5	K6449-05	PQ046037.D	12/30/2019	12/30/2019
OW-5MS	K6449-06MS	PQ046038.D	12/30/2019	12/30/2019
OW-5MSD	K6449-07MSD	PQ046039.D	12/30/2019	12/30/2019
OW-2	K6449-08	PQ046040.D	12/30/2019	12/30/2019
OW-1	K6449-09	PQ046041.D	12/30/2019	12/30/2019
FIELD-BLANK	K6449-10	PQ046042.D	12/30/2019	12/30/2019
DUPLICATE	K6449-11	PQ046043.D	12/30/2019	12/30/2019
LW-04	K6449-01	PQ046049.D	12/31/2019	12/31/2019

COMMENTS:

CALIBRATION SUMMARY

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

RETENTION TIMES OF INITIAL CALIBRATION

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q **Calibration Date(s):** 12/27/2019 12/27/2019

Calibration Times: 10:35 13:35

GC Column: ZB-MR1 ID: 0.32 (mm)

LAB FILE ID: RT 1000 = PQ045959.D RT 750 = PQ045960.D

RT 500 = PQ045961.D RT 250 = PQ045962.D RT 050 = PQ045963.D

COMPOUND		RT 1000	RT 750	RT 500	RT 250	RT 050	MEAN RT	RT WINDOW FROM	RT WINDOW TO
Aroclor-1016-1	(1)	6.53	6.53	6.53	6.53	6.53	6.53	6.43	6.63
Aroclor-1016-2	(2)	6.55	6.56	6.55	6.55	6.55	6.55	6.45	6.65
Aroclor-1016-3	(3)	6.62	6.62	6.62	6.62	6.62	6.62	6.52	6.72
Aroclor-1016-4	(4)	6.73	6.73	6.73	6.73	6.73	6.73	6.63	6.83
Aroclor-1016-5	(5)	7.04	7.05	7.04	7.04	7.04	7.04	6.94	7.14
Aroclor-1260-1	(1)	8.22	8.22	8.22	8.22	8.22	8.22	8.12	8.32
Aroclor-1260-2	(2)	8.49	8.49	8.49	8.49	8.49	8.49	8.39	8.59
Aroclor-1260-3	(3)	8.85	8.86	8.85	8.85	8.85	8.85	8.75	8.95
Aroclor-1260-4	(4)	9.09	9.10	9.09	9.09	9.09	9.09	8.99	9.19
Aroclor-1260-5	(5)	9.43	9.44	9.43	9.44	9.43	9.43	9.33	9.53
Decachlorobiphenyl		11.37	11.37	11.37	11.37	11.37	11.37	11.27	11.47
Tetrachloro-m-xylene		5.22	5.22	5.21	5.21	5.21	5.21	5.11	5.31

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RETENTION TIMES OF INITIAL CALIBRATION

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q **Calibration Date(s):** 12/27/2019 12/27/2019

Calibration Times: 10:35 13:35

GC Column: ZB-MR2 ID: 0.32 (mm)

LAB FILE ID: RT 1000 = PQ045959.D RT 750 = PQ045960.D

RT 500 = PQ045961.D RT 250 = PQ045962.D RT 050 = PQ045963.D

COMPOUND		RT 1000	RT 750	RT 500	RT 250	RT 050	MEAN RT	RT WINDOW FROM	RT WINDOW TO
Aroclor-1016-1	(1)	5.63	5.63	5.63	5.63	5.63	5.63	5.53	5.73
Aroclor-1016-2	(2)	5.65	5.65	5.65	5.65	5.65	5.65	5.55	5.75
Aroclor-1016-3	(3)	5.85	5.85	5.85	5.85	5.85	5.85	5.75	5.95
Aroclor-1016-4	(4)	5.90	5.90	5.90	5.90	5.90	5.90	5.80	6.00
Aroclor-1016-5	(5)	6.13	6.13	6.13	6.13	6.13	6.13	6.03	6.23
Aroclor-1260-1	(1)	7.24	7.24	7.24	7.24	7.24	7.24	7.14	7.34
Aroclor-1260-2	(2)	7.43	7.43	7.43	7.43	7.43	7.43	7.33	7.53
Aroclor-1260-3	(3)	7.59	7.59	7.59	7.59	7.59	7.59	7.49	7.69
Aroclor-1260-4	(4)	8.08	8.08	8.08	8.08	8.08	8.08	7.98	8.18
Aroclor-1260-5	(5)	8.32	8.32	8.32	8.32	8.32	8.32	8.22	8.42
Decachlorobiphenyl		9.78	9.78	9.78	9.78	9.78	9.78	9.68	9.88
Tetrachloro-m-xylene		4.35	4.35	4.35	4.35	4.35	4.35	4.25	4.45

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CALIBRATION FACTOR OF INITIAL CALIBRATION

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q **Calibration Date(s):** 12/27/2019 12/27/2019

Calibration Times: 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

LAB FILE ID: **CF 1000 =** PQ045959.D **CF 750 =** PQ045960.D

CF 500 = PQ045961.D **CF 250 =** PQ045962.D **CF 050 =** PQ045963.D

COMPOUND		CF 1000	CF 750	CF 500	CF 250	CF 050	CF	% RSD
Aroclor-1016-1	(1)	88799951	95087319	94354124	93894124	89287000	92284504	3
Aroclor-1016-2	(2)	138121617	145022448	146209614	141869444	147168640	143678353	3
Aroclor-1016-3	(3)	85593443	92465305	92070834	89765116	90172420	90013424	3
Aroclor-1016-4	(4)	68272916	73520331	72722822	70914872	69504600	70987108	3
Aroclor-1016-5	(5)	67891912	72432233	70642020	69524156	71765740	70451212	3
Aroclor-1260-1	(1)	128697340	138991672	138013482	135049004	148951620	137940624	5
Aroclor-1260-2	(2)	161421680	174036892	170583382	167409580	175614440	169813195	3
Aroclor-1260-3	(3)	137403893	148578600	144596518	142810000	145488420	143775486	3
Aroclor-1260-4	(4)	160768319	172705800	168469756	164545400	168180120	166933879	3
Aroclor-1260-5	(5)	348404120	370758699	356041924	345268408	354382080	354971046	3
Decachlorobiphenyl		4308837910	4641111187	4522395000	4545344280	4580425800	4519622835	3
Tetrachloro-m-xylene		2785327980	2906459320	2868085060	2823234240	2650358400	2806693000	4

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CALIBRATION FACTOR OF INITIAL CALIBRATION

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q

Calibration Date(s): 12/27/2019 12/27/2019

Calibration Times: 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

LAB FILE ID: **CF 1000 =** PQ045959.D **CF 750 =** PQ045960.D

CF 500 = PQ045961.D **CF 250 =** PQ045962.D **CF 050 =** PQ045963.D

COMPOUND		CF 1000	CF 750	CF 500	CF 250	CF 050	CF	% RSD
Aroclor-1016-1	(1)	67180122	70845360	69793008	66341768	61424120	67116876	5
Aroclor-1016-2	(2)	104710496	110119880	107136870	101136768	87597340	102140271	9
Aroclor-1016-3	(3)	51550349	55214220	53542126	50213160	46698220	51443615	6
Aroclor-1016-4	(4)	43220933	46331077	45887776	43267684	40922900	43926074	5
Aroclor-1016-5	(5)	57330176	61248757	60403238	57347016	57465880	58759013	3
Aroclor-1260-1	(1)	120027776	129230557	127046034	120642940	123819680	124153397	3
Aroclor-1260-2	(2)	137396064	154111565	132309084	147597416	151769300	144636686	7
Aroclor-1260-3	(3)	140927718	151648516	144531796	137496056	138559180	142632653	4
Aroclor-1260-4	(4)	126086679	135837287	128076534	124583792	123896200	127696098	4
Aroclor-1260-5	(5)	334934080	359974203	337478390	320704236	301278320	330873846	7
Decachlorobiphenyl		3174176090	3417662133	3203510160	3247035760	3187046600	3245886149	3
Tetrachloro-m-xylene		1944902910	1995959960	1949888680	1816498040	1705035200	1882456958	6

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INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q **Date(s) Analyzed:** 12/27/2019 12/27/2019

GC Column: ZB-MR1 **ID:** 0.32 (mm)

COMPOUND	AMOUNT (ng)	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR
Aroclor-1221	500	1	5.46	5.36	5.56	31217200
		2	5.56	5.46	5.66	24122400
		3	5.64	5.54	5.74	73290800
		4	0.00			0
		5	0.00			0
Aroclor-1232	500	1	5.64	5.54	5.74	95035800
		2	6.24	6.14	6.34	50733400
		3	6.55	6.45	6.65	98642800
		4	6.73	6.63	6.83	49547200
		5	6.83	6.73	6.93	39206800
Aroclor-1242	500	1	6.53	6.43	6.63	81171000
		2	6.55	6.45	6.65	123137000
		3	6.62	6.52	6.72	78895800
		4	6.73	6.63	6.83	62533400
		5	7.51	7.41	7.61	79345600
Aroclor-1248	500	1	6.53	6.43	6.63	57891000
		2	6.83	6.73	6.93	86393400
		3	7.04	6.94	7.14	93178000
		4	7.47	7.37	7.57	105476000
		5	7.51	7.41	7.61	105247000
Aroclor-1254	500	1	7.44	7.34	7.54	100374000
		2	7.67	7.57	7.77	159346000
		3	8.05	7.95	8.15	178515000
		4	8.35	8.25	8.45	137353000
		5	8.78	8.68	8.88	162774000
Aroclor-1262	500	1	8.85	8.75	8.95	230170000
		2	9.43	9.33	9.53	463286000
		3	9.76	9.66	9.86	334342000
		4	9.86	9.76	9.96	268404000
		5	10.56	10.46	10.66	206414000
Aroclor-1268	500	1	9.76	9.66	9.86	516768000
		2	9.86	9.76	9.96	502602000
		3	10.11	10.01	10.21	426758000
		4	10.56	10.46	10.66	203130000
		5	11.00	10.90	11.10	1706380000

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INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Instrument ID: ECD_Q **Date(s) Analyzed:** 12/27/2019 12/27/2019

GC Column: ZB-MR2 **ID:** 0.32 (mm)

COMPOUND	AMOUNT (ng)	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR
Aroclor-1221	500	1	4.61	4.51	4.71	19435800
		2	4.72	4.62	4.82	14608000
		3	4.81	4.71	4.91	48203800
		4	0.00			0
		5	0.00			0
Aroclor-1232	500	1	4.81	4.71	4.91	65852800
		2	5.65	5.55	5.75	73067600
		3	5.85	5.75	5.95	35620000
		4	5.94	5.84	6.04	34452000
		5	6.13	6.03	6.23	40195600
Aroclor-1242	500	1	5.63	5.53	5.73	57941800
		2	5.65	5.55	5.75	91786000
		3	5.85	5.75	5.95	45039200
		4	5.94	5.84	6.04	47773600
		5	6.51	6.41	6.61	62091200
Aroclor-1248	500	1	5.63	5.53	5.73	42177000
		2	5.90	5.80	6.00	62166800
		3	5.94	5.84	6.04	64798800
		4	6.13	6.03	6.23	81701600
		5	6.56	6.46	6.66	79714800
Aroclor-1254	500	1	6.51	6.41	6.61	114669000
		2	6.67	6.57	6.77	103760000
		3	7.10	7.00	7.20	176647000
		4	7.34	7.24	7.44	111781000
		5	7.77	7.67	7.87	169146000
Aroclor-1262	500	1	7.77	7.67	7.87	101502000
		2	8.32	8.22	8.42	429452000
		3	8.61	8.51	8.71	167990000
		4	8.68	8.58	8.78	342326000
		5	9.19	9.09	9.29	161051000
Aroclor-1268	500	1	8.61	8.51	8.71	458770000
		2	8.68	8.58	8.78	456126000
		3	8.89	8.79	8.99	359128000
		4	9.19	9.09	9.29	165228000
		5	9.51	9.41	9.61	1316200000

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 13:54 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	6.54	6.53	6.43	6.63	-0.01
Aroclor-1016-2	(2)	6.56	6.55	6.45	6.65	-0.01
Aroclor-1016-3	(3)	6.63	6.62	6.52	6.72	-0.01
Aroclor-1016-4	(4)	6.74	6.73	6.63	6.83	-0.01
Aroclor-1016-5	(5)	7.05	7.04	6.94	7.14	-0.01
Aroclor-1260-1	(1)	8.23	8.22	8.12	8.32	-0.01
Aroclor-1260-2	(2)	8.50	8.49	8.39	8.59	-0.01
Aroclor-1260-3	(3)	8.86	8.85	8.75	8.95	-0.01
Aroclor-1260-4	(4)	9.10	9.09	8.99	9.19	-0.01
Aroclor-1260-5	(5)	9.45	9.43	9.33	9.53	-0.02
Tetrachloro-m-xylene		5.22	5.21	5.11	5.31	-0.01
Decachlorobiphenyl		11.38	11.37	11.27	11.47	-0.01

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 13:54 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	5.64	5.63	5.53	5.73	-0.01
Aroclor-1016-2	(2)	5.66	5.65	5.55	5.75	-0.01
Aroclor-1016-3	(3)	5.86	5.85	5.75	5.95	-0.01
Aroclor-1016-4	(4)	5.91	5.90	5.80	6.00	-0.01
Aroclor-1016-5	(5)	6.14	6.13	6.03	6.23	-0.01
Aroclor-1260-1	(1)	7.24	7.24	7.14	7.34	0.00
Aroclor-1260-2	(2)	7.44	7.43	7.33	7.53	-0.01
Aroclor-1260-3	(3)	7.60	7.59	7.49	7.69	-0.01
Aroclor-1260-4	(4)	8.09	8.08	7.98	8.18	-0.01
Aroclor-1260-5	(5)	8.33	8.32	8.22	8.42	-0.01
Tetrachloro-m-xylene		4.36	4.35	4.25	4.45	-0.01
Decachlorobiphenyl		9.80	9.78	9.68	9.88	-0.02

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR1 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL01 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046026.D **Time Analyzed:** 13:54

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	6.539	6.429	6.629	540.360	500.000	8.1
Aroclor-1016-2	6.563	6.453	6.653	537.220	500.000	7.4
Aroclor-1016-3	6.631	6.521	6.721	517.200	500.000	3.4
Aroclor-1016-4	6.737	6.628	6.828	529.250	500.000	5.9
Aroclor-1016-5	7.053	6.943	7.143	555.230	500.000	11.0
Aroclor-1260-1	8.232	8.122	8.322	502.040	500.000	0.4
Aroclor-1260-2	8.496	8.386	8.586	501.730	500.000	0.3
Aroclor-1260-3	8.864	8.754	8.954	518.290	500.000	3.7
Aroclor-1260-4	9.104	8.993	9.193	485.650	500.000	-2.9
Aroclor-1260-5	9.446	9.334	9.534	431.970	500.000	-13.6
Decachlorobiphenyl	11.384	11.267	11.467	40.010	50.000	-20.0
Tetrachloro-m-xylene	5.224	5.114	5.314	46.180	50.000	-7.6

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR2 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL01 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046026.D **Time Analyzed:** 13:54

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	5.641	5.532	5.732	551.070	500.000	10.2
Aroclor-1016-2	5.662	5.552	5.752	515.910	500.000	3.2
Aroclor-1016-3	5.859	5.749	5.949	575.530	500.000	15.1
Aroclor-1016-4	5.906	5.796	5.996	565.370	500.000	13.1
Aroclor-1016-5	6.140	6.031	6.231	579.140	500.000	15.8
Aroclor-1260-1	7.244	7.135	7.335	594.880	500.000	19.0
Aroclor-1260-2	7.438	7.330	7.530	499.500	500.000	-0.1
Aroclor-1260-3	7.600	7.492	7.692	573.860	500.000	14.8
Aroclor-1260-4	8.087	7.977	8.177	596.350	500.000	19.3
Aroclor-1260-5	8.332	8.222	8.422	598.820	500.000	19.8
Decachlorobiphenyl	9.795	9.682	9.882	54.720	50.000	9.4
Tetrachloro-m-xylene	4.360	4.249	4.449	52.050	50.000	4.1

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 16:24 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	6.54	6.53	6.43	6.63	-0.01
Aroclor-1016-2	(2)	6.57	6.55	6.45	6.65	-0.02
Aroclor-1016-3	(3)	6.63	6.62	6.52	6.72	-0.01
Aroclor-1016-4	(4)	6.74	6.73	6.63	6.83	-0.01
Aroclor-1016-5	(5)	7.05	7.04	6.94	7.14	-0.01
Aroclor-1260-1	(1)	8.23	8.22	8.12	8.32	-0.01
Aroclor-1260-2	(2)	8.50	8.49	8.39	8.59	0.00
Aroclor-1260-3	(3)	8.86	8.85	8.75	8.95	-0.01
Aroclor-1260-4	(4)	9.10	9.09	8.99	9.19	-0.01
Aroclor-1260-5	(5)	9.45	9.43	9.33	9.53	-0.01
Tetrachloro-m-xylene		5.23	5.21	5.11	5.31	-0.02
Decachlorobiphenyl		11.38	11.37	11.27	11.47	-0.01

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 16:24 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	5.64	5.63	5.53	5.73	-0.01
Aroclor-1016-2	(2)	5.66	5.65	5.55	5.75	-0.01
Aroclor-1016-3	(3)	5.86	5.85	5.75	5.95	-0.01
Aroclor-1016-4	(4)	5.91	5.90	5.80	6.00	-0.01
Aroclor-1016-5	(5)	6.14	6.13	6.03	6.23	-0.01
Aroclor-1260-1	(1)	7.24	7.24	7.14	7.34	0.00
Aroclor-1260-2	(2)	7.44	7.43	7.33	7.53	-0.01
Aroclor-1260-3	(3)	7.60	7.59	7.49	7.69	-0.01
Aroclor-1260-4	(4)	8.09	8.08	7.98	8.18	-0.01
Aroclor-1260-5	(5)	8.33	8.32	8.22	8.42	-0.01
Tetrachloro-m-xylene		4.36	4.35	4.25	4.45	-0.01
Decachlorobiphenyl		9.79	9.78	9.68	9.88	-0.01

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR1 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL02 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046032.D **Time Analyzed:** 16:24

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	6.541	6.429	6.629	553.590	500.000	10.7
Aroclor-1016-2	6.565	6.453	6.653	542.550	500.000	8.5
Aroclor-1016-3	6.632	6.521	6.721	526.790	500.000	5.4
Aroclor-1016-4	6.739	6.628	6.828	529.480	500.000	5.9
Aroclor-1016-5	7.054	6.943	7.143	546.730	500.000	9.3
Aroclor-1260-1	8.231	8.122	8.322	490.050	500.000	-2.0
Aroclor-1260-2	8.495	8.386	8.586	467.590	500.000	-6.5
Aroclor-1260-3	8.864	8.754	8.954	468.650	500.000	-6.3
Aroclor-1260-4	9.103	8.993	9.193	450.290	500.000	-9.9
Aroclor-1260-5	9.445	9.334	9.534	435.910	500.000	-12.8
Decachlorobiphenyl	11.381	11.267	11.467	44.720	50.000	-10.6
Tetrachloro-m-xylene	5.227	5.114	5.314	49.620	50.000	-0.8

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR2 **ID:** 0.32 (mm) **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL02 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046032.D **Time Analyzed:** 16:24

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	5.641	5.532	5.732	564.550	500.000	12.9
Aroclor-1016-2	5.662	5.552	5.752	538.590	500.000	7.7
Aroclor-1016-3	5.860	5.749	5.949	593.930	500.000	18.8
Aroclor-1016-4	5.906	5.796	5.996	585.350	500.000	17.1
Aroclor-1016-5	6.141	6.031	6.231	587.320	500.000	17.5
Aroclor-1260-1	7.244	7.135	7.335	572.530	500.000	14.5
Aroclor-1260-2	7.438	7.330	7.530	547.900	500.000	9.6
Aroclor-1260-3	7.600	7.492	7.692	568.280	500.000	13.7
Aroclor-1260-4	8.086	7.977	8.177	567.540	500.000	13.5
Aroclor-1260-5	8.331	8.222	8.422	576.140	500.000	15.2
Decachlorobiphenyl	9.793	9.682	9.882	59.980	50.000	20.0
Tetrachloro-m-xylene	4.361	4.249	4.449	56.050	50.000	12.1

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 21:18 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	6.54	6.53	6.43	6.63	-0.01
Aroclor-1016-2	(2)	6.56	6.55	6.45	6.65	-0.01
Aroclor-1016-3	(3)	6.63	6.62	6.52	6.72	-0.01
Aroclor-1016-4	(4)	6.74	6.73	6.63	6.83	-0.01
Aroclor-1016-5	(5)	7.05	7.04	6.94	7.14	-0.01
Aroclor-1260-1	(1)	8.23	8.22	8.12	8.32	-0.01
Aroclor-1260-2	(2)	8.49	8.49	8.39	8.59	0.00
Aroclor-1260-3	(3)	8.86	8.85	8.75	8.95	-0.01
Aroclor-1260-4	(4)	9.10	9.09	8.99	9.19	-0.01
Aroclor-1260-5	(5)	9.44	9.43	9.33	9.53	-0.01
Tetrachloro-m-xylene		5.23	5.21	5.11	5.31	-0.01
Decachlorobiphenyl		11.38	11.37	11.27	11.47	-0.01

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/30/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 21:18 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	5.64	5.63	5.53	5.73	-0.01
Aroclor-1016-2	(2)	5.66	5.65	5.55	5.75	-0.01
Aroclor-1016-3	(3)	5.86	5.85	5.75	5.95	-0.01
Aroclor-1016-4	(4)	5.91	5.90	5.80	6.00	-0.01
Aroclor-1016-5	(5)	6.14	6.13	6.03	6.23	-0.01
Aroclor-1260-1	(1)	7.24	7.24	7.14	7.34	0.00
Aroclor-1260-2	(2)	7.44	7.43	7.33	7.53	-0.01
Aroclor-1260-3	(3)	7.60	7.59	7.49	7.69	-0.01
Aroclor-1260-4	(4)	8.09	8.08	7.98	8.18	-0.01
Aroclor-1260-5	(5)	8.33	8.32	8.22	8.42	-0.01
Tetrachloro-m-xylene		4.36	4.35	4.25	4.45	-0.01
Decachlorobiphenyl		9.79	9.78	9.68	9.88	-0.01

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR1 **ID:** 0.32 (mm) **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL03 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046045.D **Time Analyzed:** 21:18

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	6.539	6.429	6.629	524.680	500.000	4.9
Aroclor-1016-2	6.563	6.453	6.653	530.310	500.000	6.1
Aroclor-1016-3	6.630	6.521	6.721	506.270	500.000	1.3
Aroclor-1016-4	6.737	6.628	6.828	513.660	500.000	2.7
Aroclor-1016-5	7.052	6.943	7.143	531.970	500.000	6.4
Aroclor-1260-1	8.230	8.122	8.322	469.150	500.000	-6.2
Aroclor-1260-2	8.494	8.386	8.586	473.210	500.000	-5.4
Aroclor-1260-3	8.862	8.754	8.954	465.740	500.000	-6.9
Aroclor-1260-4	9.102	8.993	9.193	449.780	500.000	-10.0
Aroclor-1260-5	9.443	9.334	9.534	429.780	500.000	-14.0
Decachlorobiphenyl	11.380	11.267	11.467	42.890	50.000	-14.2
Tetrachloro-m-xylene	5.225	5.114	5.314	45.850	50.000	-8.3

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR2 **ID:** 0.32 (mm) **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL03 **Date Analyzed:** 12/30/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046045.D **Time Analyzed:** 21:18

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	5.642	5.532	5.732	530.910	500.000	6.2
Aroclor-1016-2	5.662	5.552	5.752	510.060	500.000	2.0
Aroclor-1016-3	5.859	5.749	5.949	576.290	500.000	15.3
Aroclor-1016-4	5.905	5.796	5.996	526.450	500.000	5.3
Aroclor-1016-5	6.141	6.031	6.231	574.890	500.000	15.0
Aroclor-1260-1	7.244	7.135	7.335	582.660	500.000	16.5
Aroclor-1260-2	7.438	7.330	7.530	517.360	500.000	3.5
Aroclor-1260-3	7.600	7.492	7.692	572.740	500.000	14.5
Aroclor-1260-4	8.086	7.977	8.177	589.040	500.000	17.8
Aroclor-1260-5	8.331	8.222	8.422	573.670	500.000	14.7
Decachlorobiphenyl	9.792	9.682	9.882	58.470	50.000	16.9
Tetrachloro-m-xylene	4.361	4.249	4.449	52.220	50.000	4.4

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/31/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 11:51 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	6.55	6.53	6.43	6.63	-0.02
Aroclor-1016-2	(2)	6.57	6.55	6.45	6.65	-0.02
Aroclor-1016-3	(3)	6.64	6.62	6.52	6.72	-0.02
Aroclor-1016-4	(4)	6.75	6.73	6.63	6.83	-0.01
Aroclor-1016-5	(5)	7.06	7.04	6.94	7.14	-0.02
Aroclor-1260-1	(1)	8.24	8.22	8.12	8.32	-0.02
Aroclor-1260-2	(2)	8.50	8.49	8.39	8.59	-0.01
Aroclor-1260-3	(3)	8.87	8.85	8.75	8.95	-0.02
Aroclor-1260-4	(4)	9.11	9.09	8.99	9.19	-0.02
Aroclor-1260-5	(5)	9.46	9.43	9.33	9.53	-0.03
Tetrachloro-m-xylene		5.23	5.21	5.11	5.31	-0.02
Decachlorobiphenyl		11.39	11.37	11.27	11.47	-0.02

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/31/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 11:51 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	5.64	5.63	5.53	5.73	-0.01
Aroclor-1016-2	(2)	5.66	5.65	5.55	5.75	-0.01
Aroclor-1016-3	(3)	5.86	5.85	5.75	5.95	-0.01
Aroclor-1016-4	(4)	5.90	5.90	5.80	6.00	0.00
Aroclor-1016-5	(5)	6.14	6.13	6.03	6.23	-0.01
Aroclor-1260-1	(1)	7.25	7.24	7.14	7.34	0.00
Aroclor-1260-2	(2)	7.44	7.43	7.33	7.53	-0.01
Aroclor-1260-3	(3)	7.60	7.59	7.49	7.69	-0.01
Aroclor-1260-4	(4)	8.09	8.08	7.98	8.18	-0.01
Aroclor-1260-5	(5)	8.33	8.32	8.22	8.42	-0.01
Tetrachloro-m-xylene		4.36	4.35	4.25	4.45	-0.01
Decachlorobiphenyl		9.80	9.78	9.68	9.88	-0.02

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR1 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL04 **Date Analyzed:** 12/31/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046048.D **Time Analyzed:** 11:51

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	6.547	6.429	6.629	512.710	500.000	2.5
Aroclor-1016-2	6.570	6.453	6.653	483.970	500.000	-3.2
Aroclor-1016-3	6.638	6.521	6.721	489.900	500.000	-2.0
Aroclor-1016-4	6.745	6.628	6.828	495.280	500.000	-0.9
Aroclor-1016-5	7.061	6.943	7.143	505.900	500.000	1.2
Aroclor-1260-1	8.241	8.122	8.322	520.390	500.000	4.1
Aroclor-1260-2	8.504	8.386	8.586	507.540	500.000	1.5
Aroclor-1260-3	8.873	8.754	8.954	484.890	500.000	-3.0
Aroclor-1260-4	9.114	8.993	9.193	496.650	500.000	-0.7
Aroclor-1260-5	9.456	9.334	9.534	471.820	500.000	-5.6
Decachlorobiphenyl	11.393	11.267	11.467	41.620	50.000	-16.8
Tetrachloro-m-xylene	5.231	5.114	5.314	45.110	50.000	-9.8

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR2 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL04 **Date Analyzed:** 12/31/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046048.D **Time Analyzed:** 11:51

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	5.638	5.532	5.732	547.100	500.000	9.4
Aroclor-1016-2	5.659	5.552	5.752	544.350	500.000	8.9
Aroclor-1016-3	5.857	5.749	5.949	528.320	500.000	5.7
Aroclor-1016-4	5.904	5.796	5.996	503.210	500.000	0.6
Aroclor-1016-5	6.139	6.031	6.231	547.440	500.000	9.5
Aroclor-1260-1	7.245	7.135	7.335	545.020	500.000	9.0
Aroclor-1260-2	7.439	7.330	7.530	566.940	500.000	13.4
Aroclor-1260-3	7.601	7.492	7.692	550.720	500.000	10.1
Aroclor-1260-4	8.088	7.977	8.177	569.450	500.000	13.9
Aroclor-1260-5	8.333	8.222	8.422	589.820	500.000	18.0
Decachlorobiphenyl	9.798	9.682	9.882	56.040	50.000	12.1
Tetrachloro-m-xylene	4.355	4.249	4.449	50.280	50.000	0.6

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/31/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 13:12 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR1 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	6.55	6.53	6.43	6.63	-0.02
Aroclor-1016-2	(2)	6.57	6.55	6.45	6.65	-0.02
Aroclor-1016-3	(3)	6.64	6.62	6.52	6.72	-0.02
Aroclor-1016-4	(4)	6.75	6.73	6.63	6.83	-0.02
Aroclor-1016-5	(5)	7.07	7.04	6.94	7.14	-0.03
Aroclor-1260-1	(1)	8.25	8.22	8.12	8.32	-0.02
Aroclor-1260-2	(2)	8.51	8.49	8.39	8.59	-0.02
Aroclor-1260-3	(3)	8.88	8.85	8.75	8.95	-0.03
Aroclor-1260-4	(4)	9.12	9.09	8.99	9.19	-0.03
Aroclor-1260-5	(5)	9.46	9.43	9.33	9.53	-0.03
Tetrachloro-m-xylene		5.23	5.21	5.11	5.31	-0.02
Decachlorobiphenyl		11.40	11.37	11.27	11.47	-0.03

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

Continuing Calib Date: 12/31/2019 **Initial Calibration Date(s):** 12/27/2019 12/27/2019

Continuing Calib Time: 13:12 **Initial Calibration Time(s):** 10:35 13:35

GC Column: ZB-MR2 **ID:** 0.32 **(mm)**

COMPOUND		CCAL RT	AVG RT	RT WINDOW FROM	RT WINDOW TO	DIFF RT
Aroclor-1016-1	(1)	5.64	5.63	5.53	5.73	-0.01
Aroclor-1016-2	(2)	5.66	5.65	5.55	5.75	-0.01
Aroclor-1016-3	(3)	5.86	5.85	5.75	5.95	-0.01
Aroclor-1016-4	(4)	5.90	5.90	5.80	6.00	0.00
Aroclor-1016-5	(5)	6.14	6.13	6.03	6.23	-0.01
Aroclor-1260-1	(1)	7.25	7.24	7.14	7.34	-0.01
Aroclor-1260-2	(2)	7.44	7.43	7.33	7.53	-0.01
Aroclor-1260-3	(3)	7.60	7.59	7.49	7.69	-0.01
Aroclor-1260-4	(4)	8.09	8.08	7.98	8.18	-0.01
Aroclor-1260-5	(5)	8.34	8.32	8.22	8.42	-0.02
Tetrachloro-m-xylene		4.35	4.35	4.25	4.45	0.00
Decachlorobiphenyl		9.80	9.78	9.68	9.88	-0.02

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR1 **ID:** 0.32 **(mm)** **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL05 **Date Analyzed:** 12/31/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046051.D **Time Analyzed:** 13:12

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	6.551	6.429	6.629	592.280	500.000	18.5
Aroclor-1016-2	6.574	6.453	6.653	557.270	500.000	11.5
Aroclor-1016-3	6.642	6.521	6.721	559.630	500.000	11.9
Aroclor-1016-4	6.749	6.628	6.828	567.940	500.000	13.6
Aroclor-1016-5	7.066	6.943	7.143	592.880	500.000	18.6
Aroclor-1260-1	8.245	8.122	8.322	554.050	500.000	10.8
Aroclor-1260-2	8.509	8.386	8.586	537.180	500.000	7.4
Aroclor-1260-3	8.877	8.754	8.954	523.550	500.000	4.7
Aroclor-1260-4	9.119	8.993	9.193	517.350	500.000	3.5
Aroclor-1260-5	9.460	9.334	9.534	496.490	500.000	-0.7
Decachlorobiphenyl	11.402	11.267	11.467	40.830	50.000	-18.3
Tetrachloro-m-xylene	5.233	5.114	5.314	52.370	50.000	4.7

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CALIBRATION VERIFICATION SUMMARY

Contract: LIRO01

Lab Code: CHEM **Case No.:** K6449 **SAS No.:** K6449 **SDG NO.:** K6449

GC Column: ZB-MR2 **ID:** 0.32 (mm) **Initi. Calib. Date(s):** 12/27/2019 12/27/2019

Client Sample No.: CCAL05 **Date Analyzed:** 12/31/2019

Lab Sample No.: AR1660CCC500 **Data File :** PQ046051.D **Time Analyzed:** 13:12

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT(ng)	NOM AMOUNT(ng)	%D
Aroclor-1016-1	5.638	5.532	5.732	627.800	500.000	25.6
Aroclor-1016-2	5.660	5.552	5.752	635.900	500.000	27.2
Aroclor-1016-3	5.857	5.749	5.949	630.810	500.000	26.2
Aroclor-1016-4	5.904	5.796	5.996	601.490	500.000	20.3
Aroclor-1016-5	6.140	6.031	6.231	635.980	500.000	27.2
Aroclor-1260-1	7.247	7.135	7.335	626.430	500.000	25.3
Aroclor-1260-2	7.441	7.330	7.530	675.990	500.000	35.2
Aroclor-1260-3	7.604	7.492	7.692	641.420	500.000	28.3
Aroclor-1260-4	8.091	7.977	8.177	650.550	500.000	30.1
Aroclor-1260-5	8.336	8.222	8.422	660.300	500.000	32.1
Decachlorobiphenyl	9.801	9.682	9.882	58.170	50.000	16.3
Tetrachloro-m-xylene	4.353	4.249	4.449	58.830	50.000	17.7

Analytical Sequence

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Project: BUDC - 683 Northland Avenue **Instrument ID:** ECD_Q

GC Column: ZB-MR1 **ID:** 0.32 (mm) **Inst. Calib. Date(s):** 12/27/2019 12/27/2019

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DATAFILE	DCB RT #	TCX RT #
I.BLK	I.BLK	12/27/2019	10:19	PQ045958.D	11.37	5.22
AR1660ICC1000	AR1660ICC1000	12/27/2019	10:35	PQ045959.D	11.37	5.22
AR1660ICC750	AR1660ICC750	12/27/2019	10:52	PQ045960.D	11.37	5.22
AR1660ICC500	AR1660ICC500	12/27/2019	11:09	PQ045961.D	11.37	5.21
AR1660ICC250	AR1660ICC250	12/27/2019	11:25	PQ045962.D	11.37	5.21
AR1660ICC050	AR1660ICC050	12/27/2019	11:41	PQ045963.D	11.37	5.21
AR1221ICC500	AR1221ICC500	12/27/2019	11:57	PQ045964.D	11.37	5.21
AR1232ICC500	AR1232ICC500	12/27/2019	12:13	PQ045965.D	11.37	5.22
AR1242ICC500	AR1242ICC500	12/27/2019	12:30	PQ045966.D	11.37	5.22
AR1248ICC500	AR1248ICC500	12/27/2019	12:46	PQ045967.D	11.37	5.21
AR1254ICC500	AR1254ICC500	12/27/2019	13:02	PQ045968.D	11.37	5.22
AR1262ICC500	AR1262ICC500	12/27/2019	13:19	PQ045969.D	11.37	5.22
AR1268ICC500	AR1268ICC500	12/27/2019	13:35	PQ045970.D	11.36	5.21
I.BLK	I.BLK	12/30/2019	13:37	PQ046025.D	11.39	5.23
AR1660CCC500	AR1660CCC500	12/30/2019	13:54	PQ046026.D	11.38	5.22
PB125778BL	PB125778BL	12/30/2019	14:43	PQ046029.D	11.38	5.23
PB125778BS	PB125778BS	12/30/2019	15:17	PQ046030.D	11.38	5.23
I.BLK	I.BLK	12/30/2019	15:33	PQ046031.D	11.38	5.23
AR1660CCC500	AR1660CCC500	12/30/2019	16:24	PQ046032.D	11.38	5.23
LW-03	K6449-02	12/30/2019	17:13	PQ046034.D	11.38	5.23
LW-05	K6449-03	12/30/2019	17:29	PQ046035.D	11.38	5.23
OW-4	K6449-04	12/30/2019	17:45	PQ046036.D	11.38	5.23
OW-5	K6449-05	12/30/2019	18:02	PQ046037.D	11.38	5.23
OW-5MS	K6449-06MS	12/30/2019	18:18	PQ046038.D	11.38	5.23
OW-5MSD	K6449-07MSD	12/30/2019	18:35	PQ046039.D	11.38	5.23
OW-2	K6449-08	12/30/2019	18:51	PQ046040.D	11.38	5.23
OW-1	K6449-09	12/30/2019	19:07	PQ046041.D	11.38	5.23
FIELD-BLANK	K6449-10	12/30/2019	19:23	PQ046042.D	11.38	5.23
DUPLICATE	K6449-11	12/30/2019	19:40	PQ046043.D	11.38	5.23
I.BLK	I.BLK	12/30/2019	19:56	PQ046044.D	11.38	5.22
AR1660CCC500	AR1660CCC500	12/30/2019	21:18	PQ046045.D	11.38	5.23
I.BLK	I.BLK	12/31/2019	09:38	PQ046047.D	11.40	5.24
AR1660CCC500	AR1660CCC500	12/31/2019	11:51	PQ046048.D	11.39	5.23
LW-04	K6449-01	12/31/2019	12:07	PQ046049.D	11.38	5.22
I.BLK	I.BLK	12/31/2019	12:24	PQ046050.D	11.38	5.22
AR1660CCC500	AR1660CCC500	12/31/2019	13:12	PQ046051.D	11.40	5.23

Analytical Sequence

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Project: BUDC - 683 Northland Avenue **Instrument ID:** ECD_Q

GC Column: ZB-MR2 **ID:** 0.32 (mm) **Inst. Calib. Date(s):** 12/27/2019 12/27/2019

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	DATAFILE	DCB RT #	TCX RT #
I.BLK	I.BLK	12/27/2019	10:19	PQ045958.D	9.78	4.35
AR1660ICC1000	AR1660ICC1000	12/27/2019	10:35	PQ045959.D	9.78	4.35
AR1660ICC750	AR1660ICC750	12/27/2019	10:52	PQ045960.D	9.78	4.35
AR1660ICC500	AR1660ICC500	12/27/2019	11:09	PQ045961.D	9.78	4.35
AR1660ICC250	AR1660ICC250	12/27/2019	11:25	PQ045962.D	9.78	4.35
AR1660ICC050	AR1660ICC050	12/27/2019	11:41	PQ045963.D	9.78	4.35
AR1221ICC500	AR1221ICC500	12/27/2019	11:57	PQ045964.D	9.78	4.35
AR1232ICC500	AR1232ICC500	12/27/2019	12:13	PQ045965.D	9.78	4.35
AR1242ICC500	AR1242ICC500	12/27/2019	12:30	PQ045966.D	9.78	4.35
AR1248ICC500	AR1248ICC500	12/27/2019	12:46	PQ045967.D	9.78	4.35
AR1254ICC500	AR1254ICC500	12/27/2019	13:02	PQ045968.D	9.78	4.35
AR1262ICC500	AR1262ICC500	12/27/2019	13:19	PQ045969.D	9.78	4.35
AR1268ICC500	AR1268ICC500	12/27/2019	13:35	PQ045970.D	9.78	4.35
I.BLK	I.BLK	12/30/2019	13:37	PQ046025.D	9.80	4.36
AR1660CCC500	AR1660CCC500	12/30/2019	13:54	PQ046026.D	9.80	4.36
PB125778BL	PB125778BL	12/30/2019	14:43	PQ046029.D	9.79	4.36
PB125778BS	PB125778BS	12/30/2019	15:17	PQ046030.D	9.80	4.36
I.BLK	I.BLK	12/30/2019	15:33	PQ046031.D	9.79	4.36
AR1660CCC500	AR1660CCC500	12/30/2019	16:24	PQ046032.D	9.79	4.36
LW-03	K6449-02	12/30/2019	17:13	PQ046034.D	9.79	4.36
LW-05	K6449-03	12/30/2019	17:29	PQ046035.D	9.79	4.37
OW-4	K6449-04	12/30/2019	17:45	PQ046036.D	9.79	4.36
OW-5	K6449-05	12/30/2019	18:02	PQ046037.D	9.79	4.36
OW-5MS	K6449-06MS	12/30/2019	18:18	PQ046038.D	9.79	4.36
OW-5MSD	K6449-07MSD	12/30/2019	18:35	PQ046039.D	9.79	4.36
OW-2	K6449-08	12/30/2019	18:51	PQ046040.D	9.79	4.37
OW-1	K6449-09	12/30/2019	19:07	PQ046041.D	9.79	4.37
FIELD-BLANK	K6449-10	12/30/2019	19:23	PQ046042.D	9.79	4.37
DUPLICATE	K6449-11	12/30/2019	19:40	PQ046043.D	9.79	4.37
I.BLK	I.BLK	12/30/2019	19:56	PQ046044.D	9.79	4.36
AR1660CCC500	AR1660CCC500	12/30/2019	21:18	PQ046045.D	9.79	4.36
I.BLK	I.BLK	12/31/2019	09:38	PQ046047.D	9.80	4.36
AR1660CCC500	AR1660CCC500	12/31/2019	11:51	PQ046048.D	9.80	4.36
LW-04	K6449-01	12/31/2019	12:07	PQ046049.D	9.79	4.36
I.BLK	I.BLK	12/31/2019	12:24	PQ046050.D	9.79	4.36
AR1660CCC500	AR1660CCC500	12/31/2019	13:12	PQ046051.D	9.80	4.35

QC SAMPLE DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125778BL	SDG No.:	K6449
Lab Sample ID:	PB125778BL	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046029.D	1	12/27/19 15:37	12/30/19 14:43	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	23.7		35 - 137	119%	SPK: 20
2051-24-3	Decachlorobiphenyl	23.2		40 - 135	116%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/27/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	PIBLK-PQ045958.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ045958.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ045958.D	1		12/27/19	PQ122719

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	17.1		43 - 150	86%	SPK: 20
2051-24-3	Decachlorobiphenyl	16.5		24 - 154	83%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/30/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/30/19
Client Sample ID:	PIBLK-PQ046025.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ046025.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046025.D	1		12/30/19	PQ123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	21.1		43 - 150	106%	SPK: 20
2051-24-3	Decachlorobiphenyl	18.2		24 - 154	91%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/30/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/30/19
Client Sample ID:	PIBLK-PQ046031.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ046031.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046031.D	1		12/30/19	PQ123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	19.3		43 - 150	97%	SPK: 20
2051-24-3	Decachlorobiphenyl	17.7		24 - 154	89%	SPK: 20

Comments:

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LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/30/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/30/19
Client Sample ID:	PIBLK-PQ046044.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ046044.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046044.D	1		12/30/19	PQ123019

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	29.3		43 - 150	147%	SPK: 20
2051-24-3	Decachlorobiphenyl	20.5		24 - 154	102%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
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D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/31/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/31/19
Client Sample ID:	PIBLK-PQ046047.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ046047.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046047.D	1		12/31/19	PQ123119

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	17.1		43 - 150	86%	SPK: 20
2051-24-3	Decachlorobiphenyl	15.4		24 - 154	77%	SPK: 20

Comments:

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LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
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B = Analyte Found in Associated Method Blank
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() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/31/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/31/19
Client Sample ID:	PIBLK-PQ046050.D	SDG No.:	K6449
Lab Sample ID:	I.BLK-PQ046050.D	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046050.D	1		12/31/19	PQ123119

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	0.50	U	0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
11096-82-5	Aroclor-1260	0.50	U	0.14	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	16.4		43 - 150	82%	SPK: 20
2051-24-3	Decachlorobiphenyl	15.6		24 - 154	78%	SPK: 20

Comments:

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MDL = Method Detection Limit
LOD = Limit of Detection
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J = Estimated Value
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() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	
Project:	BUDC - 683 Northland Avenue	Date Received:	
Client Sample ID:	PB125778BS	SDG No.:	K6449
Lab Sample ID:	PB125778BS	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046030.D	1	12/27/19 15:37	12/30/19 15:17	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	2.20		0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	2.20		0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	23.1		35 - 137	116%	SPK: 20
2051-24-3	Decachlorobiphenyl	20.5		40 - 135	102%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MS	SDG No.:	K6449
Lab Sample ID:	K6449-06MS	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046038.D	1	12/27/19 15:37	12/30/19 18:18	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	2.80		0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	3.10		0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	27.4		35 - 137	137%	SPK: 20
2051-24-3	Decachlorobiphenyl	25.3		40 - 135	127%	SPK: 20

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
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* = Values outside of QC limits
D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5MSD	SDG No.:	K6449
Lab Sample ID:	K6449-07MSD	Matrix:	WATER
Analytical Method:	SW8082A	% Moisture:	100 Decanted:
Sample Wt/Vol:	1000 Units: mL	Final Vol:	10000 uL
Soil Aliquot Vol:	uL	Test:	PCB
Extraction Type:		Injection Volume :	
GPC Factor :	1.0 PH :		

File ID/Qc Batch:	Dilution:	Prep Date	Date Analyzed	Prep Batch ID
PQ046039.D	1	12/27/19 15:37	12/30/19 18:35	PB125778

CAS Number	Parameter	Conc.	Qualifier	MDL	LOQ / CRQL	Units
TARGETS						
12674-11-2	Aroclor-1016	3.30		0.093	0.50	ug/L
11104-28-2	Aroclor-1221	0.50	U	0.13	0.50	ug/L
11141-16-5	Aroclor-1232	0.50	U	0.18	0.50	ug/L
53469-21-9	Aroclor-1242	0.50	U	0.18	0.50	ug/L
12672-29-6	Aroclor-1248	0.50	U	0.12	0.50	ug/L
11097-69-1	Aroclor-1254	0.50	U	0.12	0.50	ug/L
37324-23-5	Aroclor-1262	0.50	U	0.19	0.50	ug/L
11100-14-4	Aroclor-1268	0.50	U	0.14	0.50	ug/L
11096-82-5	Aroclor-1260	3.20		0.14	0.50	ug/L
SURROGATES						
877-09-8	Tetrachloro-m-xylene	27.6	*	35 - 137	138%	SPK: 20
2051-24-3	Decachlorobiphenyl	25.7		40 - 135	129%	SPK: 20

Comments:

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LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
E = Value Exceeds Calibration Range
P = Indicates >25% difference for detected concentrations between the two GC columns
Q = indicates LCS control criteria did not meet requirements
M = MS/MSD acceptance criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
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D = Dilution
S = Indicates estimated value where valid five-point calibration was not performed prior to analyte detection in sample.
() = Laboratory InHouse Limit

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LAB CHRONICLE

OrderID:	K6449	**OrderDate:**	12/27/2019 9:51:00 AM
Client:	LiRo Engineers, Inc.	**Project:**	BUDC - 683 Northland Avenue
Contact:	Jon Williams	**Location:**	E61

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
K6449-01	**LW-04**	**Water**			**12/18/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-02	**LW-03**	**Water**			**12/18/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-03	**LW-05**	**Water**			**12/19/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-04	**OW-4**	**Water**			**12/20/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-05	**OW-5**	**Water**			**12/23/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-08	**OW-2**	**Water**			**12/23/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-09	**OW-1**	**Water**			**12/23/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-10	**FIELD-BLANK**	**Water**			**12/23/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	
			Metals ICP-TAL	6010D		12/30/19	12/30/19	
K6449-11	**DUPLICATE**	**Water**			**12/23/19**			**12/27/19**
			Mercury	7470A		12/30/19	12/30/19	

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LAB CHRONICLE

Metals ICP-TAL	6010D	12/30/19	12/30/19

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Hit Summary Sheet
SW-846

SDG No.: K6449 **Order ID:** K6449

Client: LiRo Engineers, Inc. **Project ID:** BUDC - 683 Northland Avenue

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : LW-04								
K6449-01	LW-04	Water	Antimony	9.680	J	2.03	25.0	ug/L
K6449-01	LW-04	Water	Arsenic	4.380	J	0.68	10.0	ug/L
K6449-01	LW-04	Water	Barium	22.500	J	3.99	50.0	ug/L
K6449-01	LW-04	Water	Calcium	86,600.000		88.5	1000	ug/L
K6449-01	LW-04	Water	Copper	3.400	J	0.49	10.0	ug/L
K6449-01	LW-04	Water	Iron	122.000		7.85	50.0	ug/L
K6449-01	LW-04	Water	Magnesium	15,500.000		104	1000	ug/L
K6449-01	LW-04	Water	Manganese	20.300		0.98	10.0	ug/L
K6449-01	LW-04	Water	Potassium	2,570.000		179	1000	ug/L
K6449-01	LW-04	Water	Selenium	44.400		2.79	10.0	ug/L
K6449-01	LW-04	Water	Sodium	42,000.000		169	1000	ug/L
K6449-01	LW-04	Water	Zinc	9.870	J	4.81	20.0	ug/L
Client ID : LW-03								
K6449-02	LW-03	Water	Antimony	12.200	J	2.03	25.0	ug/L
K6449-02	LW-03	Water	Arsenic	5.540	J	0.68	10.0	ug/L
K6449-02	LW-03	Water	Barium	76.300		3.99	50.0	ug/L
K6449-02	LW-03	Water	Calcium	124,000.000		88.5	1000	ug/L
K6449-02	LW-03	Water	Cobalt	1.530	J	1.09	15.0	ug/L
K6449-02	LW-03	Water	Copper	4.730	J	0.49	10.0	ug/L
K6449-02	LW-03	Water	Iron	128.000		7.85	50.0	ug/L
K6449-02	LW-03	Water	Magnesium	24,700.000		104	1000	ug/L
K6449-02	LW-03	Water	Manganese	259.000		0.98	10.0	ug/L
K6449-02	LW-03	Water	Nickel	3.040	J	1.69	20.0	ug/L
K6449-02	LW-03	Water	Potassium	9,500.000		179	1000	ug/L
K6449-02	LW-03	Water	Selenium	49.300		2.79	10.0	ug/L
K6449-02	LW-03	Water	Sodium	61,300.000		169	1000	ug/L
K6449-02	LW-03	Water	Zinc	12.800	J	4.81	20.0	ug/L
Client ID : LW-05								
K6449-03	LW-05	Water	Antimony	13.500	J	2.03	25.0	ug/L
K6449-03	LW-05	Water	Arsenic	13.400		0.68	10.0	ug/L
K6449-03	LW-05	Water	Barium	182.000		3.99	50.0	ug/L
K6449-03	LW-05	Water	Calcium	191,000.000		88.5	1000	ug/L
K6449-03	LW-05	Water	Cobalt	1.650	J	1.09	15.0	ug/L
K6449-03	LW-05	Water	Copper	3.320	J	0.49	10.0	ug/L
K6449-03	LW-05	Water	Iron	2,160.000		7.85	50.0	ug/L
K6449-03	LW-05	Water	Lead	1.550	J	1.43	6.00	ug/L
K6449-03	LW-05	Water	Magnesium	31,600.000		104	1000	ug/L
K6449-03	LW-05	Water	Manganese	509.000		0.98	10.0	ug/L

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Hit Summary Sheet
SW-846

SDG No.: K6449 **Order ID:** K6449

Client: LiRo Engineers, Inc. **Project ID:** BUDC - 683 Northland Avenue

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
K6449-03	LW-05	Water	Nickel	1.960	J	1.69	20.0	ug/L
K6449-03	LW-05	Water	Potassium	11,300.000		179	1000	ug/L
K6449-03	LW-05	Water	Selenium	52.500		2.79	10.0	ug/L
K6449-03	LW-05	Water	Sodium	783,000.000		169	1000	ug/L
K6449-03	LW-05	Water	Zinc	11.900	J	4.81	20.0	ug/L
Client ID :	**OW-4**							
K6449-04	OW-4	Water	Antimony	12.100	J	2.03	25.0	ug/L
K6449-04	OW-4	Water	Arsenic	4.600	J	0.68	10.0	ug/L
K6449-04	OW-4	Water	Barium	78.900		3.99	50.0	ug/L
K6449-04	OW-4	Water	Calcium	120,000.000		88.5	1000	ug/L
K6449-04	OW-4	Water	Cobalt	2.320	J	1.09	15.0	ug/L
K6449-04	OW-4	Water	Copper	3.490	J	0.49	10.0	ug/L
K6449-04	OW-4	Water	Iron	224.000		7.85	50.0	ug/L
K6449-04	OW-4	Water	Magnesium	48,500.000		104	1000	ug/L
K6449-04	OW-4	Water	Manganese	587.000		0.98	10.0	ug/L
K6449-04	OW-4	Water	Nickel	7.460	J	1.69	20.0	ug/L
K6449-04	OW-4	Water	Potassium	2,030.000		179	1000	ug/L
K6449-04	OW-4	Water	Selenium	51.800		2.79	10.0	ug/L
K6449-04	OW-4	Water	Sodium	30,200.000		169	1000	ug/L
K6449-04	OW-4	Water	Zinc	91.700		4.81	20.0	ug/L
Client ID :	**OW-5**							
K6449-05	OW-5	Water	Aluminum	565.000		5.29	50.0	ug/L
K6449-05	OW-5	Water	Antimony	11.200	J	2.03	25.0	ug/L
K6449-05	OW-5	Water	Arsenic	4.020	J	0.68	10.0	ug/L
K6449-05	OW-5	Water	Barium	125.000		3.99	50.0	ug/L
K6449-05	OW-5	Water	Calcium	140,000.000		88.5	1000	ug/L
K6449-05	OW-5	Water	Cobalt	2.230	J	1.09	15.0	ug/L
K6449-05	OW-5	Water	Copper	4.520	J	0.49	10.0	ug/L
K6449-05	OW-5	Water	Iron	2,240.000		7.85	50.0	ug/L
K6449-05	OW-5	Water	Lead	1.790	J	1.43	6.00	ug/L
K6449-05	OW-5	Water	Magnesium	41,900.000		104	1000	ug/L
K6449-05	OW-5	Water	Manganese	286.000		0.98	10.0	ug/L
K6449-05	OW-5	Water	Nickel	8.150	J	1.69	20.0	ug/L
K6449-05	OW-5	Water	Potassium	3,880.000		179	1000	ug/L
K6449-05	OW-5	Water	Selenium	47.700		2.79	10.0	ug/L
K6449-05	OW-5	Water	Sodium	59,300.000		169	1000	ug/L
K6449-05	OW-5	Water	Vanadium	2.060	J	1.39	20.0	ug/L
K6449-05	OW-5	Water	Zinc	53.900		4.81	20.0	ug/L
Client ID :	**OW-2**							
K6449-08	OW-2	Water	Aluminum	17.100	J	5.29	50.0	ug/L

Hit Summary Sheet
SW-846

SDG No.: K6449 **Order ID:** K6449

Client: LiRo Engineers, Inc. **Project ID:** BUDC - 683 Northland Avenue

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
K6449-08	OW-2	Water	Antimony	12.400	J	2.03	25.0	ug/L
K6449-08	OW-2	Water	Arsenic	7.420	J	0.68	10.0	ug/L
K6449-08	OW-2	Water	Barium	100.000		3.99	50.0	ug/L
K6449-08	OW-2	Water	Calcium	111,000.000		88.5	1000	ug/L
K6449-08	OW-2	Water	Cobalt	1.730	J	1.09	15.0	ug/L
K6449-08	OW-2	Water	Copper	5.900	J	0.49	10.0	ug/L
K6449-08	OW-2	Water	Iron	1,760.000		7.85	50.0	ug/L
K6449-08	OW-2	Water	Magnesium	11,700.000		104	1000	ug/L
K6449-08	OW-2	Water	Manganese	308.000		0.98	10.0	ug/L
K6449-08	OW-2	Water	Nickel	5.610	J	1.69	20.0	ug/L
K6449-08	OW-2	Water	Potassium	37,500.000		179	1000	ug/L
K6449-08	OW-2	Water	Selenium	47.900		2.79	10.0	ug/L
K6449-08	OW-2	Water	Sodium	136,000.000		169	1000	ug/L
K6449-08	OW-2	Water	Zinc	22.700		4.81	20.0	ug/L
Client ID :	**OW-1**							
K6449-09	OW-1	Water	Aluminum	142.000		5.29	50.0	ug/L
K6449-09	OW-1	Water	Antimony	13.600	J	2.03	25.0	ug/L
K6449-09	OW-1	Water	Arsenic	9.300	J	0.68	10.0	ug/L
K6449-09	OW-1	Water	Barium	87.600		3.99	50.0	ug/L
K6449-09	OW-1	Water	Calcium	182,000.000		88.5	1000	ug/L
K6449-09	OW-1	Water	Cobalt	2.200	J	1.09	15.0	ug/L
K6449-09	OW-1	Water	Copper	19.100		0.49	10.0	ug/L
K6449-09	OW-1	Water	Iron	4,090.000		7.85	50.0	ug/L
K6449-09	OW-1	Water	Lead	5.150	J	1.43	6.00	ug/L
K6449-09	OW-1	Water	Magnesium	31,900.000		104	1000	ug/L
K6449-09	OW-1	Water	Manganese	3,140.000		0.98	10.0	ug/L
K6449-09	OW-1	Water	Nickel	7.420	J	1.69	20.0	ug/L
K6449-09	OW-1	Water	Potassium	18,400.000		179	1000	ug/L
K6449-09	OW-1	Water	Selenium	49.600		2.79	10.0	ug/L
K6449-09	OW-1	Water	Silver	0.270	J	0.17	5.00	ug/L
K6449-09	OW-1	Water	Sodium	120,000.000		169	1000	ug/L
K6449-09	OW-1	Water	Zinc	31.000		4.81	20.0	ug/L
Client ID :	**FIELD-BLANK**							
K6449-10	FIELD-BLANK	Water	Silver	0.180	J	0.17	5.00	ug/L
Client ID :	**DUPLICATE**							
K6449-11	DUPLICATE	Water	Antimony	11.500	J	2.03	25.0	ug/L
K6449-11	DUPLICATE	Water	Arsenic	7.310	J	0.68	10.0	ug/L
K6449-11	DUPLICATE	Water	Barium	79.700		3.99	50.0	ug/L
K6449-11	DUPLICATE	Water	Calcium	127,000.000		88.5	1000	ug/L
K6449-11	DUPLICATE	Water	Cobalt	1.620	J	1.09	15.0	ug/L

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Hit Summary Sheet
SW-846

SDG No.:	K6449	**Order ID:**	K6449
Client:	LiRo Engineers, Inc.	**Project ID:**	BUDC - 683 Northland Avenue

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
K6449-11	DUPLICATE	Water	Copper	5.100	J	0.49	10.0	ug/L
K6449-11	DUPLICATE	Water	Iron	136.000		7.85	50.0	ug/L
K6449-11	DUPLICATE	Water	Magnesium	25,300.000		104	1000	ug/L
K6449-11	DUPLICATE	Water	Manganese	273.000		0.98	10.0	ug/L
K6449-11	DUPLICATE	Water	Nickel	3.550	J	1.69	20.0	ug/L
K6449-11	DUPLICATE	Water	Potassium	9,830.000		179	1000	ug/L
K6449-11	DUPLICATE	Water	Selenium	49.900		2.79	10.0	ug/L
K6449-11	DUPLICATE	Water	Sodium	62,800.000		169	1000	ug/L
K6449-11	DUPLICATE	Water	Zinc	16.500	J	4.81	20.0	ug/L

SAMPLE DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-04	SDG No.:	K6449
Lab Sample ID:	K6449-01	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-36-0	Antimony	9.68	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-38-2	Arsenic	4.38	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-39-3	Barium	22.5	J	1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-70-2	Calcium	86600		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-48-4	Cobalt	15.0	U	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-50-8	Copper	3.40	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7439-89-6	Iron	122		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7439-95-4	Magnesium	15500		1	104	1000	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7439-96-5	Manganese	20.3		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:29	SW7470A
7440-02-0	Nickel	20.0	U	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-09-7	Potassium	2570		1	179	1000	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7782-49-2	Selenium	44.4		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-23-5	Sodium	42000		1	169	1000	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010
7440-66-6	Zinc	9.87	J	1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 17:47	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/18/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-03	SDG No.:	K6449
Lab Sample ID:	K6449-02	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-36-0	Antimony	12.2	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-38-2	Arsenic	5.54	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-39-3	Barium	76.3		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-70-2	Calcium	124000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-48-4	Cobalt	1.53	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-50-8	Copper	4.73	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7439-89-6	Iron	128		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7439-95-4	Magnesium	24700		1	104	1000	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7439-96-5	Manganese	259		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:31	SW7470A
7440-02-0	Nickel	3.04	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-09-7	Potassium	9500		1	179	1000	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7782-49-2	Selenium	49.3		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-23-5	Sodium	61300		1	169	1000	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010
7440-66-6	Zinc	12.8	J	1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 17:51	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/19/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	LW-05	SDG No.:	K6449
Lab Sample ID:	K6449-03	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-36-0	Antimony	13.5	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-38-2	Arsenic	13.4		1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-39-3	Barium	182		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-70-2	Calcium	191000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-48-4	Cobalt	1.65	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-50-8	Copper	3.32	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7439-89-6	Iron	2160		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7439-92-1	Lead	1.55	J	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7439-95-4	Magnesium	31600		1	104	1000	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7439-96-5	Manganese	509		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:33	SW7470A
7440-02-0	Nickel	1.96	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-09-7	Potassium	11300		1	179	1000	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7782-49-2	Selenium	52.5		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-23-5	Sodium	783000		1	169	1000	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010
7440-66-6	Zinc	11.9	J	1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 17:55	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
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* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/20/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-4	SDG No.:	K6449
Lab Sample ID:	K6449-04	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-36-0	Antimony	12.1	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-38-2	Arsenic	4.60	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-39-3	Barium	78.9		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-70-2	Calcium	120000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-48-4	Cobalt	2.32	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-50-8	Copper	3.49	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7439-89-6	Iron	224		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7439-95-4	Magnesium	48500		1	104	1000	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7439-96-5	Manganese	587		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:35	SW7470A
7440-02-0	Nickel	7.46	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-09-7	Potassium	2030		1	179	1000	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7782-49-2	Selenium	51.8		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-23-5	Sodium	30200		1	169	1000	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010
7440-66-6	Zinc	91.7		1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 17:59	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

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OR = Over Range
N =Spiked sample recovery not within control limits

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-5	SDG No.:	K6449
Lab Sample ID:	K6449-05	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	565		1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-36-0	Antimony	11.2	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-38-2	Arsenic	4.02	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-39-3	Barium	125		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-70-2	Calcium	140000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-48-4	Cobalt	2.23	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-50-8	Copper	4.52	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7439-89-6	Iron	2240		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7439-92-1	Lead	1.79	J	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7439-95-4	Magnesium	41900		1	104	1000	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7439-96-5	Manganese	286		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:45	SW7470A
7440-02-0	Nickel	8.15	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-09-7	Potassium	3880		1	179	1000	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7782-49-2	Selenium	47.7		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-23-5	Sodium	59300		1	169	1000	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-62-2	Vanadium	2.06	J	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010
7440-66-6	Zinc	53.9		1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 18:03	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-2	SDG No.:	K6449
Lab Sample ID:	K6449-08	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	17.1	J	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-36-0	Antimony	12.4	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-38-2	Arsenic	7.42	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-39-3	Barium	100		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-70-2	Calcium	111000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-48-4	Cobalt	1.73	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-50-8	Copper	5.90	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7439-89-6	Iron	1760		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7439-95-4	Magnesium	11700		1	104	1000	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7439-96-5	Manganese	308		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:57	SW7470A
7440-02-0	Nickel	5.61	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-09-7	Potassium	37500		1	179	1000	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7782-49-2	Selenium	47.9		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-23-5	Sodium	136000		1	169	1000	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010
7440-66-6	Zinc	22.7		1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 18:35	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	OW-1	SDG No.:	K6449
Lab Sample ID:	K6449-09	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	142		1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-36-0	Antimony	13.6	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-38-2	Arsenic	9.30	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-39-3	Barium	87.6		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-70-2	Calcium	182000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-48-4	Cobalt	2.20	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-50-8	Copper	19.1		1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7439-89-6	Iron	4090		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7439-92-1	Lead	5.15	J	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7439-95-4	Magnesium	31900		1	104	1000	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7439-96-5	Manganese	3140		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 15:59	SW7470A
7440-02-0	Nickel	7.42	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-09-7	Potassium	18400		1	179	1000	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7782-49-2	Selenium	49.6		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-22-4	Silver	0.27	J	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-23-5	Sodium	120000		1	169	1000	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010
7440-66-6	Zinc	31.0		1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 18:40	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

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Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	FIELD-BLANK	SDG No.:	K6449
Lab Sample ID:	K6449-10	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-36-0	Antimony	25.0	U	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-38-2	Arsenic	10.0	U	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-39-3	Barium	50.0	U	1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-70-2	Calcium	1000	U	1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-48-4	Cobalt	15.0	U	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-50-8	Copper	10.0	U	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7439-89-6	Iron	50.0	U	1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7439-95-4	Magnesium	1000	U	1	104	1000	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7439-96-5	Manganese	10.0	U	1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 16:01	SW7470A
7440-02-0	Nickel	20.0	U	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-09-7	Potassium	1000	U	1	179	1000	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7782-49-2	Selenium	10.0	U	1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-22-4	Silver	0.18	J	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-23-5	Sodium	1000	U	1	169	1000	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010
7440-66-6	Zinc	20.0	U	1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 18:44	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Report of Analysis

Client:	LiRo Engineers, Inc.	Date Collected:	12/23/19
Project:	BUDC - 683 Northland Avenue	Date Received:	12/27/19
Client Sample ID:	DUPLICATE	SDG No.:	K6449
Lab Sample ID:	K6449-11	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7429-90-5	Aluminum	50.0	U	1	5.29	50.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-36-0	Antimony	11.5	J	1	2.03	25.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-38-2	Arsenic	7.31	J	1	0.68	10.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-39-3	Barium	79.7		1	3.99	50.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-41-7	Beryllium	3.00	U	1	0.20	3.00	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-43-9	Cadmium	3.00	U	1	0.17	3.00	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-70-2	Calcium	127000		1	88.5	1000	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-47-3	Chromium	5.00	U	1	1.33	5.00	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-48-4	Cobalt	1.62	J	1	1.09	15.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-50-8	Copper	5.10	J	1	0.49	10.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7439-89-6	Iron	136		1	7.85	50.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7439-92-1	Lead	6.00	U	1	1.43	6.00	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7439-95-4	Magnesium	25300		1	104	1000	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7439-96-5	Manganese	273		1	0.98	10.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7439-97-6	Mercury	0.20	U	1	0.043	0.20	ug/L	12/30/19 10:20	12/30/19 16:04	SW7470A
7440-02-0	Nickel	3.55	J	1	1.69	20.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-09-7	Potassium	9830		1	179	1000	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7782-49-2	Selenium	49.9		1	2.79	10.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-22-4	Silver	5.00	U	1	0.17	5.00	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-23-5	Sodium	62800		1	169	1000	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-28-0	Thallium	20.0	U	1	2.88	20.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-62-2	Vanadium	20.0	U	1	1.39	20.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010
7440-66-6	Zinc	16.5	J	1	4.81	20.0	ug/L	12/30/19 12:04	12/30/19 18:48	SW6010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	METALS-TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

METAL CALIBRATION DATA

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV43	Mercury	3.77	4.0	94	90 - 110	CV	12/30/2019	13:56	LB106964

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV83	Mercury	5.09	5.0	102	90 - 110	CV	12/30/2019	14:01	LB106964
CCV84	Mercury	4.86	5.0	97	90 - 110	CV	12/30/2019	14:38	LB106964
CCV85	Mercury	5.32	5.0	106	90 - 110	CV	12/30/2019	15:12	LB106964
CCV86	Mercury	5.28	5.0	106	90 - 110	CV	12/30/2019	15:40	LB106964
CCV87	Mercury	5.38	5.0	108	90 - 110	CV	12/30/2019	16:10	LB106964
CCV88	Mercury	4.82	5.0	96	90 - 110	CV	12/30/2019	16:21	LB106964

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	2610	2520	104	90 - 110	P	12/30/2019	12:16	LB106977
	Antimony	1050	1010	104	90 - 110	P	12/30/2019	12:16	LB106977
	Arsenic	1040	997	104	90 - 110	P	12/30/2019	12:16	LB106977
	Barium	546	518	106	90 - 110	P	12/30/2019	12:16	LB106977
	Beryllium	535	514	104	90 - 110	P	12/30/2019	12:16	LB106977
	Cadmium	524	514	102	90 - 110	P	12/30/2019	12:16	LB106977
	Calcium	10500	10000	105	90 - 110	P	12/30/2019	12:16	LB106977
	Chromium	557	517	108	90 - 110	P	12/30/2019	12:16	LB106977
	Cobalt	534	521	103	90 - 110	P	12/30/2019	12:16	LB106977
	Copper	546	505	108	90 - 110	P	12/30/2019	12:16	LB106977
	Iron	10500	10100	104	90 - 110	P	12/30/2019	12:16	LB106977
	Lead	1040	1030	101	90 - 110	P	12/30/2019	12:16	LB106977
	Magnesium	6280	5990	105	90 - 110	P	12/30/2019	12:16	LB106977
	Manganese	541	524	103	90 - 110	P	12/30/2019	12:16	LB106977
	Nickel	526	525	100	90 - 110	P	12/30/2019	12:16	LB106977
	Potassium	10000	9940	101	90 - 110	P	12/30/2019	12:16	LB106977
	Selenium	1040	1030	100	90 - 110	P	12/30/2019	12:16	LB106977
	Silver	267	252	106	90 - 110	P	12/30/2019	12:16	LB106977
	Sodium	10100	10100	100	90 - 110	P	12/30/2019	12:16	LB106977
	Thallium	1040	1040	100	90 - 110	P	12/30/2019	12:16	LB106977
	Vanadium	520	504	103	90 - 110	P	12/30/2019	12:16	LB106977
	Zinc	1080	1010	107	90 - 110	P	12/30/2019	12:16	LB106977

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Aluminum	95.0	100	95	80 - 120	P	12/30/2019	12:21	LB106977
	Antimony	53.7	50.0	107	80 - 120	P	12/30/2019	12:21	LB106977
	Arsenic	19.3	20.0	97	80 - 120	P	12/30/2019	12:21	LB106977
	Barium	108	100	108	80 - 120	P	12/30/2019	12:21	LB106977
	Beryllium	6.66	6.0	111	80 - 120	P	12/30/2019	12:21	LB106977
	Cadmium	6.06	6.0	101	80 - 120	P	12/30/2019	12:21	LB106977
	Calcium	2160	2000	108	80 - 120	P	12/30/2019	12:21	LB106977
	Chromium	10.1	10.0	100	80 - 120	P	12/30/2019	12:21	LB106977
	Cobalt	31.2	30.0	104	80 - 120	P	12/30/2019	12:21	LB106977
	Copper	21.8	20.0	109	80 - 120	P	12/30/2019	12:21	LB106977
	Iron	107	100	107	80 - 120	P	12/30/2019	12:21	LB106977
	Lead	11.4	12.0	95	80 - 120	P	12/30/2019	12:21	LB106977
	Magnesium	2140	2000	107	80 - 120	P	12/30/2019	12:21	LB106977
	Manganese	22.1	20.0	111	80 - 120	P	12/30/2019	12:21	LB106977
	Nickel	41.9	40.0	105	80 - 120	P	12/30/2019	12:21	LB106977
	Potassium	1950	2000	97	80 - 120	P	12/30/2019	12:21	LB106977
	Selenium	18.3	20.0	91	80 - 120	P	12/30/2019	12:21	LB106977
	Silver	10.9	10.0	109	80 - 120	P	12/30/2019	12:21	LB106977
	Sodium	2010	2000	100	80 - 120	P	12/30/2019	12:21	LB106977
	Thallium	42.7	40.0	107	80 - 120	P	12/30/2019	12:21	LB106977
	Vanadium	41.1	40.0	103	80 - 120	P	12/30/2019	12:21	LB106977
	Zinc	45.0	40.0	112	80 - 120	P	12/30/2019	12:21	LB106977

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	9900	10000	99	90 - 110	P	12/30/2019	12:41	LB106977
	Antimony	5060	5000	101	90 - 110	P	12/30/2019	12:41	LB106977
	Arsenic	5090	5000	102	90 - 110	P	12/30/2019	12:41	LB106977
	Barium	10200	10000	102	90 - 110	P	12/30/2019	12:41	LB106977
	Beryllium	250	250	100	90 - 110	P	12/30/2019	12:41	LB106977
	Cadmium	2520	2500	101	90 - 110	P	12/30/2019	12:41	LB106977
	Calcium	25600	25000	102	90 - 110	P	12/30/2019	12:41	LB106977
	Chromium	1050	1000	105	90 - 110	P	12/30/2019	12:41	LB106977
	Cobalt	2530	2500	101	90 - 110	P	12/30/2019	12:41	LB106977
	Copper	1270	1250	102	90 - 110	P	12/30/2019	12:41	LB106977
	Iron	5260	5000	105	90 - 110	P	12/30/2019	12:41	LB106977
	Lead	5060	5000	101	90 - 110	P	12/30/2019	12:41	LB106977
	Magnesium	25700	25000	103	90 - 110	P	12/30/2019	12:41	LB106977
	Manganese	2510	2500	100	90 - 110	P	12/30/2019	12:41	LB106977
	Nickel	2530	2500	101	90 - 110	P	12/30/2019	12:41	LB106977
	Potassium	25400	25000	101	90 - 110	P	12/30/2019	12:41	LB106977
	Selenium	5090	5000	102	90 - 110	P	12/30/2019	12:41	LB106977
	Silver	1310	1250	105	90 - 110	P	12/30/2019	12:41	LB106977
	Sodium	25800	25000	103	90 - 110	P	12/30/2019	12:41	LB106977
	Thallium	5070	5000	101	90 - 110	P	12/30/2019	12:41	LB106977
	Vanadium	2540	2500	102	90 - 110	P	12/30/2019	12:41	LB106977
	Zinc	2590	2500	104	90 - 110	P	12/30/2019	12:41	LB106977

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV01	Aluminum	116	100	116	80 - 120	P	12/30/2019	12:58	LB106977
	Antimony	56.8	50.0	114	80 - 120	P	12/30/2019	12:58	LB106977
	Arsenic	21.1	20.0	106	80 - 120	P	12/30/2019	12:58	LB106977
	Barium	108	100	108	80 - 120	P	12/30/2019	12:58	LB106977
	Beryllium	6.57	6.0	109	80 - 120	P	12/30/2019	12:58	LB106977
	Cadmium	6.03	6.0	100	80 - 120	P	12/30/2019	12:58	LB106977
	Calcium	2160	2000	108	80 - 120	P	12/30/2019	12:58	LB106977
	Chromium	10.3	10.0	103	80 - 120	P	12/30/2019	12:58	LB106977
	Cobalt	31.7	30.0	106	80 - 120	P	12/30/2019	12:58	LB106977
	Copper	21.4	20.0	107	80 - 120	P	12/30/2019	12:58	LB106977
	Iron	110	100	110	80 - 120	P	12/30/2019	12:58	LB106977
	Lead	12.2	12.0	102	80 - 120	P	12/30/2019	12:58	LB106977
	Magnesium	2150	2000	108	80 - 120	P	12/30/2019	12:58	LB106977
	Manganese	21.9	20.0	110	80 - 120	P	12/30/2019	12:58	LB106977
	Nickel	42.8	40.0	107	80 - 120	P	12/30/2019	12:58	LB106977
	Potassium	1960	2000	98	80 - 120	P	12/30/2019	12:58	LB106977
	Selenium	21.4	20.0	107	80 - 120	P	12/30/2019	12:58	LB106977
	Silver	11.1	10.0	111	80 - 120	P	12/30/2019	12:58	LB106977
	Sodium	2040	2000	102	80 - 120	P	12/30/2019	12:58	LB106977
	Thallium	41.3	40.0	103	80 - 120	P	12/30/2019	12:58	LB106977
	Vanadium	37.2	40.0	93	80 - 120	P	12/30/2019	12:58	LB106977
	Zinc	45.6	40.0	114	80 - 120	P	12/30/2019	12:58	LB106977

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Aluminum	10100	10000	102	90 - 110	P	12/30/2019	15:22	LB106977
	Antimony	5370	5000	107	90 - 110	P	12/30/2019	15:22	LB106977
	Arsenic	5390	5000	108	90 - 110	P	12/30/2019	15:22	LB106977
	Barium	10500	10000	105	90 - 110	P	12/30/2019	15:22	LB106977
	Beryllium	255	250	102	90 - 110	P	12/30/2019	15:22	LB106977
	Cadmium	2610	2500	104	90 - 110	P	12/30/2019	15:22	LB106977
	Calcium	26500	25000	106	90 - 110	P	12/30/2019	15:22	LB106977
	Chromium	1090	1000	109	90 - 110	P	12/30/2019	15:22	LB106977
	Cobalt	2640	2500	106	90 - 110	P	12/30/2019	15:22	LB106977
	Copper	1350	1250	108	90 - 110	P	12/30/2019	15:22	LB106977
	Iron	5500	5000	110	90 - 110	P	12/30/2019	15:22	LB106977
	Lead	5290	5000	106	90 - 110	P	12/30/2019	15:22	LB106977
	Magnesium	26600	25000	106	90 - 110	P	12/30/2019	15:22	LB106977
	Manganese	2590	2500	104	90 - 110	P	12/30/2019	15:22	LB106977
	Nickel	2650	2500	106	90 - 110	P	12/30/2019	15:22	LB106977
	Potassium	26700	25000	107	90 - 110	P	12/30/2019	15:22	LB106977
	Selenium	5430	5000	108	90 - 110	P	12/30/2019	15:22	LB106977
	Silver	1370	1250	109	90 - 110	P	12/30/2019	15:22	LB106977
	Sodium	27200	25000	109	90 - 110	P	12/30/2019	15:22	LB106977
	Thallium	5330	5000	107	90 - 110	P	12/30/2019	15:22	LB106977
	Vanadium	2630	2500	105	90 - 110	P	12/30/2019	15:22	LB106977
	Zinc	2660	2500	106	90 - 110	P	12/30/2019	15:22	LB106977
CCV03	Aluminum	10100	10000	101	90 - 110	P	12/30/2019	16:14	LB106977
	Antimony	5380	5000	108	90 - 110	P	12/30/2019	16:14	LB106977
	Arsenic	5360	5000	107	90 - 110	P	12/30/2019	16:14	LB106977
	Barium	10400	10000	104	90 - 110	P	12/30/2019	16:14	LB106977
	Beryllium	252	250	101	90 - 110	P	12/30/2019	16:14	LB106977
	Cadmium	2590	2500	104	90 - 110	P	12/30/2019	16:14	LB106977
	Calcium	26300	25000	105	90 - 110	P	12/30/2019	16:14	LB106977
	Chromium	1080	1000	108	90 - 110	P	12/30/2019	16:14	LB106977
	Cobalt	2620	2500	105	90 - 110	P	12/30/2019	16:14	LB106977
	Copper	1340	1250	107	90 - 110	P	12/30/2019	16:14	LB106977
	Iron	5480	5000	110	90 - 110	P	12/30/2019	16:14	LB106977
	Lead	5280	5000	106	90 - 110	P	12/30/2019	16:14	LB106977

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV03	Magnesium	26400	25000	106	90 - 110	P	12/30/2019	16:14	LB106977
	Manganese	2570	2500	103	90 - 110	P	12/30/2019	16:14	LB106977
	Nickel	2640	2500	105	90 - 110	P	12/30/2019	16:14	LB106977
	Potassium	26400	25000	106	90 - 110	P	12/30/2019	16:14	LB106977
	Selenium	5400	5000	108	90 - 110	P	12/30/2019	16:14	LB106977
	Silver	1350	1250	108	90 - 110	P	12/30/2019	16:14	LB106977
	Sodium	26900	25000	108	90 - 110	P	12/30/2019	16:14	LB106977
	Thallium	5260	5000	105	90 - 110	P	12/30/2019	16:14	LB106977
	Vanadium	2600	2500	104	90 - 110	P	12/30/2019	16:14	LB106977
	Zinc	2670	2500	107	90 - 110	P	12/30/2019	16:14	LB106977
CCV04	Aluminum	9830	10000	98	90 - 110	P	12/30/2019	17:23	LB106977
	Antimony	5250	5000	105	90 - 110	P	12/30/2019	17:23	LB106977
	Arsenic	5260	5000	105	90 - 110	P	12/30/2019	17:23	LB106977
	Barium	10200	10000	102	90 - 110	P	12/30/2019	17:23	LB106977
	Beryllium	245	250	98	90 - 110	P	12/30/2019	17:23	LB106977
	Cadmium	2520	2500	101	90 - 110	P	12/30/2019	17:23	LB106977
	Calcium	25800	25000	103	90 - 110	P	12/30/2019	17:23	LB106977
	Chromium	1060	1000	106	90 - 110	P	12/30/2019	17:23	LB106977
	Cobalt	2560	2500	102	90 - 110	P	12/30/2019	17:23	LB106977
	Copper	1310	1250	105	90 - 110	P	12/30/2019	17:23	LB106977
	Iron	5430	5000	109	90 - 110	P	12/30/2019	17:23	LB106977
	Lead	5160	5000	103	90 - 110	P	12/30/2019	17:23	LB106977
	Magnesium	26000	25000	104	90 - 110	P	12/30/2019	17:23	LB106977
	Manganese	2530	2500	101	90 - 110	P	12/30/2019	17:23	LB106977
	Nickel	2570	2500	103	90 - 110	P	12/30/2019	17:23	LB106977
	Potassium	26000	25000	104	90 - 110	P	12/30/2019	17:23	LB106977
	Selenium	5310	5000	106	90 - 110	P	12/30/2019	17:23	LB106977
	Silver	1330	1250	107	90 - 110	P	12/30/2019	17:23	LB106977
	Sodium	26500	25000	106	90 - 110	P	12/30/2019	17:23	LB106977
	Thallium	5170	5000	103	90 - 110	P	12/30/2019	17:23	LB106977
	Vanadium	2570	2500	103	90 - 110	P	12/30/2019	17:23	LB106977
	Zinc	2610	2500	104	90 - 110	P	12/30/2019	17:23	LB106977
CCV05	Aluminum	10100	10000	101	90 - 110	P	12/30/2019	18:12	LB106977
	Antimony	5330	5000	106	90 - 110	P	12/30/2019	18:12	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV05	Arsenic	5320	5000	106	90 - 110	P	12/30/2019	18:12	LB106977
	Barium	10300	10000	103	90 - 110	P	12/30/2019	18:12	LB106977
	Beryllium	254	250	102	90 - 110	P	12/30/2019	18:12	LB106977
	Cadmium	2560	2500	102	90 - 110	P	12/30/2019	18:12	LB106977
	Calcium	26300	25000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Chromium	1050	1000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Cobalt	2590	2500	104	90 - 110	P	12/30/2019	18:12	LB106977
	Copper	1330	1250	106	90 - 110	P	12/30/2019	18:12	LB106977
	Iron	5340	5000	107	90 - 110	P	12/30/2019	18:12	LB106977
	Lead	5230	5000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Magnesium	26300	25000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Manganese	2580	2500	103	90 - 110	P	12/30/2019	18:12	LB106977
	Nickel	2610	2500	104	90 - 110	P	12/30/2019	18:12	LB106977
	Potassium	25900	25000	104	90 - 110	P	12/30/2019	18:12	LB106977
	Selenium	5350	5000	107	90 - 110	P	12/30/2019	18:12	LB106977
	Silver	1310	1250	105	90 - 110	P	12/30/2019	18:12	LB106977
	Sodium	26100	25000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Thallium	5250	5000	105	90 - 110	P	12/30/2019	18:12	LB106977
	Vanadium	2590	2500	104	90 - 110	P	12/30/2019	18:12	LB106977
	Zinc	2620	2500	105	90 - 110	P	12/30/2019	18:12	LB106977
CCV06	Aluminum	10200	10000	102	90 - 110	P	12/30/2019	18:52	LB106977
	Antimony	5330	5000	107	90 - 110	P	12/30/2019	18:52	LB106977
	Arsenic	5330	5000	107	90 - 110	P	12/30/2019	18:52	LB106977
	Barium	10300	10000	103	90 - 110	P	12/30/2019	18:52	LB106977
	Beryllium	257	250	103	90 - 110	P	12/30/2019	18:52	LB106977
	Cadmium	2560	2500	102	90 - 110	P	12/30/2019	18:52	LB106977
	Calcium	26500	25000	106	90 - 110	P	12/30/2019	18:52	LB106977
	Chromium	1050	1000	105	90 - 110	P	12/30/2019	18:52	LB106977
	Cobalt	2590	2500	104	90 - 110	P	12/30/2019	18:52	LB106977
	Copper	1340	1250	107	90 - 110	P	12/30/2019	18:52	LB106977
	Iron	5300	5000	106	90 - 110	P	12/30/2019	18:52	LB106977
	Lead	5260	5000	105	90 - 110	P	12/30/2019	18:52	LB106977
	Magnesium	26200	25000	105	90 - 110	P	12/30/2019	18:52	LB106977
	Manganese	2610	2500	104	90 - 110	P	12/30/2019	18:52	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV06	Nickel	2610	2500	105	90 - 110	P	12/30/2019	18:52	LB106977
	Potassium	25900	25000	104	90 - 110	P	12/30/2019	18:52	LB106977
	Selenium	5360	5000	107	90 - 110	P	12/30/2019	18:52	LB106977
	Silver	1310	1250	105	90 - 110	P	12/30/2019	18:52	LB106977
	Sodium	25900	25000	104	90 - 110	P	12/30/2019	18:52	LB106977
	Thallium	5260	5000	105	90 - 110	P	12/30/2019	18:52	LB106977
	Vanadium	2600	2500	104	90 - 110	P	12/30/2019	18:52	LB106977
	Zinc	2620	2500	105	90 - 110	P	12/30/2019	18:52	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	2560	2520	102	90 - 110	P	12/31/2019	14:39	LB106993
	Antimony	1010	1010	100	90 - 110	P	12/31/2019	14:39	LB106993
	Arsenic	995	997	100	90 - 110	P	12/31/2019	14:39	LB106993
	Barium	536	518	103	90 - 110	P	12/31/2019	14:39	LB106993
	Beryllium	521	514	101	90 - 110	P	12/31/2019	14:39	LB106993
	Cadmium	505	514	98	90 - 110	P	12/31/2019	14:39	LB106993
	Calcium	10100	10000	101	90 - 110	P	12/31/2019	14:39	LB106993
	Chromium	534	517	103	90 - 110	P	12/31/2019	14:39	LB106993
	Cobalt	513	521	98	90 - 110	P	12/31/2019	14:39	LB106993
	Copper	528	505	105	90 - 110	P	12/31/2019	14:39	LB106993
	Iron	10000	10100	99	90 - 110	P	12/31/2019	14:39	LB106993
	Lead	1000	1030	97	90 - 110	P	12/31/2019	14:39	LB106993
	Magnesium	6000	5990	100	90 - 110	P	12/31/2019	14:39	LB106993
	Manganese	528	524	101	90 - 110	P	12/31/2019	14:39	LB106993
	Nickel	506	525	96	90 - 110	P	12/31/2019	14:39	LB106993
	Potassium	9710	9940	98	90 - 110	P	12/31/2019	14:39	LB106993
	Selenium	965	1030	94	90 - 110	P	12/31/2019	14:39	LB106993
	Silver	256	252	102	90 - 110	P	12/31/2019	14:39	LB106993
	Sodium	9660	10100	96	90 - 110	P	12/31/2019	14:39	LB106993
	Thallium	1010	1040	97	90 - 110	P	12/31/2019	14:39	LB106993
	Vanadium	512	504	102	90 - 110	P	12/31/2019	14:39	LB106993
	Zinc	1030	1010	102	90 - 110	P	12/31/2019	14:39	LB106993

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Aluminum	99.8	100	100	80 - 120	P	12/31/2019	14:43	LB106993
	Antimony	56.8	50.0	114	80 - 120	P	12/31/2019	14:43	LB106993
	Arsenic	17.7	20.0	89	80 - 120	P	12/31/2019	14:43	LB106993
	Barium	110	100	110	80 - 120	P	12/31/2019	14:43	LB106993
	Beryllium	6.85	6.0	114	80 - 120	P	12/31/2019	14:43	LB106993
	Cadmium	6.21	6.0	104	80 - 120	P	12/31/2019	14:43	LB106993
	Calcium	2150	2000	108	80 - 120	P	12/31/2019	14:43	LB106993
	Chromium	10.3	10.0	103	80 - 120	P	12/31/2019	14:43	LB106993
	Cobalt	31.2	30.0	104	80 - 120	P	12/31/2019	14:43	LB106993
	Copper	21.9	20.0	110	80 - 120	P	12/31/2019	14:43	LB106993
	Iron	108	100	108	80 - 120	P	12/31/2019	14:43	LB106993
	Lead	14.3	12.0	119	80 - 120	P	12/31/2019	14:43	LB106993
	Magnesium	2180	2000	109	80 - 120	P	12/31/2019	14:43	LB106993
	Manganese	22.7	20.0	114	80 - 120	P	12/31/2019	14:43	LB106993
	Nickel	42.4	40.0	106	80 - 120	P	12/31/2019	14:43	LB106993
	Potassium	1950	2000	97	80 - 120	P	12/31/2019	14:43	LB106993
	Selenium	19.3	20.0	96	80 - 120	P	12/31/2019	14:43	LB106993
	Silver	10.8	10.0	108	80 - 120	P	12/31/2019	14:43	LB106993
	Sodium	2010	2000	101	80 - 120	P	12/31/2019	14:43	LB106993
	Thallium	45.1	40.0	113	80 - 120	P	12/31/2019	14:43	LB106993
	Vanadium	42.1	40.0	105	80 - 120	P	12/31/2019	14:43	LB106993
	Zinc	45.4	40.0	114	80 - 120	P	12/31/2019	14:43	LB106993

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	10000	10000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Antimony	4970	5000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Arsenic	4990	5000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Barium	10100	10000	101	90 - 110	P	12/31/2019	15:03	LB106993
	Beryllium	252	250	101	90 - 110	P	12/31/2019	15:03	LB106993
	Cadmium	2480	2500	99	90 - 110	P	12/31/2019	15:03	LB106993
	Calcium	25300	25000	101	90 - 110	P	12/31/2019	15:03	LB106993
	Chromium	1010	1000	101	90 - 110	P	12/31/2019	15:03	LB106993
	Cobalt	2490	2500	99	90 - 110	P	12/31/2019	15:03	LB106993
	Copper	1260	1250	101	90 - 110	P	12/31/2019	15:03	LB106993
	Iron	5030	5000	101	90 - 110	P	12/31/2019	15:03	LB106993
	Lead	4990	5000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Magnesium	25200	25000	101	90 - 110	P	12/31/2019	15:03	LB106993
	Manganese	2550	2500	102	90 - 110	P	12/31/2019	15:03	LB106993
	Nickel	2490	2500	99	90 - 110	P	12/31/2019	15:03	LB106993
	Potassium	24700	25000	99	90 - 110	P	12/31/2019	15:03	LB106993
	Selenium	5020	5000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Silver	1250	1250	100	90 - 110	P	12/31/2019	15:03	LB106993
	Sodium	24700	25000	99	90 - 110	P	12/31/2019	15:03	LB106993
	Thallium	5000	5000	100	90 - 110	P	12/31/2019	15:03	LB106993
	Vanadium	2510	2500	101	90 - 110	P	12/31/2019	15:03	LB106993
	Zinc	2510	2500	100	90 - 110	P	12/31/2019	15:03	LB106993

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Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV01	Aluminum	104	100	104	80 - 120	P	12/31/2019	15:07	LB106993
	Antimony	57.5	50.0	115	80 - 120	P	12/31/2019	15:07	LB106993
	Arsenic	18.9	20.0	94	80 - 120	P	12/31/2019	15:07	LB106993
	Barium	110	100	110	80 - 120	P	12/31/2019	15:07	LB106993
	Beryllium	6.80	6.0	113	80 - 120	P	12/31/2019	15:07	LB106993
	Cadmium	6.26	6.0	104	80 - 120	P	12/31/2019	15:07	LB106993
	Calcium	2170	2000	108	80 - 120	P	12/31/2019	15:07	LB106993
	Chromium	10.1	10.0	101	80 - 120	P	12/31/2019	15:07	LB106993
	Cobalt	32.1	30.0	107	80 - 120	P	12/31/2019	15:07	LB106993
	Copper	22.1	20.0	110	80 - 120	P	12/31/2019	15:07	LB106993
	Iron	113	100	114	80 - 120	P	12/31/2019	15:07	LB106993
	Lead	14.0	12.0	116	80 - 120	P	12/31/2019	15:07	LB106993
	Magnesium	2170	2000	109	80 - 120	P	12/31/2019	15:07	LB106993
	Manganese	22.9	20.0	115	80 - 120	P	12/31/2019	15:07	LB106993
	Nickel	42.6	40.0	106	80 - 120	P	12/31/2019	15:07	LB106993
	Potassium	1930	2000	96	80 - 120	P	12/31/2019	15:07	LB106993
	Selenium	18.3	20.0	92	80 - 120	P	12/31/2019	15:07	LB106993
	Silver	11.1	10.0	111	80 - 120	P	12/31/2019	15:07	LB106993
	Sodium	2030	2000	101	80 - 120	P	12/31/2019	15:07	LB106993
	Thallium	45.0	40.0	112	80 - 120	P	12/31/2019	15:07	LB106993
	Vanadium	41.8	40.0	105	80 - 120	P	12/31/2019	15:07	LB106993
	Zinc	45.9	40.0	115	80 - 120	P	12/31/2019	15:07	LB106993

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Aluminum	10200	10000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Antimony	5110	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Arsenic	5100	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Barium	10200	10000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Beryllium	259	250	104	90 - 110	P	12/31/2019	16:21	LB106993
	Cadmium	2540	2500	102	90 - 110	P	12/31/2019	16:21	LB106993
	Calcium	25800	25000	103	90 - 110	P	12/31/2019	16:21	LB106993
	Chromium	1030	1000	103	90 - 110	P	12/31/2019	16:21	LB106993
	Cobalt	2540	2500	101	90 - 110	P	12/31/2019	16:21	LB106993
	Copper	1290	1250	103	90 - 110	P	12/31/2019	16:21	LB106993
	Iron	5120	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Lead	5110	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Magnesium	25700	25000	103	90 - 110	P	12/31/2019	16:21	LB106993
	Manganese	2590	2500	104	90 - 110	P	12/31/2019	16:21	LB106993
	Nickel	2540	2500	102	90 - 110	P	12/31/2019	16:21	LB106993
	Potassium	25400	25000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Selenium	5090	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Silver	1270	1250	102	90 - 110	P	12/31/2019	16:21	LB106993
	Sodium	25300	25000	101	90 - 110	P	12/31/2019	16:21	LB106993
	Thallium	5120	5000	102	90 - 110	P	12/31/2019	16:21	LB106993
	Vanadium	2560	2500	102	90 - 110	P	12/31/2019	16:21	LB106993
	Zinc	2560	2500	103	90 - 110	P	12/31/2019	16:21	LB106993
CCV03	Aluminum	10200	10000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Antimony	5110	5000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Arsenic	5070	5000	101	90 - 110	P	12/31/2019	16:38	LB106993
	Barium	10200	10000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Beryllium	257	250	103	90 - 110	P	12/31/2019	16:38	LB106993
	Cadmium	2530	2500	101	90 - 110	P	12/31/2019	16:38	LB106993
	Calcium	25700	25000	103	90 - 110	P	12/31/2019	16:38	LB106993
	Chromium	1020	1000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Cobalt	2530	2500	101	90 - 110	P	12/31/2019	16:38	LB106993
	Copper	1290	1250	103	90 - 110	P	12/31/2019	16:38	LB106993
	Iron	5140	5000	103	90 - 110	P	12/31/2019	16:38	LB106993
	Lead	5090	5000	102	90 - 110	P	12/31/2019	16:38	LB106993

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV03	Magnesium	25700	25000	103	90 - 110	P	12/31/2019	16:38	LB106993
	Manganese	2610	2500	104	90 - 110	P	12/31/2019	16:38	LB106993
	Nickel	2530	2500	101	90 - 110	P	12/31/2019	16:38	LB106993
	Potassium	25500	25000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Selenium	5090	5000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Silver	1270	1250	102	90 - 110	P	12/31/2019	16:38	LB106993
	Sodium	25400	25000	101	90 - 110	P	12/31/2019	16:38	LB106993
	Thallium	5080	5000	102	90 - 110	P	12/31/2019	16:38	LB106993
	Vanadium	2580	2500	103	90 - 110	P	12/31/2019	16:38	LB106993
	Zinc	2550	2500	102	90 - 110	P	12/31/2019	16:38	LB106993

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Metals

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CRDL STANDARD FOR AA & ICP

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source:

Continuing Calibration Source:

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRI01	Aluminum	110	100	110	40 - 160	P	12/30/2019	12:29	LB106977
	Antimony	52.8	50.0	106	40 - 160	P	12/30/2019	12:29	LB106977
	Arsenic	21.8	20.0	109	40 - 160	P	12/30/2019	12:29	LB106977
	Barium	108	100	108	40 - 160	P	12/30/2019	12:29	LB106977
	Beryllium	6.67	6.0	111	40 - 160	P	12/30/2019	12:29	LB106977
	Cadmium	6.01	6.0	100	40 - 160	P	12/30/2019	12:29	LB106977
	Calcium	2150	2000	107	40 - 160	P	12/30/2019	12:29	LB106977
	Chromium	10.1	10.0	101	40 - 160	P	12/30/2019	12:29	LB106977
	Cobalt	31.8	30.0	106	40 - 160	P	12/30/2019	12:29	LB106977
	Copper	22.7	20.0	113	40 - 160	P	12/30/2019	12:29	LB106977
	Iron	103	100	103	40 - 160	P	12/30/2019	12:29	LB106977
	Lead	11.1	12.0	93	40 - 160	P	12/30/2019	12:29	LB106977
	Magnesium	2170	2000	108	40 - 160	P	12/30/2019	12:29	LB106977
	Manganese	22.1	20.0	111	40 - 160	P	12/30/2019	12:29	LB106977
	Nickel	42.3	40.0	106	40 - 160	P	12/30/2019	12:29	LB106977
	Potassium	1980	2000	99	40 - 160	P	12/30/2019	12:29	LB106977
	Selenium	24.3	20.0	122	40 - 160	P	12/30/2019	12:29	LB106977
	Silver	11.0	10.0	110	40 - 160	P	12/30/2019	12:29	LB106977
	Sodium	2020	2000	101	40 - 160	P	12/30/2019	12:29	LB106977
	Thallium	44.0	40.0	110	40 - 160	P	12/30/2019	12:29	LB106977
	Vanadium	39.1	40.0	98	40 - 160	P	12/30/2019	12:29	LB106977
	Zinc	45.3	40.0	113	40 - 160	P	12/30/2019	12:29	LB106977
CRA	Mercury	0.19	0.2	97	40 - 160	CV	12/30/2019	14:07	LB106964
CRI01	Aluminum	98.0	100	98	40 - 160	P	12/31/2019	14:51	LB106993
	Antimony	56.5	50.0	113	40 - 160	P	12/31/2019	14:51	LB106993
	Arsenic	17.9	20.0	90	40 - 160	P	12/31/2019	14:51	LB106993
	Barium	110	100	110	40 - 160	P	12/31/2019	14:51	LB106993
	Beryllium	6.99	6.0	117	40 - 160	P	12/31/2019	14:51	LB106993
	Cadmium	6.20	6.0	103	40 - 160	P	12/31/2019	14:51	LB106993
	Calcium	2160	2000	108	40 - 160	P	12/31/2019	14:51	LB106993
	Chromium	10.8	10.0	108	40 - 160	P	12/31/2019	14:51	LB106993
	Cobalt	31.8	30.0	106	40 - 160	P	12/31/2019	14:51	LB106993
	Copper	22.0	20.0	110	40 - 160	P	12/31/2019	14:51	LB106993
	Iron	106	100	106	40 - 160	P	12/31/2019	14:51	LB106993
	Lead	11.1	12.0	92	40 - 160	P	12/31/2019	14:51	LB106993

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

Metals

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CRDL STANDARD FOR AA & ICP

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Initial Calibration Source:

Continuing Calibration Source:

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRI01	Magnesium	2150	2000	108	40 - 160	P	12/31/2019	14:51	LB106993
	Manganese	23.4	20.0	117	40 - 160	P	12/31/2019	14:51	LB106993
	Nickel	42.7	40.0	107	40 - 160	P	12/31/2019	14:51	LB106993
	Potassium	1980	2000	99	40 - 160	P	12/31/2019	14:51	LB106993
	Selenium	16.2	20.0	81	40 - 160	P	12/31/2019	14:51	LB106993
	Silver	11.0	10.0	110	40 - 160	P	12/31/2019	14:51	LB106993
	Sodium	2020	2000	101	40 - 160	P	12/31/2019	14:51	LB106993
	Thallium	41.5	40.0	104	40 - 160	P	12/31/2019	14:51	LB106993
	Vanadium	42.6	40.0	107	40 - 160	P	12/31/2019	14:51	LB106993
	Zinc	45.5	40.0	114	40 - 160	P	12/31/2019	14:51	LB106993

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Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB43	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	13:58	LB106964

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB83	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	14:03	LB106964
CCB84	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	14:40	LB106964
CCB85	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	15:14	LB106964
CCB86	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	15:42	LB106964
CCB87	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	16:12	LB106964
CCB88	Mercury	0.20	+/-0.20	U	0.20	CV	12/30/2019	16:23	LB106964

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Aluminum	100	+/-100	U	100	P	12/30/2019	12:25	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	12:25	LB106977
	Arsenic	3.14	+/-20.0	J	20.0	P	12/30/2019	12:25	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	12:25	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	12:25	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	12:25	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	12:25	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	12:25	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	12:25	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	12:25	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	12:25	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	12:25	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	12:25	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	12:25	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	12:25	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	12:25	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	12:25	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	12:25	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	12:25	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	12:25	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	12:25	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	12:25	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Aluminum	100	+/-100	U	100	P	12/30/2019	13:04	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	13:04	LB106977
	Arsenic	20.0	+/-20.0	U	20.0	P	12/30/2019	13:04	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	13:04	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	13:04	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	13:04	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	13:04	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	13:04	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	13:04	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	13:04	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	13:04	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	13:04	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	13:04	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	13:04	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	13:04	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	13:04	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	13:04	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	13:04	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	13:04	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	13:04	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	13:04	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	13:04	LB106977
CCB02	Aluminum	100	+/-100	U	100	P	12/30/2019	15:26	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	15:26	LB106977
	Arsenic	5.65	+/-20.0	J	20.0	P	12/30/2019	15:26	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	15:26	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	15:26	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	15:26	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	15:26	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	15:26	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	15:26	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	15:26	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	15:26	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	15:26	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	15:26	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	15:26	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	15:26	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	15:26	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	15:26	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	15:26	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Sodium	2000	+/-2000	U	2000	P	12/30/2019	15:26	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	15:26	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	15:26	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	15:26	LB106977
CCB03	Aluminum	15.9	+/-100	J	100	P	12/30/2019	16:18	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	16:18	LB106977
	Arsenic	20.0	+/-20.0	U	20.0	P	12/30/2019	16:18	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	16:18	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	16:18	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	16:18	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	16:18	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	16:18	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	16:18	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	16:18	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	16:18	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	16:18	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	16:18	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	16:18	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	16:18	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	16:18	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	16:18	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	16:18	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	16:18	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	16:18	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	16:18	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	16:18	LB106977
CCB04	Aluminum	100	+/-100	U	100	P	12/30/2019	17:27	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	17:27	LB106977
	Arsenic	20.0	+/-20.0	U	20.0	P	12/30/2019	17:27	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	17:27	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	17:27	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	17:27	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	17:27	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	17:27	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	17:27	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	17:27	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	17:27	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	17:27	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	17:27	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	17:27	LB106977

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB04	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	17:27	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	17:27	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	17:27	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	17:27	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	17:27	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	17:27	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	17:27	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	17:27	LB106977
CCB05	Aluminum	100	+/-100	U	100	P	12/30/2019	18:16	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	18:16	LB106977
	Arsenic	20.0	+/-20.0	U	20.0	P	12/30/2019	18:16	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	18:16	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	18:16	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	18:16	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	18:16	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	18:16	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	18:16	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	18:16	LB106977
	Iron	100	+/-100	U	100	P	12/30/2019	18:16	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	18:16	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	18:16	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	18:16	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	18:16	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	18:16	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	18:16	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	18:16	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	18:16	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	18:16	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	18:16	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	18:16	LB106977
CCB06	Aluminum	100	+/-100	U	100	P	12/30/2019	18:56	LB106977
	Antimony	50.0	+/-50.0	U	50.0	P	12/30/2019	18:56	LB106977
	Arsenic	1.62	+/-20.0	J	20.0	P	12/30/2019	18:56	LB106977
	Barium	100	+/-100	U	100	P	12/30/2019	18:56	LB106977
	Beryllium	6.00	+/-6.00	U	6.00	P	12/30/2019	18:56	LB106977
	Cadmium	6.00	+/-6.00	U	6.00	P	12/30/2019	18:56	LB106977
	Calcium	2000	+/-2000	U	2000	P	12/30/2019	18:56	LB106977
	Chromium	10.0	+/-10.0	U	10.0	P	12/30/2019	18:56	LB106977
	Cobalt	30.0	+/-30.0	U	30.0	P	12/30/2019	18:56	LB106977
	Copper	20.0	+/-20.0	U	20.0	P	12/30/2019	18:56	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB06	Iron	100	+/-100	U	100	P	12/30/2019	18:56	LB106977
	Lead	12.0	+/-12.0	U	12.0	P	12/30/2019	18:56	LB106977
	Magnesium	2000	+/-2000	U	2000	P	12/30/2019	18:56	LB106977
	Manganese	20.0	+/-20.0	U	20.0	P	12/30/2019	18:56	LB106977
	Nickel	40.0	+/-40.0	U	40.0	P	12/30/2019	18:56	LB106977
	Potassium	2000	+/-2000	U	2000	P	12/30/2019	18:56	LB106977
	Selenium	20.0	+/-20.0	U	20.0	P	12/30/2019	18:56	LB106977
	Silver	10.0	+/-10.0	U	10.0	P	12/30/2019	18:56	LB106977
	Sodium	2000	+/-2000	U	2000	P	12/30/2019	18:56	LB106977
	Thallium	40.0	+/-40.0	U	40.0	P	12/30/2019	18:56	LB106977
	Vanadium	40.0	+/-40.0	U	40.0	P	12/30/2019	18:56	LB106977
	Zinc	40.0	+/-40.0	U	40.0	P	12/30/2019	18:56	LB106977

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Aluminum	100	+/-100	U	100	P	12/31/2019	14:47	LB106993
	Antimony	50.0	+/-50.0	U	50.0	P	12/31/2019	14:47	LB106993
	Arsenic	20.0	+/-20.0	U	20.0	P	12/31/2019	14:47	LB106993
	Barium	100	+/-100	U	100	P	12/31/2019	14:47	LB106993
	Beryllium	6.00	+/-6.00	U	6.00	P	12/31/2019	14:47	LB106993
	Cadmium	6.00	+/-6.00	U	6.00	P	12/31/2019	14:47	LB106993
	Calcium	2000	+/-2000	U	2000	P	12/31/2019	14:47	LB106993
	Chromium	10.0	+/-10.0	U	10.0	P	12/31/2019	14:47	LB106993
	Cobalt	30.0	+/-30.0	U	30.0	P	12/31/2019	14:47	LB106993
	Copper	20.0	+/-20.0	U	20.0	P	12/31/2019	14:47	LB106993
	Iron	100	+/-100	U	100	P	12/31/2019	14:47	LB106993
	Lead	12.0	+/-12.0	U	12.0	P	12/31/2019	14:47	LB106993
	Magnesium	2000	+/-2000	U	2000	P	12/31/2019	14:47	LB106993
	Manganese	20.0	+/-20.0	U	20.0	P	12/31/2019	14:47	LB106993
	Nickel	40.0	+/-40.0	U	40.0	P	12/31/2019	14:47	LB106993
	Potassium	2000	+/-2000	U	2000	P	12/31/2019	14:47	LB106993
	Selenium	20.0	+/-20.0	U	20.0	P	12/31/2019	14:47	LB106993
	Silver	10.0	+/-10.0	U	10.0	P	12/31/2019	14:47	LB106993
	Sodium	2000	+/-2000	U	2000	P	12/31/2019	14:47	LB106993
	Thallium	40.0	+/-40.0	U	40.0	P	12/31/2019	14:47	LB106993
	Vanadium	40.0	+/-40.0	U	40.0	P	12/31/2019	14:47	LB106993
	Zinc	40.0	+/-40.0	U	40.0	P	12/31/2019	14:47	LB106993

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Aluminum	100	+/-100	U	100	P	12/31/2019	15:11	LB106993
	Antimony	50.0	+/-50.0	U	50.0	P	12/31/2019	15:11	LB106993
	Arsenic	20.0	+/-20.0	U	20.0	P	12/31/2019	15:11	LB106993
	Barium	100	+/-100	U	100	P	12/31/2019	15:11	LB106993
	Beryllium	6.00	+/-6.00	U	6.00	P	12/31/2019	15:11	LB106993
	Cadmium	6.00	+/-6.00	U	6.00	P	12/31/2019	15:11	LB106993
	Calcium	2000	+/-2000	U	2000	P	12/31/2019	15:11	LB106993
	Chromium	10.0	+/-10.0	U	10.0	P	12/31/2019	15:11	LB106993
	Cobalt	30.0	+/-30.0	U	30.0	P	12/31/2019	15:11	LB106993
	Copper	20.0	+/-20.0	U	20.0	P	12/31/2019	15:11	LB106993
	Iron	100	+/-100	U	100	P	12/31/2019	15:11	LB106993
	Lead	12.0	+/-12.0	U	12.0	P	12/31/2019	15:11	LB106993
	Magnesium	2000	+/-2000	U	2000	P	12/31/2019	15:11	LB106993
	Manganese	20.0	+/-20.0	U	20.0	P	12/31/2019	15:11	LB106993
	Nickel	40.0	+/-40.0	U	40.0	P	12/31/2019	15:11	LB106993
	Potassium	2000	+/-2000	U	2000	P	12/31/2019	15:11	LB106993
	Selenium	20.0	+/-20.0	U	20.0	P	12/31/2019	15:11	LB106993
	Silver	10.0	+/-10.0	U	10.0	P	12/31/2019	15:11	LB106993
	Sodium	2000	+/-2000	U	2000	P	12/31/2019	15:11	LB106993
	Thallium	40.0	+/-40.0	U	40.0	P	12/31/2019	15:11	LB106993
	Vanadium	40.0	+/-40.0	U	40.0	P	12/31/2019	15:11	LB106993
	Zinc	40.0	+/-40.0	U	40.0	P	12/31/2019	15:11	LB106993
CCB02	Aluminum	100	+/-100	U	100	P	12/31/2019	16:25	LB106993
	Antimony	50.0	+/-50.0	U	50.0	P	12/31/2019	16:25	LB106993
	Arsenic	20.0	+/-20.0	U	20.0	P	12/31/2019	16:25	LB106993
	Barium	100	+/-100	U	100	P	12/31/2019	16:25	LB106993
	Beryllium	6.00	+/-6.00	U	6.00	P	12/31/2019	16:25	LB106993
	Cadmium	6.00	+/-6.00	U	6.00	P	12/31/2019	16:25	LB106993
	Calcium	2000	+/-2000	U	2000	P	12/31/2019	16:25	LB106993
	Chromium	10.0	+/-10.0	U	10.0	P	12/31/2019	16:25	LB106993
	Cobalt	30.0	+/-30.0	U	30.0	P	12/31/2019	16:25	LB106993
	Copper	20.0	+/-20.0	U	20.0	P	12/31/2019	16:25	LB106993
	Iron	100	+/-100	U	100	P	12/31/2019	16:25	LB106993
	Lead	12.0	+/-12.0	U	12.0	P	12/31/2019	16:25	LB106993
	Magnesium	2000	+/-2000	U	2000	P	12/31/2019	16:25	LB106993
	Manganese	20.0	+/-20.0	U	20.0	P	12/31/2019	16:25	LB106993
	Nickel	40.0	+/-40.0	U	40.0	P	12/31/2019	16:25	LB106993
	Potassium	2000	+/-2000	U	2000	P	12/31/2019	16:25	LB106993
	Selenium	20.0	+/-20.0	U	20.0	P	12/31/2019	16:25	LB106993
	Silver	10.0	+/-10.0	U	10.0	P	12/31/2019	16:25	LB106993

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Sodium	2000	+/-2000	U	2000	P	12/31/2019	16:25	LB106993
	Thallium	40.0	+/-40.0	U	40.0	P	12/31/2019	16:25	LB106993
	Vanadium	40.0	+/-40.0	U	40.0	P	12/31/2019	16:25	LB106993
	Zinc	40.0	+/-40.0	U	40.0	P	12/31/2019	16:25	LB106993
CCB03	Aluminum	100	+/-100	U	100	P	12/31/2019	16:42	LB106993
	Antimony	50.0	+/-50.0	U	50.0	P	12/31/2019	16:42	LB106993
	Arsenic	1.68	+/-20.0	J	20.0	P	12/31/2019	16:42	LB106993
	Barium	100	+/-100	U	100	P	12/31/2019	16:42	LB106993
	Beryllium	6.00	+/-6.00	U	6.00	P	12/31/2019	16:42	LB106993
	Cadmium	6.00	+/-6.00	U	6.00	P	12/31/2019	16:42	LB106993
	Calcium	2000	+/-2000	U	2000	P	12/31/2019	16:42	LB106993
	Chromium	10.0	+/-10.0	U	10.0	P	12/31/2019	16:42	LB106993
	Cobalt	30.0	+/-30.0	U	30.0	P	12/31/2019	16:42	LB106993
	Copper	20.0	+/-20.0	U	20.0	P	12/31/2019	16:42	LB106993
	Iron	100	+/-100	U	100	P	12/31/2019	16:42	LB106993
	Lead	12.0	+/-12.0	U	12.0	P	12/31/2019	16:42	LB106993
	Magnesium	2000	+/-2000	U	2000	P	12/31/2019	16:42	LB106993
	Manganese	20.0	+/-20.0	U	20.0	P	12/31/2019	16:42	LB106993
	Nickel	40.0	+/-40.0	U	40.0	P	12/31/2019	16:42	LB106993
	Potassium	2000	+/-2000	U	2000	P	12/31/2019	16:42	LB106993
	Selenium	20.0	+/-20.0	U	20.0	P	12/31/2019	16:42	LB106993
	Silver	10.0	+/-10.0	U	10.0	P	12/31/2019	16:42	LB106993
	Sodium	2000	+/-2000	U	2000	P	12/31/2019	16:42	LB106993
	Thallium	40.0	+/-40.0	U	40.0	P	12/31/2019	16:42	LB106993
	Vanadium	40.0	+/-40.0	U	40.0	P	12/31/2019	16:42	LB106993
	Zinc	40.0	+/-40.0	U	40.0	P	12/31/2019	16:42	LB106993

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Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB125784BL		**WATER**		**Batch Number:**	**PB125784**		**Prep Date:**	**12/30/2019**	
	Mercury	0.20	<0.20	U	0.20	CV	12/30/2019	15:20	LB106964

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Metals
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PREPARATION BLANK SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB125789BL		**WATER**		**Batch Number:**	**PB125789**		**Prep Date:**	**12/30/2019**	
	Aluminum	50.0	<50.0	U	50.0	P	12/31/2019	15:51	LB106993
	Antimony	25.0	<25.0	U	25.0	P	12/31/2019	15:51	LB106993
	Arsenic	10.0	<10.0	U	10.0	P	12/31/2019	15:51	LB106993
	Barium	50.0	<50.0	U	50.0	P	12/31/2019	15:51	LB106993
	Beryllium	3.00	<3.00	U	3.00	P	12/31/2019	15:51	LB106993
	Cadmium	3.00	<3.00	U	3.00	P	12/31/2019	15:51	LB106993
	Calcium	1000	<1000	U	1000	P	12/31/2019	15:51	LB106993
	Chromium	5.00	<5.00	U	5.00	P	12/31/2019	15:51	LB106993
	Cobalt	15.0	<15.0	U	15.0	P	12/31/2019	15:51	LB106993
	Copper	10.0	<10.0	U	10.0	P	12/31/2019	15:51	LB106993
	Iron	50.0	<50.0	U	50.0	P	12/31/2019	15:51	LB106993
	Lead	6.00	<6.00	U	6.00	P	12/31/2019	15:51	LB106993
	Magnesium	1000	<1000	U	1000	P	12/31/2019	15:51	LB106993
	Manganese	10.0	<10.0	U	10.0	P	12/31/2019	15:51	LB106993
	Nickel	20.0	<20.0	U	20.0	P	12/31/2019	15:51	LB106993
	Potassium	1000	<1000	U	1000	P	12/31/2019	15:51	LB106993
	Selenium	10.0	<10.0	U	10.0	P	12/31/2019	15:51	LB106993
	Silver	5.00	<5.00	U	5.00	P	12/31/2019	15:51	LB106993
	Sodium	1000	<1000	U	1000	P	12/31/2019	15:51	LB106993
	Thallium	20.0	<20.0	U	20.0	P	12/31/2019	15:51	LB106993
	Vanadium	20.0	<20.0	U	20.0	P	12/31/2019	15:51	LB106993
	Zinc	20.0	<20.0	U	20.0	P	12/31/2019	15:51	LB106993

Metals
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INTERFERENCE CHECK SAMPLE

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Aluminum	254000	254900	100	203920	305880	12/30/2019	12:33	LB106977
	Antimony	18.8			-50	50	12/30/2019	12:33	LB106977
	Arsenic	5.25			-20	20	12/30/2019	12:33	LB106977
	Barium	5.94	6.0	99	-94	106	12/30/2019	12:33	LB106977
	Beryllium	1.17			-6	6	12/30/2019	12:33	LB106977
	Cadmium	0.97	1.0	97	-5	7	12/30/2019	12:33	LB106977
	Calcium	239000	244500	98	195600	293400	12/30/2019	12:33	LB106977
	Chromium	55.9	52.0	108	42	62	12/30/2019	12:33	LB106977
	Cobalt	4.12			-30	30	12/30/2019	12:33	LB106977
	Copper	7.77	2.0	388	-18	22	12/30/2019	12:33	LB106977
	Iron	99600	100700	99	80560	120840	12/30/2019	12:33	LB106977
	Lead	-6.75			-12	12	12/30/2019	12:33	LB106977
	Magnesium	258000	255400	101	204320	306480	12/30/2019	12:33	LB106977
	Manganese	12.7	7.0	181	-13	27	12/30/2019	12:33	LB106977
	Nickel	-30.1	2.0	1505	-38	42	12/30/2019	12:33	LB106977
	Potassium	-31.3			0	0	12/30/2019	12:33	LB106977
	Selenium	-9.18			-20	20	12/30/2019	12:33	LB106977
	Silver	-5.00			-10	10	12/30/2019	12:33	LB106977
	Sodium	1.73			0	0	12/30/2019	12:33	LB106977
	Thallium	11.0			-40	40	12/30/2019	12:33	LB106977
	Vanadium	-13.7			-40	40	12/30/2019	12:33	LB106977
	Zinc	6.18			-40	40	12/30/2019	12:33	LB106977
ICSAB01	Aluminum	246000	246800	100	197440	296160	12/30/2019	12:37	LB106977
	Antimony	622	618	101	494	742	12/30/2019	12:37	LB106977
	Arsenic	103	104	99	83	125	12/30/2019	12:37	LB106977
	Barium	506	537	94	337	737	12/30/2019	12:37	LB106977
	Beryllium	488	495	99	396	594	12/30/2019	12:37	LB106977
	Cadmium	989	972	102	778	1166	12/30/2019	12:37	LB106977
	Calcium	233000	234900	99	187920	281880	12/30/2019	12:37	LB106977
	Chromium	559	542	103	434	650	12/30/2019	12:37	LB106977
	Cobalt	501	476	105	381	571	12/30/2019	12:37	LB106977
	Copper	487	511	95	409	613	12/30/2019	12:37	LB106977
	Iron	98000	99320	99	79456	119184	12/30/2019	12:37	LB106977
	Lead	42.4	49.0	86	39	59	12/30/2019	12:37	LB106977
	Magnesium	252000	248000	102	198400	297600	12/30/2019	12:37	LB106977
	Manganese	488	507	96	406	608	12/30/2019	12:37	LB106977
	Nickel	949	954	100	763	1145	12/30/2019	12:37	LB106977
	Potassium	-42.4			0	0	12/30/2019	12:37	LB106977
	Selenium	36.7	46.0	80	11	81	12/30/2019	12:37	LB106977
	Silver	209	201	104	161	241	12/30/2019	12:37	LB106977
	Sodium	-1.11			0	0	12/30/2019	12:37	LB106977
	Thallium	85.7	108	79	83	133	12/30/2019	12:37	LB106977
	Vanadium	467	491	95	393	589	12/30/2019	12:37	LB106977
	Zinc	1020	952	107	762	1142	12/30/2019	12:37	LB106977
ICSA01	Aluminum	258000	254900	101	203920	305880	12/31/2019	14:55	LB106993

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Metals
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INTERFERENCE CHECK SAMPLE

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Antimony	27.6			-50	50	12/31/2019	14:55	LB106993
	Arsenic	12.0			-20	20	12/31/2019	14:55	LB106993
	Barium	6.68	6.0	111	-94	106	12/31/2019	14:55	LB106993
	Beryllium	1.42			-6	6	12/31/2019	14:55	LB106993
	Cadmium	-4.58	1.0	458	-5	7	12/31/2019	14:55	LB106993
	Calcium	240000	244500	98	195600	293400	12/31/2019	14:55	LB106993
	Chromium	57.4	52.0	110	42	62	12/31/2019	14:55	LB106993
	Cobalt	4.53			-30	30	12/31/2019	14:55	LB106993
	Copper	10.5	2.0	524	-18	22	12/31/2019	14:55	LB106993
	Iron	98300	100700	98	80560	120840	12/31/2019	14:55	LB106993
	Lead	-8.13			-12	12	12/31/2019	14:55	LB106993
	Magnesium	259000	255400	101	204320	306480	12/31/2019	14:55	LB106993
	Manganese	13.3	7.0	190	-13	27	12/31/2019	14:55	LB106993
	Nickel	-28.0	2.0	1400	-38	42	12/31/2019	14:55	LB106993
	Potassium	-73.0			0	0	12/31/2019	14:55	LB106993
	Selenium	-13.0			-20	20	12/31/2019	14:55	LB106993
	Silver	-5.38			-10	10	12/31/2019	14:55	LB106993
	Sodium	9.43			0	0	12/31/2019	14:55	LB106993
	Thallium	13.0			-40	40	12/31/2019	14:55	LB106993
	Vanadium	-10.1			-40	40	12/31/2019	14:55	LB106993
	Zinc	6.68			-40	40	12/31/2019	14:55	LB106993
ICSAB01	Aluminum	254000	246800	103	197440	296160	12/31/2019	14:59	LB106993
	Antimony	632	618	102	494	742	12/31/2019	14:59	LB106993
	Arsenic	108	104	104	83	125	12/31/2019	14:59	LB106993
	Barium	520	537	97	337	737	12/31/2019	14:59	LB106993
	Beryllium	503	495	102	396	594	12/31/2019	14:59	LB106993
	Cadmium	988	972	102	778	1166	12/31/2019	14:59	LB106993
	Calcium	237000	234900	101	187920	281880	12/31/2019	14:59	LB106993
	Chromium	558	542	103	434	650	12/31/2019	14:59	LB106993
	Cobalt	502	476	106	381	571	12/31/2019	14:59	LB106993
	Copper	491	511	96	409	613	12/31/2019	14:59	LB106993
	Iron	96600	99320	97	79456	119184	12/31/2019	14:59	LB106993
	Lead	46.6	49.0	95	39	59	12/31/2019	14:59	LB106993
	Magnesium	256000	248000	103	198400	297600	12/31/2019	14:59	LB106993
	Manganese	504	507	99	406	608	12/31/2019	14:59	LB106993
	Nickel	953	954	100	763	1145	12/31/2019	14:59	LB106993
	Potassium	-49.3			0	0	12/31/2019	14:59	LB106993
	Selenium	25.0	46.0	54	11	81	12/31/2019	14:59	LB106993
	Silver	207	201	103	161	241	12/31/2019	14:59	LB106993
	Sodium	16.8			0	0	12/31/2019	14:59	LB106993
	Thallium	87.1	108	81	83	133	12/31/2019	14:59	LB106993
	Vanadium	478	491	97	393	589	12/31/2019	14:59	LB106993
	Zinc	1030	952	108	762	1142	12/31/2019	14:59	LB106993

METAL QC DATA

CHEMTECH 284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

metals
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MATRIX SPIKE SUMMARY

client: LiRo Engineers, Inc. **level:** low **sdg no.:** K6449

contract: LIRO01 **lab code:** CHEM **case no.:** K6449 **sas no.:** K6449

matrix: Water **sample id:** K6449-05 **client id:** OW-5MS

Percent Solids for Sample: NA **Spiked ID:** K6449-06 **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1420		565		1000	86		P
Antimony	ug/L	75 - 125	437		11.2	J	400	107		P
Arsenic	ug/L	75 - 125	426		4.02	J	400	106		P
Barium	ug/L	75 - 125	226		125		100	102		P
Beryllium	ug/L	75 - 125	94.0		3.00	U	100	94		P
Cadmium	ug/L	75 - 125	98.2		3.00	U	100	98		P
Calcium	ug/L	75 - 125	138000		140000		500	-443		P
Chromium	ug/L	75 - 125	211		5.00	U	200	106		P
Cobalt	ug/L	75 - 125	105		2.23	J	100	103		P
Copper	ug/L	75 - 125	158		4.52	J	150	103		P
Iron	ug/L	75 - 125	3580		2240		1500	89		P
Lead	ug/L	75 - 125	505		1.79	J	500	101		P
Magnesium	ug/L	75 - 125	41700		41900		1000	-23		P
Manganese	ug/L	75 - 125	379		286		100	94		P
Mercury	ug/L	75 - 125	3.87		0.20	U	4.0	97		CV
Nickel	ug/L	75 - 125	264		8.15	J	250	102		P
Potassium	ug/L	75 - 125	9190		3880		5000	106		P
Selenium	ug/L	75 - 125	1090		47.7		1000	104		P
Silver	ug/L	75 - 125	38.2		5.00	U	37.5	102		P
Sodium	ug/L	75 - 125	58400		59300		1500	-60		P
Thallium	ug/L	75 - 125	1010		20.0	U	1000	101		P
Vanadium	ug/L	75 - 125	150		2.06	J	150	99		P
Zinc	ug/L	75 - 125	158		53.9		100	104		P

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metals
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MATRIX SPIKE DUPLICATE SUMMARY

client: LiRo Engineers, Inc. **level:** low **sdg no.:** K6449

contract: LIRO01 **lab code:** CHEM **case no.:** K6449 **sas no.:** K6449

matrix: Water **sample id:** K6449-05 **client id:** OW-5MSD

Percent Solids for Sample: NA **Spiked ID:** K6449-07 **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1410		565		1000	85		P
Antimony	ug/L	75 - 125	437		11.2	J	400	107		P
Arsenic	ug/L	75 - 125	426		4.02	J	400	106		P
Barium	ug/L	75 - 125	228		125		100	103		P
Beryllium	ug/L	75 - 125	95.2		3.00	U	100	95		P
Cadmium	ug/L	75 - 125	98.1		3.00	U	100	98		P
Calcium	ug/L	75 - 125	139000		140000		500	-230		P
Chromium	ug/L	75 - 125	212		5.00	U	200	106		P
Cobalt	ug/L	75 - 125	105		2.23	J	100	103		P
Copper	ug/L	75 - 125	158		4.52	J	150	102		P
Iron	ug/L	75 - 125	3570		2240		1500	89		P
Lead	ug/L	75 - 125	505		1.79	J	500	101		P
Magnesium	ug/L	75 - 125	42100		41900		1000	21		P
Manganese	ug/L	75 - 125	383		286		100	98		P
Mercury	ug/L	75 - 125	3.59		0.20	U	4.0	90		CV
Nickel	ug/L	75 - 125	264		8.15	J	250	102		P
Potassium	ug/L	75 - 125	9190		3880		5000	106		P
Selenium	ug/L	75 - 125	1090		47.7		1000	104		P
Silver	ug/L	75 - 125	38.1		5.00	U	37.5	102		P
Sodium	ug/L	75 - 125	58200		59300		1500	-69		P
Thallium	ug/L	75 - 125	1010		20.0	U	1000	101		P
Vanadium	ug/L	75 - 125	152		2.06	J	150	100		P
Zinc	ug/L	75 - 125	158		53.9		100	104		P

CHEMTECH

Metals
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Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Matrix: **Level:** LOW **Client ID:**

Sample ID: **Spiked ID:**

Analyte	Units	Acceptance Limit %R	C	Sample Result	C	Spike Added	% Recovery	Qual	M

Metals

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DUPLICATE SAMPLE SUMMARY

Client: LiRo Engineers, Inc. **Level:** LOW **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Matrix: Water **Sample ID:** K6449-05 **Client ID:** OW-5DUP

Percent Solids for Sample: NA **Duplicate ID** K6449-05DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	565		550		3		P
Antimony	ug/L	20	11.2	J	11.6	J	4		P
Arsenic	ug/L	20	4.02	J	6.50	J	47		P
Barium	ug/L	20	125		124		1		P
Beryllium	ug/L	20	3.00	U	3.00	U			P
Cadmium	ug/L	20	3.00	U	3.00	U			P
Calcium	ug/L	20	140000		140000		0		P
Chromium	ug/L	20	5.00	U	5.00	U			P
Cobalt	ug/L	20	2.23	J	2.25	J	1		P
Copper	ug/L	20	4.52	J	4.44	J	2		P
Iron	ug/L	20	2240		2220		1		P
Lead	ug/L	20	1.79	J	1.85	J	3		P
Magnesium	ug/L	20	41900		42000		0		P
Manganese	ug/L	20	286		283		1		P
Mercury	ug/L	20	0.20	U	0.20	U			CV
Nickel	ug/L	20	8.15	J	7.85	J	4		P
Potassium	ug/L	20	3880		3810		2		P
Selenium	ug/L	20	47.7		46.4		3		P
Silver	ug/L	20	5.00	U	5.00	U			P
Sodium	ug/L	20	59300		58500		1		P
Thallium	ug/L	20	20.0	U	20.0	U			P
Vanadium	ug/L	20	2.06	J	1.58	J	26		P
Zinc	ug/L	20	53.9		54.2		1		P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

Metals

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DUPLICATE SAMPLE SUMMARY

Client: LiRo Engineers, Inc. **Level:** LOW **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Matrix: Water **Sample ID:** K6449-06 **Client ID:** OW-5MSD

Percent Solids for Sample: NA **Duplicate ID** K6449-07 **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	1420		1410		1		P
Antimony	ug/L	20	437		437		0		P
Arsenic	ug/L	20	426		426		0		P
Barium	ug/L	20	226		228		1		P
Beryllium	ug/L	20	94.0		95.2		1		P
Cadmium	ug/L	20	98.2		98.1		0		P
Calcium	ug/L	20	138000		139000		1		P
Chromium	ug/L	20	211		212		0		P
Cobalt	ug/L	20	105		105		0		P
Copper	ug/L	20	158		158		0		P
Iron	ug/L	20	3580		3570		0		P
Lead	ug/L	20	505		505		0		P
Magnesium	ug/L	20	41700		42100		1		P
Manganese	ug/L	20	379		383		1		P
Mercury	ug/L	20	3.87		3.59		8		CV
Nickel	ug/L	20	264		264		0		P
Potassium	ug/L	20	9190		9190		0		P
Selenium	ug/L	20	1090		1090		0		P
Silver	ug/L	20	38.2		38.1		0		P
Sodium	ug/L	20	58400		58200		0		P
Thallium	ug/L	20	1010		1010		0		P
Vanadium	ug/L	20	150		152		1		P
Zinc	ug/L	20	158		158		0		P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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LABORATORY CONTROL SAMPLE SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB125784BS							
Mercury	ug/L	4.0	4.47		112	80 - 120	CV

Metals

LABORATORY CONTROL SAMPLE SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB125789BS							
Aluminum	ug/L	1000	1040		104	80 - 120	P
Antimony	ug/L	400	413		103	80 - 120	P
Arsenic	ug/L	400	393		98	80 - 120	P
Barium	ug/L	100	110		110	80 - 120	P
Beryllium	ug/L	100	100		100	80 - 120	P
Cadmium	ug/L	100	98.1		98	80 - 120	P
Calcium	ug/L	500	533	J	107	80 - 120	P
Chromium	ug/L	200	225		112	80 - 120	P
Cobalt	ug/L	100	103		103	80 - 120	P
Copper	ug/L	150	162		108	80 - 120	P
Iron	ug/L	1500	1590		106	80 - 120	P
Lead	ug/L	500	499		100	80 - 120	P
Magnesium	ug/L	1000	1030		103	80 - 120	P
Manganese	ug/L	100	107		107	80 - 120	P
Nickel	ug/L	250	257		103	80 - 120	P
Potassium	ug/L	5000	5120		102	80 - 120	P
Selenium	ug/L	1000	975		98	80 - 120	P
Silver	ug/L	37.5	38.8		104	80 - 120	P
Sodium	ug/L	1500	1570		105	80 - 120	P
Thallium	ug/L	1000	1030		103	80 - 120	P
Vanadium	ug/L	150	158		105	80 - 120	P
Zinc	ug/L	100	112		112	80 - 120	P

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ICP SERIAL DILUTIONS

SAMPLE NO.

OW-5L

Lab Name: Chemtech Consulting Group **Contract:** LIRO01

Lab Code: CHEM **Lb No.:** lb106977 **Lab Sample ID :** K6449-05L **SDG No.:** K6449

Matrix (soil/water): Water **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	565		525		7		P
Antimony	11.2	J	31.0	J	177		P
Arsenic	4.02	J	10.8	J	168		P
Barium	125		124	J	0		P
Beryllium	3.00	U	15.0	U			P
Cadmium	3.00	U	15.0	U			P
Calcium	140000		145000		3		P
Chromium	5.00	U	25.0	U			P
Cobalt	2.23	J	75.0	U	100.0		P
Copper	4.52	J	9.87	J	118		P
Iron	2240		2180		3		P
Lead	1.79	J	30.0	U	100.0		P
Magnesium	41900		42700		2		P
Manganese	286		300		5		P
Mercury	0.20	U	1.00	U			CV
Nickel	8.15	J	9.29	J	14		P
Potassium	3880		3400	J	12		P
Selenium	47.7		147		208		P
Silver	5.00	U	25.0	U			P
Sodium	59300		53700		9		P
Thallium	20.0	U	100	U			P
Vanadium	2.06	J	100	U	100.0		P
Zinc	53.9		51.2	J	5		P

METAL PREPARATION & INSTRUMENT DATA

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Metals

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Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: P4 **Preparation Method:**

Analyte	Wave- length (nm)	MDL	LOQ/CRQL	Date:
LIQUID				
Method:	**6010D**			
Aluminum	396	5.29	50.0	
Antimony	207	2.03	25.0	
Arsenic	189	0.68	10.0	
Barium	493	3.99	50.0	
Beryllium	235	0.20	3.00	
Cadmium	227	0.17	3.00	
Calcium	374	88.5	1000	
Chromium	268	1.33	5.00	
Cobalt	229	1.09	15.0	
Copper	225	0.49	10.0	
Iron	240	7.85	50.0	
Lead	220	1.43	6.00	
Magnesium	279	104	1000	
Manganese	258	0.98	10.0	
Nickel	232	1.69	20.0	
Potassium	766	179	1000	
Selenium	196	2.79	10.0	
Silver	328	0.17	5.00	
Sodium	590	169	1000	
Thallium	191	2.88	20.0	
Vanadium	292	1.39	20.0	
Zinc	214	4.81	20.0	
Method:	**6010D**			
Aluminum	396	5.29	50.0	
Antimony	207	2.03	25.0	
Arsenic	189	0.68	10.0	
Barium	493	3.99	50.0	
Beryllium	235	0.20	3.00	
Cadmium	227	0.17	3.00	
Calcium	374	88.5	1000	
Chromium	268	1.33	5.00	
Cobalt	229	1.09	15.0	
Copper	225	0.49	10.0	
Iron	240	7.85	50.0	
Lead	220	1.43	6.00	
Magnesium	279	104	1000	
Manganese	258	0.98	10.0	
Nickel	232	1.69	20.0	
Potassium	766	179	1000	
Selenium	196	2.79	10.0	
Silver	328	0.17	5.00	
Sodium	590	169	1000	
Thallium	191	2.88	20.0	

Metals

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Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: P4 **Preparation Method:**

Analyte	Wave- length (nm)	MDL	LOQ/CRQL	Date:
Vanadium	292	1.39	20.0	
Zinc	214	4.81	20.0	

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Metals

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Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: CV1 **Preparation Method:**

Analyte	Wave- length (nm)	MDL	LOQ/CRQL	Date:
LIQUID				
Method: **7470A**				
Mercury	254	0.043	0.20	

Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	Ag
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	-0.0001030	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000090	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000840	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0001620	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0001070	0.0000000	0.0000280	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	-0.0000440	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000200	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001280	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001170	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001900	0.0000000	0.0000000

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: As	Ba	Be	Cd	Co
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0001570
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0004170
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0002660
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0018500
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Cr	Cu	K	Mn	Mo
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0308240
Antimony	206.833	0.0013816	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	-0.0011220	0.0000000	0.0000000	0.0000000	0.0015300
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	-0.0000740	-0.0003180
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000600
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0002280	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	-0.0011900
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0014660
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0003060	0.0000000	0.0000000	0.0001250	-0.0013650
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	-0.0137700
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0020550
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0006680	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0002250	0.0000000	0.0000000	0.0011640	0.0000000
Vanadium	292.402	-0.0032600	0.0000000	0.0000000	-0.0220050	-0.0003720
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Na	Ni	Pb	Sb	Se
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	-0.0004160	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	-0.0000930	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0001600	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0049290	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0002444	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0057000	0.0000000	0.0000000	0.0000000

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Case No.:** K6449 **SAS No.:** K6449

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sn	Ti	Tl	V	Zn
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	-0.0018200	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	-0.0040370	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	-0.0346560	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

METAL PREPARATION & ANALYICAL SUMMARY

Metals
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SAMPLE PREPARATION SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Method:**

Case No.: K6449 **SAS No.:** K6449

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB125784**						
K6449-01	LW-04	SAM	WATER	12/30/2019	30.0	30.0	
K6449-02	LW-03	SAM	WATER	12/30/2019	30.0	30.0	
K6449-03	LW-05	SAM	WATER	12/30/2019	30.0	30.0	
K6449-04	OW-4	SAM	WATER	12/30/2019	30.0	30.0	
K6449-05	OW-5	SAM	WATER	12/30/2019	30.0	30.0	
K6449-05DUP	OW-5DUP	DUP	WATER	12/30/2019	30.0	30.0	
K6449-06	OW-5MS	MS	WATER	12/30/2019	30.0	30.0	
K6449-07	OW-5MSD	MSD	WATER	12/30/2019	30.0	30.0	
K6449-08	OW-2	SAM	WATER	12/30/2019	30.0	30.0	
K6449-09	OW-1	SAM	WATER	12/30/2019	30.0	30.0	
K6449-10	FIELD-BLANK	SAM	WATER	12/30/2019	30.0	30.0	
K6449-11	DUPLICATE	SAM	WATER	12/30/2019	30.0	30.0	
PB125784BL	PB125784BL	MB	WATER	12/30/2019	30.0	30.0	
PB125784BS	PB125784BS	LCS	WATER	12/30/2019	30.0	30.0	

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Metals
- 13 -
SAMPLE PREPARATION SUMMARY

Client: LiRo Engineers, Inc. **SDG No.:** K6449

Contract: LIRO01 **Lab Code:** CHEM **Method:**

Case No.: K6449 **SAS No.:** K6449

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB125789**						
K6449-01	LW-04	SAM	WATER	12/30/2019	50.0	25.0	
K6449-02	LW-03	SAM	WATER	12/30/2019	50.0	25.0	
K6449-03	LW-05	SAM	WATER	12/30/2019	50.0	25.0	
K6449-04	OW-4	SAM	WATER	12/30/2019	50.0	25.0	
K6449-05	OW-5	SAM	WATER	12/30/2019	50.0	25.0	
K6449-05DUP	OW-5DUP	DUP	WATER	12/30/2019	50.0	25.0	
K6449-06	OW-5MS	MS	WATER	12/30/2019	50.0	25.0	
K6449-07	OW-5MSD	MSD	WATER	12/30/2019	50.0	25.0	
K6449-08	OW-2	SAM	WATER	12/30/2019	50.0	25.0	
K6449-09	OW-1	SAM	WATER	12/30/2019	50.0	25.0	
K6449-10	FIELD-BLANK	SAM	WATER	12/30/2019	50.0	25.0	
K6449-11	DUPLICATE	SAM	WATER	12/30/2019	50.0	25.0	
PB125789BL	PB125789BL	MB	WATER	12/30/2019	50.0	25.0	
PB125789BS	PB125789BS	LCS	WATER	12/30/2019	50.0	25.0	

metals
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ANALYSIS RUN LOG

Client: LiRo Engineers, Inc. **Contract:** LIRO01

Lab code: CHEM **Case no.:** K6449 **Sas no.:** K6449 **Sdg no.:** K6449

Instrument id number: **Method:** **Run number:** LB106964

Start date: 12/30/2019 **End date:** 12/30/2019

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1330	HG
S0.2	S0.2	1	1338	HG
S2.5	S2.5	1	1340	HG
S5	S5	1	1342	HG
S7.5	S7.5	1	1348	HG
S10	S10	1	1353	HG
ICV43	ICV43	1	1356	HG
ICB43	ICB43	1	1358	HG
CCV83	CCV83	1	1401	HG
CCB83	CCB83	1	1403	HG
CRA	CRA	1	1407	HG
CCV84	CCV84	1	1438	HG
CCB84	CCB84	1	1440	HG
CCV85	CCV85	1	1512	HG
CCB85	CCB85	1	1514	HG
PB125784BL	PB125784BL	1	1520	HG
PB125784BS	PB125784BS	1	1523	HG
K6449-01	LW-04	1	1529	HG
K6449-02	LW-03	1	1531	HG
K6449-03	LW-05	1	1533	HG
K6449-04	OW-4	1	1535	HG
CCV86	CCV86	1	1540	HG
CCB86	CCB86	1	1542	HG
K6449-05	OW-5	1	1545	HG
K6449-05DUP	OW-5DUP	1	1547	HG
K6449-06	OW-5MS	1	1553	HG
K6449-07	OW-5MSD	1	1555	HG
K6449-08	OW-2	1	1557	HG
K6449-09	OW-1	1	1559	HG
K6449-10	FIELD-BLANK	1	1601	HG
K6449-11	DUPLICATE	1	1604	HG
CCV87	CCV87	1	1610	HG
CCB87	CCB87	1	1612	HG
K6449-05L	OW-5L	5	1614	HG
CCV88	CCV88	1	1621	HG
CCB88	CCB88	1	1623	HG

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metals
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ANALYSIS RUN LOG

Client: LiRo Engineers, Inc. **Contract:** LIRO01

Lab code: CHEM **Case no.:** K6449 **Sas no.:** K6449 **Sdg no.:** K6449

Instrument id number: **Method:** **Run number:** LB106977

Start date: 12/30/2019 **End date:** 12/30/2019

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1152	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S1	S1	1	1156	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1201	Ca,K,Mg,Na
S3	S3	1	1205	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1208	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1212	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICV01	ICV01	1	1216	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLICV01	LLICV01	1	1221	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1225	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CRI01	CRI01	1	1229	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1233	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1237	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1241	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLCCV01	LLCCV01	1	1258	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1304	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1522	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1526	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV03	CCV03	1	1614	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB03	CCB03	1	1618	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV04	CCV04	1	1723	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB04	CCB04	1	1727	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-01	LW-04	1	1747	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-02	LW-03	1	1751	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-03	LW-05	1	1755	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-04	OW-4	1	1759	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-05	OW-5	1	1803	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-05DUP	OW-5DUP	1	1807	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV05	CCV05	1	1812	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB05	CCB05	1	1816	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-05L	OW-5L	5	1820	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-06	OW-5MS	1	1824	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-07	OW-5MSD	1	1828	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-08	OW-2	1	1835	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-09	OW-1	1	1840	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-10	FIELD-BLANK	1	1844	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
K6449-11	DUPLICATE	1	1848	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV06	CCV06	1	1852	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB06	CCB06	1	1856	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn

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metals
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ANALYSIS RUN LOG

Client: LiRo Engineers, Inc. **Contract:** LIRO01

Lab code: CHEM **Case no.:** K6449 **Sas no.:** K6449 **Sdg no.:** K6449

Instrument id number: **Method:** **Run number:** LB106993

Start date: 12/31/2019 **End date:** 12/31/2019

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1415	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S1	S1	1	1419	Ag,Al,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1423	Ca,K,Mg,Na
S3	S3	1	1427	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1431	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1435	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICV01	ICV01	1	1439	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLICV01	LLICV01	1	1443	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1447	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CRI01	CRI01	1	1451	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1455	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1459	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1503	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLCCV01	LLCCV01	1	1507	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1511	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB125789BL	PB125789BL	1	1551	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB125789BS	PB125789BS	1	1555	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1621	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1625	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV03	CCV03	1	1638	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB03	CCB03	1	1642	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn

SHIPPING DOCUMENTS

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO.
QUOTE NO. K6449
COC Number 040175

9
9.1

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: LiRO
ADDRESS: 690 Delaware Ave.
CITY: Buffalo STATE: NY ZIP: 14209
ATTENTION: Jon Williams
PHONE: 716 882 5476 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Workforce training Center
PROJECT NO.: 15-029-1054 LOCATION: 683 Northland
PROJECT MANAGER: Jon Williams
e-mail: williamsJ@LiRO.com
PHONE: 716 882 5476 FAX:

CLIENT BILLING INFORMATION

BILL TO: SAME PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: ~~10~~ DAYS *
HARD COPY: 10 DAYS *
EDD: 10 DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
* STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ LEVEL 1: Results only
☒ Others ASP-B
☐ LEVEL 2: Results + QC
☐ LEVEL 3: Results (plus results raw data) + QC
☐ LEVEL 4: Results + QC (all raw data)
☒ EDD Format: EQuIS V4/ASP-B

ANALYSIS

1 VOCs 2 SVOCs 3 PCBs 4 TAL Metals 5 6 7 8 9

PRESERVATIVES

1 E A 2 E 3 E 4 E B 5 6 7 8 9

COMMENTS

← Specify Preservatives
A – HCl B – HNO_3
C – H_2SO_4 D – NaOH
E – ICE F – Other

	CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	1	2	3	4	5	6	7	8	9
1.		LW-04	water		X	12/18/19	1232	5	X	X	X	X					
2.		LW-03				"	315										
3.		LW-05				12/19/19	130										
4.		OW-4				12/20/19	245										
5.		OW-5				12/23/19	950										
6.		OW-5 MS				"	"										
7.		OW-5 MSD				"	"										
8.		OW-2				"	1230										
9.		OW-1				"	120										
10.		Field Blank				"	130										

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1. Kris Cheney	12/26/19 @ 500	1.
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
2.	12-27-19 9:00	2.
RELINQUISHED BY:	DATE/TIME:	RECEIVED FOR LAB BY:
3.		3.

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant
Cooler Temp. 3-3.C
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:
Ice in Cooler?: yes

Page 1 of 2

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☐ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT
Shipment Complete: ☐ YES ☐ NO

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO.
QUOTE NO. K6449
COC Number 040176

CLIENT INFORMATION (REPORT TO BE SENT TO:)

COMPANY:
ADDRESS: SAME
CITY: STATE: ZIP:
ATTENTION:
PHONE: FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME:
PROJECT NO.: LOCATION: SAME
PROJECT MANAGER:
e-mail: SAME
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS: SAME
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: DAYS *
HARD COPY: DAYS *
EDD: SAME DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
* STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ LEVEL 1: Results only ☐ Others
☐ LEVEL 2: Results + QC
☐ LEVEL 3: Results (plus results raw data) + QC SAME
☐ LEVEL 4: Results + QC (all raw data)
☐ EDD Format:

ANALYSIS

1 VOCs 2 SVOCs 3 PCBs 4 TAL Metals 5 6 7 8 9

PRESERVATIVES

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	1	2	3	4	5	6	7	8	9
1.	Duplicate	water		X	—	—	5	X	X	X	X					
2.	Trip - Blank	"		X	—	—	2	↓								
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

A E 1 | E 2 | E 3 | B E 4

COMMENTS

← Specify Preservatives
A – HCl B – HNO_3
C – H_2SO_4 D – NaOH
E – ICE F – Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1. Kris Chaney	12/6/19 500	1.
RELINQUISHED BY:	DATE/TIME: 9:00 12-27-19	RECEIVED BY:
2.		2.
RELINQUISHED BY:	DATE/TIME:	RECEIVED FOR LAB BY:
3.		3.

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant
Cooler Temp. 5.3 °C
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:
Ice in Cooler?: YES

Page 2 of 2

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☐ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☐ YES ☐ NO

Revision 8/2007

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

ORIGIN ID:CDWA (716) 882-5476
KRIS CHARNEY
LIRO ENGINEERS
690 DELAWARE AVE

BUFFALO, NY 14209
UNITED STATES US

SHIP DATE: 07OCT19
ACTWGT: 20.00 LB MAN
CAD: 0403399/CAFE3211

TO GEORGE
CHEMTECH
284 SHEFFIELD ST

MOUNTIANSIDE NJ 07092
(908) 728-3144
INV:
PO:
REF:
DEPT:

RMA:

551C3/2A3C/104C

FedEx Express

J181118060501av

FedEx
TRK# 0221 4846 1860 7194

FRI - 27 DEC 3:00P
STANDARD OVERNIGHT

E2 KBCA K6449

07092
NJ-US EWR

EXP 06/20

CR 12-27-19 9:00

3.3 lb

ORIGIN ID:CDWA (716) 882-5476
KRIS CHARNEY
LIRO ENGINEERS
690 DELAWARE AVE

BUFFALO, NY 14209
UNITED STATES US

SHIP DATE: 07OCT19
ACTWGT: 20.00 LB MAN
CAD: 0403399/CAFE3211

TO GEORGE
CHEMTECH
284 SHEFFIELD ST

MOUNTIANSIDE NJ 07092
(908) 728-3144
INV:
PO:
REF:
DEPT:

RMA:

551C3/2A3C/104C

FedEx Express

J181118060501av

FedEx
TRK# 0221 4846 1860 7210

FRI - 27 DEC 3:00P
STANDARD OVERNIGHT

E2 KBCA K6449

07092
NJ-US EWR

EXP 06/20

#2636780 12/26 567J2/18DD/05A2

CR 12-27-19 9:00

3.7 lb

ORIGIN ID:CDWA (716) 882-5476
KRIS CHARNEY
LIRO ENGINEERS
690 DELAWARE AVE

BUFFALO, NY 14209
UNITED STATES US

SHIP DATE: 07OCT19
ACTWGT: 20.00 LB MAN
CAD: 0403399/CAFE3211

TO GEORGE
CHEMTECH
284 SHEFFIELD ST

MOUNTIANSIDE NJ 07092
(908) 728-3144 REF:
INV:
PO: DEPT:

RMA:

551C3/2B3C/10AC

FedEx Express

J181118060501uv

FedEx
TRK# 0221 4846 1860 7209

FRI - 27 DEC 3:00P
STANDARD OVERNIGHT

E2 KBCA

K6449

07092
NJ-US EWR

#2636780 12/26 567J2/18DD/05A2

Cl 12-27-19 9:00 4.1

From: Williams, Jon <williamsj@liro.com>
Sent: Friday, December 27, 2019 10:38 AM
To: s.chaim@chemtech.net
Cc: Samantha@chemtech.net
Subject: RE: k6449 - BUDC - 683 Northland Avenue

Hi Steven,

Standard turnaround time for these samples is perfect.

Thanks,

Jon

From: Steven Chaimowitz <S.Chaim@chemtech.net>
Sent: Friday, December 27, 2019 10:33 AM
To: Williams, Jon <williamsj@liro.com>
Cc: Samantha@chemtech.net
Subject: k6449 - BUDC - 683 Northland Avenue

Hi Jon,
Please see the attached. Please confirm standard TAT is okay.

Thank you,

Steven Chaimowitz
Project Manager

CHEMTECH

284 Sheffield St. | Mountainside, NJ 07092
Direct: (908) 728-3147
s.chaim@chemtech.net | www.chemtech.net

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CHEMTECH is an equal opportunity employer

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	EP-W-14-030
Connecticut	PH-0649
DOD ELAP (L-A-B)	L2219
Florida	E87935
Maine	2012025
Maryland	296
New Hampshire	255413
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	P330-13-00380
Texas	T104704488-13-5

Attachment 5
Data Usability Summary Report (DUSR)

Data Usability Summary Report

Vali-Data of WNY, LLC
1514 Davis Rd.
West Falls, NY 14170

683 Northland Ave.
Chemtech SDG#K6449
February 12, 2020
Sampling date: 12/18, 20, 23/2019

Prepared by:
Jodi Zimmerman
Vali-Data of WNY, LLC
1514 Davis Rd.
West Falls, NY 14170

DELIVERABLES

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for LiRo Engineers, project located at 683 Northland Ave., Project #15-029-1054, Chemtech, SDG#K6449, submitted to Vali-Data of WNY, LLC on January 31, 2020. This DUSR has been prepared in general compliance with USEPA National Functional Guidelines(2012, 2013, 2015) and NYSDEC Analytical Services Protocols. The laboratory performed the analyses using USEPA method Volatile Organics (8260C), Semi-Volatile Organics (8270D), PCB (8082A), Inorganics (6010D) and Mercury (7470A).

VOLATILE ORGANIC COMPOUNDS

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES
The data are acceptable for use except where qualified below in Compound Quantitation.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met.
Data was not reported to 3 significant figures. This does not affect the usability of the data.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met.

INTERNAL STANDARD (IS)
All criteria were met.

SURROGATE SPIKE RECOVERIES
All criteria were met.

METHOD BLANK
All the criteria were met.

FIELD DUPLICATE SAMPLE PRECISION
All criteria were met.

LABORATORY CONTROL SAMPLES
All criteria were met.

MS/MSD
All criteria were met.

COMPOUND QUANTITATION
All criteria were met except Acetone was detected above the MDL, below the reporting limit and is qualified as estimated in Field Blank. Associated samples in which this target analyte was detected above the MDL and below the reporting limit should be reported with the reporting limit and 'undetected'. Associated samples in which this target analyte was detected above the reporting limit should be qualified as estimated high.

INITIAL CALIBRATION
All criteria were met.

CONTINUING CALIBRATION
All criteria were met.

GC/MS PERFORMANCE CHECK
All criteria were met.

SEMIVOLATILE ORGANIC COMPOUNDS

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS) Area Performance
- Surrogate Spike Recoveries
- Method Blank
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration
- GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES
The data are acceptable for use but are qualified below in Holding Times and Compound Quantitation.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met except the incorrect RPD values were recorded on the MS/MSD summary in the original package. Updated forms are attached.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met except for samples LW-03, LW-04 and LW-05. Target analytes detected in these samples should be qualified as estimated.

INTERNAL STANDARD (IS)
All criteria were met.

SURROGATE SPIKE RECOVERIES
All criteria were met.

METHOD BLANK
All the criteria were met.

FIELD DUPLICATE SAMPLE PRECISION
All the criteria were met.

LABORATORY CONTROL SAMPLES
All criteria were met.

MS/MSD
All criteria were met except the concentration of Pentachlorophenol exceeded the calibration limits in OW-5MS and is qualified with an 'E'.

COMPOUND QUANTITATION
All criteria were met except Phenol was detected above the MDL, below the reporting limit and is qualified as estimated in Field Blank. Associated samples in which this target analyte was detected above the MDL and below the reporting limit should be reported with the reporting limit and 'undetected'. Associated samples in which this target analyte was detected above the reporting limit should be qualified as estimated high.

INITIAL CALIBRATION
All criteria were met.
Alternate forms of regression were performed on target analytes whose %RSD >20.0%, with acceptable results.

CONTINUING CALIBRATION
All criteria were met.

GC/MS PERFORMANCE CHECK
All criteria were met.

PCB

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Surrogate Spike Recoveries

- Method Blank
- Field Duplicate Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES
The data are acceptable for use except where qualified below in Holding Times and MS/MSD.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met except the narrative incorrectly recorded OW-4 as being outside hold time. Since it was within hold time, no further action is required.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met except for samples LW-03, LW-04 and LW-05. Target analytes detected in these samples should be qualified as estimated.

SURROGATE SPIKE RECOVERIES
All criteria were met.
Several surrogates were outside laboratory QC limits but within EPA limits, so no further action is required.

METHOD BLANK
All the criteria were met.

FIELD DUPLICATE SAMPLE PRECISION
All the criteria were met.

LABORATORY CONTROL SAMPLES
All criteria were met.

MS/MSD
All criteria were met except the %Rec of Aroclor 1016 and Aroclor 1260 was outside QC limits high in OW-5MS/MSD. These target analytes should be qualified as estimated high in OW-5MS/MSD and OW-5, if detected.

COMPOUND QUANTITATION
All criteria were met.

INITIAL CALIBRATION
All criteria were met.

CONTINUING CALIBRATION
All criteria were met.

METALS

The following items/criteria were reviewed for this analytical suite:

- -Data Completeness
- -Narrative and Data Reporting Forms
- -Chain of Custody and Traffic Reports
- -Holding Times
- -Blanks
- -Laboratory Control Sample
- -MS/MSD/Duplicate
- -Field Duplicate
- -Serial Dilution
- -Compound Quantitation
- -Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES
The data are acceptable for use but are qualified below in Blanks, MS/MSD/Duplicate, Compound Quantitation and Calibration.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met.

BLANKS
All criteria were met except As was detected above the MDL, below the reporting limit and is qualified as estimated in ICB01, CCB02, CCB03 and CCB06 run on 12/30/2019 and CCB03 run on 12/31/2019. Associated samples in which this target analyte was detected above the MDL and below the reporting limit should be reported with the reporting limit and 'undetected'. Associated samples in which this target analyte was detected above the reporting limit should be qualified as estimated high.

LABORATORY CONTROL SAMPLE
All criteria were met.

MS/MSD/DUPLICATE
All criteria were met except the RPD of As and V was outside QC limits between OW-5MS and OW-5MSD. These target analytes should be qualified as estimated in OW-5 and OW-5MS/MSD.

FIELD DUPLICATE
All criteria were met.

SERIAL DILUTION
All criteria were met.

COMPOUND QUANTITATION
All criteria were met except Ag was detected above the MDL, below the reporting limit and is qualified as estimated in Field Blank. Associated samples in which this target analyte was detected above the MDL and below the reporting limit should be reported with the reporting limit and 'undetected'. Associated samples in which this target analyte was detected above the reporting limit should be qualified as estimated high.

CALIBRATION
All criteria were met except the %Rec of Be, Mn and Zn was outside ASP QC limits, high, in LLICV01 run on 12/30/2019. The %Rec of Al, Sb, Ag and Zn was outside ASP QC limits, high, in LLCCV01 run on 12/30/2019. The %Rec of Sb, Be, Pb, Mn, Tl and Zn was outside ASP QC limits, high, in LLICV01 run on 12/31/2019. The %Rec of Sb, Be, Fe, Pb, Mn, Tl, Ag and Zn was outside ASP QC limits, high, in LLCCV01 run on 12/31/2019. These target analytes should be qualified as estimate high in the associated samples, blanks and spikes, if detected.
The %Rec of As was outside QC limits, low in LLICV01. The %Rec of Tl was outside QC limits, low in ICSAB01 run on 12/30/2019. The %Rec of Se was outside QC limits, low in ICSAB01 run on 12/31/2019.These target analytes should be qualified as estimated in the associated samples,

blanks and spikes.
The %Rec of Cu, Mn and Ni was outside QC limits, high in ICSA01 run on 12/30/2019. The %Rec of Cu, Cd, Mn and Ni was outside QC limits, high in ICSA01 run on 12/31/2019. These target analytes should be qualified as estimated high, if detected, in the associated samples, blanks and spikes.

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-04-20191218	K6449-01	Aluminum		U		Y
LW-04-20191218	K6449-01	Antimony	9.68	J	JH	Y
LW-04-20191218	K6449-01	Arsenic	10	J	U	Y
LW-04-20191218	K6449-01	Barium	22.5	J		Y
LW-04-20191218	K6449-01	Beryllium		U		Y
LW-04-20191218	K6449-01	Cadmium		U		Y
LW-04-20191218	K6449-01	Calcium	86600			Y
LW-04-20191218	K6449-01	Chromium, Total		U		Y
LW-04-20191218	K6449-01	Cobalt		U		Y
LW-04-20191218	K6449-01	Copper	3.4	J	JH	Y
LW-04-20191218	K6449-01	Iron	122			Y
LW-04-20191218	K6449-01	Lead		U		Y
LW-04-20191218	K6449-01	Magnesium	15500			Y
LW-04-20191218	K6449-01	Manganese	20.3		JH	Y
LW-04-20191218	K6449-01	Nickel		U		Y
LW-04-20191218	K6449-01	Potassium	2570			Y
LW-04-20191218	K6449-01	Selenium	44.4			Y
LW-04-20191218	K6449-01	Silver		U		Y
LW-04-20191218	K6449-01	Sodium	42000			Y
LW-04-20191218	K6449-01	Thallium		U	UJ	Y
LW-04-20191218	K6449-01	Vanadium		U		Y
LW-04-20191218	K6449-01	Zinc	9.87	J	JH	Y
LW-03-20191218	K6449-02	Aluminum		U		Y
LW-03-20191218	K6449-02	Antimony	12.2	J	JH	Y
LW-03-20191218	K6449-02	Arsenic	10	J	U	Y
LW-03-20191218	K6449-02	Barium	76.3			Y
LW-03-20191218	K6449-02	Beryllium		U		Y
LW-03-20191218	K6449-02	Cadmium		U		Y
LW-03-20191218	K6449-02	Calcium	124000			Y
LW-03-20191218	K6449-02	Chromium, Total		U		Y
LW-03-20191218	K6449-02	Cobalt	1.53	J		Y
LW-03-20191218	K6449-02	Copper	4.73	J	JH	Y
LW-03-20191218	K6449-02	Iron	128			Y
LW-03-20191218	K6449-02	Lead		U		Y
LW-03-20191218	K6449-02	Magnesium	24700			Y
LW-03-20191218	K6449-02	Manganese	259		JH	Y
LW-03-20191218	K6449-02	Nickel	3.04	J	JH	Y
LW-03-20191218	K6449-02	Potassium	9500			Y
LW-03-20191218	K6449-02	Selenium	49.3			Y
LW-03-20191218	K6449-02	Silver		U		Y
LW-03-20191218	K6449-02	Sodium	61300			Y
LW-03-20191218	K6449-02	Thallium		U	UJ	Y
LW-03-20191218	K6449-02	Vanadium		U		Y
LW-03-20191218	K6449-02	Zinc	12.8	J	JH	Y
LW-05-20191219	K6449-03	Aluminum		U		Y
LW-05-20191219	K6449-03	Antimony	13.5	J	JH	Y
LW-05-20191219	K6449-03	Arsenic	13.4		JH	Y
LW-05-20191219	K6449-03	Barium	182			Y
LW-05-20191219	K6449-03	Beryllium		U		Y
LW-05-20191219	K6449-03	Cadmium		U		Y
LW-05-20191219	K6449-03	Calcium	191000			Y
LW-05-20191219	K6449-03	Chromium, Total		U		Y
LW-05-20191219	K6449-03	Cobalt	1.65	J		Y
LW-05-20191219	K6449-03	Copper	3.32	J	JH	Y
LW-05-20191219	K6449-03	Iron	2160			Y
LW-05-20191219	K6449-03	Lead	1.55	J		Y
LW-05-20191219	K6449-03	Magnesium	31600			Y
LW-05-20191219	K6449-03	Manganese	509		JH	Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-05-20191219	K6449-03	Nickel	1.96	J	JH	Y
LW-05-20191219	K6449-03	Potassium	11300			Y
LW-05-20191219	K6449-03	Selenium	52.5			Y
LW-05-20191219	K6449-03	Silver		U		Y
LW-05-20191219	K6449-03	Sodium	783000			Y
LW-05-20191219	K6449-03	Thallium		U	UJ	Y
LW-05-20191219	K6449-03	Vanadium		U		Y
LW-05-20191219	K6449-03	Zinc	11.9	J	JH	Y
OW-4-20191220	K6449-04	Aluminum		U		Y
OW-4-20191220	K6449-04	Antimony	12.1	J	JH	Y
OW-4-20191220	K6449-04	Arsenic	10	J	U	Y
OW-4-20191220	K6449-04	Barium	78.9			Y
OW-4-20191220	K6449-04	Beryllium		U		Y
OW-4-20191220	K6449-04	Cadmium		U		Y
OW-4-20191220	K6449-04	Calcium	120000			Y
OW-4-20191220	K6449-04	Chromium, Total		U		Y
OW-4-20191220	K6449-04	Cobalt	2.32	J		Y
OW-4-20191220	K6449-04	Copper	3.49	J	JH	Y
OW-4-20191220	K6449-04	Iron	224			Y
OW-4-20191220	K6449-04	Lead		U		Y
OW-4-20191220	K6449-04	Magnesium	48500			Y
OW-4-20191220	K6449-04	Manganese	587		JH	Y
OW-4-20191220	K6449-04	Nickel	7.46	J	JH	Y
OW-4-20191220	K6449-04	Potassium	2030			Y
OW-4-20191220	K6449-04	Selenium	51.8			Y
OW-4-20191220	K6449-04	Silver		U		Y
OW-4-20191220	K6449-04	Sodium	30200			Y
OW-4-20191220	K6449-04	Thallium		U	UJ	Y
OW-4-20191220	K6449-04	Vanadium		U		Y
OW-4-20191220	K6449-04	Zinc	91.7		JH	Y
OW-5-20191223	K6449-05	Aluminum	565		JH	Y
OW-5-20191223	K6449-05	Antimony	11.2	J	JH	Y
OW-5-20191223	K6449-05	Arsenic	10	J	U	Y
OW-5-20191223	K6449-05	Barium	125			Y
OW-5-20191223	K6449-05	Beryllium		U		Y
OW-5-20191223	K6449-05	Cadmium		U		Y
OW-5-20191223	K6449-05	Calcium	140000			Y
OW-5-20191223	K6449-05	Chromium, Total		U		Y
OW-5-20191223	K6449-05	Cobalt	2.23	J		Y
OW-5-20191223	K6449-05	Copper	4.52	J	JH	Y
OW-5-20191223	K6449-05	Iron	2240			Y
OW-5-20191223	K6449-05	Lead	1.79	J		Y
OW-5-20191223	K6449-05	Magnesium	41900			Y
OW-5-20191223	K6449-05	Manganese	286		JH	Y
OW-5-20191223	K6449-05	Nickel	8.15	J	JH	Y
OW-5-20191223	K6449-05	Potassium	3880			Y
OW-5-20191223	K6449-05	Selenium	47.7			Y
OW-5-20191223	K6449-05	Silver		U		Y
OW-5-20191223	K6449-05	Sodium	59300			Y
OW-5-20191223	K6449-05	Thallium		U	UJ	Y
OW-5-20191223	K6449-05	Vanadium	2.06	J	J	Y
OW-5-20191223	K6449-05	Zinc	53.9		JH	Y
OW-5MS	K6449-06	Aluminum	1420		JH	Y
OW-5MS	K6449-06	Antimony	437		JH	Y
OW-5MS	K6449-06	Arsenic	426		J	Y
OW-5MS	K6449-06	Barium	226			Y
OW-5MS	K6449-06	Beryllium	94		JH	Y
OW-5MS	K6449-06	Cadmium	98.2			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5MS	K6449-06	Calcium	138000			Y
OW-5MS	K6449-06	Chromium, Total	211			Y
OW-5MS	K6449-06	Cobalt	105			Y
OW-5MS	K6449-06	Copper	158		JH	Y
OW-5MS	K6449-06	Iron	3580			Y
OW-5MS	K6449-06	Lead	505			Y
OW-5MS	K6449-06	Magnesium	41700			Y
OW-5MS	K6449-06	Manganese	379			Y
OW-5MS	K6449-06	Nickel	264		JH	Y
OW-5MS	K6449-06	Potassium	9190			Y
OW-5MS	K6449-06	Selenium	1090			Y
OW-5MS	K6449-06	Silver	38.2		JH	Y
OW-5MS	K6449-06	Sodium	58400			Y
OW-5MS	K6449-06	Thallium	1010		J	Y
OW-5MS	K6449-06	Vanadium	150		J	Y
OW-5MS	K6449-06	Zinc	158		JH	Y
OW-5MSD	K6449-07	Aluminum	1410		JH	Y
OW-5MSD	K6449-07	Antimony	437		JH	Y
OW-5MSD	K6449-07	Arsenic	426		J	Y
OW-5MSD	K6449-07	Barium	228			Y
OW-5MSD	K6449-07	Beryllium	95.2		JH	Y
OW-5MSD	K6449-07	Cadmium	98.1			Y
OW-5MSD	K6449-07	Calcium	139000			Y
OW-5MSD	K6449-07	Chromium, Total	212			Y
OW-5MSD	K6449-07	Cobalt	105			Y
OW-5MSD	K6449-07	Copper	158		JH	Y
OW-5MSD	K6449-07	Iron	3570			Y
OW-5MSD	K6449-07	Lead	505			Y
OW-5MSD	K6449-07	Magnesium	42100			Y
OW-5MSD	K6449-07	Manganese	383		JH	Y
OW-5MSD	K6449-07	Nickel	264		JH	Y
OW-5MSD	K6449-07	Potassium	9190			Y
OW-5MSD	K6449-07	Selenium	1090			Y
OW-5MSD	K6449-07	Silver	38.1		JH	Y
OW-5MSD	K6449-07	Sodium	58200			Y
OW-5MSD	K6449-07	Thallium	1010		J	Y
OW-5MSD	K6449-07	Vanadium	152		J	Y
OW-5MSD	K6449-07	Zinc	158		JH	Y
OW-2-20191223	K6449-08	Aluminum	17.1	J	JH	Y
OW-2-20191223	K6449-08	Antimony	12.4	J	JH	Y
OW-2-20191223	K6449-08	Arsenic	10	J	U	Y
OW-2-20191223	K6449-08	Barium	100			Y
OW-2-20191223	K6449-08	Beryllium		U		Y
OW-2-20191223	K6449-08	Cadmium		U		Y
OW-2-20191223	K6449-08	Calcium	111000			Y
OW-2-20191223	K6449-08	Chromium, Total		U		Y
OW-2-20191223	K6449-08	Cobalt	1.73	J		Y
OW-2-20191223	K6449-08	Copper	5.9	J	JH	Y
OW-2-20191223	K6449-08	Iron	1760			Y
OW-2-20191223	K6449-08	Lead		U		Y
OW-2-20191223	K6449-08	Magnesium	11700			Y
OW-2-20191223	K6449-08	Manganese	308		JH	Y
OW-2-20191223	K6449-08	Nickel	5.61	J	JH	Y
OW-2-20191223	K6449-08	Potassium	37500			Y
OW-2-20191223	K6449-08	Selenium	47.9			Y
OW-2-20191223	K6449-08	Silver		U		Y
OW-2-20191223	K6449-08	Sodium	136000			Y
OW-2-20191223	K6449-08	Thallium		U	UJ	Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-2-20191223	K6449-08	Vanadium		U		Y
OW-2-20191223	K6449-08	Zinc	22.7		JH	Y
OW-1-20191223	K6449-09	Aluminum	142			Y
OW-1-20191223	K6449-09	Antimony	13.6	J	JH	Y
OW-1-20191223	K6449-09	Arsenic	10	J	U	Y
OW-1-20191223	K6449-09	Barium	87.6			Y
OW-1-20191223	K6449-09	Beryllium		U		Y
OW-1-20191223	K6449-09	Cadmium		U		Y
OW-1-20191223	K6449-09	Calcium	182000			Y
OW-1-20191223	K6449-09	Chromium, Total		U		Y
OW-1-20191223	K6449-09	Cobalt	2.2	J		Y
OW-1-20191223	K6449-09	Copper	19.1		JH	Y
OW-1-20191223	K6449-09	Iron	4090			Y
OW-1-20191223	K6449-09	Lead	5.15	J		Y
OW-1-20191223	K6449-09	Magnesium	31900			Y
OW-1-20191223	K6449-09	Manganese	3140		JH	Y
OW-1-20191223	K6449-09	Nickel	7.42	J	JH	Y
OW-1-20191223	K6449-09	Potassium	18400			Y
OW-1-20191223	K6449-09	Selenium	49.6			Y
OW-1-20191223	K6449-09	Silver	5	J	U	Y
OW-1-20191223	K6449-09	Sodium	120000			Y
OW-1-20191223	K6449-09	Thallium		U	UJ	Y
OW-1-20191223	K6449-09	Vanadium		U		Y
OW-1-20191223	K6449-09	Zinc	31		JH	Y
FIELD-BLANK-20191223	K6449-10	Aluminum		U		Y
FIELD-BLANK-20191223	K6449-10	Antimony		U		Y
FIELD-BLANK-20191223	K6449-10	Arsenic		U		Y
FIELD-BLANK-20191223	K6449-10	Barium		U		Y
FIELD-BLANK-20191223	K6449-10	Beryllium		U		Y
FIELD-BLANK-20191223	K6449-10	Cadmium		U		Y
FIELD-BLANK-20191223	K6449-10	Calcium		U		Y
FIELD-BLANK-20191223	K6449-10	Chromium, Total		U		Y
FIELD-BLANK-20191223	K6449-10	Cobalt		U		Y
FIELD-BLANK-20191223	K6449-10	Copper		U		Y
FIELD-BLANK-20191223	K6449-10	Iron		U		Y
FIELD-BLANK-20191223	K6449-10	Lead		U		Y
FIELD-BLANK-20191223	K6449-10	Magnesium		U		Y
FIELD-BLANK-20191223	K6449-10	Manganese		U		Y
FIELD-BLANK-20191223	K6449-10	Nickel		U		Y
FIELD-BLANK-20191223	K6449-10	Potassium		U		Y
FIELD-BLANK-20191223	K6449-10	Selenium		U		Y
FIELD-BLANK-20191223	K6449-10	Silver	0.177	J		Y
FIELD-BLANK-20191223	K6449-10	Sodium		U		Y
FIELD-BLANK-20191223	K6449-10	Thallium		U	UJ	Y
FIELD-BLANK-20191223	K6449-10	Vanadium		U		Y
FIELD-BLANK-20191223	K6449-10	Zinc		U		Y
DUPLICATE-20191223	K6449-11	Aluminum		U		Y
DUPLICATE-20191223	K6449-11	Antimony	11.5	J	JH	Y
DUPLICATE-20191223	K6449-11	Arsenic	10	J	U	Y
DUPLICATE-20191223	K6449-11	Barium	79.7			Y
DUPLICATE-20191223	K6449-11	Beryllium		U		Y
DUPLICATE-20191223	K6449-11	Cadmium		U		Y
DUPLICATE-20191223	K6449-11	Calcium	127000			Y
DUPLICATE-20191223	K6449-11	Chromium, Total		U		Y
DUPLICATE-20191223	K6449-11	Cobalt	1.62	J		Y
DUPLICATE-20191223	K6449-11	Copper	5.1	J	JH	Y
DUPLICATE-20191223	K6449-11	Iron	136			Y
DUPLICATE-20191223	K6449-11	Lead		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
DUPLICATE-20191223	K6449-11	Magnesium	25300			Y
DUPLICATE-20191223	K6449-11	Manganese	273		JH	Y
DUPLICATE-20191223	K6449-11	Nickel	3.55	J	JH	Y
DUPLICATE-20191223	K6449-11	Potassium	9830			Y
DUPLICATE-20191223	K6449-11	Selenium	49.9			Y
DUPLICATE-20191223	K6449-11	Silver		U		Y
DUPLICATE-20191223	K6449-11	Sodium	62800			Y
DUPLICATE-20191223	K6449-11	Thallium		U	UJ	Y
DUPLICATE-20191223	K6449-11	Vanadium		U		Y
DUPLICATE-20191223	K6449-11	Zinc	16.5	J	JH	Y
PB125789BL	PB125789BL	Aluminum		U		Y
PB125789BL	PB125789BL	Antimony		U		Y
PB125789BL	PB125789BL	Arsenic		U		Y
PB125789BL	PB125789BL	Barium		U		Y
PB125789BL	PB125789BL	Beryllium		U		Y
PB125789BL	PB125789BL	Cadmium		U		Y
PB125789BL	PB125789BL	Calcium		U		Y
PB125789BL	PB125789BL	Chromium, Total		U		Y
PB125789BL	PB125789BL	Cobalt		U		Y
PB125789BL	PB125789BL	Copper		U		Y
PB125789BL	PB125789BL	Iron		U		Y
PB125789BL	PB125789BL	Lead		U		Y
PB125789BL	PB125789BL	Magnesium		U		Y
PB125789BL	PB125789BL	Manganese		U		Y
PB125789BL	PB125789BL	Nickel		U		Y
PB125789BL	PB125789BL	Potassium		U		Y
PB125789BL	PB125789BL	Selenium		U	UJ	Y
PB125789BL	PB125789BL	Silver		U		Y
PB125789BL	PB125789BL	Sodium		U		Y
PB125789BL	PB125789BL	Thallium		U		Y
PB125789BL	PB125789BL	Vanadium		U		Y
PB125789BL	PB125789BL	Zinc		U		Y
PB125789BS	PB125789BS	Aluminum	1040			Y
PB125789BS	PB125789BS	Antimony	413		JH	Y
PB125789BS	PB125789BS	Arsenic	393			Y
PB125789BS	PB125789BS	Barium	110			Y
PB125789BS	PB125789BS	Beryllium	100		JH	Y
PB125789BS	PB125789BS	Cadmium	98.1		JH	Y
PB125789BS	PB125789BS	Calcium	533	J		Y
PB125789BS	PB125789BS	Chromium, Total	225			Y
PB125789BS	PB125789BS	Cobalt	103			Y
PB125789BS	PB125789BS	Copper	162		JH	Y
PB125789BS	PB125789BS	Iron	1590		JH	Y
PB125789BS	PB125789BS	Lead	499		JH	Y
PB125789BS	PB125789BS	Magnesium	1030			Y
PB125789BS	PB125789BS	Manganese	107		JH	Y
PB125789BS	PB125789BS	Nickel	257		JH	Y
PB125789BS	PB125789BS	Potassium	5120			Y
PB125789BS	PB125789BS	Selenium	975		J	Y
PB125789BS	PB125789BS	Silver	38.8		JH	Y
PB125789BS	PB125789BS	Sodium	1570			Y
PB125789BS	PB125789BS	Thallium	1030		JH	Y
PB125789BS	PB125789BS	Vanadium	158			Y
PB125789BS	PB125789BS	Zinc	112		JH	Y
LW-04-20191218	K6449-01	Mercury		U		Y
LW-03-20191218	K6449-02	Mercury		U		Y
LW-05-20191219	K6449-03	Mercury		U		Y
OW-4-20191220	K6449-04	Mercury		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5-20191223	K6449-05	Mercury		U		Y
OW-5MS	K6449-06	Mercury	3.87			Y
OW-5MSD	K6449-07	Mercury	3.59			Y
OW-2-20191223	K6449-08	Mercury		U		Y
OW-1-20191223	K6449-09	Mercury		U		Y
FIELD-BLANK-20191223	K6449-10	Mercury		U		Y
DUPLICATE-20191223	K6449-11	Mercury		U		Y
PB125784BL	PB125784BL	Mercury		U		Y
PB125784BS	PB125784BS	Mercury	4.47			Y
LW-04-20191218	K6449-01	2,4,5,6-Tetrachloro-Meta-Xylene	17.24			Y
LW-04-20191218	K6449-01	Decachlorobiphenyl (PCB 209)	20.29	P		Y
LW-04-20191218	K6449-01	PCB-1016 (Aroclor 1016)		U		Y
LW-04-20191218	K6449-01	PCB-1221 (Aroclor 1221)		U		Y
LW-04-20191218	K6449-01	PCB-1232 (Aroclor 1232)		U		Y
LW-04-20191218	K6449-01	PCB-1242 (Aroclor 1242)		U		Y
LW-04-20191218	K6449-01	PCB-1248 (Aroclor 1248)		U		Y
LW-04-20191218	K6449-01	PCB-1254 (Aroclor 1254)		U		Y
LW-04-20191218	K6449-01	PCB-1260 (Aroclor 1260)		U		Y
LW-04-20191218	K6449-01	PCB-1262 (Aroclor 1262)		U		Y
LW-04-20191218	K6449-01	PCB-1268 (Aroclor 1268)		U		Y
LW-03-20191218	K6449-02	2,4,5,6-Tetrachloro-Meta-Xylene	26.59			Y
LW-03-20191218	K6449-02	Decachlorobiphenyl (PCB 209)	29.2	P		Y
LW-03-20191218	K6449-02	PCB-1016 (Aroclor 1016)		U		Y
LW-03-20191218	K6449-02	PCB-1221 (Aroclor 1221)		U		Y
LW-03-20191218	K6449-02	PCB-1232 (Aroclor 1232)		U		Y
LW-03-20191218	K6449-02	PCB-1242 (Aroclor 1242)		U		Y
LW-03-20191218	K6449-02	PCB-1248 (Aroclor 1248)		U		Y
LW-03-20191218	K6449-02	PCB-1254 (Aroclor 1254)		U		Y
LW-03-20191218	K6449-02	PCB-1260 (Aroclor 1260)		U		Y
LW-03-20191218	K6449-02	PCB-1262 (Aroclor 1262)		U		Y
LW-03-20191218	K6449-02	PCB-1268 (Aroclor 1268)		U		Y
LW-05-20191219	K6449-03	2,4,5,6-Tetrachloro-Meta-Xylene	24.77			Y
LW-05-20191219	K6449-03	Decachlorobiphenyl (PCB 209)	25.15			Y
LW-05-20191219	K6449-03	PCB-1016 (Aroclor 1016)		U		Y
LW-05-20191219	K6449-03	PCB-1221 (Aroclor 1221)		U		Y
LW-05-20191219	K6449-03	PCB-1232 (Aroclor 1232)		U		Y
LW-05-20191219	K6449-03	PCB-1242 (Aroclor 1242)		U		Y
LW-05-20191219	K6449-03	PCB-1248 (Aroclor 1248)		U		Y
LW-05-20191219	K6449-03	PCB-1254 (Aroclor 1254)		U		Y
LW-05-20191219	K6449-03	PCB-1260 (Aroclor 1260)		U		Y
LW-05-20191219	K6449-03	PCB-1262 (Aroclor 1262)		U		Y
LW-05-20191219	K6449-03	PCB-1268 (Aroclor 1268)		U		Y
OW-4-20191220	K6449-04	2,4,5,6-Tetrachloro-Meta-Xylene	27.24			Y
OW-4-20191220	K6449-04	Decachlorobiphenyl (PCB 209)	28.1	P		Y
OW-4-20191220	K6449-04	PCB-1016 (Aroclor 1016)		U		Y
OW-4-20191220	K6449-04	PCB-1221 (Aroclor 1221)		U		Y
OW-4-20191220	K6449-04	PCB-1232 (Aroclor 1232)		U		Y
OW-4-20191220	K6449-04	PCB-1242 (Aroclor 1242)		U		Y
OW-4-20191220	K6449-04	PCB-1248 (Aroclor 1248)		U		Y
OW-4-20191220	K6449-04	PCB-1254 (Aroclor 1254)		U		Y
OW-4-20191220	K6449-04	PCB-1260 (Aroclor 1260)		U		Y
OW-4-20191220	K6449-04	PCB-1262 (Aroclor 1262)		U		Y
OW-4-20191220	K6449-04	PCB-1268 (Aroclor 1268)		U		Y
OW-5-20191223	K6449-05	2,4,5,6-Tetrachloro-Meta-Xylene	29.89			Y
OW-5-20191223	K6449-05	Decachlorobiphenyl (PCB 209)	25.29			Y
OW-5-20191223	K6449-05	PCB-1016 (Aroclor 1016)		U		Y
OW-5-20191223	K6449-05	PCB-1221 (Aroclor 1221)		U		Y
OW-5-20191223	K6449-05	PCB-1232 (Aroclor 1232)		U		Y

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OW-5-20191223	K6449-05	PCB-1242 (Aroclor 1242)		U		Y
OW-5-20191223	K6449-05	PCB-1248 (Aroclor 1248)		U		Y
OW-5-20191223	K6449-05	PCB-1254 (Aroclor 1254)		U		Y
OW-5-20191223	K6449-05	PCB-1260 (Aroclor 1260)		U		Y
OW-5-20191223	K6449-05	PCB-1262 (Aroclor 1262)		U		Y
OW-5-20191223	K6449-05	PCB-1268 (Aroclor 1268)		U		Y
OW-5MS	K6449-06MS	2,4,5,6-Tetrachloro-Meta-Xylene	27.36			Y
OW-5MS	K6449-06MS	Decachlorobiphenyl (PCB 209)	25.34			Y
OW-5MS	K6449-06MS	PCB-1016 (Aroclor 1016)	2.8		J	Y
OW-5MS	K6449-06MS	PCB-1221 (Aroclor 1221)		U		Y
OW-5MS	K6449-06MS	PCB-1232 (Aroclor 1232)		U		Y
OW-5MS	K6449-06MS	PCB-1242 (Aroclor 1242)		U		Y
OW-5MS	K6449-06MS	PCB-1248 (Aroclor 1248)		U		Y
OW-5MS	K6449-06MS	PCB-1254 (Aroclor 1254)		U		Y
OW-5MS	K6449-06MS	PCB-1260 (Aroclor 1260)	3.1		J	Y
OW-5MS	K6449-06MS	PCB-1262 (Aroclor 1262)		U		Y
OW-5MS	K6449-06MS	PCB-1268 (Aroclor 1268)		U		Y
OW-5MSD	K6449-07MSD	2,4,5,6-Tetrachloro-Meta-Xylene	27.64			Y
OW-5MSD	K6449-07MSD	Decachlorobiphenyl (PCB 209)	25.74			Y
OW-5MSD	K6449-07MSD	PCB-1016 (Aroclor 1016)	3.3		J	Y
OW-5MSD	K6449-07MSD	PCB-1221 (Aroclor 1221)		U		Y
OW-5MSD	K6449-07MSD	PCB-1232 (Aroclor 1232)		U		Y
OW-5MSD	K6449-07MSD	PCB-1242 (Aroclor 1242)		U		Y
OW-5MSD	K6449-07MSD	PCB-1248 (Aroclor 1248)		U		Y
OW-5MSD	K6449-07MSD	PCB-1254 (Aroclor 1254)		U		Y
OW-5MSD	K6449-07MSD	PCB-1260 (Aroclor 1260)	3.2		J	Y
OW-5MSD	K6449-07MSD	PCB-1262 (Aroclor 1262)		U		Y
OW-5MSD	K6449-07MSD	PCB-1268 (Aroclor 1268)		U		Y
OW-2-20191223	K6449-08	2,4,5,6-Tetrachloro-Meta-Xylene	26.91			Y
OW-2-20191223	K6449-08	Decachlorobiphenyl (PCB 209)	27.41			Y
OW-2-20191223	K6449-08	PCB-1016 (Aroclor 1016)		U		Y
OW-2-20191223	K6449-08	PCB-1221 (Aroclor 1221)		U		Y
OW-2-20191223	K6449-08	PCB-1232 (Aroclor 1232)		U		Y
OW-2-20191223	K6449-08	PCB-1242 (Aroclor 1242)		U		Y
OW-2-20191223	K6449-08	PCB-1248 (Aroclor 1248)		U		Y
OW-2-20191223	K6449-08	PCB-1254 (Aroclor 1254)		U		Y
OW-2-20191223	K6449-08	PCB-1260 (Aroclor 1260)		U		Y
OW-2-20191223	K6449-08	PCB-1262 (Aroclor 1262)		U		Y
OW-2-20191223	K6449-08	PCB-1268 (Aroclor 1268)		U		Y
OW-1-20191223	K6449-09	2,4,5,6-Tetrachloro-Meta-Xylene	21.15			Y
OW-1-20191223	K6449-09	Decachlorobiphenyl (PCB 209)	18.89			Y
OW-1-20191223	K6449-09	PCB-1016 (Aroclor 1016)		U		Y
OW-1-20191223	K6449-09	PCB-1221 (Aroclor 1221)		U		Y
OW-1-20191223	K6449-09	PCB-1232 (Aroclor 1232)		U		Y
OW-1-20191223	K6449-09	PCB-1242 (Aroclor 1242)		U		Y
OW-1-20191223	K6449-09	PCB-1248 (Aroclor 1248)		U		Y
OW-1-20191223	K6449-09	PCB-1254 (Aroclor 1254)		U		Y
OW-1-20191223	K6449-09	PCB-1260 (Aroclor 1260)		U		Y
OW-1-20191223	K6449-09	PCB-1262 (Aroclor 1262)		U		Y
OW-1-20191223	K6449-09	PCB-1268 (Aroclor 1268)		U		Y
FIELD-BLANK-20191223	K6449-10	2,4,5,6-Tetrachloro-Meta-Xylene	26.05			Y
FIELD-BLANK-20191223	K6449-10	Decachlorobiphenyl (PCB 209)	22.27	P		Y
FIELD-BLANK-20191223	K6449-10	PCB-1016 (Aroclor 1016)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1221 (Aroclor 1221)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1232 (Aroclor 1232)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1242 (Aroclor 1242)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1248 (Aroclor 1248)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1254 (Aroclor 1254)		U		Y

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FIELD-BLANK-20191223	K6449-10	PCB-1260 (Aroclor 1260)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1262 (Aroclor 1262)		U		Y
FIELD-BLANK-20191223	K6449-10	PCB-1268 (Aroclor 1268)		U		Y
DUPLICATE-20191223	K6449-11	2,4,5,6-Tetrachloro-Meta-Xylene	20.09			Y
DUPLICATE-20191223	K6449-11	Decachlorobiphenyl (PCB 209)	25.26	P		Y
DUPLICATE-20191223	K6449-11	PCB-1016 (Aroclor 1016)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1221 (Aroclor 1221)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1232 (Aroclor 1232)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1242 (Aroclor 1242)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1248 (Aroclor 1248)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1254 (Aroclor 1254)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1260 (Aroclor 1260)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1262 (Aroclor 1262)		U		Y
DUPLICATE-20191223	K6449-11	PCB-1268 (Aroclor 1268)		U		Y
PB125778BL	PB125778BL	2,4,5,6-Tetrachloro-Meta-Xylene	23.72			Y
PB125778BL	PB125778BL	Decachlorobiphenyl (PCB 209)	23.2			Y
PB125778BL	PB125778BL	PCB-1016 (Aroclor 1016)		U		Y
PB125778BL	PB125778BL	PCB-1221 (Aroclor 1221)		U		Y
PB125778BL	PB125778BL	PCB-1232 (Aroclor 1232)		U		Y
PB125778BL	PB125778BL	PCB-1242 (Aroclor 1242)		U		Y
PB125778BL	PB125778BL	PCB-1248 (Aroclor 1248)		U		Y
PB125778BL	PB125778BL	PCB-1254 (Aroclor 1254)		U		Y
PB125778BL	PB125778BL	PCB-1260 (Aroclor 1260)		U		Y
PB125778BL	PB125778BL	PCB-1262 (Aroclor 1262)		U		Y
PB125778BL	PB125778BL	PCB-1268 (Aroclor 1268)		U		Y
PB125778BS	PB125778BS	2,4,5,6-Tetrachloro-Meta-Xylene	23.14			Y
PB125778BS	PB125778BS	Decachlorobiphenyl (PCB 209)	20.49			Y
PB125778BS	PB125778BS	PCB-1016 (Aroclor 1016)	2.2			Y
PB125778BS	PB125778BS	PCB-1221 (Aroclor 1221)		U		Y
PB125778BS	PB125778BS	PCB-1232 (Aroclor 1232)		U		Y
PB125778BS	PB125778BS	PCB-1242 (Aroclor 1242)		U		Y
PB125778BS	PB125778BS	PCB-1248 (Aroclor 1248)		U		Y
PB125778BS	PB125778BS	PCB-1254 (Aroclor 1254)		U		Y
PB125778BS	PB125778BS	PCB-1260 (Aroclor 1260)	2.2			Y
PB125778BS	PB125778BS	PCB-1262 (Aroclor 1262)		U		Y
PB125778BS	PB125778BS	PCB-1268 (Aroclor 1268)		U		Y
LW-04-20191218	K6449-01	1,1,1-Trichloroethane (TCA)		U		Y
LW-04-20191218	K6449-01	1,1-Dichloroethane		U		Y
LW-04-20191218	K6449-01	1,1-Dichloroethene		U		Y
LW-04-20191218	K6449-01	1,2,4-Trimethylbenzene		U		Y
LW-04-20191218	K6449-01	1,2-Dichlorobenzene		U		Y
LW-04-20191218	K6449-01	1,2-Dichloroethane		U		Y
LW-04-20191218	K6449-01	1,2-Dichloroethane-D4	49			Y
LW-04-20191218	K6449-01	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
LW-04-20191218	K6449-01	1,3-Dichlorobenzene		U		Y
LW-04-20191218	K6449-01	1,4-Dichlorobenzene		U		Y
LW-04-20191218	K6449-01	Acetone	25	J	U	Y
LW-04-20191218	K6449-01	Benzene		U		Y
LW-04-20191218	K6449-01	Carbon Tetrachloride		U		Y
LW-04-20191218	K6449-01	Chlorobenzene		U		Y
LW-04-20191218	K6449-01	Chloroform		U		Y
LW-04-20191218	K6449-01	Cis-1,2-Dichloroethylene	0.53	J		Y
LW-04-20191218	K6449-01	Dibromofluoromethane	50.2			Y
LW-04-20191218	K6449-01	Ethylbenzene		U		Y
LW-04-20191218	K6449-01	Methyl Ethyl Ketone (2-Butanone)		U		Y
LW-04-20191218	K6449-01	Methylene Chloride		U		Y
LW-04-20191218	K6449-01	N-Butylbenzene		U		Y
LW-04-20191218	K6449-01	N-Propylbenzene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-04-20191218	K6449-01	p-Bromofluorobenzene	45.1			Y
LW-04-20191218	K6449-01	Sec-Butylbenzene		U		Y
LW-04-20191218	K6449-01	T-Butylbenzene		U		Y
LW-04-20191218	K6449-01	Tert-Butyl Methyl Ether		U		Y
LW-04-20191218	K6449-01	Tetrachloroethylene (PCE)		U		Y
LW-04-20191218	K6449-01	Toluene		U		Y
LW-04-20191218	K6449-01	Toluene-D8	50.4			Y
LW-04-20191218	K6449-01	Trans-1,2-Dichloroethene		U		Y
LW-04-20191218	K6449-01	Trichloroethylene (TCE)	1	J		Y
LW-04-20191218	K6449-01	Vinyl Chloride		U		Y
LW-04-20191218	K6449-01	Xylenes		U		Y
LW-03-20191218	K6449-02	1,1,1-Trichloroethane (TCA)		U		Y
LW-03-20191218	K6449-02	1,1-Dichloroethane		U		Y
LW-03-20191218	K6449-02	1,1-Dichloroethene		U		Y
LW-03-20191218	K6449-02	1,2,4-Trimethylbenzene		U		Y
LW-03-20191218	K6449-02	1,2-Dichlorobenzene		U		Y
LW-03-20191218	K6449-02	1,2-Dichloroethane		U		Y
LW-03-20191218	K6449-02	1,2-Dichloroethane-D4	50.5			Y
LW-03-20191218	K6449-02	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
LW-03-20191218	K6449-02	1,3-Dichlorobenzene		U		Y
LW-03-20191218	K6449-02	1,4-Dichlorobenzene		U		Y
LW-03-20191218	K6449-02	Acetone	25	J	U	Y
LW-03-20191218	K6449-02	Benzene		U		Y
LW-03-20191218	K6449-02	Carbon Tetrachloride		U		Y
LW-03-20191218	K6449-02	Chlorobenzene		U		Y
LW-03-20191218	K6449-02	Chloroform		U		Y
LW-03-20191218	K6449-02	Cis-1,2-Dichloroethylene		U		Y
LW-03-20191218	K6449-02	Dibromofluoromethane	49.5			Y
LW-03-20191218	K6449-02	Ethylbenzene		U		Y
LW-03-20191218	K6449-02	Methyl Ethyl Ketone (2-Butanone)		U		Y
LW-03-20191218	K6449-02	Methylene Chloride		U		Y
LW-03-20191218	K6449-02	N-Butylbenzene		U		Y
LW-03-20191218	K6449-02	N-Propylbenzene		U		Y
LW-03-20191218	K6449-02	p-Bromofluorobenzene	45.6			Y
LW-03-20191218	K6449-02	Sec-Butylbenzene		U		Y
LW-03-20191218	K6449-02	T-Butylbenzene		U		Y
LW-03-20191218	K6449-02	Tert-Butyl Methyl Ether		U		Y
LW-03-20191218	K6449-02	Tetrachloroethylene (PCE)		U		Y
LW-03-20191218	K6449-02	Toluene		U		Y
LW-03-20191218	K6449-02	Toluene-D8	49.6			Y
LW-03-20191218	K6449-02	Trans-1,2-Dichloroethene		U		Y
LW-03-20191218	K6449-02	Trichloroethylene (TCE)		U		Y
LW-03-20191218	K6449-02	Vinyl Chloride		U		Y
LW-03-20191218	K6449-02	Xylenes		U		Y
LW-05-20191219	K6449-03	1,1,1-Trichloroethane (TCA)		U		Y
LW-05-20191219	K6449-03	1,1-Dichloroethane		U		Y
LW-05-20191219	K6449-03	1,1-Dichloroethene		U		Y
LW-05-20191219	K6449-03	1,2,4-Trimethylbenzene		U		Y
LW-05-20191219	K6449-03	1,2-Dichlorobenzene		U		Y
LW-05-20191219	K6449-03	1,2-Dichloroethane		U		Y
LW-05-20191219	K6449-03	1,2-Dichloroethane-D4	50.2			Y
LW-05-20191219	K6449-03	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
LW-05-20191219	K6449-03	1,3-Dichlorobenzene		U		Y
LW-05-20191219	K6449-03	1,4-Dichlorobenzene		U		Y
LW-05-20191219	K6449-03	Acetone	25	J	U	Y
LW-05-20191219	K6449-03	Benzene		U		Y
LW-05-20191219	K6449-03	Carbon Tetrachloride		U		Y
LW-05-20191219	K6449-03	Chlorobenzene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-05-20191219	K6449-03	Chloroform		U		Y
LW-05-20191219	K6449-03	Cis-1,2-Dichloroethylene		U		Y
LW-05-20191219	K6449-03	Dibromofluoromethane	49			Y
LW-05-20191219	K6449-03	Ethylbenzene		U		Y
LW-05-20191219	K6449-03	Methyl Ethyl Ketone (2-Butanone)		U		Y
LW-05-20191219	K6449-03	Methylene Chloride		U		Y
LW-05-20191219	K6449-03	N-Butylbenzene		U		Y
LW-05-20191219	K6449-03	N-Propylbenzene		U		Y
LW-05-20191219	K6449-03	p-Bromofluorobenzene	46.4			Y
LW-05-20191219	K6449-03	Sec-Butylbenzene		U		Y
LW-05-20191219	K6449-03	T-Butylbenzene		U		Y
LW-05-20191219	K6449-03	Tert-Butyl Methyl Ether		U		Y
LW-05-20191219	K6449-03	Tetrachloroethylene (PCE)		U		Y
LW-05-20191219	K6449-03	Toluene		U		Y
LW-05-20191219	K6449-03	Toluene-D8	50.3			Y
LW-05-20191219	K6449-03	Trans-1,2-Dichloroethene		U		Y
LW-05-20191219	K6449-03	Trichloroethylene (TCE)		U		Y
LW-05-20191219	K6449-03	Vinyl Chloride		U		Y
LW-05-20191219	K6449-03	Xylenes		U		Y
OW-4-20191220	K6449-04	1,1,1-Trichloroethane (TCA)		U		Y
OW-4-20191220	K6449-04	1,1-Dichloroethane		U		Y
OW-4-20191220	K6449-04	1,1-Dichloroethene		U		Y
OW-4-20191220	K6449-04	1,2,4-Trimethylbenzene		U		Y
OW-4-20191220	K6449-04	1,2-Dichlorobenzene		U		Y
OW-4-20191220	K6449-04	1,2-Dichloroethane		U		Y
OW-4-20191220	K6449-04	1,2-Dichloroethane-D4	50.1			Y
OW-4-20191220	K6449-04	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
OW-4-20191220	K6449-04	1,3-Dichlorobenzene		U		Y
OW-4-20191220	K6449-04	1,4-Dichlorobenzene		U		Y
OW-4-20191220	K6449-04	Acetone		U		Y
OW-4-20191220	K6449-04	Benzene		U		Y
OW-4-20191220	K6449-04	Carbon Tetrachloride		U		Y
OW-4-20191220	K6449-04	Chlorobenzene		U		Y
OW-4-20191220	K6449-04	Chloroform		U		Y
OW-4-20191220	K6449-04	Cis-1,2-Dichloroethylene		U		Y
OW-4-20191220	K6449-04	Dibromofluoromethane	49.1			Y
OW-4-20191220	K6449-04	Ethylbenzene		U		Y
OW-4-20191220	K6449-04	Methyl Ethyl Ketone (2-Butanone)		U		Y
OW-4-20191220	K6449-04	Methylene Chloride		U		Y
OW-4-20191220	K6449-04	N-Butylbenzene		U		Y
OW-4-20191220	K6449-04	N-Propylbenzene		U		Y
OW-4-20191220	K6449-04	p-Bromofluorobenzene	46.7			Y
OW-4-20191220	K6449-04	Sec-Butylbenzene		U		Y
OW-4-20191220	K6449-04	T-Butylbenzene		U		Y
OW-4-20191220	K6449-04	Tert-Butyl Methyl Ether		U		Y
OW-4-20191220	K6449-04	Tetrachloroethylene (PCE)		U		Y
OW-4-20191220	K6449-04	Toluene		U		Y
OW-4-20191220	K6449-04	Toluene-D8	50.3			Y
OW-4-20191220	K6449-04	Trans-1,2-Dichloroethene		U		Y
OW-4-20191220	K6449-04	Trichloroethylene (TCE)		U		Y
OW-4-20191220	K6449-04	Vinyl Chloride		U		Y
OW-4-20191220	K6449-04	Xylenes		U		Y
OW-5-20191223	K6449-05	1,1,1-Trichloroethane (TCA)		U		Y
OW-5-20191223	K6449-05	1,1-Dichloroethane		U		Y
OW-5-20191223	K6449-05	1,1-Dichloroethene		U		Y
OW-5-20191223	K6449-05	1,2,4-Trimethylbenzene		U		Y
OW-5-20191223	K6449-05	1,2-Dichlorobenzene		U		Y
OW-5-20191223	K6449-05	1,2-Dichloroethane		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5-20191223	K6449-05	1,2-Dichloroethane-D4	50.4			Y
OW-5-20191223	K6449-05	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
OW-5-20191223	K6449-05	1,3-Dichlorobenzene		U		Y
OW-5-20191223	K6449-05	1,4-Dichlorobenzene		U		Y
OW-5-20191223	K6449-05	Acetone	25	J	U	Y
OW-5-20191223	K6449-05	Benzene		U		Y
OW-5-20191223	K6449-05	Carbon Tetrachloride		U		Y
OW-5-20191223	K6449-05	Chlorobenzene		U		Y
OW-5-20191223	K6449-05	Chloroform		U		Y
OW-5-20191223	K6449-05	Cis-1,2-Dichloroethylene		U		Y
OW-5-20191223	K6449-05	Dibromofluoromethane	49.3			Y
OW-5-20191223	K6449-05	Ethylbenzene		U		Y
OW-5-20191223	K6449-05	Methyl Ethyl Ketone (2-Butanone)		U		Y
OW-5-20191223	K6449-05	Methylene Chloride		U		Y
OW-5-20191223	K6449-05	N-Butylbenzene		U		Y
OW-5-20191223	K6449-05	N-Propylbenzene		U		Y
OW-5-20191223	K6449-05	p-Bromofluorobenzene	45.4			Y
OW-5-20191223	K6449-05	Sec-Butylbenzene		U		Y
OW-5-20191223	K6449-05	T-Butylbenzene		U		Y
OW-5-20191223	K6449-05	Tert-Butyl Methyl Ether		U		Y
OW-5-20191223	K6449-05	Tetrachloroethylene (PCE)		U		Y
OW-5-20191223	K6449-05	Toluene		U		Y
OW-5-20191223	K6449-05	Toluene-D8	50			Y
OW-5-20191223	K6449-05	Trans-1,2-Dichloroethene		U		Y
OW-5-20191223	K6449-05	Trichloroethylene (TCE)		U		Y
OW-5-20191223	K6449-05	Vinyl Chloride		U		Y
OW-5-20191223	K6449-05	Xylenes		U		Y
OW-5MS	K6449-06MS	1,1,1-Trichloroethane (TCA)	51			Y
OW-5MS	K6449-06MS	1,1-Dichloroethane	51.7			Y
OW-5MS	K6449-06MS	1,1-Dichloroethene	49.4			Y
OW-5MS	K6449-06MS	1,2,4-Trimethylbenzene	51.1			Y
OW-5MS	K6449-06MS	1,2-Dichlorobenzene	48.1			Y
OW-5MS	K6449-06MS	1,2-Dichloroethane	50.5			Y
OW-5MS	K6449-06MS	1,2-Dichloroethane-D4	51			Y
OW-5MS	K6449-06MS	1,3,5-Trimethylbenzene (Mesitylene)	50.7			Y
OW-5MS	K6449-06MS	1,3-Dichlorobenzene	48.8			Y
OW-5MS	K6449-06MS	1,4-Dichlorobenzene	47.5			Y
OW-5MS	K6449-06MS	Acetone	180			Y
OW-5MS	K6449-06MS	Benzene	49.5			Y
OW-5MS	K6449-06MS	Carbon Tetrachloride	49.2			Y
OW-5MS	K6449-06MS	Chlorobenzene	48.8			Y
OW-5MS	K6449-06MS	Chloroform	52.8			Y
OW-5MS	K6449-06MS	Cis-1,2-Dichloroethylene	51			Y
OW-5MS	K6449-06MS	Dibromofluoromethane	51.1			Y
OW-5MS	K6449-06MS	Ethylbenzene	49.8			Y
OW-5MS	K6449-06MS	Methyl Ethyl Ketone (2-Butanone)	250			Y
OW-5MS	K6449-06MS	Methylene Chloride	48.8			Y
OW-5MS	K6449-06MS	N-Butylbenzene	50.6			Y
OW-5MS	K6449-06MS	N-Propylbenzene	51.4			Y
OW-5MS	K6449-06MS	p-Bromofluorobenzene	48.6			Y
OW-5MS	K6449-06MS	Sec-Butylbenzene	51.4			Y
OW-5MS	K6449-06MS	T-Butylbenzene	52			Y
OW-5MS	K6449-06MS	Tert-Butyl Methyl Ether	53.5			Y
OW-5MS	K6449-06MS	Tetrachloroethylene (PCE)	44.4			Y
OW-5MS	K6449-06MS	Toluene	48.6			Y
OW-5MS	K6449-06MS	Toluene-D8	49.8			Y
OW-5MS	K6449-06MS	Trans-1,2-Dichloroethene	48.9			Y
OW-5MS	K6449-06MS	Trichloroethylene (TCE)	47.2			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5MS	K6449-06MS	Vinyl Chloride	48			Y
OW-5MS	K6449-06MS	Xylenes	147.1			Y
OW-5MSD	K6449-07MSD	1,1,1-Trichloroethane (TCA)	50.7			Y
OW-5MSD	K6449-07MSD	1,1-Dichloroethane	52.3			Y
OW-5MSD	K6449-07MSD	1,1-Dichloroethene	49			Y
OW-5MSD	K6449-07MSD	1,2,4-Trimethylbenzene	50.7			Y
OW-5MSD	K6449-07MSD	1,2-Dichlorobenzene	48			Y
OW-5MSD	K6449-07MSD	1,2-Dichloroethane	49.8			Y
OW-5MSD	K6449-07MSD	1,2-Dichloroethane-D4	52.1			Y
OW-5MSD	K6449-07MSD	1,3,5-Trimethylbenzene (Mesitylene)	50.2			Y
OW-5MSD	K6449-07MSD	1,3-Dichlorobenzene	47.9			Y
OW-5MSD	K6449-07MSD	1,4-Dichlorobenzene	46.7			Y
OW-5MSD	K6449-07MSD	Acetone	190			Y
OW-5MSD	K6449-07MSD	Benzene	49.4			Y
OW-5MSD	K6449-07MSD	Carbon Tetrachloride	49.2			Y
OW-5MSD	K6449-07MSD	Chlorobenzene	48.9			Y
OW-5MSD	K6449-07MSD	Chloroform	52.8			Y
OW-5MSD	K6449-07MSD	Cis-1,2-Dichloroethylene	51.1			Y
OW-5MSD	K6449-07MSD	Dibromofluoromethane	50.2			Y
OW-5MSD	K6449-07MSD	Ethylbenzene	50			Y
OW-5MSD	K6449-07MSD	Methyl Ethyl Ketone (2-Butanone)	250			Y
OW-5MSD	K6449-07MSD	Methylene Chloride	49.1			Y
OW-5MSD	K6449-07MSD	N-Butylbenzene	50.3			Y
OW-5MSD	K6449-07MSD	N-Propylbenzene	51.1			Y
OW-5MSD	K6449-07MSD	p-Bromofluorobenzene	48.8			Y
OW-5MSD	K6449-07MSD	Sec-Butylbenzene	50.8			Y
OW-5MSD	K6449-07MSD	T-Butylbenzene	51.1			Y
OW-5MSD	K6449-07MSD	Tert-Butyl Methyl Ether	53.2			Y
OW-5MSD	K6449-07MSD	Tetrachloroethylene (PCE)	43.9			Y
OW-5MSD	K6449-07MSD	Toluene	48.5			Y
OW-5MSD	K6449-07MSD	Toluene-D8	50.3			Y
OW-5MSD	K6449-07MSD	Trans-1,2-Dichloroethene	48.3			Y
OW-5MSD	K6449-07MSD	Trichloroethylene (TCE)	47.4			Y
OW-5MSD	K6449-07MSD	Vinyl Chloride	47.3			Y
OW-5MSD	K6449-07MSD	Xylenes	147.9			Y
OW-2-20191223	K6449-08	1,1,1-Trichloroethane (TCA)		U		Y
OW-2-20191223	K6449-08	1,1-Dichloroethane		U		Y
OW-2-20191223	K6449-08	1,1-Dichloroethene		U		Y
OW-2-20191223	K6449-08	1,2,4-Trimethylbenzene	0.48	J		Y
OW-2-20191223	K6449-08	1,2-Dichlorobenzene		U		Y
OW-2-20191223	K6449-08	1,2-Dichloroethane		U		Y
OW-2-20191223	K6449-08	1,2-Dichloroethane-D4	49.2			Y
OW-2-20191223	K6449-08	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
OW-2-20191223	K6449-08	1,3-Dichlorobenzene		U		Y
OW-2-20191223	K6449-08	1,4-Dichlorobenzene		U		Y
OW-2-20191223	K6449-08	Acetone	25	J	U	Y
OW-2-20191223	K6449-08	Benzene	0.32	J		Y
OW-2-20191223	K6449-08	Carbon Tetrachloride		U		Y
OW-2-20191223	K6449-08	Chlorobenzene		U		Y
OW-2-20191223	K6449-08	Chloroform		U		Y
OW-2-20191223	K6449-08	Cis-1,2-Dichloroethylene		U		Y
OW-2-20191223	K6449-08	Dibromofluoromethane	49.5			Y
OW-2-20191223	K6449-08	Ethylbenzene		U		Y
OW-2-20191223	K6449-08	Methyl Ethyl Ketone (2-Butanone)		U		Y
OW-2-20191223	K6449-08	Methylene Chloride		U		Y
OW-2-20191223	K6449-08	N-Butylbenzene		U		Y
OW-2-20191223	K6449-08	N-Propylbenzene		U		Y
OW-2-20191223	K6449-08	p-Bromofluorobenzene	46.9			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-2-20191223	K6449-08	Sec-Butylbenzene		U		Y
OW-2-20191223	K6449-08	T-Butylbenzene		U		Y
OW-2-20191223	K6449-08	Tert-Butyl Methyl Ether		U		Y
OW-2-20191223	K6449-08	Tetrachloroethylene (PCE)		U		Y
OW-2-20191223	K6449-08	Toluene	0.34	J		Y
OW-2-20191223	K6449-08	Toluene-D8	51.4			Y
OW-2-20191223	K6449-08	Trans-1,2-Dichloroethene		U		Y
OW-2-20191223	K6449-08	Trichloroethylene (TCE)		U		Y
OW-2-20191223	K6449-08	Vinyl Chloride		U		Y
OW-2-20191223	K6449-08	Xylenes	0.85	J		Y
OW-1-20191223	K6449-09	1,1,1-Trichloroethane (TCA)		U		Y
OW-1-20191223	K6449-09	1,1-Dichloroethane		U		Y
OW-1-20191223	K6449-09	1,1-Dichloroethene		U		Y
OW-1-20191223	K6449-09	1,2,4-Trimethylbenzene		U		Y
OW-1-20191223	K6449-09	1,2-Dichlorobenzene		U		Y
OW-1-20191223	K6449-09	1,2-Dichloroethane		U		Y
OW-1-20191223	K6449-09	1,2-Dichloroethane-D4	49.6			Y
OW-1-20191223	K6449-09	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
OW-1-20191223	K6449-09	1,3-Dichlorobenzene		U		Y
OW-1-20191223	K6449-09	1,4-Dichlorobenzene		U		Y
OW-1-20191223	K6449-09	Acetone	25	J	U	Y
OW-1-20191223	K6449-09	Benzene		U		Y
OW-1-20191223	K6449-09	Carbon Tetrachloride		U		Y
OW-1-20191223	K6449-09	Chlorobenzene		U		Y
OW-1-20191223	K6449-09	Chloroform		U		Y
OW-1-20191223	K6449-09	Cis-1,2-Dichloroethylene		U		Y
OW-1-20191223	K6449-09	Dibromofluoromethane	48.9			Y
OW-1-20191223	K6449-09	Ethylbenzene		U		Y
OW-1-20191223	K6449-09	Methyl Ethyl Ketone (2-Butanone)		U		Y
OW-1-20191223	K6449-09	Methylene Chloride		U		Y
OW-1-20191223	K6449-09	N-Butylbenzene		U		Y
OW-1-20191223	K6449-09	N-Propylbenzene		U		Y
OW-1-20191223	K6449-09	p-Bromofluorobenzene	46.2			Y
OW-1-20191223	K6449-09	Sec-Butylbenzene		U		Y
OW-1-20191223	K6449-09	T-Butylbenzene		U		Y
OW-1-20191223	K6449-09	Tert-Butyl Methyl Ether		U		Y
OW-1-20191223	K6449-09	Tetrachloroethylene (PCE)		U		Y
OW-1-20191223	K6449-09	Toluene		U		Y
OW-1-20191223	K6449-09	Toluene-D8	50.2			Y
OW-1-20191223	K6449-09	Trans-1,2-Dichloroethene		U		Y
OW-1-20191223	K6449-09	Trichloroethylene (TCE)		U		Y
OW-1-20191223	K6449-09	Vinyl Chloride		U		Y
OW-1-20191223	K6449-09	Xylenes		U		Y
FIELD-BLANK-20191223	K6449-10	1,1,1-Trichloroethane (TCA)		U		Y
FIELD-BLANK-20191223	K6449-10	1,1-Dichloroethane		U		Y
FIELD-BLANK-20191223	K6449-10	1,1-Dichloroethene		U		Y
FIELD-BLANK-20191223	K6449-10	1,2,4-Trimethylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	1,2-Dichlorobenzene		U		Y
FIELD-BLANK-20191223	K6449-10	1,2-Dichloroethane		U		Y
FIELD-BLANK-20191223	K6449-10	1,2-Dichloroethane-D4	49			Y
FIELD-BLANK-20191223	K6449-10	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
FIELD-BLANK-20191223	K6449-10	1,3-Dichlorobenzene		U		Y
FIELD-BLANK-20191223	K6449-10	1,4-Dichlorobenzene		U		Y
FIELD-BLANK-20191223	K6449-10	Acetone	4.3	J		Y
FIELD-BLANK-20191223	K6449-10	Benzene		U		Y
FIELD-BLANK-20191223	K6449-10	Carbon Tetrachloride		U		Y
FIELD-BLANK-20191223	K6449-10	Chlorobenzene		U		Y
FIELD-BLANK-20191223	K6449-10	Chloroform		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
FIELD-BLANK-20191223	K6449-10	Cis-1,2-Dichloroethylene		U		Y
FIELD-BLANK-20191223	K6449-10	Dibromofluoromethane	49.3			Y
FIELD-BLANK-20191223	K6449-10	Ethylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	Methyl Ethyl Ketone (2-Butanone)		U		Y
FIELD-BLANK-20191223	K6449-10	Methylene Chloride		U		Y
FIELD-BLANK-20191223	K6449-10	N-Butylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	N-Propylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	p-Bromofluorobenzene	46.1			Y
FIELD-BLANK-20191223	K6449-10	Sec-Butylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	T-Butylbenzene		U		Y
FIELD-BLANK-20191223	K6449-10	Tert-Butyl Methyl Ether		U		Y
FIELD-BLANK-20191223	K6449-10	Tetrachloroethylene (PCE)		U		Y
FIELD-BLANK-20191223	K6449-10	Toluene		U		Y
FIELD-BLANK-20191223	K6449-10	Toluene-D8	50.3			Y
FIELD-BLANK-20191223	K6449-10	Trans-1,2-Dichloroethene		U		Y
FIELD-BLANK-20191223	K6449-10	Trichloroethylene (TCE)		U		Y
FIELD-BLANK-20191223	K6449-10	Vinyl Chloride		U		Y
FIELD-BLANK-20191223	K6449-10	Xylenes		U		Y
DUPLICATE-20191223	K6449-11	1,1,1-Trichloroethane (TCA)		U		Y
DUPLICATE-20191223	K6449-11	1,1-Dichloroethane		U		Y
DUPLICATE-20191223	K6449-11	1,1-Dichloroethene		U		Y
DUPLICATE-20191223	K6449-11	1,2,4-Trimethylbenzene		U		Y
DUPLICATE-20191223	K6449-11	1,2-Dichlorobenzene		U		Y
DUPLICATE-20191223	K6449-11	1,2-Dichloroethane		U		Y
DUPLICATE-20191223	K6449-11	1,2-Dichloroethane-D4	49.3			Y
DUPLICATE-20191223	K6449-11	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
DUPLICATE-20191223	K6449-11	1,3-Dichlorobenzene		U		Y
DUPLICATE-20191223	K6449-11	1,4-Dichlorobenzene		U		Y
DUPLICATE-20191223	K6449-11	Acetone	25	J	U	Y
DUPLICATE-20191223	K6449-11	Benzene		U		Y
DUPLICATE-20191223	K6449-11	Carbon Tetrachloride		U		Y
DUPLICATE-20191223	K6449-11	Chlorobenzene		U		Y
DUPLICATE-20191223	K6449-11	Chloroform		U		Y
DUPLICATE-20191223	K6449-11	Cis-1,2-Dichloroethylene		U		Y
DUPLICATE-20191223	K6449-11	Dibromofluoromethane	49			Y
DUPLICATE-20191223	K6449-11	Ethylbenzene		U		Y
DUPLICATE-20191223	K6449-11	Methyl Ethyl Ketone (2-Butanone)		U		Y
DUPLICATE-20191223	K6449-11	Methylene Chloride		U		Y
DUPLICATE-20191223	K6449-11	N-Butylbenzene		U		Y
DUPLICATE-20191223	K6449-11	N-Propylbenzene		U		Y
DUPLICATE-20191223	K6449-11	p-Bromofluorobenzene	45.3			Y
DUPLICATE-20191223	K6449-11	Sec-Butylbenzene		U		Y
DUPLICATE-20191223	K6449-11	T-Butylbenzene		U		Y
DUPLICATE-20191223	K6449-11	Tert-Butyl Methyl Ether		U		Y
DUPLICATE-20191223	K6449-11	Tetrachloroethylene (PCE)		U		Y
DUPLICATE-20191223	K6449-11	Toluene		U		Y
DUPLICATE-20191223	K6449-11	Toluene-D8	50.1			Y
DUPLICATE-20191223	K6449-11	Trans-1,2-Dichloroethene		U		Y
DUPLICATE-20191223	K6449-11	Trichloroethylene (TCE)		U		Y
DUPLICATE-20191223	K6449-11	Vinyl Chloride		U		Y
DUPLICATE-20191223	K6449-11	Xylenes		U		Y
TRIP-BLANK-20191223	K6449-12	1,1,1-Trichloroethane (TCA)		U		Y
TRIP-BLANK-20191223	K6449-12	1,1-Dichloroethane		U		Y
TRIP-BLANK-20191223	K6449-12	1,1-Dichloroethene		U		Y
TRIP-BLANK-20191223	K6449-12	1,2,4-Trimethylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	1,2-Dichlorobenzene		U		Y
TRIP-BLANK-20191223	K6449-12	1,2-Dichloroethane		U		Y
TRIP-BLANK-20191223	K6449-12	1,2-Dichloroethane-D4	49.6			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
TRIP-BLANK-20191223	K6449-12	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
TRIP-BLANK-20191223	K6449-12	1,3-Dichlorobenzene		U		Y
TRIP-BLANK-20191223	K6449-12	1,4-Dichlorobenzene		U		Y
TRIP-BLANK-20191223	K6449-12	Acetone		U		Y
TRIP-BLANK-20191223	K6449-12	Benzene		U		Y
TRIP-BLANK-20191223	K6449-12	Carbon Tetrachloride		U		Y
TRIP-BLANK-20191223	K6449-12	Chlorobenzene		U		Y
TRIP-BLANK-20191223	K6449-12	Chloroform		U		Y
TRIP-BLANK-20191223	K6449-12	Cis-1,2-Dichloroethylene		U		Y
TRIP-BLANK-20191223	K6449-12	Dibromofluoromethane	49.1			Y
TRIP-BLANK-20191223	K6449-12	Ethylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	Methyl Ethyl Ketone (2-Butanone)		U		Y
TRIP-BLANK-20191223	K6449-12	Methylene Chloride		U		Y
TRIP-BLANK-20191223	K6449-12	N-Butylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	N-Propylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	p-Bromofluorobenzene	45.6			Y
TRIP-BLANK-20191223	K6449-12	Sec-Butylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	T-Butylbenzene		U		Y
TRIP-BLANK-20191223	K6449-12	Tert-Butyl Methyl Ether		U		Y
TRIP-BLANK-20191223	K6449-12	Tetrachloroethylene (PCE)		U		Y
TRIP-BLANK-20191223	K6449-12	Toluene		U		Y
TRIP-BLANK-20191223	K6449-12	Toluene-D8	50.2			Y
TRIP-BLANK-20191223	K6449-12	Trans-1,2-Dichloroethene		U		Y
TRIP-BLANK-20191223	K6449-12	Trichloroethylene (TCE)		U		Y
TRIP-BLANK-20191223	K6449-12	Vinyl Chloride		U		Y
TRIP-BLANK-20191223	K6449-12	Xylenes		U		Y
VX1227WBL01	VX1227WBL01	1,1,1-Trichloroethane (TCA)		U		Y
VX1227WBL01	VX1227WBL01	1,1-Dichloroethane		U		Y
VX1227WBL01	VX1227WBL01	1,1-Dichloroethene		U		Y
VX1227WBL01	VX1227WBL01	1,2,4-Trimethylbenzene		U		Y
VX1227WBL01	VX1227WBL01	1,2-Dichlorobenzene		U		Y
VX1227WBL01	VX1227WBL01	1,2-Dichloroethane		U		Y
VX1227WBL01	VX1227WBL01	1,2-Dichloroethane-D4	49.1			Y
VX1227WBL01	VX1227WBL01	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
VX1227WBL01	VX1227WBL01	1,3-Dichlorobenzene		U		Y
VX1227WBL01	VX1227WBL01	1,4-Dichlorobenzene		U		Y
VX1227WBL01	VX1227WBL01	Acetone		U		Y
VX1227WBL01	VX1227WBL01	Benzene		U		Y
VX1227WBL01	VX1227WBL01	Carbon Tetrachloride		U		Y
VX1227WBL01	VX1227WBL01	Chlorobenzene		U		Y
VX1227WBL01	VX1227WBL01	Chloroform		U		Y
VX1227WBL01	VX1227WBL01	Cis-1,2-Dichloroethylene		U		Y
VX1227WBL01	VX1227WBL01	Dibromofluoromethane	49.5			Y
VX1227WBL01	VX1227WBL01	Ethylbenzene		U		Y
VX1227WBL01	VX1227WBL01	Methyl Ethyl Ketone (2-Butanone)		U		Y
VX1227WBL01	VX1227WBL01	Methylene Chloride		U		Y
VX1227WBL01	VX1227WBL01	N-Butylbenzene		U		Y
VX1227WBL01	VX1227WBL01	N-Propylbenzene		U		Y
VX1227WBL01	VX1227WBL01	p-Bromofluorobenzene	45.4			Y
VX1227WBL01	VX1227WBL01	Sec-Butylbenzene		U		Y
VX1227WBL01	VX1227WBL01	T-Butylbenzene		U		Y
VX1227WBL01	VX1227WBL01	Tert-Butyl Methyl Ether		U		Y
VX1227WBL01	VX1227WBL01	Tetrachloroethylene (PCE)		U		Y
VX1227WBL01	VX1227WBL01	Toluene		U		Y
VX1227WBL01	VX1227WBL01	Toluene-D8	50.6			Y
VX1227WBL01	VX1227WBL01	Trans-1,2-Dichloroethene		U		Y
VX1227WBL01	VX1227WBL01	Trichloroethylene (TCE)		U		Y
VX1227WBL01	VX1227WBL01	Vinyl Chloride		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
VX1227WBL01	VX1227WBL01	Xylenes		U		Y
VX1227WBS01	VX1227WBS01	1,1,1-Trichloroethane (TCA)	18			Y
VX1227WBS01	VX1227WBS01	1,1-Dichloroethane	18.8			Y
VX1227WBS01	VX1227WBS01	1,1-Dichloroethene	17.4			Y
VX1227WBS01	VX1227WBS01	1,2,4-Trimethylbenzene	19.3			Y
VX1227WBS01	VX1227WBS01	1,2-Dichlorobenzene	18.2			Y
VX1227WBS01	VX1227WBS01	1,2-Dichloroethane	18.7			Y
VX1227WBS01	VX1227WBS01	1,2-Dichloroethane-D4	49.1			Y
VX1227WBS01	VX1227WBS01	1,3,5-Trimethylbenzene (Mesitylene)	19.3			Y
VX1227WBS01	VX1227WBS01	1,3-Dichlorobenzene	18.5			Y
VX1227WBS01	VX1227WBS01	1,4-Dichlorobenzene	18.3			Y
VX1227WBS01	VX1227WBS01	Acetone	81.1			Y
VX1227WBS01	VX1227WBS01	Benzene	18.8			Y
VX1227WBS01	VX1227WBS01	Carbon Tetrachloride	18.5			Y
VX1227WBS01	VX1227WBS01	Chlorobenzene	18.5			Y
VX1227WBS01	VX1227WBS01	Chloroform	19			Y
VX1227WBS01	VX1227WBS01	Cis-1,2-Dichloroethylene	18.4			Y
VX1227WBS01	VX1227WBS01	Dibromofluoromethane	50.7			Y
VX1227WBS01	VX1227WBS01	Ethylbenzene	18.9			Y
VX1227WBS01	VX1227WBS01	Methyl Ethyl Ketone (2-Butanone)	89.8			Y
VX1227WBS01	VX1227WBS01	Methylene Chloride	17.9			Y
VX1227WBS01	VX1227WBS01	N-Butylbenzene	19.5			Y
VX1227WBS01	VX1227WBS01	N-Propylbenzene	19.6			Y
VX1227WBS01	VX1227WBS01	p-Bromofluorobenzene	48.4			Y
VX1227WBS01	VX1227WBS01	Sec-Butylbenzene	19.6			Y
VX1227WBS01	VX1227WBS01	T-Butylbenzene	18.6			Y
VX1227WBS01	VX1227WBS01	Tert-Butyl Methyl Ether	18.8			Y
VX1227WBS01	VX1227WBS01	Tetrachloroethylene (PCE)	19.6			Y
VX1227WBS01	VX1227WBS01	Toluene	18.5			Y
VX1227WBS01	VX1227WBS01	Toluene-D8	50			Y
VX1227WBS01	VX1227WBS01	Trans-1,2-Dichloroethene	17.5			Y
VX1227WBS01	VX1227WBS01	Trichloroethylene (TCE)	18.5			Y
VX1227WBS01	VX1227WBS01	Vinyl Chloride	17.5			Y
VX1227WBS01	VX1227WBS01	Xylenes	56.4			Y
VX1230WBL02	VX1230WBL02	1,1,1-Trichloroethane (TCA)		U		Y
VX1230WBL02	VX1230WBL02	1,1-Dichloroethane		U		Y
VX1230WBL02	VX1230WBL02	1,1-Dichloroethene		U		Y
VX1230WBL02	VX1230WBL02	1,2,4-Trimethylbenzene		U		Y
VX1230WBL02	VX1230WBL02	1,2-Dichlorobenzene		U		Y
VX1230WBL02	VX1230WBL02	1,2-Dichloroethane		U		Y
VX1230WBL02	VX1230WBL02	1,2-Dichloroethane-D4	49.7			Y
VX1230WBL02	VX1230WBL02	1,3,5-Trimethylbenzene (Mesitylene)		U		Y
VX1230WBL02	VX1230WBL02	1,3-Dichlorobenzene		U		Y
VX1230WBL02	VX1230WBL02	1,4-Dichlorobenzene		U		Y
VX1230WBL02	VX1230WBL02	Acetone		U		Y
VX1230WBL02	VX1230WBL02	Benzene		U		Y
VX1230WBL02	VX1230WBL02	Carbon Tetrachloride		U		Y
VX1230WBL02	VX1230WBL02	Chlorobenzene		U		Y
VX1230WBL02	VX1230WBL02	Chloroform		U		Y
VX1230WBL02	VX1230WBL02	Cis-1,2-Dichloroethylene		U		Y
VX1230WBL02	VX1230WBL02	Dibromofluoromethane	49.1			Y
VX1230WBL02	VX1230WBL02	Ethylbenzene		U		Y
VX1230WBL02	VX1230WBL02	Methyl Ethyl Ketone (2-Butanone)		U		Y
VX1230WBL02	VX1230WBL02	Methylene Chloride		U		Y
VX1230WBL02	VX1230WBL02	N-Butylbenzene		U		Y
VX1230WBL02	VX1230WBL02	N-Propylbenzene		U		Y
VX1230WBL02	VX1230WBL02	p-Bromofluorobenzene	46.4			Y
VX1230WBL02	VX1230WBL02	Sec-Butylbenzene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
VX1230WBL02	VX1230WBL02	T-Butylbenzene		U		Y
VX1230WBL02	VX1230WBL02	Tert-Butyl Methyl Ether		U		Y
VX1230WBL02	VX1230WBL02	Tetrachloroethylene (PCE)		U		Y
VX1230WBL02	VX1230WBL02	Toluene		U		Y
VX1230WBL02	VX1230WBL02	Toluene-D8	50.5			Y
VX1230WBL02	VX1230WBL02	Trans-1,2-Dichloroethene		U		Y
VX1230WBL02	VX1230WBL02	Trichloroethylene (TCE)		U		Y
VX1230WBL02	VX1230WBL02	Vinyl Chloride		U		Y
VX1230WBL02	VX1230WBL02	Xylenes		U		Y
VX1230WBS02	VX1230WBS02	1,1,1-Trichloroethane (TCA)	18.8			Y
VX1230WBS02	VX1230WBS02	1,1-Dichloroethane	18.8			Y
VX1230WBS02	VX1230WBS02	1,1-Dichloroethene	17.9			Y
VX1230WBS02	VX1230WBS02	1,2,4-Trimethylbenzene	19.9			Y
VX1230WBS02	VX1230WBS02	1,2-Dichlorobenzene	18.8			Y
VX1230WBS02	VX1230WBS02	1,2-Dichloroethane	18.5			Y
VX1230WBS02	VX1230WBS02	1,2-Dichloroethane-D4	48.2			Y
VX1230WBS02	VX1230WBS02	1,3,5-Trimethylbenzene (Mesitylene)	19.7			Y
VX1230WBS02	VX1230WBS02	1,3-Dichlorobenzene	19			Y
VX1230WBS02	VX1230WBS02	1,4-Dichlorobenzene	18.3			Y
VX1230WBS02	VX1230WBS02	Acetone	67.4			Y
VX1230WBS02	VX1230WBS02	Benzene	18.9			Y
VX1230WBS02	VX1230WBS02	Carbon Tetrachloride	18.6			Y
VX1230WBS02	VX1230WBS02	Chlorobenzene	18.7			Y
VX1230WBS02	VX1230WBS02	Chloroform	19.5			Y
VX1230WBS02	VX1230WBS02	Cis-1,2-Dichloroethylene	18.3			Y
VX1230WBS02	VX1230WBS02	Dibromofluoromethane	48.8			Y
VX1230WBS02	VX1230WBS02	Ethylbenzene	18.9			Y
VX1230WBS02	VX1230WBS02	Methyl Ethyl Ketone (2-Butanone)	84.5			Y
VX1230WBS02	VX1230WBS02	Methylene Chloride	18.6			Y
VX1230WBS02	VX1230WBS02	N-Butylbenzene	19.8			Y
VX1230WBS02	VX1230WBS02	N-Propylbenzene	20.1			Y
VX1230WBS02	VX1230WBS02	p-Bromofluorobenzene	47.6			Y
VX1230WBS02	VX1230WBS02	Sec-Butylbenzene	20.1			Y
VX1230WBS02	VX1230WBS02	T-Butylbenzene	19.5			Y
VX1230WBS02	VX1230WBS02	Tert-Butyl Methyl Ether	19.2			Y
VX1230WBS02	VX1230WBS02	Tetrachloroethylene (PCE)	18.6			Y
VX1230WBS02	VX1230WBS02	Toluene	18.6			Y
VX1230WBS02	VX1230WBS02	Toluene-D8	48.1			Y
VX1230WBS02	VX1230WBS02	Trans-1,2-Dichloroethene	17.8			Y
VX1230WBS02	VX1230WBS02	Trichloroethylene (TCE)	18.5			Y
VX1230WBS02	VX1230WBS02	Vinyl Chloride	17.5			Y
VX1230WBS02	VX1230WBS02	Xylenes	55.9			Y
LW-04-20191218	K6449-01	1,4-Dioxane (P-Dioxane)		U		Y
LW-04-20191218	K6449-01	2,4,6-Tribromophenol	159.823			Y
LW-04-20191218	K6449-01	2-Fluorobiphenyl	98.814			Y
LW-04-20191218	K6449-01	2-Fluorophenol	89.933			Y
LW-04-20191218	K6449-01	2-Methylphenol (O-Cresol)		U		Y
LW-04-20191218	K6449-01	Acenaphthene		U		Y
LW-04-20191218	K6449-01	Acenaphthylene		U		Y
LW-04-20191218	K6449-01	Anthracene		U		Y
LW-04-20191218	K6449-01	Benzo(A)Anthracene		U		Y
LW-04-20191218	K6449-01	Benzo(A)Pyrene		U		Y
LW-04-20191218	K6449-01	Benzo(B)Fluoranthene		U		Y
LW-04-20191218	K6449-01	Benzo(G,H,I)Perylene		U		Y
LW-04-20191218	K6449-01	Benzo(K)Fluoranthene		U		Y
LW-04-20191218	K6449-01	Chrysene		U		Y
LW-04-20191218	K6449-01	Dibenz(A,H)Anthracene		U		Y
LW-04-20191218	K6449-01	Dibenzofuran		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-04-20191218	K6449-01	Fluoranthene		U		Y
LW-04-20191218	K6449-01	Fluorene		U		Y
LW-04-20191218	K6449-01	Hexachlorobenzene		U		Y
LW-04-20191218	K6449-01	Indeno(1,2,3-C,D)Pyrene		U		Y
LW-04-20191218	K6449-01	M+P MethylPhenol		U		Y
LW-04-20191218	K6449-01	Naphthalene		U		Y
LW-04-20191218	K6449-01	Nitrobenzene-D5	106.92			Y
LW-04-20191218	K6449-01	Pentachlorophenol		U		Y
LW-04-20191218	K6449-01	Phenanthrene		U		Y
LW-04-20191218	K6449-01	Phenol		U		Y
LW-04-20191218	K6449-01	Phenol-D6	59.408			Y
LW-04-20191218	K6449-01	Pyrene		U		Y
LW-04-20191218	K6449-01	Terphenyl-D14	108.904			Y
LW-04-20191218	K6449-01	Terphenyl-D14	108.904			Y
LW-03-20191218	K6449-02	1,4-Dioxane (P-Dioxane)		U		Y
LW-03-20191218	K6449-02	2,4,6-Tribromophenol	153.753			Y
LW-03-20191218	K6449-02	2-Fluorobiphenyl	92.365			Y
LW-03-20191218	K6449-02	2-Fluorophenol	99.986			Y
LW-03-20191218	K6449-02	2-Methylphenol (O-Cresol)		U		Y
LW-03-20191218	K6449-02	Acenaphthene		U		Y
LW-03-20191218	K6449-02	Acenaphthylene		U		Y
LW-03-20191218	K6449-02	Anthracene		U		Y
LW-03-20191218	K6449-02	Benzo(A)Anthracene		U		Y
LW-03-20191218	K6449-02	Benzo(A)Pyrene		U		Y
LW-03-20191218	K6449-02	Benzo(B)Fluoranthene		U		Y
LW-03-20191218	K6449-02	Benzo(G,H,I)Perylene		U		Y
LW-03-20191218	K6449-02	Benzo(K)Fluoranthene		U		Y
LW-03-20191218	K6449-02	Chrysene		U		Y
LW-03-20191218	K6449-02	Dibenz(A,H)Anthracene		U		Y
LW-03-20191218	K6449-02	Dibenzofuran		U		Y
LW-03-20191218	K6449-02	Fluoranthene		U		Y
LW-03-20191218	K6449-02	Fluorene		U		Y
LW-03-20191218	K6449-02	Hexachlorobenzene		U		Y
LW-03-20191218	K6449-02	Indeno(1,2,3-C,D)Pyrene		U		Y
LW-03-20191218	K6449-02	M+P MethylPhenol		U		Y
LW-03-20191218	K6449-02	Naphthalene		U		Y
LW-03-20191218	K6449-02	Nitrobenzene-D5	89.656			Y
LW-03-20191218	K6449-02	Pentachlorophenol		U		Y
LW-03-20191218	K6449-02	Phenanthrene		U		Y
LW-03-20191218	K6449-02	Phenol	10	J	U	Y
LW-03-20191218	K6449-02	Phenol-D6	70.518			Y
LW-03-20191218	K6449-02	Pyrene		U		Y
LW-03-20191218	K6449-02	Terphenyl-D14	95.536			Y
LW-03-20191218	K6449-02	Terphenyl-D14	95.536			Y
LW-05-20191219	K6449-03	1,4-Dioxane (P-Dioxane)		U		Y
LW-05-20191219	K6449-03	2,4,6-Tribromophenol	148.14			Y
LW-05-20191219	K6449-03	2-Fluorobiphenyl	92.173			Y
LW-05-20191219	K6449-03	2-Fluorophenol	99.309			Y
LW-05-20191219	K6449-03	2-Methylphenol (O-Cresol)		U		Y
LW-05-20191219	K6449-03	Acenaphthene		U		Y
LW-05-20191219	K6449-03	Acenaphthylene		U		Y
LW-05-20191219	K6449-03	Anthracene		U		Y
LW-05-20191219	K6449-03	Benzo(A)Anthracene		U		Y
LW-05-20191219	K6449-03	Benzo(A)Pyrene		U		Y
LW-05-20191219	K6449-03	Benzo(B)Fluoranthene		U		Y
LW-05-20191219	K6449-03	Benzo(G,H,I)Perylene		U		Y
LW-05-20191219	K6449-03	Benzo(K)Fluoranthene		U		Y
LW-05-20191219	K6449-03	Chrysene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
LW-05-20191219	K6449-03	Dibenz(A,H)Anthracene		U		Y
LW-05-20191219	K6449-03	Dibenzofuran		U		Y
LW-05-20191219	K6449-03	Fluoranthene		U		Y
LW-05-20191219	K6449-03	Fluorene		U		Y
LW-05-20191219	K6449-03	Hexachlorobenzene		U		Y
LW-05-20191219	K6449-03	Indeno(1,2,3-C,D)Pyrene		U		Y
LW-05-20191219	K6449-03	M+P MethylPhenol		U		Y
LW-05-20191219	K6449-03	Naphthalene		U		Y
LW-05-20191219	K6449-03	Nitrobenzene-D5	86.458			Y
LW-05-20191219	K6449-03	Pentachlorophenol		U		Y
LW-05-20191219	K6449-03	Phenanthrene		U		Y
LW-05-20191219	K6449-03	Phenol	10	J	U	Y
LW-05-20191219	K6449-03	Phenol-D6	69.134			Y
LW-05-20191219	K6449-03	Pyrene		U		Y
LW-05-20191219	K6449-03	Terphenyl-D14	94.578			Y
LW-05-20191219	K6449-03	Terphenyl-D14	94.578			Y
OW-4-20191220	K6449-04	1,4-Dioxane (P-Dioxane)		U		Y
OW-4-20191220	K6449-04	2,4,6-Tribromophenol	153.979			Y
OW-4-20191220	K6449-04	2-Fluorobiphenyl	92.075			Y
OW-4-20191220	K6449-04	2-Fluorophenol	98.306			Y
OW-4-20191220	K6449-04	2-Methylphenol (O-Cresol)		U		Y
OW-4-20191220	K6449-04	Acenaphthene		U		Y
OW-4-20191220	K6449-04	Acenaphthylene		U		Y
OW-4-20191220	K6449-04	Anthracene		U		Y
OW-4-20191220	K6449-04	Benzo(A)Anthracene		U		Y
OW-4-20191220	K6449-04	Benzo(A)Pyrene		U		Y
OW-4-20191220	K6449-04	Benzo(B)Fluoranthene		U		Y
OW-4-20191220	K6449-04	Benzo(G,H,I)Perylene		U		Y
OW-4-20191220	K6449-04	Benzo(K)Fluoranthene		U		Y
OW-4-20191220	K6449-04	Chrysene		U		Y
OW-4-20191220	K6449-04	Dibenz(A,H)Anthracene		U		Y
OW-4-20191220	K6449-04	Dibenzofuran		U		Y
OW-4-20191220	K6449-04	Fluoranthene		U		Y
OW-4-20191220	K6449-04	Fluorene		U		Y
OW-4-20191220	K6449-04	Hexachlorobenzene		U		Y
OW-4-20191220	K6449-04	Indeno(1,2,3-C,D)Pyrene		U		Y
OW-4-20191220	K6449-04	M+P MethylPhenol		U		Y
OW-4-20191220	K6449-04	Naphthalene		U		Y
OW-4-20191220	K6449-04	Nitrobenzene-D5	86.981			Y
OW-4-20191220	K6449-04	Pentachlorophenol		U		Y
OW-4-20191220	K6449-04	Phenanthrene		U		Y
OW-4-20191220	K6449-04	Phenol	10	J	U	Y
OW-4-20191220	K6449-04	Phenol-D6	68.021			Y
OW-4-20191220	K6449-04	Pyrene		U		Y
OW-4-20191220	K6449-04	Terphenyl-D14	96.372			Y
OW-4-20191220	K6449-04	Terphenyl-D14	96.372			Y
OW-5-20191223	K6449-05	1,4-Dioxane (P-Dioxane)		U		Y
OW-5-20191223	K6449-05	2,4,6-Tribromophenol	155.251			Y
OW-5-20191223	K6449-05	2-Fluorobiphenyl	93.668			Y
OW-5-20191223	K6449-05	2-Fluorophenol	103.092			Y
OW-5-20191223	K6449-05	2-Methylphenol (O-Cresol)		U		Y
OW-5-20191223	K6449-05	Acenaphthene		U		Y
OW-5-20191223	K6449-05	Acenaphthylene		U		Y
OW-5-20191223	K6449-05	Anthracene		U		Y
OW-5-20191223	K6449-05	Benzo(A)Anthracene		U		Y
OW-5-20191223	K6449-05	Benzo(A)Pyrene		U		Y
OW-5-20191223	K6449-05	Benzo(B)Fluoranthene		U		Y
OW-5-20191223	K6449-05	Benzo(G,H,I)Perylene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5-20191223	K6449-05	Benzo(K)Fluoranthene		U		Y
OW-5-20191223	K6449-05	Chrysene		U		Y
OW-5-20191223	K6449-05	Dibenz(A,H)Anthracene		U		Y
OW-5-20191223	K6449-05	Dibenzofuran		U		Y
OW-5-20191223	K6449-05	Fluoranthene		U		Y
OW-5-20191223	K6449-05	Fluorene		U		Y
OW-5-20191223	K6449-05	Hexachlorobenzene		U		Y
OW-5-20191223	K6449-05	Indeno(1,2,3-C,D)Pyrene		U		Y
OW-5-20191223	K6449-05	M+P MethylPhenol		U		Y
OW-5-20191223	K6449-05	Naphthalene		U		Y
OW-5-20191223	K6449-05	Nitrobenzene-D5	89.976			Y
OW-5-20191223	K6449-05	Pentachlorophenol		U		Y
OW-5-20191223	K6449-05	Phenanthrene		U		Y
OW-5-20191223	K6449-05	Phenol	10	J	U	Y
OW-5-20191223	K6449-05	Phenol-D6	72.095			Y
OW-5-20191223	K6449-05	Pyrene		U		Y
OW-5-20191223	K6449-05	Terphenyl-D14	95.943			Y
OW-5-20191223	K6449-05	Terphenyl-D14	95.943			Y
OW-5MS	K6449-06MS	1,4-Dioxane (P-Dioxane)	28.2			Y
OW-5MS	K6449-06MS	2,4,6-Tribromophenol	151.759			Y
OW-5MS	K6449-06MS	2-Fluorobiphenyl	92.887			Y
OW-5MS	K6449-06MS	2-Fluorophenol	105.918			Y
OW-5MS	K6449-06MS	2-Methylphenol (O-Cresol)	47.4			Y
OW-5MS	K6449-06MS	Acenaphthene	45.3			Y
OW-5MS	K6449-06MS	Acenaphthylene	47.8			Y
OW-5MS	K6449-06MS	Anthracene	49.3			Y
OW-5MS	K6449-06MS	Benzo(A)Anthracene	48.8			Y
OW-5MS	K6449-06MS	Benzo(A)Pyrene	45.9			Y
OW-5MS	K6449-06MS	Benzo(B)Fluoranthene	47.6			Y
OW-5MS	K6449-06MS	Benzo(G,H,I)Perylene	49.9			Y
OW-5MS	K6449-06MS	Benzo(K)Fluoranthene	47.4			Y
OW-5MS	K6449-06MS	Chrysene	48.4			Y
OW-5MS	K6449-06MS	Dibenz(A,H)Anthracene	49.1			Y
OW-5MS	K6449-06MS	Dibenzofuran	48.3			Y
OW-5MS	K6449-06MS	Fluoranthene	45.7			Y
OW-5MS	K6449-06MS	Fluorene	48.5			Y
OW-5MS	K6449-06MS	Hexachlorobenzene	44.8			Y
OW-5MS	K6449-06MS	Indeno(1,2,3-C,D)Pyrene	48.5			Y
OW-5MS	K6449-06MS	M+P MethylPhenol	44.4			Y
OW-5MS	K6449-06MS	Naphthalene	45.3			Y
OW-5MS	K6449-06MS	Nitrobenzene-D5	89.755			Y
OW-5MS	K6449-06MS	Pentachlorophenol	100	E		Y
OW-5MS	K6449-06MS	Phenanthrene	47.4			Y
OW-5MS	K6449-06MS	Phenol	28.4			Y
OW-5MS	K6449-06MS	Phenol-D6	74.514			Y
OW-5MS	K6449-06MS	Pyrene	47.7			Y
OW-5MS	K6449-06MS	Terphenyl-D14	99.935			Y
OW-5MS	K6449-06MS	Terphenyl-D14	99.935			Y
OW-5MSD	K6449-07MSD	1,4-Dioxane (P-Dioxane)	26.2			Y
OW-5MSD	K6449-07MSD	2,4,6-Tribromophenol	146.252			Y
OW-5MSD	K6449-07MSD	2-Fluorobiphenyl	89.742			Y
OW-5MSD	K6449-07MSD	2-Fluorophenol	105.25			Y
OW-5MSD	K6449-07MSD	2-Methylphenol (O-Cresol)	46.1			Y
OW-5MSD	K6449-07MSD	Acenaphthene	45			Y
OW-5MSD	K6449-07MSD	Acenaphthylene	46.4			Y
OW-5MSD	K6449-07MSD	Anthracene	48.2			Y
OW-5MSD	K6449-07MSD	Benzo(A)Anthracene	47			Y
OW-5MSD	K6449-07MSD	Benzo(A)Pyrene	45.2			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-5MSD	K6449-07MSD	Benzo(B)Fluoranthene	45.4			Y
OW-5MSD	K6449-07MSD	Benzo(G,H,I)Perylene	48.6			Y
OW-5MSD	K6449-07MSD	Benzo(K)Fluoranthene	47			Y
OW-5MSD	K6449-07MSD	Chrysene	47			Y
OW-5MSD	K6449-07MSD	Dibenz(A,H)Anthracene	47.7			Y
OW-5MSD	K6449-07MSD	Dibenzofuran	46.6			Y
OW-5MSD	K6449-07MSD	Fluoranthene	44.7			Y
OW-5MSD	K6449-07MSD	Fluorene	47.2			Y
OW-5MSD	K6449-07MSD	Hexachlorobenzene	42.8			Y
OW-5MSD	K6449-07MSD	Indeno(1,2,3-C,D)Pyrene	47.1			Y
OW-5MSD	K6449-07MSD	M+P MethylPhenol	42.5			Y
OW-5MSD	K6449-07MSD	Naphthalene	42.7			Y
OW-5MSD	K6449-07MSD	Nitrobenzene-D5	86.664			Y
OW-5MSD	K6449-07MSD	Pentachlorophenol	97.5			Y
OW-5MSD	K6449-07MSD	Phenanthrene	46			Y
OW-5MSD	K6449-07MSD	Phenol	29			Y
OW-5MSD	K6449-07MSD	Phenol-D6	72.906			Y
OW-5MSD	K6449-07MSD	Pyrene	46.2			Y
OW-5MSD	K6449-07MSD	Terphenyl-D14	96.581			Y
OW-5MSD	K6449-07MSD	Terphenyl-D14	96.581			Y
OW-2-20191223	K6449-08	1,4-Dioxane (P-Dioxane)		U		Y
OW-2-20191223	K6449-08	2,4,6-Tribromophenol	156.399			Y
OW-2-20191223	K6449-08	2-Fluorobiphenyl	93.115			Y
OW-2-20191223	K6449-08	2-Fluorophenol	101.511			Y
OW-2-20191223	K6449-08	2-Methylphenol (O-Cresol)		U		Y
OW-2-20191223	K6449-08	Acenaphthene		U		Y
OW-2-20191223	K6449-08	Acenaphthylene		U		Y
OW-2-20191223	K6449-08	Anthracene		U		Y
OW-2-20191223	K6449-08	Benzo(A)Anthracene		U		Y
OW-2-20191223	K6449-08	Benzo(A)Pyrene		U		Y
OW-2-20191223	K6449-08	Benzo(B)Fluoranthene		U		Y
OW-2-20191223	K6449-08	Benzo(G,H,I)Perylene		U		Y
OW-2-20191223	K6449-08	Benzo(K)Fluoranthene		U		Y
OW-2-20191223	K6449-08	Chrysene		U		Y
OW-2-20191223	K6449-08	Dibenz(A,H)Anthracene		U		Y
OW-2-20191223	K6449-08	Dibenzofuran		U		Y
OW-2-20191223	K6449-08	Fluoranthene		U		Y
OW-2-20191223	K6449-08	Fluorene		U		Y
OW-2-20191223	K6449-08	Hexachlorobenzene		U		Y
OW-2-20191223	K6449-08	Indeno(1,2,3-C,D)Pyrene		U		Y
OW-2-20191223	K6449-08	M+P MethylPhenol		U		Y
OW-2-20191223	K6449-08	Naphthalene		U		Y
OW-2-20191223	K6449-08	Nitrobenzene-D5	90.787			Y
OW-2-20191223	K6449-08	Pentachlorophenol		U		Y
OW-2-20191223	K6449-08	Phenanthrene		U		Y
OW-2-20191223	K6449-08	Phenol	10	J	U	Y
OW-2-20191223	K6449-08	Phenol-D6	71.592			Y
OW-2-20191223	K6449-08	Pyrene		U		Y
OW-2-20191223	K6449-08	Terphenyl-D14	99.913			Y
OW-2-20191223	K6449-08	Terphenyl-D14	99.913			Y
OW-1-20191223	K6449-09	1,4-Dioxane (P-Dioxane)		U		Y
OW-1-20191223	K6449-09	2,4,6-Tribromophenol	148.942			Y
OW-1-20191223	K6449-09	2-Fluorobiphenyl	94.081			Y
OW-1-20191223	K6449-09	2-Fluorophenol	102.607			Y
OW-1-20191223	K6449-09	2-Methylphenol (O-Cresol)		U		Y
OW-1-20191223	K6449-09	Acenaphthene		U		Y
OW-1-20191223	K6449-09	Acenaphthylene		U		Y
OW-1-20191223	K6449-09	Anthracene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
OW-1-20191223	K6449-09	Benzo(A)Anthracene		U		Y
OW-1-20191223	K6449-09	Benzo(A)Pyrene		U		Y
OW-1-20191223	K6449-09	Benzo(B)Fluoranthene		U		Y
OW-1-20191223	K6449-09	Benzo(G,H,I)Perylene		U		Y
OW-1-20191223	K6449-09	Benzo(K)Fluoranthene		U		Y
OW-1-20191223	K6449-09	Chrysene		U		Y
OW-1-20191223	K6449-09	Dibenz(A,H)Anthracene		U		Y
OW-1-20191223	K6449-09	Dibenzofuran		U		Y
OW-1-20191223	K6449-09	Fluoranthene		U		Y
OW-1-20191223	K6449-09	Fluorene		U		Y
OW-1-20191223	K6449-09	Hexachlorobenzene		U		Y
OW-1-20191223	K6449-09	Indeno(1,2,3-C,D)Pyrene		U		Y
OW-1-20191223	K6449-09	M+P MethylPhenol		U		Y
OW-1-20191223	K6449-09	Naphthalene		U		Y
OW-1-20191223	K6449-09	Nitrobenzene-D5	89.539			Y
OW-1-20191223	K6449-09	Pentachlorophenol		U		Y
OW-1-20191223	K6449-09	Phenanthrene		U		Y
OW-1-20191223	K6449-09	Phenol	10	J	U	Y
OW-1-20191223	K6449-09	Phenol-D6	71.976			Y
OW-1-20191223	K6449-09	Pyrene		U		Y
OW-1-20191223	K6449-09	Terphenyl-D14	95.525			Y
OW-1-20191223	K6449-09	Terphenyl-D14	95.525			Y
FIELD-BLANK-20191223	K6449-10	1,4-Dioxane (P-Dioxane)		U		Y
FIELD-BLANK-20191223	K6449-10	2,4,6-Tribromophenol	146.222			Y
FIELD-BLANK-20191223	K6449-10	2-Fluorobiphenyl	89.686			Y
FIELD-BLANK-20191223	K6449-10	2-Fluorophenol	89.09			Y
FIELD-BLANK-20191223	K6449-10	2-Methylphenol (O-Cresol)		U		Y
FIELD-BLANK-20191223	K6449-10	Acenaphthene		U		Y
FIELD-BLANK-20191223	K6449-10	Acenaphthylene		U		Y
FIELD-BLANK-20191223	K6449-10	Anthracene		U		Y
FIELD-BLANK-20191223	K6449-10	Benzo(A)Anthracene		U		Y
FIELD-BLANK-20191223	K6449-10	Benzo(A)Pyrene		U		Y
FIELD-BLANK-20191223	K6449-10	Benzo(B)Fluoranthene		U		Y
FIELD-BLANK-20191223	K6449-10	Benzo(G,H,I)Perylene		U		Y
FIELD-BLANK-20191223	K6449-10	Benzo(K)Fluoranthene		U		Y
FIELD-BLANK-20191223	K6449-10	Chrysene		U		Y
FIELD-BLANK-20191223	K6449-10	Dibenz(A,H)Anthracene		U		Y
FIELD-BLANK-20191223	K6449-10	Dibenzofuran		U		Y
FIELD-BLANK-20191223	K6449-10	Fluoranthene		U		Y
FIELD-BLANK-20191223	K6449-10	Fluorene		U		Y
FIELD-BLANK-20191223	K6449-10	Hexachlorobenzene		U		Y
FIELD-BLANK-20191223	K6449-10	Indeno(1,2,3-C,D)Pyrene		U		Y
FIELD-BLANK-20191223	K6449-10	M+P MethylPhenol		U		Y
FIELD-BLANK-20191223	K6449-10	Naphthalene		U		Y
FIELD-BLANK-20191223	K6449-10	Nitrobenzene-D5	82.587			Y
FIELD-BLANK-20191223	K6449-10	Pentachlorophenol		U		Y
FIELD-BLANK-20191223	K6449-10	Phenanthrene		U		Y
FIELD-BLANK-20191223	K6449-10	Phenol	2.7	J		Y
FIELD-BLANK-20191223	K6449-10	Phenol-D6	61.123			Y
FIELD-BLANK-20191223	K6449-10	Pyrene		U		Y
FIELD-BLANK-20191223	K6449-10	Terphenyl-D14	93.162			Y
FIELD-BLANK-20191223	K6449-10	Terphenyl-D14	93.162			Y
DUPLICATE-20191223	K6449-11	1,4-Dioxane (P-Dioxane)		U		Y
DUPLICATE-20191223	K6449-11	2,4,6-Tribromophenol	157.245			Y
DUPLICATE-20191223	K6449-11	2-Fluorobiphenyl	94.747			Y
DUPLICATE-20191223	K6449-11	2-Fluorophenol	102.633			Y
DUPLICATE-20191223	K6449-11	2-Methylphenol (O-Cresol)		U		Y
DUPLICATE-20191223	K6449-11	Acenaphthene		U		Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
DUPLICATE-20191223	K6449-11	Acenaphthylene		U		Y
DUPLICATE-20191223	K6449-11	Anthracene		U		Y
DUPLICATE-20191223	K6449-11	Benzo(A)Anthracene		U		Y
DUPLICATE-20191223	K6449-11	Benzo(A)Pyrene		U		Y
DUPLICATE-20191223	K6449-11	Benzo(B)Fluoranthene		U		Y
DUPLICATE-20191223	K6449-11	Benzo(G,H,I)Perylene		U		Y
DUPLICATE-20191223	K6449-11	Benzo(K)Fluoranthene		U		Y
DUPLICATE-20191223	K6449-11	Chrysene		U		Y
DUPLICATE-20191223	K6449-11	Dibenz(A,H)Anthracene		U		Y
DUPLICATE-20191223	K6449-11	Dibenzofuran		U		Y
DUPLICATE-20191223	K6449-11	Fluoranthene		U		Y
DUPLICATE-20191223	K6449-11	Fluorene		U		Y
DUPLICATE-20191223	K6449-11	Hexachlorobenzene		U		Y
DUPLICATE-20191223	K6449-11	Indeno(1,2,3-C,D)Pyrene		U		Y
DUPLICATE-20191223	K6449-11	M+P MethylPhenol		U		Y
DUPLICATE-20191223	K6449-11	Naphthalene		U		Y
DUPLICATE-20191223	K6449-11	Nitrobenzene-D5	90.341			Y
DUPLICATE-20191223	K6449-11	Pentachlorophenol		U		Y
DUPLICATE-20191223	K6449-11	Phenanthrene		U		Y
DUPLICATE-20191223	K6449-11	Phenol	10	J	U	Y
DUPLICATE-20191223	K6449-11	Phenol-D6	72.231			Y
DUPLICATE-20191223	K6449-11	Pyrene		U		Y
DUPLICATE-20191223	K6449-11	Terphenyl-D14	98.336			Y
DUPLICATE-20191223	K6449-11	Terphenyl-D14	98.336			Y
PB125777BL	PB125777BL	1,4-Dioxane (P-Dioxane)		U		Y
PB125777BL	PB125777BL	2,4,6-Tribromophenol	136.429			Y
PB125777BL	PB125777BL	2-Fluorobiphenyl	91.436			Y
PB125777BL	PB125777BL	2-Fluorophenol	134.063			Y
PB125777BL	PB125777BL	2-Methylphenol (O-Cresol)		U		Y
PB125777BL	PB125777BL	Acenaphthene		U		Y
PB125777BL	PB125777BL	Acenaphthylene		U		Y
PB125777BL	PB125777BL	Anthracene		U		Y
PB125777BL	PB125777BL	Benzo(A)Anthracene		U		Y
PB125777BL	PB125777BL	Benzo(A)Pyrene		U		Y
PB125777BL	PB125777BL	Benzo(B)Fluoranthene		U		Y
PB125777BL	PB125777BL	Benzo(G,H,I)Perylene		U		Y
PB125777BL	PB125777BL	Benzo(K)Fluoranthene		U		Y
PB125777BL	PB125777BL	Chrysene		U		Y
PB125777BL	PB125777BL	Dibenz(A,H)Anthracene		U		Y
PB125777BL	PB125777BL	Dibenzofuran		U		Y
PB125777BL	PB125777BL	Fluoranthene		U		Y
PB125777BL	PB125777BL	Fluorene		U		Y
PB125777BL	PB125777BL	Hexachlorobenzene		U		Y
PB125777BL	PB125777BL	Indeno(1,2,3-C,D)Pyrene		U		Y
PB125777BL	PB125777BL	M+P MethylPhenol		U		Y
PB125777BL	PB125777BL	Naphthalene		U		Y
PB125777BL	PB125777BL	Nitrobenzene-D5	92.417			Y
PB125777BL	PB125777BL	Pentachlorophenol		U		Y
PB125777BL	PB125777BL	Phenanthrene		U		Y
PB125777BL	PB125777BL	Phenol		U		Y
PB125777BL	PB125777BL	Phenol-D6	146.028			Y
PB125777BL	PB125777BL	Pyrene		U		Y
PB125777BL	PB125777BL	Terphenyl-D14	100.011			Y
PB125777BL	PB125777BL	Terphenyl-D14	100.011			Y
PB125777BS	PB125777BS	1,4-Dioxane (P-Dioxane)	40.9			Y
PB125777BS	PB125777BS	2,4,6-Tribromophenol	106.3			Y
PB125777BS	PB125777BS	2-Fluorobiphenyl	67.547			Y
PB125777BS	PB125777BS	2-Fluorophenol	114.752			Y

#sys_sample_code	lab_sample_id	chemical_name	result value	lab qualifiers	validator qualifiers	validated_yn
PB125777BS	PB125777BS	2-Methylphenol (O-Cresol)	42.3			Y
PB125777BS	PB125777BS	Acenaphthene	36.7			Y
PB125777BS	PB125777BS	Acenaphthylene	35.8			Y
PB125777BS	PB125777BS	Anthracene	41.4			Y
PB125777BS	PB125777BS	Benzo(A)Anthracene	38.5			Y
PB125777BS	PB125777BS	Benzo(A)Pyrene	42.7			Y
PB125777BS	PB125777BS	Benzo(B)Fluoranthene	43			Y
PB125777BS	PB125777BS	Benzo(G,H,I)Perylene	45.1			Y
PB125777BS	PB125777BS	Benzo(K)Fluoranthene	45.6			Y
PB125777BS	PB125777BS	Chrysene	36.4			Y
PB125777BS	PB125777BS	Dibenz(A,H)Anthracene	42.2			Y
PB125777BS	PB125777BS	Dibenzofuran	37.4			Y
PB125777BS	PB125777BS	Fluoranthene	40.6			Y
PB125777BS	PB125777BS	Fluorene	37.3			Y
PB125777BS	PB125777BS	Hexachlorobenzene	38.7			Y
PB125777BS	PB125777BS	Indeno(1,2,3-C,D)Pyrene	34.9			Y
PB125777BS	PB125777BS	M+P MethylPhenol	40.6			Y
PB125777BS	PB125777BS	Naphthalene	40.4			Y
PB125777BS	PB125777BS	Nitrobenzene-D5	71.053			Y
PB125777BS	PB125777BS	Pentachlorophenol	80.9			Y
PB125777BS	PB125777BS	Phenanthrene	39.2			Y
PB125777BS	PB125777BS	Phenol	44.5			Y
PB125777BS	PB125777BS	Phenol-D6	119.042			Y
PB125777BS	PB125777BS	Pyrene	43.1			Y
PB125777BS	PB125777BS	Terphenyl-D14	83.07			Y
PB125777BS	PB125777BS	Terphenyl-D14	83.07			Y