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16 August 2023

Stephen Lee, Director
Louisiana Department of Natural Resources
Office of Conservation - Injection & Mining Division
617 North Third Street, LaSalle Building
Baton Rouge, Louisiana 70802-5431

Reference: 0701093

Subject: 4th Analytical Data Submittal
Westlake US 2, LLC
Sulphur Dome
Calcasieu Parish, Louisiana

Dear Mr. Lee:

On behalf of Westlake US 2, LLC (Westlake), Environmental Resources Management Southwest, Inc. (ERM) is pleased to provide the Louisiana Department of Natural Resources (LDNR) Injection & Mining Division with the final laboratory analytical data for groundwater, surface water, and oil samples collected at the Sulphur Dome in Calcasieu Parish. The samples were collected by ERM during May through July 2023 sampling events.

Enclosed are the following:

- Table 1 – Groundwater Data
- Table 2 – Surface Water Data
- Table 3 – Central Lake Water Column Profile
- Table 4 – Gas Data
- Table 5 – Oil Data
- Figure 1-3 – Sample Location Maps
- Figure 4 – Piper Diagram
- Figure 5 – Methane Isotopes
- Attachment 1 – Laboratory Reports

Only final laboratory reports received since the previous data submittal are provided in Attachment 1. Supplemental submittals will be made as additional final laboratory analytical data are received.

1. WATER SAMPLING RESULTS

In June and July 2023, additional samples of groundwater, surface water, brine, and oil were collected at the site. Results were also received for dissolved gas samples collected in May and June. The sampling locations are shown in Figures 1-3. The water samples were analyzed by ALS Global laboratory in Houston, Texas, a Louisiana Environmental Laboratory Accreditation Program (LELAP) accredited laboratory. Dissolved gases were submitted to and analyzed by Isotech, a Stratum Reservoir Company in Champaign, Illinois. Oil samples were submitted to SPL, a

hydrocarbon analytical laboratory in Houston, Texas. All samples were submitted under proper Chain-of-Custody in laboratory supplied containers with appropriate preservative and handling requirements.

1.1 Groundwater Sampling Results

On June 16th and July 17th, 2023, groundwater samples were collected from the industrial water wells operated by Westlake, as well as the Cottages Well located west of Cavern 7 (see Figure 1). At each well, water was allowed to flow from each well for several minutes prior to sampling and field parameters, i.e., pH, specific conductivity (SC), oxidation-reduction potential (ORP), and temperature, were recorded with a hand-held meter at the time of sampling. The groundwater analytical data to date are summarized in Table 1.

Reported constituent concentrations were below their respective RECAP screening standards (GWSS) or EPA Secondary Maximum Contaminant Limits (SMCL), with the exception of iron and manganese. Alluvial aquifers throughout South Louisiana are known to exhibit elevated concentrations of naturally occurring iron, manganese, and other metals. Industrial processes utilizing steel piping can also influence the metal concentrations reported in the water.

A brine sample was collected from Brine Well 7B on July 27, 2023, via wireline sampler. The sample was collected at an approximate depth of 3,000 feet below ground surface, and within Cavern 7. This data, along with the previously sampled brine data, are included on Table 1. Since brine is a manufactured product, the data are included on the groundwater data summary table for comparison but were not evaluated with respect to the RECAP GWSS or the SMCL.

The Piper diagram (Figure 4) illustrates the overall consistency of the groundwater quality within the Chicot aquifer. At this time, there is no indication that the groundwater at these locations has been influenced by or mixed with brine.

1.2 Surface Water Sampling Results

On July 17, 2023 one surface water sample was collected from bubble site #26 along the eastern shoreline of the large water body west of Cavern 7, previously referred to as Salt Lake. The surface water sampling locations are shown in Figure 2. Water quality parameters (pH, SC, ORP, and temperature) were recorded using a hand-held field meter. Surface water data are summarized on Table 2.

All available surface water data are included on the Piper diagram (Figure 4). The water quality of samples collected within the Central Lake has remained consistent. Samples collected outside of the Central Lake have a slightly different water quality signature indicative of separation of these water bodies.

1.2.1 Central Lake Water Column Profile

Field readings from the Central Lake water column are continuing on a weekly basis. The profile data collected from the monitoring station are provided in Table 3. Generally, the water quality is consistent throughout the water column, and consistent with parameters recorded elsewhere within the Central Lake. There is a slight change in water quality at the bottom of the water column where the pH and temperature are slightly lower, change to reducing conditions (ORP is negative), and conductivity slightly increases. The reducing conditions at the bottom are most likely attributed to decaying vegetation accumulating on the bottom.

1.3 Dissolved Gas Results

Dissolved gas samples were collected from the water wells and many of the bubble sites. Dissolved gas data have been received from the May and June sampling events. The dissolved gas sampling locations are provided in Figure 2, and the dissolved gas data received to date are summarized in Table 4.

The isotopic composition of methane has been plotted on Figure 5 for comparison with other gas samples collected. In general, the gas from the bubble sites exhibits isotopic characteristics of thermogenic gas originating from a deep source. The gas collected from the caverns and oil wells in the vicinity also plot as thermogenic gas. With a few exceptions, obtaining deuterium isotopic ratio data from the dissolved methane in the water wells has been difficult due to the small quantity of methane present in the water. The available methane isotopic data for the water wells indicates that the methane is biogenic, and different than what is observed in the bubble sites and oil wells.

1.4 Gas Sampling Update

Gas data were received for samples collected from production wells SN 189416 and SN 246792 on the western edge of the dome. These data are included on Table 4 and have been plotted on Figure 5 for comparison with other gas samples. Gas has been collected from Brine Well #2, and two land-based bubble sites (LDNR #10 and Brine Well 7A). These data are still pending and will be submitted when received. The gas analyzed from the three oil wells (SN 189416, 209459, and 246792) has a similar isotopic signature with the bubble sites being thermogenic gas. The pending gas samples will be included for comparison when received.

2. OIL SAMPLE RESULTS

On June 16, 2023 oil samples were collected from Cavern 7B, SN 209459, SN 158997, SN 252112, SN 109963, and the on-site oil stock tank (Pad Oil). The samples were submitted to SPL for bulk/whole oil properties. The oil and gas sample locations are shown in Figure 3. The results from this sampling, along with data from previous sampling conducted by Intertek, are provided in Table 5. Based on the data comparison, the oil from within the caverns appears to be similar to the previous cavern oil samples and different from the crude oil sample collected from adjacent oil wells.

3. SCHEDULE

Water wells will continue to be sampled on a monthly basis. The next water well sampling event is planned for August 2023. The bubble sites will be sampled as discovered. The next full round of bubble site sampling is planned for September 2023.

We will continue to report additional sampling results to LDNR as they are received. Should you have any questions or need addition information, please contact us at scott.himes@erm.com and david.upthegrove@erm.com.

Sincerely,

Environmental Resources Management Southwest, Inc.

Scott A. Himes, P.G.
Senior Hydrogeologist

David C. Upthegrove, P.G.
Partner

SAH/DCU/pcv

FIGURES

M:\US\Projects\V-Z\Westlake\Sulphur Dome\Maps\04_LDNR Submittals\04\01_Groundwater Sampling Locations.mxd, REVISED: 07/17/2023, SCALE: 1:9,000 when printed at 8.5x11 DRAWN BY: SAH

Legend

- Water Well Sample Location
- Brine Sample Location
- Westlake Property

Figure 1
Groundwater Sampling Locations
Sulphur Dome
Westlake US 2, LLC
Calcasieu Parish, Louisiana

Notes:
2021 Aerial imagery via USGS Earth Explorer (NAIP).

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Source: Esri - ArcGIS Online; GCS North American 1983

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Legend

- Surface Water Sample Location (non-bubble site)
- Bubble Site Water/Gas Sample Location
- Sheen Sample Location
- Westlake Property

Notes:
2021 Aerial imagery via USGS Earth Explorer (NAIP).

Figure 2
Surface Water Sampling Locations
Sulphur Dome
Westlake US 2, LLC
Calcasieu Parish, Louisiana

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Source: Esri - ArcGIS Online; GCS North American 1983

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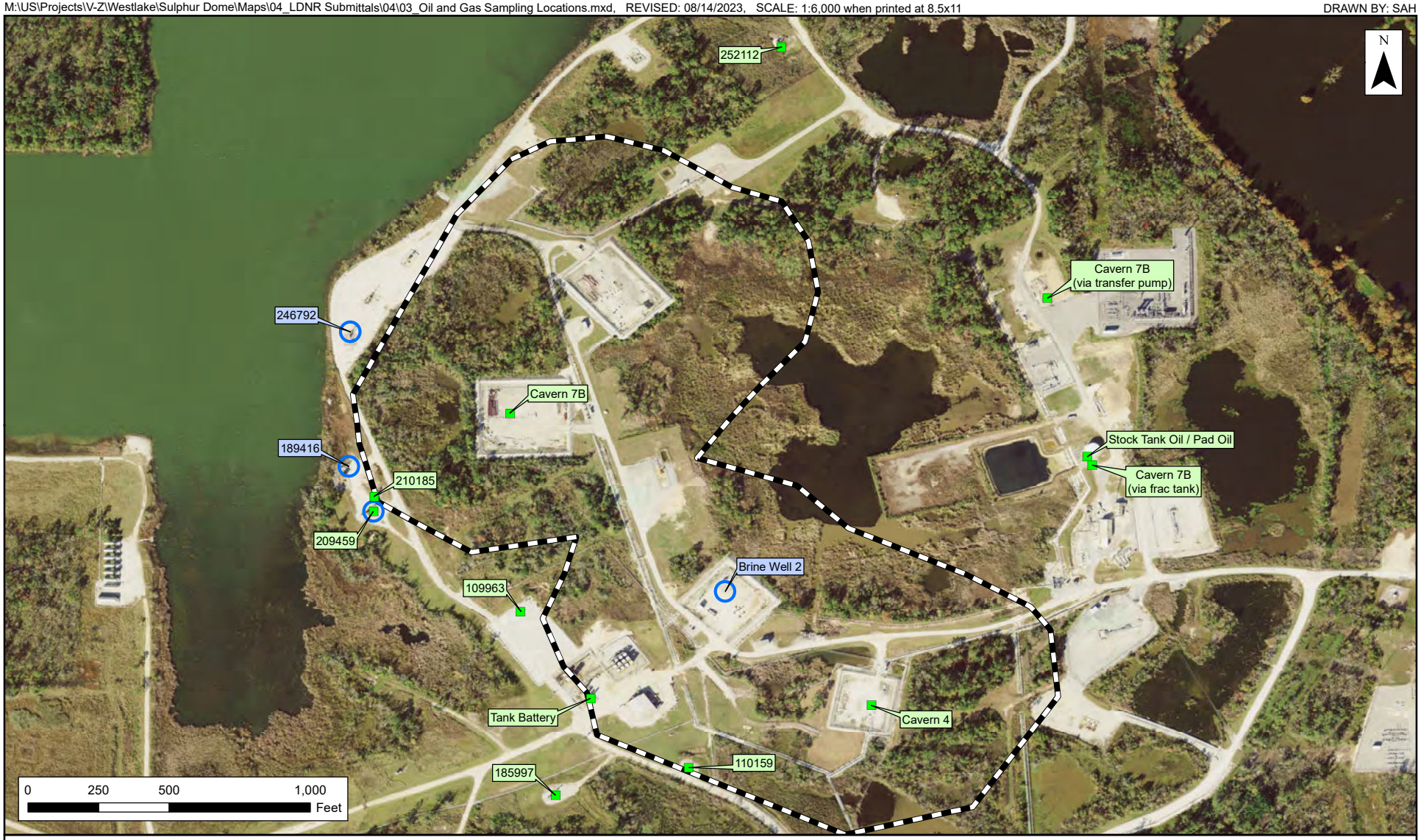

Legend

- Oil Sample Location
- Gas Sample Location
- Westlake Property

Figure 3
Oil and Gas Sampling Locations
Sulphur Dome
Westlake US 2, LLC
Calcasieu Parish, Louisiana

Notes:
2021 Aerial imagery via USGS Earth Explorer (NAIP).

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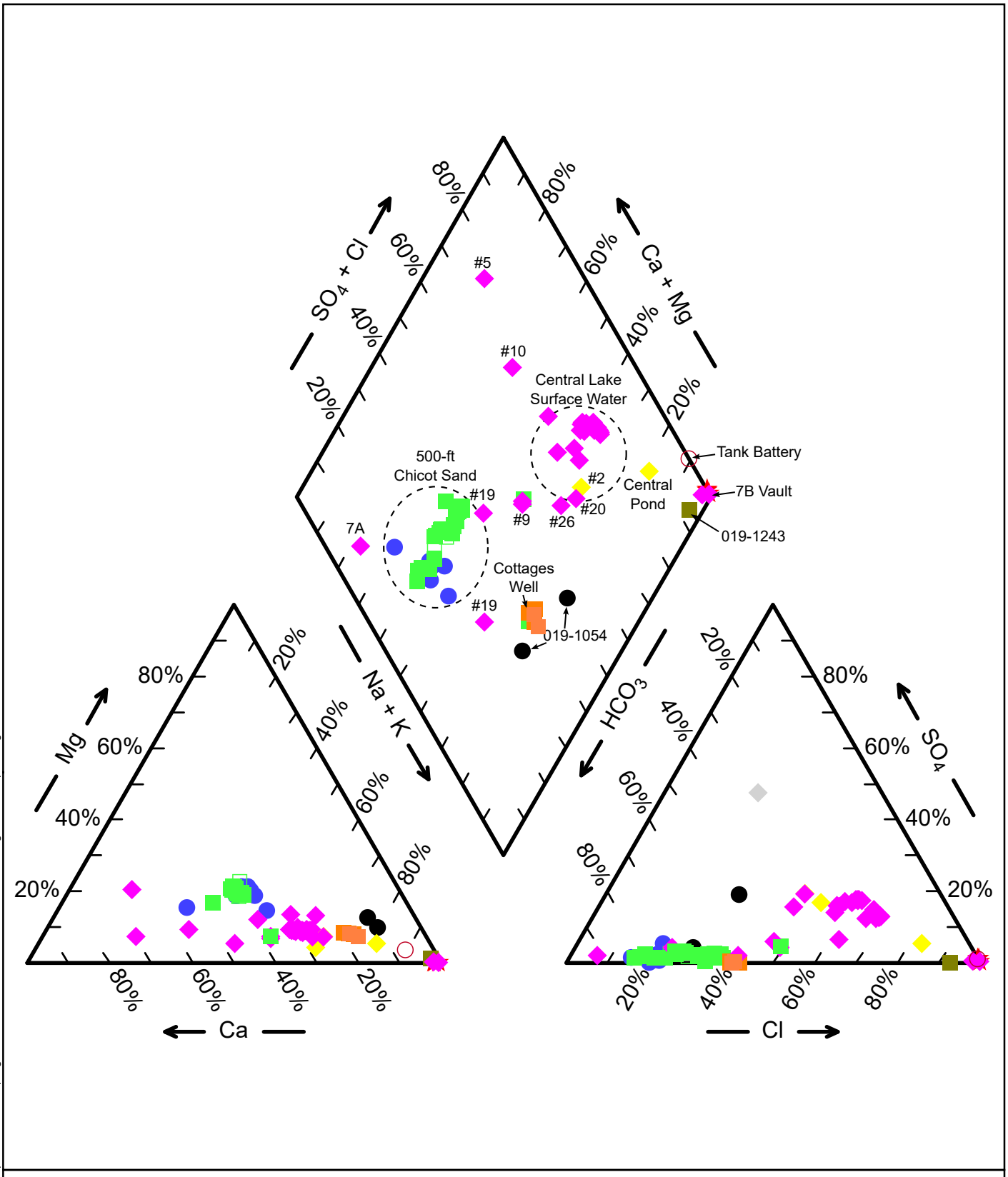

Legend

- Bubble Site & Surface Water
- Other Surface Water
- Industrial Water Well (Current)
- Industrial Water Well (Historic)
- Cottages Well
- Evangeline Aquifer Water Well (Historic)
- Other Water Well
- 019-1054 (Historic)
- Produced Water
- Brine

Figure 4
Piper Diagram
Sulphur Dome
Westlake US 2, LLC
Calcacieu Parish, Louisiana

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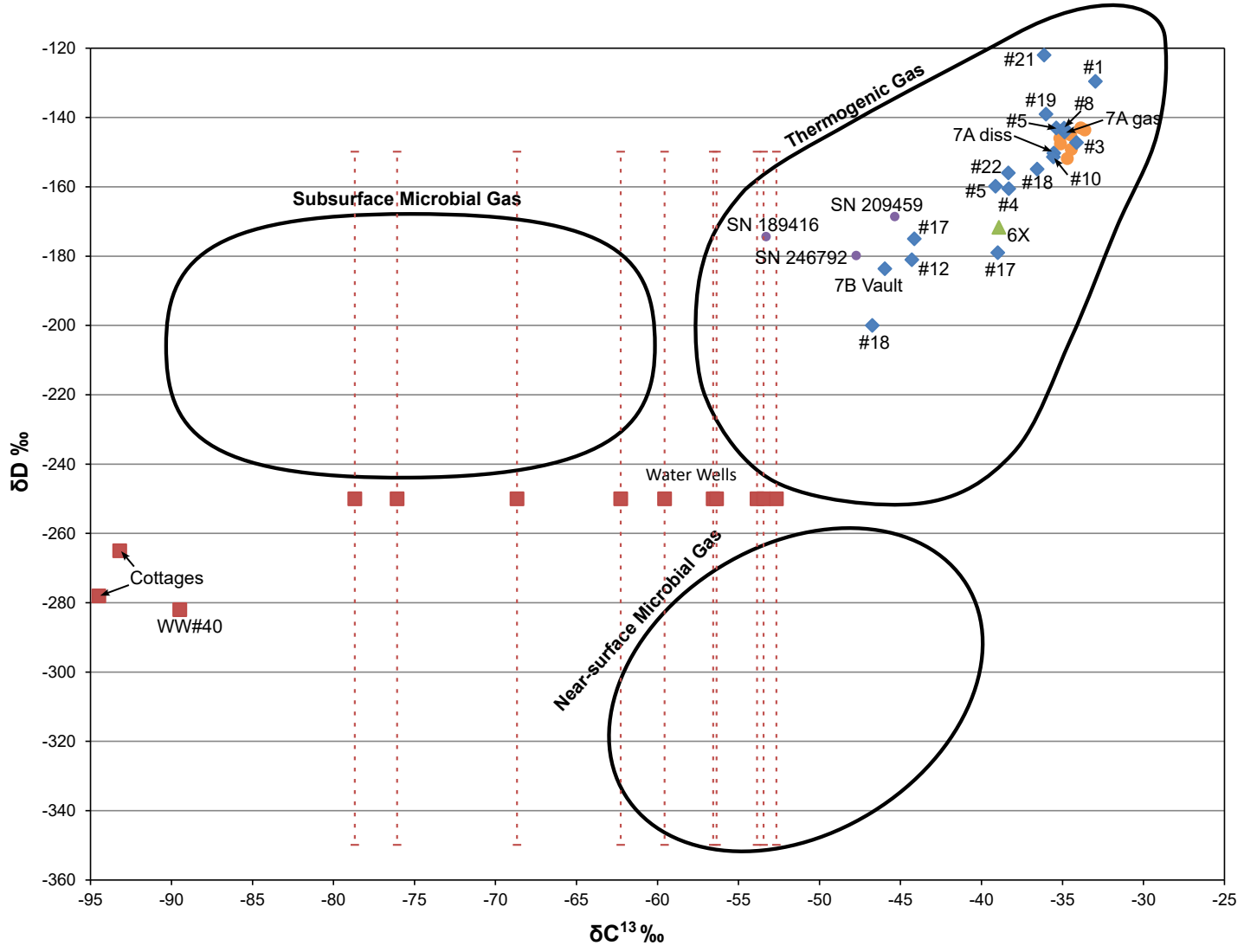

Legend

- Cavern Gas (Lonquist)
- Bubble Site
- Groundwater
- Brine
- Production Gas

Notes:
Coleman, D.D., Liu, C., Hackley, K.C., and Pelphrey, S.R., 1995, Identification of Landfill Methane, Environmental Geosciences, Vol. 2, No. 2, pp. 95-103.

Figure 5
Methane Isotopes
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Calcasieu Parish, Lousiana

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TABLES

Table 1
Groundwater Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

			Sample ID	019-580						019-582					
			Sample Location	WW #11						WW #13					
			Sample Interval (ft)	469'						609'					
			Sample Date	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23	7/17/23	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23	7/17/23
			Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**			**Groundwater**											
Total Metals		**RECAP GWSS**													
Arsenic	mg/L	0.01		0.000477 J	<0.0004	0.000615 J	<0.0004	0.000452 J	0.000556 J	0.000812 J	<0.0004	0.000451 J	0.000418 J	0.000635 J	0.000436 J
Barium	mg/L	2		**0.23**	**0.235**	**0.205**	**0.216**	**0.197**	**0.200**	**0.239**	**0.221**	**0.243**	**0.232**	**0.210**	**0.217**
Cadmium	mg/L	0.005		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium	mg/L	NS		**26.8**	**25.4**	**15.8**	**24.1**	**22.7**	**18.9**	**25.5**	**23.9**	**25.8**	**24.6**	**22.9**	**21.1**
Chromium	mg/L	0.1		<0.0004	<0.0004	0.000559 J	<0.0004	0.000462 J	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Iron[(a)]	mg/L	0.3		**5.12**	**4.25**	**2.72**	**1.81**	**3.61**	**6.07**	**4.03**	**4.02**	**6.09**	**6.13**	**3.28**	**3.12**
Lead	mg/L	0.015		0.00144 J	<0.0006	<0.0006	<0.0006	<0.0006	**0.00388**	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
Magnesium	mg/L	NS		**8.03**	**8.10**	**4.32**	**7.19**	**7.43**	**5.88**	**7.81**	**7.66**	**7.58**	**7.36**	**7.36**	**6.45**
Manganese[(a)]	mg/L	0.05		**0.412**	**0.413**	**0.215**	**0.317**	**0.355**	**0.329**	**0.417**	**0.388**	**0.388**	**0.408**	**0.361**	**0.349**
Mercury	mg/L	0.002		<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.0000520 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.0000640 J
Nickel	mg/L	0.073		NA	NA	**0.00368**	<0.0006	<0.0006	<0.0006	NA	NA	<0.0006	<0.0006	<0.0006	<0.0006
Potassium	mg/L	NS		**2.93**	**2.68**	**2.42**	**2.62**	**2.51**	**1.99**	**2.94**	**2.50**	**2.70**	**2.55**	**2.49**	**2.28**
Selenium	mg/L	0.05		<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Silver	mg/L	0.18		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sodium	mg/L	NS		**31.9**	**27.7**	**71.5**	**27.4**	**24.6**	**19.7**	**28.0**	**26.4**	**30.2**	**27.8**	**24.7**	**22.2**
Strontium	mg/L	NS		**0.246**	**0.228**	**0.183**	**0.212**	**0.214**	**0.175**	**0.240**	**0.208**	**0.231**	**0.218**	**0.221**	**0.195**
Vanadium	mg/L	0.026		NA	NA	0.00434 J	<0.0006	0.00322 J	<0.0006	NA	NA	0.00352 J	<0.0006	0.00358 J	<0.0006
Zinc	mg/L	1.1		**0.0147**	**0.0495**	**0.350**	**0.011**	**0.0130**	**0.00934**	**0.0107**	**0.0166**	**0.0474**	**0.019**	**0.00897**	**0.0102**
Anions/Water Quality Parameters															
Bicarbonate Alkalinity	mg/L	NS		**200**	**115**	**116**	**114**	**107**	**118**	**180**	**115**	**119**	**120**	**109**	**119**
Bromide	mg/L	NS		0.0992 J	<0.03	<0.03	**0.169**	<0.03	<0.03	0.0860 J	<0.03	<0.03	**0.168**	<0.03	<0.03
Carbonate Alkalinity	mg/L	NS		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride[(a)]	mg/L	250		**35.7**	**26.4**	**40.7**	**38.7**	**23.7**	**23.7**	**23.4**	**26.3**	**40.4**	**38.1**	**23.2**	**23.6**
Sulfate[(a)]	mg/L	250		**2.91**	**3.67**	**2.21**	**3.3**	**4.28**	**4.07**	**4.11**	**3.68**	**2.69**	**2.9**	**4.30**	**4.41**
Total Dissolved Solids (TDS)[(a)]	mg/L	500		**236**	**186**	**210**	**266**	**204**	**222**	**212**	**200**	**236**	**248**	**190**	**234**
pH[(a)]	SI	6.5 - 8.5		NA	7.04 H	NA	7.30 H	7.22 H	7.85 H	NA	7.01 H	NA	7.37 H	7.36 H	7.75 H
pH (field)	SI	6.5 - 8.5		**6.41**	NA	**5.79**	**6.68**	NA	**6.40**	**6.45**	**6.53**	**5.89**	**6.42**	NA	**6.38**
Sulfides															
Hydrogen Sulfide	mg/L	NS		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulfide	mg/L	NS		<1	<1.7	<1.7	<1.7	<1.7	<1.7	<1	<1.7	<1.7	<1.7	<1.7	<1.7
Volatile Organic Compounds															
Benzene	mg/L	0.005		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylbenzene	mg/L	0.7		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/L	1		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
m,p-Xylene	mg/L	10		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	10		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Xylenes, Total	mg/L	10		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
TPH Fractions															
Aliphatics >C6-C8	mg/L	3.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/L	0.15		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/L	0.15		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aliphatics >C12-C16	mg/L	0.15		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Aliphatics >C16-C35	mg/L	7.3		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Aromatics >C8-C10	mg/L	0.15		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >C10-C12	mg/L	0.15		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aromatics >C12-C16	mg/L	0.15		<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Aromatics >C16-C21	mg/L	0.15		<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Aromatics >C21-C35	mg/L	0.15		<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009

Notes
J - Estimated Value reported below the detection limit.
H - pH is received at the lab outside of hold time.
< - Not Detected at the reporting limit shown.
Bolded values deteted in the sample.
NA - Not Analyzed
NS - No Standard
[(a)] - EPA Secondary MCL (No RECAP standard)
Shaded values exceed standard

Table 1
Groundwater Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

		Sample ID	019-995					019-1055						019-1603		
		Sample Location	WW #12					WW #19						WW #40		
		Sample Interval (ft)			485'					520'					520'	
		Sample Date	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23	1/26/23	3/30/23	4/27/23	5/18/23	6/16/23	7/17/23	3/30/23	5/18/23	6/16/23
		Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**		Groundwater													
Total Metals		**RECAP GWSS**														
Arsenic	mg/L	0.01	0.000762 J	<0.0004	0.000739 J	0.000497 J	<0.0004	0.000419 J	<0.0004	0.000461 J	<0.0004	<0.0004	<0.0004	0.000974 J	**0.0044**	0.000466 J
Barium	mg/L	2	**0.214**	**0.234**	**0.242**	**0.207**	**0.205**	**0.265**	**0.263**	**0.242**	**0.256**	**0.207**	**0.262**	**0.258**	**0.178**	**0.136**
Cadmium	mg/L	0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002002
Calcium	mg/L	NS	**26.4**	**25.3**	**27.7**	**24.8**	**23.0**	**28.7**	**27.5**	**24.7**	**25.9**	**22.6**	**24.7**	**26.9**	**56**	**22.4**
Chromium	mg/L	0.1	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.000825 J	0.000415 J
Iron[(a)]	mg/L	0.3	**0.821**	**4.76**	**3.42**	**2.11**	**4.88**	**3.81**	**3.96**	**3.48**	**3.42**	**4.24**	**3.72**	**12.4**	**0.69**	**4.39**
Lead	mg/L	0.015	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	0.000702 J	<0.0006
Magnesium	mg/L	NS	**8.02**	**7.87**	**8.14**	**7.47**	**7.51**	**8.66**	**8.42**	**7.32**	**7.78**	**7.32**	**7.45**	**8.33**	**6.58**	**7.37**
Manganese[(a)]	mg/L	0.05	**0.388**	**0.403**	**0.416**	**0.403**	**0.375**	**0.420**	**0.400**	**0.353**	**0.379**	**0.359**	**0.369**	**0.506**	**0.348**	**0.491**
Mercury	mg/L	0.002	<0.00003	0.0000310 J	<0.00003	<0.00003	<0.00003	<0.00003	0.0000300 J	<0.00003	<0.00003	<0.00003	0.0000570 J	<0.00003	0.0000720 J	0.0000400 J
Nickel	mg/L	0.073	NA	NA	**0.00531**	<0.0006	0.000820 J	NA	NA	<0.0006	<0.0006	<0.0006	<0.0006	NA	**0.00202**	0.000750 J
Potassium	mg/L	NS	**3.00**	**2.60**	**2.79**	**2.61**	**2.53**	**3.10**	**2.69**	**2.54**	**2.74**	**2.48**	**2.59**	**2.81**	**2.61**	**2.43**
Selenium	mg/L	0.05	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	0.00114 J	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Silver	mg/L	0.18	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sodium	mg/L	NS	**29.9**	**30.3**	**32.2**	**30.5**	**25.0**	**34.4**	**32.0**	**28.5**	**29.6**	**24.8**	**29.0**	**32.1**	**92.9**	**24.0**
Strontium	mg/L	NS	**0.241**	**0.221**	**0.244**	**0.223**	**0.220**	**0.262**	**0.238**	**0.225**	**0.24**	**0.215**	**0.229**	**0.235**	**0.397**	**0.210**
Vanadium	mg/L	0.026	NA	NA	0.00299 J	<0.0006	0.00370 J	NA	NA	0.00320 J	<0.0006	0.00311 J	<0.0006	NA	**0.0136**	0.00320 J
Zinc	mg/L	1.1	**0.00426**	<0.002	0.00276 J	<0.002	<0.002	**0.00993**	**0.0107**	**0.0163**	**0.00906**	**0.00514**	**0.0231**	**0.0845**	**0.0231**	**0.0200**
Anions/Water Quality Parameters																
Bicarbonate Alkalinity	mg/L	NS	**258**	**122**	**124**	**128**	**194**	**250**	**123**	**119**	**118**	**108**	**135**	**125**	**183**	**113**
Bromide	mg/L	NS	0.0931 J	0.0782 J	<0.03	**0.164**	<0.03	0.0982 J	<0.03	<0.03	**0.167**	<0.03	<0.03	**0.101**	<0.03	**0.143**
Carbonate Alkalinity	mg/L	NS	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride[(a)]	mg/L	250	**28.7**	**36.3**	**37.5**	**34.1**	**23.4**	**38.3**	**36.8**	**40.6**	**37.6**	**23.6**	**37.4**	**36.6**	**115**	**23.0**
Sulfate[(a)]	mg/L	250	**3.63**	**2.80**	**2.12**	**2.53**	**3.57**	**3.51**	**3.39**	**3.55**	**3.85**	**4.21**	**3.77**	0.426 J	**14.5**	**3.00**
Total Dissolved Solids (TDS)[(a)]	mg/L	500	**226**	**240**	**202**	**222**	**194**	**244**	**230**	**220**	**274**	**176**	**272**	**206**	**446**	**192**
pH[(a)]	SI	6.5 - 8.5	NA	6.94 H	NA	7.55 H	7.30 H	NA	7.16 H	NA	7.14 H	7.38 H	7.70 H	7.23 H	8.02 H	7.45 H
pH (field)	SI	6.5 - 8.5	**6.35**	**6.53**	**5.64**	**6.18**	NA	**6.82**	**6.53**	**5.84**	**6.46**	NA	**6.25**	**6.68**	**6.65**	NA
Sulfides																
Hydrogen Sulfide	mg/L	NS	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulfide	mg/L	NS	<1	<1.7	<1.7	<1.7	<1.7	<1	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Volatile Organic Compounds																
Benzene	mg/L	0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylbenzene	mg/L	0.7	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/L	1	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
m,p-Xylene	mg/L	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	10	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Xylenes, Total	mg/L	10	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
TPH Fractions																
Aliphatics >C6-C8	mg/L	3.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/L	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/L	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aliphatics >C12-C16	mg/L	0.15	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Aliphatics >C16-C35	mg/L	7.3	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Aromatics >C8-C10	mg/L	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >C10-C12	mg/L	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aromatics >C12-C16	mg/L	0.15	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Aromatics >C16-C21	mg/L	0.15	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Aromatics >C21-C35	mg/L	0.15	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009

Notes
J - Estimated Value reported below the detection limit.
H - pH is received at the lab outside of hold time.
< - Not Detected at the reporting limit shown.
Bolded values deteted in the sample.
NA - Not Analyzed
NS - No Standard
[(a)] - EPA Secondary MCL (No RECAP standard)
Shaded values exceed standard

Table 1
Groundwater Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

		Sample ID	Cottages Well					6X Brine	007-B Brine		Tank Battery
		Sample Location	Cottages					SN 57788	SN 67270	7B-Brine	Produced Water
		Sample Interval (ft)			unknown			Brine	3,000'	3,000'	
		Sample Date	3/9/23	4/27/23	5/18/23	6/16/23	7/17/23	1/25/23	2/16/23	7/27/23	5/25/23
		Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**		**Groundwater**					**Brine**			**Produced Water**
Total Metals		**RECAP GWSS**									
Arsenic	mg/L	0.01	<0.0004	0.000464 J	<0.0004	<0.0004	<0.0004	0.0300 J	<0.04	<0.04	<0.008
Barium	mg/L	2	**0.187**	**0.187**	**0.171**	**0.172**	**0.187**	**0.220**	<0.19	<0.19	**60.1**
Cadmium	mg/L	0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	<0.02	<0.02	<0.004
Calcium	mg/L	NS	**13.7**	**14.5**	**14.5**	**14.4**	**13.4**	**722**	**1,320**	**1,360**	**2,940**
Chromium	mg/L	0.1	<0.0004	<0.0004	0.00103 J	0.000522 J	**0.00744**	**0.243**	**0.722**	0.114 J	0.0717 J
Iron[(a)]	mg/L	0.3	**5.57**	**2.48**	**4.76**	**6.04**	**2.34**	**25.7**	9.65 J	2.78 J	1.94 J
Lead	mg/L	0.015	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.03	<0.06	<0.06	<0.012
Magnesium	mg/L	NS	**3.69**	**3.97**	**4.05**	**3.96**	**3.72**	8.16 J	8.64 J	9.30 J	**971**
Manganese[(a)]	mg/L	0.05	**0.193**	**0.192**	**0.224**	**0.211**	**0.190**	**0.953**	0.487 J	0.361 J	**1.43**
Mercury	mg/L	0.002	<0.00003	<0.00003	0.000117 J	<0.00003	0.0000510 J	<0.00003	<0.00003	<0.00003	<0.00003
Nickel	mg/L	0.073	NA	**0.00330**	**0.00408**	**0.00304**	**0.00239**	NA	NA	**0.211**	<0.012
Potassium	mg/L	NS	**2.03**	**2.24**	**2.31**	**2.20**	**2.12**	**14.4**	13.8 J	14.0 J	**185**
Selenium	mg/L	0.05	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0550	<0.11	<0.11	<0.022
Silver	mg/L	0.18	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	<0.02	<0.02	<0.004
Sodium	mg/L	NS	**57.7**	**65.2**	**71.2**	**66.2**	**71.2**	**100,000**	**82,600**	**91,900**	**44,000**
Strontium	mg/L	NS	**0.160**	**0.167**	**0.171**	**0.179**	**0.157**	**2.66**	**11.0**	**10.7**	**134**
Vanadium	mg/L	0.026	NA	0.00270 J	**0.0006**	0.00295 J	<0.0006	NA	NA	<0.06	<0.012
Zinc	mg/L	1.1	**0.255**	**0.320**	**0.202**	**0.203**	**0.798**	**0.481**	**1.70**	**1.55**	0.0695 J
Anions/Water Quality Parameters											
Bicarbonate Alkalinity	mg/L	NS	**139**	**134**	**139**	**132**	**153**	**159**	**140**	**124**	**204**
Bromide	mg/L	NS	**0.102**	**0.105**	**0.19**	**0.179**	**0.156**	<3	<7.5	<15	**79.5**
Carbonate Alkalinity	mg/L	NS	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride[(a)]	mg/L	250	**52.8**	**55.6**	**52.8**	**52.6**	**59.6**	**213,000**	**201,000**	**179,000**	**79,900**
Sulfate[(a)]	mg/L	250	<0.2	0.286 J	**0.574**	**0.608**	0.277 J	**1,380**	**3,060**	**3,270**	**1,340**
Total Dissolved Solids (TDS)[(a)]	mg/L	500	**274**	**250**	**284**	**244**	**308**	**239,000**	**300,000**	**255,000**	**161,000**
pH[(a)]	SI	6.5 - 8.5	NA	NA	7.63 H	7.30 H	7.91 H	NA	NA	6.75 H	6.97 H
pH (field)	SI	6.5 - 8.5	**7.67**	**5.73**	**7.06**	NA	**6.28**	NA	NA	NA	NA
Sulfides											
Hydrogen Sulfide	mg/L	NS	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.7**
Sulfide	mg/L	NS	<1.7	<1.7	<1.7	<1.7	<1.7	<1	<1	<1.7	<1.7
Volatile Organic Compounds											
Benzene	mg/L	0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.170**	**0.092**	**0.360**	<0.0002
Ethylbenzene	mg/L	0.7	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0075 J	<0.0003	**0.0059**	<0.0003
Toluene	mg/L	1	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.110**	**0.025**	**0.130**	<0.0002
m,p-Xylene	mg/L	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.013 J	<0.0005	**0.0079**	<0.0005
o-Xylene	mg/L	10	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0091 J	<0.0003	**0.0079**	<0.0003
Xylenes, Total	mg/L	10	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**0.022**	<0.0003	**0.016**	<0.0003
TPH Fractions											
Aliphatics >C6-C8	mg/L	3.2	<0.01	<0.01	<0.01	<0.01	<0.01	**0.0997**	**0.0803**	**0.147**	**0.144**
Aliphatics >C8-C10	mg/L	0.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.107**	<0.01	**0.0131**
Aliphatics >C10-C12	mg/L	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<0.00192	**0.969**
Aliphatics >C12-C16	mg/L	0.15	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	NA	**0.0288**	**3.77**
Aliphatics >C16-C35	mg/L	7.3	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	NA	**0.774**	**4.44**
Aromatics >C8-C10	mg/L	0.15	**0.0132**	<0.01	<0.01	<0.01	<0.01	**0.0284**	**0.422**	**0.0373**	**0.0557**
Aromatics >C10-C12	mg/L	0.15	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	**0.00293**	**0.211**
Aromatics >C12-C16	mg/L	0.15	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	NA	**0.0109**	**1.29**
Aromatics >C16-C21	mg/L	0.15	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	NA	**0.0281**	**1.09**
Aromatics >C21-C35	mg/L	0.15	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	NA	**0.161**	**1.05**

Notes
J - Estimated Value reported below the detection limit.
H - pH is received at the lab outside of hold time.
< - Not Detected at the reporting limit shown.
Bolded values deteted in the sample.
NA - Not Analyzed
NS - No Standard
[(a)] - EPA Secondary MCL (No RECAP standard)
Shaded values exceed standard

Table 2

Surface Water Data Summary

Sulphur Dome

Calcasieu Parish, Louisiana

	LDNR Sample No.	#1		#3		#4		#5		#6		#7		#8	
	Sample ID	Brine Well 22 BS	BS 1	CP BS 1	BS-3	CP BS 2	BS 4	CP BS 3	BS 5	BS 6		BS 7		BS 8	
	Sample Date	1/25/23	5/18/23	1/30/23	5/22/23	1/30/23	5/22/23	1/30/23	5/17/23	2/28/23	5/18/23	2/28/23	5/17/23	2/28/23	5/18/23
	Sample Interval (ft)	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**	**Bubble Site (Surface Water)**													
Total Metals															
Arsenic	mg/L	0.00149 J	**0.00594**	0.000862 J	0.00113 J	0.000868 J	0.00110 J	0.000769 J	0.00139 J	0.000784 J	0.00108 J	0.000886 J	0.00118 J	0.000975 J	0.00150 J
Barium	mg/L	**0.300**	**0.317**	**0.160**	**0.156**	**0.367**	**0.276**	**0.155**	**0.216**	**0.116**	**0.152**	**0.119**	**0.194**	**0.127**	**0.224**
Cadmium	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium	mg/L	**71.2**	**83.5**	**75.3**	**65.9**	**64.2**	**69.6**	**77.7**	**73.3**	**66.3**	**66.3**	**65.8**	**66.3**	**68.1**	**74**
Chromium	mg/L	0.000847 J	0.00159 J	<0.0004	0.00201 J	<0.0004	<0.0004	<0.0004	0.000998 J	<0.0004	0.000731 J	<0.0004	0.000695 J	<0.0004	0.000627 J
Iron	mg/L	**1.14**	**3.04**	0.132 J	0.118 J	0.0258 J	0.0647 J	0.125 J	0.160 J	0.0485 J	0.0249 J	0.0546 J	0.0565 J	0.166 J	**0.27**
Lead	mg/L	**0.00208**	**0.00466**	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	0.000694 J
Magnesium	mg/L	**19.8**	**16.1**	**15.0**	**12.0**	**12.6**	**13.6**	**15.0**	**14.7**	**11.7**	**12.4**	**11.5**	**13.2**	**12**	**14.7**
Manganese	mg/L	**0.797**	**1.75**	**0.266**	**0.389**	**0.458**	**0.747**	**0.232**	**2.28**	**0.813**	**0.645**	**1.03**	**2.36**	**0.972**	**2.15**
Mercury	mg/L	<0.00003	0.0000990 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.0000670 J	<0.00003	0.000133 J	<0.00003	0.000109 J
Nickel	mg/L	NA	**0.00641**	NA	0.00114 J	NA	**0.00385**	NA	0.00168 J	NA	0.00124 J	NA	0.00130 J	NA	0.00179 J
Potassium	mg/L	**2.57**	**2.83**	**2.90**	**2.17**	**2.58**	**2.34**	**2.86**	**2.53**	**2.31**	**2.18**	**2.36**	**2.19**	**2.39**	**2.54**
Selenium	mg/L	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Silver	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sodium	mg/L	**156**	**123**	**174**	**155**	**166**	**176**	**19.1**	**203**	**142**	**161**	**140**	**171**	**144**	**196**
Strontium	mg/L	**0.619**	**0.598**	**0.556**	**0.479**	**0.482**	**0.532**	**0.578**	**0.552**	**0.441**	**0.496**	**0.426**	**0.509**	**0.457**	**0.56**
Vanadium		NA	**0.00639**	NA	0.00324 J	NA	0.00181 J	NA	0.00207 J	NA	0.00171 J	NA	0.00226 J	NA	0.00434 J
Zinc	mg/L	**0.00857**	**0.0179**	**0.00452**	**0.0448**	0.00213 J	0.00289 J	**0.00748**	0.00250 J	<0.002	0.00307 J	<0.002	**0.0171**	**0.0658**	**0.0171**
Anions/Water Quality Parameters															
Bicarbonate Alkalinity	mg/L	**269**	**178**	**241**	**149**	**238**	**164**	**245**	**150**	**148**	**143**	**162**	**147**	**144**	**148**
Bromide	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Carbonate Alkalinity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	**317**	**213**	**308**	**322**	**296**	**340**	**343**	**332**	**253**	**302**	**253**	**333**	**251**	**333**
Sulfate	mg/L	**45.2**	**70.3**	**113**	**89.6**	**111**	**83.5**	**135**	**82.9**	**96.8**	**90.7**	**95.1**	**85.7**	**96.2**	**84.9**
Total Dissolved Solids (TDS)	mg/L	**676**	**760.0**	**80.0**	**880.0**	**512**	**864**	**892**	**792**	**710**	**784**	**712**	**832**	**748**	**836**
pH	SI	NA	7.20 H	NA	7.75 H	NA	7.66 H	NA	7.79 H	NA	7.96 H	NA	7.95 H	NA	8.00 H
Sulfides															
Hydrogen Sulfide	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulfide	mg/L	<1	<1.7	<1	<1.7	<1	<1.7	<1	<1.7	<1	<1.7	<1	<1.7	<1	<1.7
Volatile Organic Compounds															
Benzene	mg/L	**0.00120**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylbenzene	mg/L	<0.0003	0.58 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/L	0.00079 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
m,p-Xylene	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Xylenes, Total	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
TPH Fractions															
Aliphatics >C6-C8	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/L	<0.001	**0.0202**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aliphatics >C12-C16	mg/L	**0.0746**	**0.234**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Aliphatics >C16-C35	mg/L	**0.249**	**0.876**	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Aromatics >C8-C10	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.0102**	<0.01	**0.0103**	<0.01	**0.0101**	<0.01
Aromatics >C10-C12	mg/L	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aromatics >C12-C16	mg/L	**0.0417**	**0.0179**	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Aromatics >C16-C21	mg/L	**0.121**	**0.0535**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Aromatics >C21-C35	mg/L	<0.009	**0.0511**	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009

Notes
J - Estimated Value reported below the detection limit.
H - pH is received at the lab outside of hold time (15 min from sampling).
< - Not Detected at the reporting limit shown.
Bolded values deteted in the sample.

Table 2

Surface Water Data Summary

Sulphur Dome

Calcasieu Parish, Louisiana

	LDNR Sample No.	#9		#10	#12		#17		#18		#19		#21	
	Sample ID	Brine Pond 4 BS		1101529-BS	BS 12		BS 17		BS 18		BS 19		No. 21	
	Sample Date	2/10/23	5/18/23	2/10/23	2/28/23	5/18/23	2/28/23	5/17/23	2/28/23	5/17/23	2/28/23	5/18/23	3/30/23	5/17/23
	Sample Interval (ft)	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**	**Bubble Site (Surface Water)**												
Total Metals														
Arsenic	mg/L	0.00176 J	**0.00419**	0.000896 J	0.000861 J	0.00121 J	0.000797 J	0.00130 J	0.000916 J	0.00124 J	**0.00355**	<0.0004	0.000855 J	0.00115 J
Barium	mg/L	**0.118**	**0.168**	**0.0594**	**0.119**	**0.168**	**0.118**	**0.188**	**0.125**	**0.183**	**0.127**	**0.149**	**0.116**	**0.163**
Cadmium	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium	mg/L	**38.6**	**50.2**	**55.8**	**66.9**	**70.2**	**65.8**	**71.3**	**68.6**	**70.1**	**62**	**19.8**	**78.4**	**65.5**
Chromium	mg/L	<0.0004	0.000513 J	<0.0004	<0.0004	0.000565 J	<0.0004	0.00127 J	<0.0004	0.000762 J	<0.0004	0.000530 J	<0.0004	0.000779 J
Iron	mg/L	**0.609**	**0.694**	0.0432 J	0.0570 J	0.0237 J	0.0795 J	0.0852 J	0.0686 J	0.0526 J	0.102 J	**2.43**	0.0273 J	0.0315 J
Lead	mg/L	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
Magnesium	mg/L	**4.2**	**5.93**	**5.64**	**11.9**	**14.2**	**11.5**	**14.1**	**12**	**14**	**4.36**	**6.72**	**13.9**	**13.1**
Manganese	mg/L	**0.204**	**0.614**	**0.0295**	**0.885**	**0.732**	**1**	**1.29**	**1.03**	**1.43**	**0.24**	**0.314**	**0.445**	**0.99**
Mercury	mg/L	<0.00003	<0.00003	<0.00003	<0.00003	**0.000206**	<0.00003	**0.000338**	<0.00003	0.0000970 J	<0.00003	**0.000407**	<0.00003	0.000151 J
Nickel	mg/L	NA	0.00192 J	NA	NA	0.00126 J	NA	0.00159 J	NA	0.00144 J	NA	<0.0006	NA	0.00143 J
Potassium	mg/L	**1.17**	**2.39**	**2.44**	**2.3**	**2.33**	**2.36**	**2.42**	**2.42**	**2.35**	**0.962**	**3.03**	**2.15**	**2.21**
Selenium	mg/L	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
Silver	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sodium	mg/L	**64.6**	**83.4**	**37.6**	**146**	**194**	**137**	**197**	**143**	**189**	**71.2**	**58.3**	**186**	**169**
Strontium	mg/L	**0.243**	**0.35**	**0.237**	**0.451**	**0.533**	**0.435**	**0.54**	**0.452**	**0.536**	**0.338**	**0.17**	**0.495**	**0.501**
Vanadium		NA	**0.0105**	NA	NA	0.00202 J	NA	0.00221 J	NA	0.00207 J	NA	<0.0006	NA	0.00184 J
Zinc	mg/L	**0.00496**	**0.0221**	**0.00654**	**0.0445**	0.00299 J	**0.0119**	<0.002	<0.002	**0.00659**	**0.00535**	**0.132**	<0.002	**0.0657**
Anions/Water Quality Parameters														
Bicarbonate Alkalinity	mg/L	**163**	**188**	**107**	**142**	**146**	**144**	**149**	**148**	**146**	**240**	**159**	**162**	**147**
Bromide	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	**0.144**	<0.03	<0.03
Carbonate Alkalinity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	**95.8**	**117**	**47**	**257**	**327**	**248**	**328**	**248**	**331**	**98.4**	**30.1**	**342**	**334**
Sulfate	mg/L	**16.5**	**13.3**	**133**	**96.5**	**84.9**	**95.9**	**84.7**	**95.9**	**83.8**	**6.72**	**7.5**	**93.9**	**83.6**
Total Dissolved Solids (TDS)	mg/L	**290**	**416**	**412**	**712**	**802**	**732**	**928**	**706**	**748**	**408**	**286**	**872**	**776**
pH	SI	NA	8.09 H	NA	NA	8.07 H	NA	7.84 H	NA	7.94 H	NA	8.03 H	7.74 H	7.88 H
Sulfides														
Hydrogen Sulfide	mg/L	<0.5	<0.5	**23.9**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulfide	mg/L	<1	<1.7	<1	<1	<1.7	<1	<1.7	<1	<1.7	<1	<1.7	<1.7	<1.7
Volatile Organic Compounds														
Benzene	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Ethylbenzene	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
m,p-Xylene	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Xylenes, Total	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
TPH Fractions														
Aliphatics >C6-C8	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aliphatics >C12-C16	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Aliphatics >C16-C35	mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Aromatics >C8-C10	mg/L	<0.01	<0.01	<0.01	**0.0102**	<0.01	**0.0101**	<0.01	**0.0101**	<0.01	**0.0105**	<0.01	<0.01	<0.01
Aromatics >C10-C12	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aromatics >C12-C16	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Aromatics >C16-C21	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Aromatics >C21-C35	mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009

Notes

J - Estimated Value reported below the de

H - pH is received at the lab outside of ho

< - Not Detected at the reporting limit sho

Bolded values deteted in the sample.

Table 2

Surface Water Data Summary

Sulphur Dome

Calcasieu Parish, Louisiana

LDNR Sample No.		#22		#23		#24	#26	WPB PPB No.7A	WPB PPB No.7B		#2		#20
Sample ID		No. 22		No. 23		BS 24	BS-26	Brine Well 7A BS	Brine Well 7B BS		Culvert	Central Pond	No. 20
Sample Date		3/30/23	5/17/23	3/30/23	5/18/23	5/22/23	7/17/23	1/25/23	2/16/23	5/18/23	1/25/23	1/25/23	3/9/23
Sample Interval (ft)		Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Sampler		ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Constituent	**Units**	**Bubble Site (Surface Water)**									**Surface Water**		
Total Metals													
Arsenic	mg/L	0.000998 J	0.00120 J	0.000930 J	0.00126 J	0.00124 J	**0.00246**	0.000767 J	0.0202 J	<0.0004	0.00141 J	0.00192 J	0.00109 J
Barium	mg/L	**0.135**	**0.175**	**0.132**	**0.18**	**0.226**	**1.07**	**0.232**	**1.23**	**0.118**	**0.0832**	**0.146**	**0.43**
Cadmium	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	<0.0002	<0.0002	<0.0004	<0.0002
Calcium	mg/L	**89.2**	**71.9**	**84.1**	**73.1**	**71.8**	**11.5**	**24.5**	**141**	**23.8**	**58.2**	**149**	**8.98**
Chromium	mg/L	<0.0004	0.000811 J	<0.0004	0.000789 J	<0.0004	0.00322 J	0.000474 J	0.114 J	0.00175 J	0.00101 J	0.00458 J	<0.0004
Iron	mg/L	0.0375 J	0.0302 J	0.0270 J	0.0654 J	**0.327**	**1.06**	0.0406 J	3.34 J	**0.98**	**0.207**	**2.07**	0.148 J
Lead	mg/L	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	**0.00946**	<0.0006	<0.03	**0.00245**	<0.0006	<0.00120	<0.0006
Magnesium	mg/L	**15.9**	**14.4**	**14.8**	**13.7**	**12.5**	**1.90**	**1.54**	2.85 J	**1.73**	**5.44**	**37.8**	**1.6**
Manganese	mg/L	**0.43**	**1.04**	**0.379**	**1.08**	**0.574**	**0.516**	**0.0215**	**0.509**	**0.161**	**0.00934**	**0.847**	**0.0163**
Mercury	mg/L	<0.00003	<0.00003	<0.00003	0.000124 J	<0.00003	0.0000500 J	<0.00003	<0.00003	**0.000358**	<0.00003	<0.00003	<0.00003
Nickel	mg/L	NA	0.00142 J	NA	0.00147 J	0.000869 J	**0.00271**	NA	NA	**0.00417**	NA	NA	NA
Potassium	mg/L	**2.45**	**2.37**	**2.33**	**2.51**	**2.6**	**1.19**	**1.02**	1.78 J	**1.3**	**2.86**	**3.22**	**1.2**
Selenium	mg/L	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.055	<0.0011	<0.0011	<0.0022	<0.0011
Silver	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	<0.0002	<0.0002	<0.0004	<0.0002
Sodium	mg/L	**211**	**195**	**205**	**175**	**161**	**30.8**	**8.45**	**26,400**	**1,390**	**158**	**1080**	**27.5**
Strontium	mg/L	**0.559**	**0.545**	**0.542**	**0.546**	**0.519**	**0.174**	**0.167**	**0.678**	**0.16**	**0.341**	**0.941**	**0.134**
Vanadium		NA	0.00197 J	NA	0.00167 J	0.00246 J	0.00483 J	NA	NA	0.00113 J	NA	NA	NA
Zinc	mg/L	**0.00431**	**0.0368**	0.00291 J	**0.0588**	0.00278 J	**0.0638**	**0.0466**	**1.97**	**0.451**	**0.0153**	**0.0258**	<0.002
Anions/Water Quality Parameters													
Bicarbonate Alkalinity	mg/L	**162**	**148**	**162**	**148**	**176**	**48.8**	**159**	**128**	**78.4**	**210**	**495**	**37.4**
Bromide	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<1.5	<0.06	<0.03	<0.06	<0.03
Carbonate Alkalinity	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L	**343**	**330**	**346**	**312**	**314**	**35.9**	**6.45**	**55,900**	**2,400**	**215**	**2090**	**32**
Sulfate	mg/L	**94.1**	**83.7**	**94**	**89.1**	**79.9**	**16.1**	**2.97**	**243**	**14.2**	**92.1**	**183**	**17.2**
Total Dissolved Solids (TDS)	mg/L	**812**	**812**	**844**	**1,540**	**840**	**180**	**320**	**97,400**	**4,840**	**498**	**3600**	**148**
pH	SI	7.70 H	7.98 H	7.58 H	7.79 H	7.58 H	7.38 H	NA	NA	7.65 H	NA	NA	NA
Sulfides													
Hydrogen Sulfide	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulfide	mg/L	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1	<1	<1.7	<1	<1	<1.7
Volatile Organic Compounds													
Benzene	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.74 J	<0.0002	0.00034 J	0.75 J	<0.0002	<0.0002	<0.0002	<0.0002
Ethylbenzene	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**0.00180**	**2.3**	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	**1.1**	0.00051 J	0.00055 J	0.73 J	<0.0002	<0.0002	<0.0002	<0.0002
m,p-Xylene	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0020 J	**3**	<0.0005	<0.0005	<0.0005	<0.0005
o-Xylene	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**2**	<0.0003	<0.0003	<0.0003	<0.0003
Xylenes, Total	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**0.00200**	**5**	<0.0003	<0.0003	<0.0003	<0.0003
TPH Fractions													
Aliphatics >C6-C8	mg/L	<0.01	<0.01	<0.01	<0.01	**0.0758**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Aliphatics >C12-C16	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Aliphatics >C16-C35	mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	**0.239**	<0.008	<0.008	<0.008	<0.008
Aromatics >C8-C10	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.0285**	**0.0192**	<0.01	<0.01	<0.01	**0.012**
Aromatics >C10-C12	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.00551**	<0.001	<0.001	<0.001	<0.001
Aromatics >C12-C16	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	**0.0225**	<0.004	<0.004	<0.004	<0.004
Aromatics >C16-C21	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	**0.0188**	<0.003	<0.003	<0.003	<0.003
Aromatics >C21-C35	mg/L	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	**0.079**	<0.009	<0.009	<0.009	<0.009

Notes

J - Estimated Value reported below the de

H - pH is received at the lab outside of ho

< - Not Detected at the reporting limit sho

Bolded values deteted in the sample.

Table 3
Central Lake Water Column Profile
Sulphur Dome
Calcasieu Parish, Louisiana

1/30/2023	LDNR #4 (water depth 2.55 ft)				
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
0.5	6.14	1317	31	17.5	NM
2.55	6.3	1321	-4	17.1	NM

5/22/2023	LDNR #5 (water depth 5.0 ft)				
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
0	6.95	1509	59	30.1	1058
1	6.95	1513	69	30.1	1058
2	6.96	1515	77	30	1057
3	6.94	1513	83	29.7	1059
4	6.96	1513	84	29.6	1057
5	6.77	1522	-64	28.7	1065

6/15/2023	13:55	Water Column Station (water depth 5.2 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.55	1665	113	34.3	1238
3	7.02	1671	137	34.7	1241
5	7.52	1692	39	33.7	1254

6/16/2023	12:58	Water Column Station (water depth 5.2 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.67	1792	205	33.5	1256
3	7.70	1786	174	33.3	1254
5	7.30	1902	-240	33.4	1352

6/23/2023	8:13	Water Column Station (water depth 5.2 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.53	NR	165	27.7	NR
3	7.56	NR	155	291	1291
5	7.54	1814	-186	29.8	1282

6/30/2023	13:40	Water Column Station (water depth 5.15 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.60	1883	64	36.1	1322
3	7.50	1878	84	34.8	1325
5	7.50	1876	94	35.0	1320

7/7/2023	8:45	Water Column Station (water depth 5.0 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.60	1910	103	29.3	1355
3	7.61	1951	107	29.6	1389
5	7.59	1916	113	29.7	1364

7/14/2023	13:00	Water Column Station (water depth 5.0 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.85	NR	161	35.2	NR
3	7.65	2032	148	34.2	1449
5	7.59	1962	140	331	1529

7/21/2023	9:10	Water Column Station (water depth 4.8 ft.)			
Depth (ft)	pH	SC (uS/cm)	ORP (mV)	Temp (°C)	TDS (ppm)
1	7.72	2123	168	31.6	1515
3	7.67	2117	162	31.7	1514
5	7.70	2104	155	31.4	1509

Notes:
Readings were recorded with an Ultrameter II, hand-held meter
NR - Not Recorded

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

	Sample Location	LDNR #1		LDNR #3	LDNR #4	LDNR #5		LDNR #6		LDNR #7		LDNR #8		LDNR #9	
	Sample ID	Brine Well 22 BS		CP BS 1	CP BS 2	CP BS 3		BS 06		BS 07		BS 08		Brine Pond 4	
	Sample Date	1/25/23	5/18/23	1/30/23	1/30/23	1/30/23	5/17/23	2/28/23	5/18/23	2/28/23	5/17/23	2/28/23	5/18/23	2/10/23	5/18/23
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Component	**Units**	Surface Water (Bubble Site)													
Carbon Monoxide	mol%	ND	0.18	ND	ND	ND	0.099	ND	0.22	ND	0.31	ND	0.33	0.034	0.26
Helium	mol%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrogen	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Argon	mol%	**1.35**	**1.31**	**1.04**	**0.905**	**1.54**	**1.12**	**1.68**	**1.63**	**1.66**	**1.64**	**1.31**	**1.71**	**1.14**	**1.50**
Oxygen	mol%	**0.47**	**17.47**	**8.91**	**15.5**	**21.68**	**15.89**	**21.86**	**21.22**	**22.94**	**17.64**	**16.43**	**12.99**	**22.32**	**30.16**
Nitrogen	mol%	**61.78**	**64.5**	**45.65**	**65.33**	**69.85**	**73.83**	**72.96**	**72.30**	**71.73**	**73.45**	**57.26**	**75.89**	**75.05**	**63.88**
Carbon Dioxide	mol%	**7.47**	**6.37**	**3.58**	**1.29**	**2.47**	**2.79**	**3.22**	**4.39**	**3.27**	**6.46**	**2.88**	**7.63**	**0.61**	**2.70**
Methane	mol%	**28.45**	**10.00**	**40.41**	**16.69**	**4.39**	**6.20**	**0.278**	**0.234**	**0.398**	**0.493**	**21.89**	**1.44**	**0.845**	**1.49**
Ethane	mol%	**0.287**	**0.110**	**0.261**	**0.209**	**0.0472**	**0.0488**	**0.0042**	**0.0014**	**0.0050**	**0.0057**	**0.146**	**0.0040**	**0.0022**	**0.0032**
Ethylene	mol%	ND	ND	**0.0097**	**0.0067**	**0.0022**	**0.0042**	ND	ND	ND	ND	**0.0044**	ND	ND	ND
Propane	mol%	**0.0926**	**0.0412**	**0.0702**	**0.0445**	**0.0128**	**0.0120**	ND	**0.0014**	**0.0006**	ND	**0.0482**	**0.0008**	**0.0004**	ND
Propylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	mol%	**0.0216**	**0.0070**	**0.0259**	**0.0115**	**0.0033**	**0.0030**	ND	ND	ND	ND	**0.0158**	ND	ND	ND
N-butane	mol%	**0.0216**	**0.0070**	**0.0189**	**0.0091**	**0.0028**	**0.0021**	ND	ND	ND	ND	**0.0108**	ND	ND	ND
Iso-pentane	mol%	**0.0083**	**0.0017**	**0.0083**	**0.0032**	**0.0006**	**0.0006**	ND	ND	ND	ND	**0.0034**	ND	ND	ND
N-pentane	mol%	**0.0055**	**0.0012**	**0.0051**	**0.0019**	ND	ND	ND	ND	ND	ND	**0.0015**	ND	ND	ND
Hexanes +	mol%	**0.0449**	**0.0064**	**0.0083**	**0.0029**	**0.0039**	**0.0009**	**0.0012**	**0.0028**	**0.0013**	**0.0041**	**0.0030**	**0.0040**	**0.0007**	**0.0040**
Methane Stable Isotopes															
$\delta^{13}C$	‰	**-33.03**	**-24.86**	**-34.2**	**-38.37**	**-35.45**	**-39.21**	NA	NA	**-36.7**	**-48.9**	**-34.96**	**-60.3**	**-33.1**	**-38.9**
δD	‰	**-129.6**	**-81.1**	**-147.2**	**-160.5**	**-143**	**-159.8**	NA	NA	NA	NA	**-143.1**	NA	**-81**	NA

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

	Sample Location	LDNR #10	LDNR #12		LDNR #17		LDNR #18		LDNR #19		LDNR #21		LDNR #22	
	Sample ID	1101529-BS	BS 12		BS 17		BS 18		BS 19		No. 21		No. 22	
	Sample Date	2/10/23	2/28/23	5/18/23	2/28/23	5/17/23	2/28/23	5/17/23	2/28/23	5/18/23	3/30/23	5/17/23	3/30/23	5/17/23
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Component	**Units**	Surface Water (Bubble Site)												
Carbon Monoxide	mol%	ND	ND	0.23	ND	0.17	ND	0.066	ND	0.26	0.11	0.25	0.098	0.11
Helium	mol%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrogen	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Argon	mol%	**0.837**	**1.62**	**1.68**	**1.69**	**1.57**	**1.21**	**1.09**	**0.976**	**1.50**	**1.29**	**1.61**	**1.43**	**1.25**
Oxygen	mol%	**14.68**	**19.99**	**20.99**	**16.22**	**17.08**	**14.38**	**16.45**	**29.18**	**28.03**	**20.65**	**18.44**	**20.90**	**16.79**
Nitrogen	mol%	**59.75**	**70.00**	**72.41**	**74.92**	**66.25**	**52.67**	**79.94**	**43.27**	**63.87**	**75.31**	**73.33**	**71.96**	**79.02**
Carbon Dioxide	mol%	**1.04**	**3.51**	**4.56**	**5.42**	**7.42**	**3.08**	**1.67**	**2.83**	**2.92**	**1.77**	**5.64**	**2.40**	**2.54**
Methane	mol%	**23.55**	**4.72**	**0.122**	**1.73**	**7.42**	**28.32**	**0.784**	**23.62**	**3.40**	**0.860**	**0.721**	**3.16**	**0.288**
Ethane	mol%	**0.12**	**0.138**	**0.0014**	**0.0148**	**0.0714**	**0.240**	**0.0028**	**0.106**	**0.0130**	**0.0080**	**0.0015**	**0.410**	**0.0010**
Ethylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.0005**	ND
Propane	mol%	**0.0084**	**0.0108**	**0.0007**	**0.0021**	**0.0090**	**0.0616**	**0.0007**	**0.093**	**0.0007**	**0.0011**	**0.0008**	**0.0064**	**0.0003**
Propylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	mol%	**0.0112**	**0.0025**	ND	ND	**0.0025**	**0.176**	**0.0002**	**0.0034**	ND	**0.0004**	ND	**0.0015**	ND
N-butane	mol%	ND	**0.0019**	ND	ND	**0.0016**	**0.132**	ND	ND	ND	ND	ND	**0.0010**	ND
Iso-pentane	mol%	**0.0019**	ND	ND	ND	ND	**0.0044**	ND	**0.0004**	ND	ND	ND	ND	ND
N-pentane	mol%	ND	ND	ND	ND	ND	**0.0024**	ND	ND	ND	ND	ND	ND	ND
Hexanes +	mol%	**0.0012**	**0.0038**	**0.0058**	**0.0028**	**0.0025**	**0.0044**	**0.0006**	**0.0021**	**0.0036**	**0.0018**	**0.0031**	**0.0020**	**0.0010**
Methane Stable Isotopes														
$\delta^{13}C$	‰	**-35.63**	**-44.36**	NA	**-44.2**	**-39.07**	**-36.62**	**-46.8**	**-32.77**	**-36.1**	**-36.2**	**-48.0**	**-38.40**	**-44.40**
δD	‰	**-151.4**	**-181**	NA	**-175**	**-179**	**-154.9**	**-200**	**-109.4**	**-139**	**-122**	NA	**-156**	NA

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

	Sample Location	LDNR #23		WPB PGG No.7A	WPB PPB No.7B		Sulphur Dome	LDNR #20
	Sample ID	No. 23		Brine Well 7A BS	Brine Well 7B-BS		Central Pond	No. 20
	Sample Date	3/30/23	5/18/23	1/25/23	2/16/23	5/18/23	1/25/23	3/9/23
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Component	**Units**	Surface Water (Bubble Site)					Surface Water	
Carbon Monoxide	mol%	0.040	0.25	ND	ND	ND	0.26	0.023
Helium	mol%	NA	NA	NA	NA	NA	NA	NA
Hydrogen	mol%	ND	ND	ND	ND	ND	ND	ND
Argon	mol%	**1.09**	**1.68**	**0.744**	**0.955**	**1.58**	**1.98**	**1.01**
Oxygen	mol%	**21.18**	**14.37**	**16.39**	**19.64**	**25.16**	**0.41**	**22.40**
Nitrogen	mol%	**76.89**	**74.50**	**41.21**	**76.59**	**68.50**	**84.79**	**76.38**
Carbon Dioxide	mol%	**0.69**	**6.71**	**0.29**	**0.51**	**1.69**	**12.25**	**0.16**
Methane	mol%	**0.105**	**2.47**	**40.83**	**2.26**	**3.00**	**0.302**	**0.0245**
Ethane	mol%	**0.0013**	**0.0124**	**0.397**	**0.0333**	**0.0427**	**0.0015**	ND
Ethylene	mol%	ND	ND	**0.0013**	**0.0011**	ND	ND	ND
Propane	mol%	**0.0002**	**0.0044**	**0.099**	**0.0085**	**0.0192**	ND	ND
Propylene	mol%	ND	ND	ND	ND	ND	ND	ND
Iso-butane	mol%	ND	**0.0015**	**0.0286**	**0.0011**	**0.0043**	ND	ND
N-butane	mol%	ND	**0.0007**	**0.0106**	**0.0024**	**0.0043**	ND	ND
Iso-pentane	mol%	ND	ND	**0.013**	**0.0005**	ND	ND	ND
N-pentane	mol%	ND	ND	ND	**0.0004**	ND	ND	ND
Hexanes +	mol%	**0.0007**	**0.0037**	**0.003**	**0.001**	**0.0028**	**0.0037**	**0.005**
Methane Stable Isotopes								
$\delta^{13}C$	‰	**-34.0**	**-33.0**	**-35.6**	**-46.02**	**-38.2**	NA	NA
δD	‰	NA	**-99**	**-150.3**	**-183.6**	**-117**	NA	NA

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

	Sample Location	WW #11					WW #13					WW #12				
	Sample ID	019-580					019-582					019-995				
	Sample Date	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23	1/26/23	3/30/23	4/27/23	5/22/23	6/16/23
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Component	**Units**	Water Well														
Carbon Monoxide	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	mol%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrogen	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Argon	mol%	**1.64**	**1.17**	**1.66**	**1.76**	**1.48**	**1.76**	**1.27**	**1.61**	**1.27**	**1.56**	**1.75**	**1.29**	**1.61**	**1.77**	**1.60**
Oxygen	mol%	**5.59**	**14.38**	**9.66**	**11.60**	**17.51**	**5.03**	**13.10**	**8.07**	**4.94**	**16.60**	**6.3**	**11.66**	**11.53**	**10.41**	**14.54**
Nitrogen	mol%	**79.08**	**80.66**	**76.17**	**72.37**	**73.84**	**82.36**	**80.92**	**80.13**	**88.21**	**73.36**	**80.84**	**81.99**	**77.35**	**76.58**	**75.78**
Carbon Dioxide	mol%	**13.23**	**3.75**	**11.99**	**14.23**	**7.13**	**10.83**	**4.66**	**9.64**	**5.26**	**8.46**	**10.81**	**4.83**	**9.19**	**10.71**	**8.00**
Methane	mol%	**0.456**	**0.0421**	**0.517**	**0.0348**	**0.0321**	**0.0186**	**0.0516**	**0.547**	**0.313**	**0.0154**	**0.294**	**0.231**	**0.313**	**0.532**	**0.0701**
Ethane	mol%	ND	ND	**0.0007**	ND	**0.0005**	ND	ND	**0.0022**	**0.0012**	ND	ND	**0.0005**	ND	ND	**0.0016**
Ethylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.0005**
Propylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-butane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-pentane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanes +	mol%	**0.0042**	**0.0008**	**0.0039**	**0.0030**	**0.0041**	**0.0018**	**0.0007**	**0.0027**	**0.0012**	**0.0023**	**0.0019**	**0.0018**	**0.0034**	**0.0020**	**0.0032**
Methane Stable Isotopes																
$\delta^{13}C$	‰	**-56.4**	NA	**-59.6**	NA	NA	NA	NA	**-62.3**	NA	NA	NA	**-56.6**	**-68.7**	**-78.7**	NA
δD	‰	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

	Sample Location	WW #19					WW #40			Cottages Well		
	Sample ID	019-1055					019-1603					
	Sample Date	1/26/23	3/30/23	4/27/23	5/18/23	6/16/23	3/30/23	5/18/23	6/16/23	4/27/23	5/18/23	6/16/23
	Sampler	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM
Component	**Units**	Water Well										
Carbon Monoxide	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Helium	mol%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrogen	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Argon	mol%	**1.39**	**1.23**	**1.68**	**1.64**	**1.55**	**1.26**	**1.57**	**1.56**	**1.43**	**1.58**	**1.33**
Oxygen	mol%	**9.78**	**13.74**	**9.15**	**11.70**	**15.55**	**11.67**	**10.06**	**13.05**	**20.30**	**17.31**	**18.77**
Nitrogen	mol%	**82**	**80.18**	**78.32**	**76.17**	**75.03**	**82.50**	**73.32**	**82.13**	**70.51**	**70.87**	**68.11**
Carbon Dioxide	mol%	**6.53**	**4.67**	**10.43**	**10.09**	**7.82**	**3.77**	**4.67**	**3.25**	**7.28**	**7.44**	**9.81**
Methane	mol%	**0.3**	**0.180**	**0.411**	**0.396**	**0.049**	**0.802**	**10.37**	**0.0095**	**0.476**	**2.80**	**1.98**
Ethane	mol%	**0.0013**	**0.0007**	**0.0017**	**0.0021**	**0.0005**	**0.0009**	**0.0075**	ND	ND	ND	ND
Ethylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propylene	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-butane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-butane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iso-pentane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-pentane	mol%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanes +	mol%	**0.002**	**0.0015**	**0.0034**	**0.0021**	**0.0021**	**0.0013**	**0.0035**	**0.0010**	**0.0015**	**0.0014**	**0.0030**
Methane Stable Isotopes												
$\delta^{13}C$	‰	**-53.9**	**-53.5**	**-52.7**	**-51.3**	NA	**-89.5**	**-57.53**	NA	**-76.1**	**-94.4**	**-93.2**
δD	‰	NA	NA	NA	NA	NA	**-282**	**-110.9**	NA	NA	**-278**	**-265**

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 4
Gas Data Summary
Sulphur Dome
Calcasieu Parish, Louisiana

Sample Location		**SN 57788**	**SN 209459**	**SN 189416**	**SN 246792**	**Brine Well 7A**
Sample ID		**6X Brine**	**Fee 1012**	**Fee 969**	**Fee 1026**	**Bubble Site**
Sample Date		1/25/23	1/25/23	5/25/23	5/25/23	5/17/23
Sampler		ERM	ERM	ERM	ERM	ERM
Component	**Units**	Brine	Gas			
Carbon Monoxide	mol%	ND	ND	ND	ND	ND
Helium	mol%	NA	ND	**0.0089**	ND	ND
Hydrogen	mol%	ND	**1.40**	**0.02**	**3.37**	ND
Argon	mol%	**1.91**	**0.0086**	**0.0630**	**0.0125**	**0.823**
Oxygen	mol%	**0.74**	**0.015**	**0.13**	**0.24**	**18.25**
Nitrogen	mol%	**79.17**	**0.38**	**9.27**	**0.83**	**66.37**
Carbon Dioxide	mol%	**5.31**	**1.34**	ND	ND	**0.07**
Methane	mol%	**11.72**	**88.34**	**89.63**	**89.59**	**14.3**
Ethane	mol%	**0.462**	**3.11**	**0.592**	**4.39**	**0.132**
Ethylene	mol%	**0.0193**	ND	**0.001**	**0.0002**	**0.0001**
Propane	mol%	**0.389**	**2.78**	**0.202**	**1.17**	**0.0372**
Propylene	mol%	**0.0006**	ND	ND	ND	ND
Iso-butane	mol%	**0.0312**	**0.701**	**0.0326**	**0.117**	**0.013**
N-butane	mol%	**0.0893**	**0.905**	**0.0381**	**0.135**	**0.005**
Iso-pentane	mol%	**0.0162**	**2.7**	**0.0072**	**0.0273**	**0.0011**
N-pentane	mol%	**0.0193**	**0.191**	**0.0053**	**0.0789**	**0.0003**
Hexanes +	mol%	**0.12**	**0.562**	**0.0069**	**0.0948**	**0.0022**
Methane Stable Isotopes						
$\delta^{13}C$	‰	**-38.98**	**-45.41**	**-53.33**	**-47.78**	**-34.94**
δD	‰	**-171.7**	**-168.6**	**-174.4**	**-179.8**	**-144.2**

Notes
Bolded values deteted in the sample.
ND - Not Detected
NA - Not Analyzed (insufficient volume)

Table 5

Oil Data Summary

Sulphur Dome

Calcalsieu Parish, Louisiana

		Cavern 7 Oil								Cavern 4 Oil
	Sample ID	**Westlake 7B**	**Westlake 7B**	**Westlake 7B**	**Westlake 7B**	**Westlake 7B**	**7B Oil**	**Cavern 7B**	**7B Oil**	**Cavern 4**
	Sample Date	5/11/22	6/14/22	8/16/22	11/2/22	1/18/23	3/30/23	5/25/23	6/16/23	5/25/23
	Location	Shore Tank @ Boardwalk Composite	Shore Tank @ Boardwalk Composite	Cavern 7	Cavern 7	Cavern 7	Cavern 7 frac tank	Cavern 7	Cavern 7	Cavern 4
	Sampler	Intertek	Intertek	Intertek	Intertek	Intertek	ERM	ERM	ERM	ERM
Constituent	**Units**									
Average API Gravity	**°**	**30.3**	**32.8**	**34.1**	**32.8**	**34.0**	**33.6**	**33.52**	**33.98**	**31.21**
Sulfur	**Wt %**	**1.48**	**1.3788**	**1.36**	**1.38**	**1.4**	**1.37**	**1.401**	**1.350**	**1.548**
Vanadium	**mg/kg**	**20.6**	**4.035**	**2.85**	**22.8**	**22.8**	**100**	**23**	**25**	**42**
Nickel	**mg/kg**	**26.2**	**1.401**	**0.986**	**6.11**	**5.88**	**26**	**6**	**6**	**9**
Iron	**mg/kg**	<0.1	**2.304**	**0.014**	**0.002**	**0**	**12**	<1	**1**	**4**
Salt	**lb/1000 bbl**	<1.0	**0.57**	**5**	<1.0	**2.1**	**18**	**5.0**	**10.6**	**10.4**
Organic Chloride	**mg/kg**	**5.1**	**4.5**	**6.9**	**4.8**	**2.5**	<1.0	<1.0	<1.0	<1.0
Total Chloride	**mg/kg**	**5.5**	**5.19**	**10.5**	**5.5**	**9.7**	NA	NA	NA	NA
Inorganic Chloride	**mg/kg**	**0.4**	**0.69**	**3.7**	**0.7**	**7.2**	NA	NA	NA	NA
Specific Gravity	**°**	NA	NA	NA	NA	NA	**0.8571**	**0.8575**	**0.8551**	**0.8696**
Density	**g/ml**	NA	NA	NA	NA	NA	**0.8562**	**0.8566**	**0.8542**	**0.8688**

Notes:

< Not detected at the reporting limit shown.

Bolded values detected in sample

NA - Not Analyzed

Table 5
Oil Data Summary
Sulphur Dome
Calcalsieu Parish, Louisiana

		Produced Oil									Stock Tank	
	Sample ID	**Yellowrock 969**	**209459**		**185997**		**210185**	**Tank Battery**	**252112**	**109963**	**Pad Oil**	**Pad Oil**
	Sample Date	11/2/22	5/2/23	6/16/23	5/2/23	6/16/23	5/25/23	5/25/23	6/16/23	6/16/23	1/18/23	6/16/23
	Location	SN 189416 Well Sample	SN 209459 Well Sample	SN 209459 Well Sample	SN 185997 Well Sample	SN 185997 Well Sample	SN 210185 Well Sample	Tank Battery	SN 252112 Well Sample	SN 109963 Well Sample	Pad Oil Pump Oil	Pad Oil Pump Oil
	Sampler	Intertek	ERM	ERM	ERM	ERM	ERM	ERM	ERM	ERM	Intertek	ERM
Constituent	**Units**											
Average API Gravity	°	**26.0**	**22.81**	**21.56**	**21.53**	**22.96**	**22.79**	**26.95**	**29.72**	**24.05**	**29.1**	**29.27**
Sulfur	**Wt %**	**0.302**	**0.435**	**0.433**	**0.407**	**0.411**	**0.476**	**0.327**	**0.295**	**0.431**	**1.17**	**1.265**
Vanadium	**mg/kg**	**1.23**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**19**	**18**
Nickel	**mg/kg**	**7.04**	**8**	**9**	**9**	**10**	**10**	**6**	**5**	**8**	**4.94**	**5**
Iron	**mg/kg**	**6.57**	**13**	**6**	**6**	**7**	**59**	**15**	**11**	**17**	**24.5**	**29**
Salt	**lb/1000 bbl**	**363.36**	**1,290**	**9.2**	**1,015**	**138.0**	**9.8**	**32.0**	**74.0**	**54.0**	**46.7**	**258.0**
Organic Chloride	**mg/kg**	**89.0**	<1	<1	<1	<1	<1.0	<1.0	<1	<1	**63.7**	**2.1**
Total Chloride	**mg/kg**	**146.1**	NA	NA	NA	NA	NA	NA	NA	NA	**202.9**	NA
Inorganic Chloride	**mg/kg**	**57.1**	NA	NA	NA	NA	NA	NA	NA	NA	**139.2**	NA
Specific Gravity	°	NA	**0.917**	**0.9245**	**0.9246**	**0.9161**	**0.9171**	**0.893**	**0.8887**	**0.9096**	NA	**0.8801**
Density	**g/ml**	NA	**0.9161**	**0.9235**	**0.9237**	**0.9152**	**0.9162**	**0.8921**	**0.8878**	**0.9087**	NA	**0.8793**

Notes:
< Not detected at the reporting limit shown.
Bolded values detected in sample
NA - Not Analyzed

ATTACHMENT 1: LABORATORY REPORTS

SPL Laboratory Report

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-001A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: Pad Oil
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:00
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 763 mm Hg
Initial Boiling Point	194
5	272
10	326
20	NR
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	400
Volume % Recovery	17.0
Volume % Residue	83.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.1635

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-001A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: Pad Oil
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:00

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	258.0	lbs/1000 bbls		MG	06/22/2023
Sulfur Content by X-ray	ASTM D-4294	1.265	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	2.1	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	29.27	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.8801	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.8793	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	5	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	18	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	29	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.1635

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-002A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 7B Oil
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:30
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 763 mm Hg
Initial Boiling Point	138
5	214
10	270
20	360
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	400
Volume % Recovery	24.0
Volume % Residue	76.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.2296

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-002A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 7B Oil
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:30

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	10.6	lbs/1000 bbls		MG	06/22/2023
Sulfur Content by X-ray	ASTM D-4294	1.350	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	<1.0	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	33.98	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.8551	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.8542	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	6	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	25	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	1	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.2296

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-003A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 252112
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:45
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 763 mm Hg
Initial Boiling Point	212
5	293
10	362
20	NR
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	400
Volume % Recovery	14.0
Volume % Residue	86.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.1136

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-003A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 252112
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 10:45

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	74.0	lbs/1000 bbls		MG	06/22/2023
Sulfur Content by X-ray	ASTM D-4294	0.295	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	<1.0	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	27.72	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.8887	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.8878	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	5	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	1	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	11	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.1136

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-004A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 109963
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:00
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 763 mm Hg
Initial Boiling Point	227
5	304
10	377
20	NR
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	400
Volume % Recovery	11.0
Volume % Residue	89.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.0976

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-004A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 109963
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:00

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	54.0	lbs/1000 bbls		MG	06/22/2023
Sulfur Content by X-ray	ASTM D-4294	0.431	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	<1.0	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	24.05	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.9096	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.9087	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	8	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	2	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	17	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.0976

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-005A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 185997
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:20
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 764 mm Hg
Initial Boiling Point	368
5	466
10	NR
20	NR
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	500
Volume % Recovery	9.0
Volume % Residue	91.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.0795

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-005A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 185997
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:20

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	138.0	lbs/1000 bbls		ES	06/27/2023
Sulfur Content by X-ray	ASTM D-4294	0.411	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	<1.0	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	22.96	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.9161	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.9152	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	10	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	2	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	7	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.0795

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-006A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 209459
Method: ASTM D-86
Analyzed: 06/30/2023 00:00:00 by MG

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:30
Sample Conditions:

ASTM D-86 Distillation

% Recovery	°F @ 764 mm Hg
Initial Boiling Point	250
5	397
10	NR
20	NR
30	NR
40	NR
50	NR
60	NR
70	NR
80	NR
85	NR
90	NR
95	NR
Final Boiling Point	400
Volume % Recovery	5.0
Volume % Residue	95.0
Volume % Loss	0.0

Comments: Residue and loss observed.
IBP to 400°F Naphtha Cut Mass Fraction = 0.0397

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-23060668-006A

Scott Himes
ERM
840 W. Sam Houston Parkway North
Houston, TX 77024-4613

July 05, 2023

Station Name: 209459
Sample Conditions:

Sampled By: Taylar Brown
Sample Of: Liquid Spot
Sample Date: 06/16/2023 11:30

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Salt in Crude Oil	ASTM D-3230	9.2	lbs/1000 bbls		ES	06/27/2023
Sulfur Content by X-ray	ASTM D-4294	0.433	wt%		ES	07/04/2023
Organic Chloride	ASTM D-4929	<1.0	ppmw		FSN	07/05/2023
API Gravity @ 60.01 °F	ASTM D-5002	21.56	°		ES	07/04/2023
Specific Gravity @ 60.01/60.01 °F	ASTM D-5002	0.9245	_		ES	07/04/2023
Density @ 60.01 °F	ASTM D-5002	0.9235	g/ml		ES	07/04/2023
Nickel	ASTM D-5708A	9	ppmw		CMN	07/02/2023
Vanadium	ASTM D-5708A	2	ppmw		CMN	07/02/2023
Iron	ASTM D-5708A	6	ppmw		CMN	07/02/2023

Comments:
AS-D-4929: Sample analyzed by ASTM D-4929 procedure B.
Mass Fraction = 0.0397

Michael Staley

Data reviewed by: Michael Staley, ASTM Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

SPL, Inc.
Analysis Request Chain of Custody Record

SPL		SPL Work Order No.:	Acct. Mate Code:	Dept. Code	Page	Pages
					1	1

Report To: (Company Name):	ERM	Project/Station **Name**:	Project/Station **Number**:	Project/Station **Location**:	**Requested TAT***
Address:	840 W. Sam Houston Parkway North Suite 600	Special Instructions:			**10 business days**
City/State/Zip:	Houston TX 77024-4613				
Contact:	Scott Himes	Scott.Himes@erm.com			
Phone:	832-209-8811	Fax:			

Indicate Billing Type: (Place "X", where appropriate)	Net 30 day Acct.		Check #	
	Credit Card		<<<Contact SPL, Inc for CC payment arrangements.	

* Surcharges May Apply (See quote for details)

Invoice To: (Company Name):	ERM	† Terms: Cylinders will be rented for $10/cyl. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.		
Address:	840 W. Sam Houston Parkway North Suite 600			
City/State/Zip:	Houston TX 77024-4613			
Contact:	Scott Himes	Scott.Himes@erm.com		
Phone:	832-209-8811	Fax:		
Client PO# or Ref. No.:				
Contract/Proposal #: (i.e. SPLQ####)	**SPLQ10978**			

RECEIVED
JUN 19 2023
BY: 1470

Sample ID (used to log/track sample)	Sample Date	Sample Time	Sample Type (Gas/Liq. /Solid)	Duplicate	Composite	Spot	Cylinder Tracking Info† Cylinder #	Date Out	Date In	AS-D-5002	AS-D-4294	ASTM D-5708	AS-D-3230	ASTM D-86-IBP-400°F	AS-D-4929	Comments
Pad Oil	06/16/23	10:00	Liq Oil			X				X	X	X	X	X	X	
7B Oil	06/16/23	10:30	Liq Oil			X				X	X	X	X	X	X	
252112	06/16/23	10:45	Liq Oil			X				X	X	X	X	X	X	
109963	06/16/23	11:00	Liq Oil			X				X	X	X	X	X	X	
185997	06/16/23	11:20	Liq Oil			X				X	X	X	X	X	X	
209459	06/16/23	11:30	Liq Oil			X				X	X	X	X	X	X	

Sampled By-Print Name:	Taylar Brown			Received By-Company:			
Signature:							
Relinquished By-Print Name:	Taylar Brown	Date:	Time:	Received By-Print Name:		Date:	Time:
Signature:	Taylar Brown	06/19/23	13:00	Signature:			
Relinquished By-Print Name:		Date:	Time:	Received By-Print Name:		Date:	Time:
Signature:				Signature:			
Relinquished By-Print Name:		Date:	Time:	Received By-Print Name:		Date:	Time:
Signature:				Signature:			

Choose SPL Facility>>>	Corporate HQ - Houston, TX	Ship to Address:	8820 Interchange Dr., Houston,TX 77054	Phone:	713.660.0901

Note - As a convenience to our clients, this form is available in an electronic format. Please contact one of our offices above for the form to be e-mailed to you.

ALS Laboratory Reports

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

July 03, 2023

Scott Himes
Environmental Resources Mgmt.
CityCentre Four
840 W. Sam Houston Pkwy., Suite 600
Houston, TX 77024

Work Order: **HS23061189**

Laboratory Results for: **Sulphur Dome**

Dear Scott Himes,

ALS Environmental received 6 sample(s) on Jun 16, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Bernadette A. Fini
Project Manager

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Work Order: HS23061189

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23061189-01	019-580	Water		16-Jun-2023 07:45	16-Jun-2023 17:57	☐
HS23061189-02	019-582	Water		16-Jun-2023 08:15	16-Jun-2023 17:57	☐
HS23061189-03	019-995	Water		16-Jun-2023 08:45	16-Jun-2023 17:57	☐
HS23061189-04	019-1603	Water		16-Jun-2023 09:15	16-Jun-2023 17:57	☐
HS23061189-05	Cottages	Water		16-Jun-2023 09:30	16-Jun-2023 17:57	☐
HS23061189-06	019-1055	Water		16-Jun-2023 09:00	16-Jun-2023 17:57	☐

Client: Environmental Resources Mgmt. **CASE NARRATIVE**
Project: Sulphur Dome
Work Order: HS23061189

Work Order Comments

- Login notes:
  Samples : 019-1603; Cottages & 019-1055 MA-EPH Ambers 2 of 2 pH >2 (7). Preserved with 5ml HCL (Lot 3100605321) 6/19/23 @ 09:15. Final pH (1)

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

  The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method MA EPH

Batch ID: 196661

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

GC Volatiles by Method MA VPH

Batch ID: R439330,R439356,R439540,R439543

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

GCMS Volatiles by Method SW8260

Batch ID: R439666

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

Metals by Method SW7470A

Batch ID: 196965

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

Metals by Method SW6020A

Batch ID: 196811

Sample ID: HS23061161-02MS

- MS/MSD and DUPs are for an unrelated sample

WetChemistry by Method SM4500 S2-F

Batch ID: R439643

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

WetChemistry by Method E376.1

Batch ID: R439645

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

WetChemistry by Method SW9056

Batch ID: R439655

Sample ID: HS23061481-01MS

- MS and MSD are for an unrelated sample (Sulfate)

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Work Order: HS23061189

CASE NARRATIVE

WetChemistry by Method SW9056

WetChemistry by Method M2540C

Batch ID: R439601,R439604

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

WetChemistry by Method SM2320B

Batch ID: R439592

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

WetChemistry by Method SM4500H+ B

Batch ID: R439425

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-580
Collection Date: 16-Jun-2023 07:45

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 02:57
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 02:57
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 02:57
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 02:57
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 02:57
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 02:57
Surr: 1,2-Dichloroethane-d4	*89.7*			*70-126*	*%REC*	*1*	*23-Jun-2023 02:57*
Surr: 4-Bromofluorobenzene	*89.7*			*77-113*	*%REC*	*1*	*23-Jun-2023 02:57*
Surr: Dibromofluoromethane	*94.7*			*77-123*	*%REC*	*1*	*23-Jun-2023 02:57*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jun-2023 02:57*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:06
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:06
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:06
Surr: 2,5-Dibromotoluene (Aliphatic)	*95.7*			*70-130*	*%REC*	*1*	*20-Jun-2023 06:06*
Surr: 2,5-Dibromotoluene (Aromatic)	*121*			*70-130*	*%REC*	*1*	*20-Jun-2023 06:06*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 00:10
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 00:10
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 00:10
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 00:10
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 00:10
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 00:10
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 00:10
Surr: 1-Chlorooctadecane	*66.7*			*40-140*	*%REC*	*1*	*30-Jun-2023 00:10*
Surr: 2-Bromonaphthalene	*108*			*40-140*	*%REC*	*1*	*30-Jun-2023 00:10*
Surr: 2-Fluorobiphenyl	*82.0*			*40-140*	*%REC*	*1*	*30-Jun-2023 00:10*
Surr: o-Terphenyl	*93.9*			*40-140*	*%REC*	*1*	*30-Jun-2023 00:10*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-580
Collection Date: 16-Jun-2023 07:45

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	**0.000452**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jun-2023 19:59
Barium	**0.197**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 19:59
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 19:59
Calcium	**22.7**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 19:59
Chromium	**0.000462**	J	**0.000400**	**0.00400**	**mg/L**	1	30-Jun-2023 19:59
Iron	**3.61**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 19:59
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 19:59
Magnesium	**7.43**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 19:59
Manganese	**0.355**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 19:59
Nickel	U		0.000600	0.00200	mg/L	1	30-Jun-2023 19:59
Potassium	**2.51**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 19:59
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 19:59
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 19:59
Sodium	**24.6**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:34
Strontium	**0.214**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 19:59
Vanadium	**0.00322**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 19:59
Zinc	**0.0130**		**0.00200**	**0.00400**	**mg/L**	1	30-Jun-2023 19:59
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2023 18:20
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**204**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:27
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**107**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 11:32
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 11:32
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.22**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:02
Temp Deg C @pH	**22.9**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:02
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	22-Jun-2023 18:57
Chloride	**23.7**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 18:57
Sulfate	**4.28**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 18:57

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-582
Collection Date: 16-Jun-2023 08:15

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:00
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:00
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 04:00
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:00
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:00
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 04:00
Surr: 1,2-Dichloroethane-d4	*89.6*			*70-126*	*%REC*	*1*	*23-Jun-2023 04:00*
Surr: 4-Bromofluorobenzene	*86.5*			*77-113*	*%REC*	*1*	*23-Jun-2023 04:00*
Surr: Dibromofluoromethane	*95.0*			*77-123*	*%REC*	*1*	*23-Jun-2023 04:00*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*23-Jun-2023 04:00*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:44
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:44
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	20-Jun-2023 06:44
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.6*			*70-130*	*%REC*	*1*	*20-Jun-2023 06:44*
Surr: 2,5-Dibromotoluene (Aromatic)	*121*			*70-130*	*%REC*	*1*	*20-Jun-2023 06:44*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 01:47
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 01:47
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 01:47
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 01:47
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 01:47
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 01:47
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 01:47
Surr: 1-Chlorooctadecane	*69.6*			*40-140*	*%REC*	*1*	*30-Jun-2023 01:47*
Surr: 2-Bromonaphthalene	*105*			*40-140*	*%REC*	*1*	*30-Jun-2023 01:47*
Surr: 2-Fluorobiphenyl	*85.9*			*40-140*	*%REC*	*1*	*30-Jun-2023 01:47*
Surr: o-Terphenyl	*86.1*			*40-140*	*%REC*	*1*	*30-Jun-2023 01:47*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-582
Collection Date: 16-Jun-2023 08:15

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	**0.000635**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jun-2023 20:01
Barium	**0.210**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 20:01
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:01
Calcium	**22.9**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 20:01
Chromium	U		0.000400	0.00400	mg/L	1	30-Jun-2023 20:01
Iron	**3.28**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 20:01
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:01
Magnesium	**7.36**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 20:01
Manganese	**0.361**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 20:01
Nickel	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:01
Potassium	**2.49**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 20:01
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 20:01
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:01
Sodium	**24.7**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:36
Strontium	**0.221**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 20:01
Vanadium	**0.00358**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 20:01
Zinc	**0.00897**		**0.00200**	**0.00400**	**mg/L**	1	30-Jun-2023 20:01
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2023 18:22
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**190**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:27
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**109**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 11:38
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 11:38
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.36**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:07
Temp Deg C @pH	**23.1**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:07
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	22-Jun-2023 19:08
Chloride	**23.2**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:08
Sulfate	**4.30**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:08

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-995
Collection Date: 16-Jun-2023 08:45

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:21
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:21
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 04:21
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:21
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:21
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 04:21
Surr: 1,2-Dichloroethane-d4	*90.6*			*70-126*	*%REC*	*1*	*23-Jun-2023 04:21*
Surr: 4-Bromofluorobenzene	*89.1*			*77-113*	*%REC*	*1*	*23-Jun-2023 04:21*
Surr: Dibromofluoromethane	*92.7*			*77-123*	*%REC*	*1*	*23-Jun-2023 04:21*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Jun-2023 04:21*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	21-Jun-2023 21:26
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 21:26
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 21:26
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.1*			*70-130*	*%REC*	*1*	*21-Jun-2023 21:26*
Surr: 2,5-Dibromotoluene (Aromatic)	*121*			*70-130*	*%REC*	*1*	*21-Jun-2023 21:26*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 02:19
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 02:19
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 02:19
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 02:19
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 02:19
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 02:19
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 02:19
Surr: 1-Chlorooctadecane	*65.2*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:19*
Surr: 2-Bromonaphthalene	*120*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:19*
Surr: 2-Fluorobiphenyl	*99.7*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:19*
Surr: o-Terphenyl	*94.0*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:19*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-995
Collection Date: 16-Jun-2023 08:45

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jun-2023 20:03
Barium	**0.205**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 20:03
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:03
Calcium	**23.0**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 20:03
Chromium	U		0.000400	0.00400	mg/L	1	30-Jun-2023 20:03
Iron	**4.88**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 20:03
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:03
Magnesium	**7.51**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 20:03
Manganese	**0.375**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 20:03
Nickel	**0.000820**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jun-2023 20:03
Potassium	**2.53**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 20:03
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 20:03
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:03
Sodium	**25.0**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:38
Strontium	**0.220**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 20:03
Vanadium	**0.00370**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 20:03
Zinc	U		0.00200	0.00400	mg/L	1	30-Jun-2023 20:03
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2023 18:23
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**194**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:27
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**108**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 11:54
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 11:54
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.30**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:10
Temp Deg C @pH	**22.8**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:10
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	22-Jun-2023 19:20
Chloride	**23.4**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:20
Sulfate	**3.57**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:20

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1603
Collection Date: 16-Jun-2023 09:15

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:42
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:42
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 04:42
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 04:42
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 04:42
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 04:42
Surr: 1,2-Dichloroethane-d4	*92.7*			*70-126*	*%REC*	*1*	*23-Jun-2023 04:42*
Surr: 4-Bromofluorobenzene	*90.0*			*77-113*	*%REC*	*1*	*23-Jun-2023 04:42*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*23-Jun-2023 04:42*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Jun-2023 04:42*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:05
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:05
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:05
Surr: 2,5-Dibromotoluene (Aliphatic)	*102*			*70-130*	*%REC*	*1*	*21-Jun-2023 22:05*
Surr: 2,5-Dibromotoluene (Aromatic)	*123*			*70-130*	*%REC*	*1*	*21-Jun-2023 22:05*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 02:51
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 02:51
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 02:51
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 02:51
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 02:51
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 02:51
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 02:51
Surr: 1-Chlorooctadecane	*66.0*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:51*
Surr: 2-Bromonaphthalene	*93.3*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:51*
Surr: 2-Fluorobiphenyl	*72.4*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:51*
Surr: o-Terphenyl	*82.8*			*40-140*	*%REC*	*1*	*30-Jun-2023 02:51*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1603
Collection Date: 16-Jun-2023 09:15

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	**0.000466**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jun-2023 20:05
Barium	**0.136**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 20:05
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:05
Calcium	**22.4**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 20:05
Chromium	**0.000415**	J	**0.000400**	**0.00400**	**mg/L**	1	30-Jun-2023 20:05
Iron	**4.39**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 20:05
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:05
Magnesium	**7.37**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 20:05
Manganese	**0.491**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 20:05
Nickel	**0.000750**	J	**0.000600**	**0.00200**	**mg/L**	1	30-Jun-2023 20:05
Potassium	**2.43**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 20:05
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 20:05
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:05
Sodium	**24.0**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:40
Strontium	**0.210**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 20:05
Vanadium	**0.00320**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 20:05
Zinc	**0.0200**		**0.00200**	**0.00400**	**mg/L**	1	30-Jun-2023 20:05
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	**0.0000400**	J	**0.0000300**	**0.000200**	**mg/L**	1	29-Jun-2023 18:25
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**192**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:27
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**113**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 12:00
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 12:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.45**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:13
Temp Deg C @pH	**22.7**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:13
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	**0.143**		**0.0300**	**0.100**	**mg/L**	1	22-Jun-2023 19:31
Chloride	**23.0**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:31
Sulfate	**3.00**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 19:31

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: Cottages
Collection Date: 16-Jun-2023 09:30

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 05:03
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 05:03
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 05:03
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 05:03
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 05:03
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 05:03
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*23-Jun-2023 05:03*
Surr: 4-Bromofluorobenzene	*87.3*			*77-113*	*%REC*	*1*	*23-Jun-2023 05:03*
Surr: Dibromofluoromethane	*96.4*			*77-123*	*%REC*	*1*	*23-Jun-2023 05:03*
Surr: Toluene-d8	*108*			*82-127*	*%REC*	*1*	*23-Jun-2023 05:03*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:43
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:43
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 22:43
Surr: 2,5-Dibromotoluene (Aliphatic)	*105*			*70-130*	*%REC*	*1*	*21-Jun-2023 22:43*
Surr: 2,5-Dibromotoluene (Aromatic)	*120*			*70-130*	*%REC*	*1*	*21-Jun-2023 22:43*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 03:23
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 03:23
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 03:23
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 03:23
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 03:23
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 03:23
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 03:23
Surr: 1-Chlorooctadecane	*40.6*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:23*
Surr: 2-Bromonaphthalene	*82.2*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:23*
Surr: 2-Fluorobiphenyl	*68.5*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:23*
Surr: o-Terphenyl	*88.3*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:23*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: Cottages
Collection Date: 16-Jun-2023 09:30

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jun-2023 20:07
Barium	**0.172**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 20:07
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:07
Calcium	**14.4**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 20:07
Chromium	**0.000522**	J	**0.000400**	**0.00400**	**mg/L**	1	30-Jun-2023 20:07
Iron	**6.04**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 20:07
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:07
Magnesium	**3.96**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 20:07
Manganese	**0.211**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 20:07
Nickel	**0.00304**		**0.000600**	**0.00200**	**mg/L**	1	30-Jun-2023 20:07
Potassium	**2.20**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 20:07
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 20:07
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:07
Sodium	**66.2**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:42
Strontium	**0.179**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 20:07
Vanadium	**0.00295**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 20:07
Zinc	**0.203**		**0.00200**	**0.00400**	**mg/L**	1	30-Jun-2023 20:07
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2023 18:27
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**244**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:37
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**132**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 12:05
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 12:05
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.30**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:15
Temp Deg C @pH	**22.8**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:15
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	**0.179**		**0.0300**	**0.100**	**mg/L**	1	22-Jun-2023 20:06
Chloride	**52.6**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 20:06
Sulfate	**0.608**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 20:06

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1055
Collection Date: 16-Jun-2023 09:00

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene		U	0.20	1.0	ug/L	1	23-Jun-2023 05:24
Ethylbenzene		U	0.30	1.0	ug/L	1	23-Jun-2023 05:24
m,p-Xylene		U	0.50	2.0	ug/L	1	23-Jun-2023 05:24
o-Xylene		U	0.30	1.0	ug/L	1	23-Jun-2023 05:24
Toluene		U	0.20	1.0	ug/L	1	23-Jun-2023 05:24
Xylenes, Total		U	0.30	1.0	ug/L	1	23-Jun-2023 05:24
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*23-Jun-2023 05:24*
Surr: 4-Bromofluorobenzene	*84.9*			*77-113*	*%REC*	*1*	*23-Jun-2023 05:24*
Surr: Dibromofluoromethane	*96.1*			*77-123*	*%REC*	*1*	*23-Jun-2023 05:24*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Jun-2023 05:24*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	21-Jun-2023 23:21
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 23:21
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	21-Jun-2023 23:21
Surr: 2,5-Dibromotoluene (Aliphatic)	*105*			*70-130*	*%REC*	*1*	*21-Jun-2023 23:21*
Surr: 2,5-Dibromotoluene (Aromatic)	*124*			*70-130*	*%REC*	*1*	*21-Jun-2023 23:21*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 23-Jun-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 03:55
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	30-Jun-2023 03:55
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	30-Jun-2023 03:55
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	30-Jun-2023 03:55
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	30-Jun-2023 03:55
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	30-Jun-2023 03:55
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	30-Jun-2023 03:55
Surr: 1-Chlorooctadecane	*59.8*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:55*
Surr: 2-Bromonaphthalene	*102*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:55*
Surr: 2-Fluorobiphenyl	*80.2*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:55*
Surr: o-Terphenyl	*96.2*			*40-140*	*%REC*	*1*	*30-Jun-2023 03:55*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1055
Collection Date: 16-Jun-2023 09:00

ANALYTICAL REPORT
WorkOrder:HS23061189
Lab ID:HS23061189-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 27-Jun-2023		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jun-2023 20:09
Barium	**0.207**		**0.00190**	**0.00400**	**mg/L**	1	30-Jun-2023 20:09
Cadmium	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:09
Calcium	**22.6**		**0.0340**	**0.500**	**mg/L**	1	30-Jun-2023 20:09
Chromium	U		0.000400	0.00400	mg/L	1	30-Jun-2023 20:09
Iron	**4.24**		**0.0120**	**0.200**	**mg/L**	1	30-Jun-2023 20:09
Lead	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:09
Magnesium	**7.32**		**0.0100**	**0.200**	**mg/L**	1	30-Jun-2023 20:09
Manganese	**0.359**		**0.000700**	**0.00500**	**mg/L**	1	30-Jun-2023 20:09
Nickel	U		0.000600	0.00200	mg/L	1	30-Jun-2023 20:09
Potassium	**2.48**		**0.0180**	**0.200**	**mg/L**	1	30-Jun-2023 20:09
Selenium	U		0.00110	0.00200	mg/L	1	30-Jun-2023 20:09
Silver	U		0.000200	0.00200	mg/L	1	30-Jun-2023 20:09
Sodium	**24.8**		**0.0140**	**0.200**	**mg/L**	1	30-Jun-2023 21:44
Strontium	**0.215**		**0.000200**	**0.00500**	**mg/L**	1	30-Jun-2023 20:09
Vanadium	**0.00311**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jun-2023 20:09
Zinc	**0.00514**		**0.00200**	**0.00400**	**mg/L**	1	30-Jun-2023 20:09
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 29-Jun-2023		Analyst: JS
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2023 18:29
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	23-Jun-2023 07:23
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**176**		**5.00**	**10.0**	**mg/L**	1	21-Jun-2023 13:37
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: DW
Alkalinity, Bicarbonate (As CaCO3)	**108**		**5.00**	**5.00**	**mg/L**	1	22-Jun-2023 12:10
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	22-Jun-2023 12:10
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	23-Jun-2023 07:07
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.38**	H	**0.100**	**0.100**	**pH Units**	1	20-Jun-2023 18:18
Temp Deg C @pH	**22.8**	H	**0**	**0**	**°C**	1	20-Jun-2023 18:18
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	22-Jun-2023 20:18
Chloride	**23.6**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 20:18
Sulfate	**4.21**		**0.200**	**0.500**	**mg/L**	1	22-Jun-2023 20:18

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

Weight / Prep Log

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

Batch ID: 196661 **Start Date:** 23 Jun 2023 13:02 **End Date:** 23 Jun 2023 13:02
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23061189-01	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23061189-02	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23061189-03	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23061189-04	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23061189-05	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23061189-06	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2

Batch ID: 196811 **Start Date:** 27 Jun 2023 10:00 **End Date:** 27 Jun 2023 10:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23061189-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-06		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 196965 **Start Date:** 29 Jun 2023 11:30 **End Date:** 29 Jun 2023 11:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23061189-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23061189-06		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 196661 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45		23 Jun 2023 13:02	30 Jun 2023 00:10	1
HS23061189-01	019-580	16 Jun 2023 07:45		23 Jun 2023 13:02	30 Jun 2023 00:10	1
HS23061189-02	019-582	16 Jun 2023 08:15		23 Jun 2023 13:02	30 Jun 2023 01:47	1
HS23061189-02	019-582	16 Jun 2023 08:15		23 Jun 2023 13:02	30 Jun 2023 01:47	1
HS23061189-03	019-995	16 Jun 2023 08:45		23 Jun 2023 13:02	30 Jun 2023 02:19	1
HS23061189-03	019-995	16 Jun 2023 08:45		23 Jun 2023 13:02	30 Jun 2023 02:19	1
HS23061189-04	019-1603	16 Jun 2023 09:15		23 Jun 2023 13:02	30 Jun 2023 02:51	1
HS23061189-04	019-1603	16 Jun 2023 09:15		23 Jun 2023 13:02	30 Jun 2023 02:51	1
HS23061189-05	Cottages	16 Jun 2023 09:30		23 Jun 2023 13:02	30 Jun 2023 03:23	1
HS23061189-05	Cottages	16 Jun 2023 09:30		23 Jun 2023 13:02	30 Jun 2023 03:23	1
HS23061189-06	019-1055	16 Jun 2023 09:00		23 Jun 2023 13:02	30 Jun 2023 03:55	1
HS23061189-06	019-1055	16 Jun 2023 09:00		23 Jun 2023 13:02	30 Jun 2023 03:55	1
Batch ID: 196811 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45		27 Jun 2023 10:00	30 Jun 2023 21:34	1
HS23061189-01	019-580	16 Jun 2023 07:45		27 Jun 2023 10:00	30 Jun 2023 19:59	1
HS23061189-02	019-582	16 Jun 2023 08:15		27 Jun 2023 10:00	30 Jun 2023 21:36	1
HS23061189-02	019-582	16 Jun 2023 08:15		27 Jun 2023 10:00	30 Jun 2023 20:01	1
HS23061189-03	019-995	16 Jun 2023 08:45		27 Jun 2023 10:00	30 Jun 2023 21:38	1
HS23061189-03	019-995	16 Jun 2023 08:45		27 Jun 2023 10:00	30 Jun 2023 20:03	1
HS23061189-04	019-1603	16 Jun 2023 09:15		27 Jun 2023 10:00	30 Jun 2023 21:40	1
HS23061189-04	019-1603	16 Jun 2023 09:15		27 Jun 2023 10:00	30 Jun 2023 20:05	1
HS23061189-05	Cottages	16 Jun 2023 09:30		27 Jun 2023 10:00	30 Jun 2023 21:42	1
HS23061189-05	Cottages	16 Jun 2023 09:30		27 Jun 2023 10:00	30 Jun 2023 20:07	1
HS23061189-06	019-1055	16 Jun 2023 09:00		27 Jun 2023 10:00	30 Jun 2023 21:44	1
HS23061189-06	019-1055	16 Jun 2023 09:00		27 Jun 2023 10:00	30 Jun 2023 20:09	1
Batch ID: 196965 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45		29 Jun 2023 11:30	29 Jun 2023 18:20	1
HS23061189-02	019-582	16 Jun 2023 08:15		29 Jun 2023 11:30	29 Jun 2023 18:22	1
HS23061189-03	019-995	16 Jun 2023 08:45		29 Jun 2023 11:30	29 Jun 2023 18:23	1
HS23061189-04	019-1603	16 Jun 2023 09:15		29 Jun 2023 11:30	29 Jun 2023 18:25	1
HS23061189-05	Cottages	16 Jun 2023 09:30		29 Jun 2023 11:30	29 Jun 2023 18:27	1
HS23061189-06	019-1055	16 Jun 2023 09:00		29 Jun 2023 11:30	29 Jun 2023 18:29	1
Batch ID: R439330 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			20 Jun 2023 06:06	1
HS23061189-02	019-582	16 Jun 2023 08:15			20 Jun 2023 06:44	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R439356 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			20 Jun 2023 06:06	1
HS23061189-02	019-582	16 Jun 2023 08:15			20 Jun 2023 06:44	1
Batch ID: R439425 (0)	**Test Name :** PH BY SM4500H+ B-2011				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			20 Jun 2023 18:02	1
HS23061189-02	019-582	16 Jun 2023 08:15			20 Jun 2023 18:07	1
HS23061189-03	019-995	16 Jun 2023 08:45			20 Jun 2023 18:10	1
HS23061189-04	019-1603	16 Jun 2023 09:15			20 Jun 2023 18:13	1
HS23061189-05	Cottages	16 Jun 2023 09:30			20 Jun 2023 18:15	1
HS23061189-06	019-1055	16 Jun 2023 09:00			20 Jun 2023 18:18	1
Batch ID: R439540 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23061189-03	019-995	16 Jun 2023 08:45			21 Jun 2023 21:26	1
HS23061189-04	019-1603	16 Jun 2023 09:15			21 Jun 2023 22:05	1
HS23061189-05	Cottages	16 Jun 2023 09:30			21 Jun 2023 22:43	1
HS23061189-06	019-1055	16 Jun 2023 09:00			21 Jun 2023 23:21	1
Batch ID: R439543 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23061189-03	019-995	16 Jun 2023 08:45			21 Jun 2023 21:26	1
HS23061189-04	019-1603	16 Jun 2023 09:15			21 Jun 2023 22:05	1
HS23061189-05	Cottages	16 Jun 2023 09:30			21 Jun 2023 22:43	1
HS23061189-06	019-1055	16 Jun 2023 09:00			21 Jun 2023 23:21	1
Batch ID: R439592 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			22 Jun 2023 11:32	1
HS23061189-02	019-582	16 Jun 2023 08:15			22 Jun 2023 11:38	1
HS23061189-03	019-995	16 Jun 2023 08:45			22 Jun 2023 11:54	1
HS23061189-04	019-1603	16 Jun 2023 09:15			22 Jun 2023 12:00	1
HS23061189-05	Cottages	16 Jun 2023 09:30			22 Jun 2023 12:05	1
HS23061189-06	019-1055	16 Jun 2023 09:00			22 Jun 2023 12:10	1
Batch ID: R439601 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			21 Jun 2023 13:27	1
HS23061189-02	019-582	16 Jun 2023 08:15			21 Jun 2023 13:27	1
HS23061189-03	019-995	16 Jun 2023 08:45			21 Jun 2023 13:27	1
HS23061189-04	019-1603	16 Jun 2023 09:15			21 Jun 2023 13:27	1
Batch ID: R439604 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS23061189-05	Cottages	16 Jun 2023 09:30			21 Jun 2023 13:37	1
HS23061189-06	019-1055	16 Jun 2023 09:00			21 Jun 2023 13:37	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R439643 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			23 Jun 2023 07:07	1
HS23061189-02	019-582	16 Jun 2023 08:15			23 Jun 2023 07:07	1
HS23061189-03	019-995	16 Jun 2023 08:45			23 Jun 2023 07:07	1
HS23061189-04	019-1603	16 Jun 2023 09:15			23 Jun 2023 07:07	1
HS23061189-05	Cottages	16 Jun 2023 09:30			23 Jun 2023 07:07	1
HS23061189-06	019-1055	16 Jun 2023 09:00			23 Jun 2023 07:07	1
Batch ID: R439645 (0)	**Test Name :** HYDROGEN SULFIDE BY E376.1				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			23 Jun 2023 07:23	1
HS23061189-02	019-582	16 Jun 2023 08:15			23 Jun 2023 07:23	1
HS23061189-03	019-995	16 Jun 2023 08:45			23 Jun 2023 07:23	1
HS23061189-04	019-1603	16 Jun 2023 09:15			23 Jun 2023 07:23	1
HS23061189-05	Cottages	16 Jun 2023 09:30			23 Jun 2023 07:23	1
HS23061189-06	019-1055	16 Jun 2023 09:00			23 Jun 2023 07:23	1
Batch ID: R439655 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			22 Jun 2023 18:57	1
HS23061189-02	019-582	16 Jun 2023 08:15			22 Jun 2023 19:08	1
HS23061189-03	019-995	16 Jun 2023 08:45			22 Jun 2023 19:20	1
HS23061189-04	019-1603	16 Jun 2023 09:15			22 Jun 2023 19:31	1
HS23061189-05	Cottages	16 Jun 2023 09:30			22 Jun 2023 20:06	1
HS23061189-06	019-1055	16 Jun 2023 09:00			22 Jun 2023 20:18	1
Batch ID: R439666 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS23061189-01	019-580	16 Jun 2023 07:45			23 Jun 2023 02:57	1
HS23061189-02	019-582	16 Jun 2023 08:15			23 Jun 2023 04:00	1
HS23061189-03	019-995	16 Jun 2023 08:45			23 Jun 2023 04:21	1
HS23061189-04	019-1603	16 Jun 2023 09:15			23 Jun 2023 04:42	1
HS23061189-05	Cottages	16 Jun 2023 09:30			23 Jun 2023 05:03	1
HS23061189-06	019-1055	16 Jun 2023 09:00			23 Jun 2023 05:24	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196661 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-196661** Units: **mg/L** Analysis Date: **29-Jun-2023 19:20**
Client ID: Run ID: **FID-7_440303** SeqNo: **7395427** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	U	0.00100								
Aliphatics >C12 - C16	U	0.00200								
Aliphatics >C16 - C35	U	0.00800								
Surr: 1-Chlorooctadecane	*0.02781*	*0*	*0.04*	*0*	*69.5*	*40 - 140*				

MBLK Sample ID: **MBLK-196661** Units: **mg/L** Analysis Date: **29-Jun-2023 19:20**
Client ID: Run ID: **FID-8_440305** SeqNo: **7395478** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	U	0.00100								
Aromatics >C12 - C16	U	0.00400								
Aromatics >C16 - C21	U	0.00300								
Aromatics >C21 - C35	U	0.00900								
Surr: 2-Bromonaphthalene	*0.03453*	*0*	*0.04*	*0*	*86.3*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03654*	*0*	*0.04*	*0*	*91.3*	*40 - 140*				
Surr: o-Terphenyl	*0.03655*	*0*	*0.04*	*0*	*91.4*	*40 - 140*				

LCS Sample ID: **LCS-196661** Units: **mg/L** Analysis Date: **29-Jun-2023 19:52**
Client ID: Run ID: **FID-7_440303** SeqNo: **7395428** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.04323	0.00100	0.05	0	86.5	40 - 140				
Aliphatics >C12 - C16	0.1085	0.00200	0.1	0	108	40 - 140				
Aliphatics >C16 - C35	0.3327	0.00800	0.4	0	83.2	40 - 140				
Surr: 1-Chlorooctadecane	*0.02555*	*0*	*0.04*	*0*	*63.9*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196661 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-196661** Units: **mg/L** Analysis Date: **29-Jun-2023 19:52**
Client ID: Run ID: **FID-8_440305** SeqNo: **7395479** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04461	0.00100	0.05	0	89.2	40 - 140				
Aromatics >C12 - C16	0.2092	0.00400	0.2	0	105	40 - 140				
Aromatics >C16 - C21	0.1636	0.00300	0.15	0	109	40 - 140				
Aromatics >C21 - C35	0.5305	0.00900	0.45	0	118	40 - 140				
Surr: 2-Bromonaphthalene	*0.04424*	*0*	*0.04*	*0*	*111*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03271*	*0*	*0.04*	*0*	*81.8*	*40 - 140*				
Surr: o-Terphenyl	*0.03785*	*0*	*0.04*	*0*	*94.6*	*40 - 140*				

MS Sample ID: **HS23061318-05MS** Units: **mg/L** Analysis Date: **29-Jun-2023 20:57**
Client ID: Run ID: **FID-7_440303** SeqNo: **7395430** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05639	0.00100	0.05	0	113	40 - 140				
Aliphatics >C12 - C16	0.1218	0.00200	0.1	0	122	40 - 140				
Aliphatics >C16 - C35	0.4093	0.00800	0.4	0	102	40 - 140				
Surr: 1-Chlorooctadecane	*0.02909*	*0*	*0.04*	*0*	*72.7*	*40 - 140*				

MS Sample ID: **HS23061318-05MS** Units: **mg/L** Analysis Date: **30-Jun-2023 10:51**
Client ID: Run ID: **FID-8_440305** SeqNo: **7395501** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04883	0.00100	0.05	0	97.7	40 - 140				
Aromatics >C12 - C16	0.2125	0.00400	0.2	0	106	40 - 140				
Aromatics >C16 - C21	0.168	0.00300	0.15	0	112	40 - 140				
Aromatics >C21 - C35	0.567	0.00900	0.45	0	126	40 - 140				
Surr: 2-Bromonaphthalene	*0.03929*	*0*	*0.04*	*0*	*98.2*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.02814*	*0*	*0.04*	*0*	*70.4*	*40 - 140*				
Surr: o-Terphenyl	*0.03649*	*0*	*0.04*	*0*	*91.2*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196661 (0) **Instrument: FID-7** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MSD Sample ID: **HS23061318-05MSD** Units: **mg/L** Analysis Date: **29-Jun-2023 21:29**
Client ID: Run ID: **FID-7_440303** SeqNo: **7395431** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.05715	0.00100	0.05	0	114	40 - 140	0.05639	1.33	50	
Aliphatics >C12 - C16	0.1262	0.00200	0.1	0	126	40 - 140	0.1218	3.54	50	
Aliphatics >C16 - C35	0.5259	0.00800	0.4	0	131	40 - 140	0.4093	24.9	50	
Surr: 1-Chlorooctadecane	*0.0377*	*0*	*0.04*	*0*	*94.3*	*40 - 140*	*0.02909*	*25.8*	*50*	

MSD Sample ID: **HS23061318-05MSD** Units: **mg/L** Analysis Date: **29-Jun-2023 21:29**
Client ID: Run ID: **FID-8_440305** SeqNo: **7395481** PrepDate: **23-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.05371	0.00100	0.05	0	107	40 - 140	0.04883	9.51	50	
Aromatics >C12 - C16	0.1752	0.00400	0.2	0	87.6	40 - 140	0.2125	19.2	50	
Aromatics >C16 - C21	0.1907	0.00300	0.15	0	127	40 - 140	0.168	12.7	50	
Aromatics >C21 - C35	0.5061	0.00900	0.45	0	112	40 - 140	0.567	11.4	50	
Surr: 2-Bromonaphthalene	*0.04407*	*0*	*0.04*	*0*	*110*	*40 - 140*	*0.03929*	*11.5*	*50*	
Surr: 2-Fluorobiphenyl	*0.03186*	*0*	*0.04*	*0*	*79.6*	*40 - 140*	*0.02814*	*12.4*	*50*	
Surr: o-Terphenyl	*0.04153*	*0*	*0.04*	*0*	*104*	*40 - 140*	*0.03649*	*12.9*	*50*	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439330 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 14:08**
Client ID: Run ID: **FID-14_439330** SeqNo: **7372304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	U	0.0100								
Aliphatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2478*	*0.0100*	*0.25*	*0*	*99.1*	*70 - 130*				

LCS Sample ID: **LCS-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 10:39**
Client ID: Run ID: **FID-14_439330** SeqNo: **7372302** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02046	0.0100	0.025	0	81.8	70 - 130				
Aliphatics >C8 - C10	0.02093	0.0100	0.025	0	83.7	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2636*	*0.0100*	*0.25*	*0*	*105*	*70 - 130*				

LCSD Sample ID: **LCSD-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 11:17**
Client ID: Run ID: **FID-14_439330** SeqNo: **7372303** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02058	0.0100	0.025	0	82.3	70 - 130	0.02046	0.556	25	
Aliphatics >C8 - C10	0.02078	0.0100	0.025	0	83.1	70 - 130	0.02093	0.738	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2729*	*0.0100*	*0.25*	*0*	*109*	*70 - 130*	*0.2636*	*3.45*	*25*	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439356 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 14:08**
Client ID: Run ID: **FID-15_439356** SeqNo: **7372837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2958*	*0.0100*	*0.25*	*0*	*118*	*70 - 130*				

LCS Sample ID: **LCS-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 10:39**
Client ID: Run ID: **FID-15_439356** SeqNo: **7372835** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.081	0.0100	0.1	0	81.0	70 - 130				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2984*	*0.0100*	*0.25*	*0*	*119*	*70 - 130*				

LCSD Sample ID: **LCSD-230619** Units: **mg/L** Analysis Date: **19-Jun-2023 11:17**
Client ID: Run ID: **FID-15_439356** SeqNo: **7372836** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08666	0.0100	0.1	0	86.7	70 - 130	0.081	6.75	25	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2951*	*0.0100*	*0.25*	*0*	*118*	*70 - 130*	*0.2984*	*1.11*	*25*	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439540 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 14:18**
Client ID: Run ID: **FID-14_439540** SeqNo: **7377255** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	U	0.0100								
Aliphatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2211*	*0.0100*	*0.25*	*0*	*88.4*	*70 - 130*				

LCS Sample ID: **LCS-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 12:24**
Client ID: Run ID: **FID-14_439540** SeqNo: **7377253** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02142	0.0100	0.025	0	85.7	70 - 130				
Aliphatics >C8 - C10	0.02117	0.0100	0.025	0	84.7	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2453*	*0.0100*	*0.25*	*0*	*98.1*	*70 - 130*				

LCSD Sample ID: **LCSD-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 13:02**
Client ID: Run ID: **FID-14_439540** SeqNo: **7377254** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02039	0.0100	0.025	0	81.5	70 - 130	0.02142	4.95	25	
Aliphatics >C8 - C10	0.01998	0.0100	0.025	0	79.9	70 - 130	0.02117	5.75	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2621*	*0.0100*	*0.25*	*0*	*105*	*70 - 130*	*0.2453*	*6.61*	*25*	

The following samples were analyzed in this batch: HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439543 (0) **Instrument: FID-15** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 14:18**
Client ID: Run ID: **FID-15_439543** SeqNo: **7377276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2919*	*0.0100*	*0.25*	*0*	*117*	*70 - 130*				

LCS Sample ID: **LCS-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 12:24**
Client ID: Run ID: **FID-15_439543** SeqNo: **7377274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08377	0.0100	0.1	0	83.8	70 - 130				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2936*	*0.0100*	*0.25*	*0*	*117*	*70 - 130*				

LCSD Sample ID: **LCSD-230621** Units: **mg/L** Analysis Date: **21-Jun-2023 13:02**
Client ID: Run ID: **FID-15_439543** SeqNo: **7377275** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08585	0.0100	0.1	0	85.9	70 - 130	0.08377	2.46	25	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2965*	*0.0100*	*0.25*	*0*	*119*	*70 - 130*	*0.2936*	*0.983*	*25*	

The following samples were analyzed in this batch: HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-196811** Units: **mg/L** Analysis Date: **30-Jun-2023 17:11**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396499** PrepDate: **27-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Iron	U	0.200								
Lead	U	0.00200								
Magnesium	0.01088	0.200								J
Manganese	U	0.00500								
Nickel	U	0.00200								
Potassium	U	0.200								
Selenium	U	0.00200								
Silver	U	0.00200								
Sodium	0.02313	0.200								J
Strontium	U	0.00500								
Vanadium	U	0.00500								
Zinc	U	0.00400								

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

LCS Sample ID: **LCS-196811** Units: **mg/L** Analysis Date: **30-Jun-2023 17:13**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396500** PrepDate: **27-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04854	0.00200	0.05	0	97.1	80 - 120				
Barium	0.04529	0.00400	0.05	0	90.6	80 - 120				
Cadmium	0.0478	0.00200	0.05	0	95.6	80 - 120				
Calcium	4.764	0.500	5	0	95.3	80 - 120				
Chromium	0.04607	0.00400	0.05	0	92.1	80 - 120				
Iron	4.744	0.200	5	0	94.9	80 - 120				
Lead	0.04501	0.00200	0.05	0	90.0	80 - 120				
Magnesium	4.758	0.200	5	0	95.2	80 - 120				
Manganese	0.04652	0.00500	0.05	0	93.0	80 - 120				
Nickel	0.0468	0.00200	0.05	0	93.6	80 - 120				
Potassium	4.577	0.200	5	0	91.5	80 - 120				
Selenium	0.05008	0.00200	0.05	0	100	80 - 120				
Silver	0.04636	0.00200	0.05	0	92.7	80 - 120				
Sodium	4.888	0.200	5	0	97.8	80 - 120				
Strontium	0.09075	0.00500	0.1	0	90.7	80 - 120				
Vanadium	0.04434	0.00500	0.05	0	88.7	80 - 120				
Zinc	0.05132	0.00400	0.05	0	103	80 - 120				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS23061161-02MS** Units: **mg/L** Analysis Date: **30-Jun-2023 17:20**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396503** PrepDate: **27-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04971	0.00200	0.05	0.000599	98.2	80 - 120				
Barium	1.383	0.00400	0.05	1.347	71.2	80 - 120				SO
Cadmium	0.04552	0.00200	0.05	0.000182	90.7	80 - 120				
Calcium	291.6	0.500	5	289.2	49.0	80 - 120				SEO
Chromium	0.0475	0.00400	0.05	0.001268	92.5	80 - 120				
Iron	5.182	0.200	5	0.3465	96.7	80 - 120				
Lead	0.04706	0.00200	0.05	0.00054	93.0	80 - 120				
Magnesium	148.2	0.200	5	143.6	92.1	80 - 120				O
Manganese	0.5237	0.00500	0.05	0.4736	100	80 - 120				O
Nickel	0.04688	0.00200	0.05	0.002899	88.0	80 - 120				
Potassium	7.89	0.200	5	2.661	105	80 - 120				
Selenium	0.04768	0.00200	0.05	0.000487	94.4	80 - 120				
Silver	0.04352	0.00200	0.05	-0.000014	87.1	80 - 120				
Sodium	328.5	0.200	5	323.5	99.0	80 - 120				EO
Strontium	1.86	0.00500	0.1	1.762	97.6	80 - 120				EO
Vanadium	0.0504	0.00500	0.05	0.001544	97.7	80 - 120				
Zinc	0.05299	0.00400	0.05	0.01044	85.1	80 - 120				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS23061161-02MSD** Units: **mg/L** Analysis Date: **30-Jun-2023 17:22**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396504** PrepDate: **27-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04933	0.00200	0.05	0.000599	97.5	80 - 120	0.04971	0.767	20	
Barium	1.349	0.00400	0.05	1.347	3.79	80 - 120	1.383	2.47	20	SO
Cadmium	0.04517	0.00200	0.05	0.000182	90.0	80 - 120	0.04552	0.763	20	
Calcium	292.9	0.500	5	289.2	74.8	80 - 120	291.6	0.442	20	SEO
Chromium	0.04738	0.00400	0.05	0.001268	92.2	80 - 120	0.0475	0.245	20	
Iron	5.165	0.200	5	0.3465	96.4	80 - 120	5.182	0.341	20	
Lead	0.04654	0.00200	0.05	0.00054	92.0	80 - 120	0.04706	1.12	20	
Magnesium	147.5	0.200	5	143.6	77.6	80 - 120	148.2	0.492	20	SO
Manganese	0.5182	0.00500	0.05	0.4736	89.1	80 - 120	0.5237	1.06	20	O
Nickel	0.0459	0.00200	0.05	0.002899	86.0	80 - 120	0.04688	2.1	20	
Potassium	7.768	0.200	5	2.661	102	80 - 120	7.89	1.56	20	
Selenium	0.04791	0.00200	0.05	0.000487	94.9	80 - 120	0.04768	0.487	20	
Silver	0.04304	0.00200	0.05	-0.000014	86.1	80 - 120	0.04352	1.11	20	
Sodium	323.2	0.200	5	323.5	-6.56	80 - 120	328.5	1.62	20	SEO
Strontium	1.827	0.00500	0.1	1.762	65.2	80 - 120	1.86	1.76	20	SEO
Vanadium	0.05028	0.00500	0.05	0.001544	97.5	80 - 120	0.0504	0.232	20	
Zinc	0.05249	0.00400	0.05	0.01044	84.1	80 - 120	0.05299	0.956	20	

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS23061161-02PDS** Units: **mg/L** Analysis Date: **30-Jun-2023 17:24**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396505** PrepDate: **27-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1053	0.00200	0.1	0.000599	105	75 - 125				
Barium	1.395	0.00400	0.1	1.347	47.9	75 - 125				SO
Cadmium	0.09575	0.00200	0.1	0.000182	95.6	75 - 125				
Chromium	0.09907	0.00400	0.1	0.001268	97.8	75 - 125				
Iron	10.44	0.200	10	0.3465	101	75 - 125				
Lead	0.09766	0.00200	0.1	0.00054	97.1	75 - 125				
Magnesium	148.8	0.200	10	143.6	52.6	75 - 125				SO
Manganese	0.5636	0.00500	0.1	0.4736	90.0	75 - 125				O
Nickel	0.09478	0.00200	0.1	0.002899	91.9	75 - 125				
Potassium	13.41	0.200	10	2.661	108	75 - 125				
Selenium	0.1039	0.00200	0.1	0.000487	103	75 - 125				
Silver	0.08676	0.00200	0.1	-0.000014	86.8	75 - 125				
Vanadium	0.1042	0.00500	0.1	0.001544	103	75 - 125				
Zinc	0.1009	0.00400	0.1	0.01044	90.5	75 - 125				

PDS Sample ID: **HS23061161-02PDS** Units: **mg/L** Analysis Date: **03-Jul-2023 12:07**
Client ID: Run ID: **ICPMS05_440420** SeqNo: **7398546** PrepDate: **27-Jun-2023** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	494.3	10.0	200	278.6	108	75 - 125				
Sodium	555	4.00	200	334.4	110	75 - 125				

PDS Sample ID: **HS23061161-02PDS** Units: **mg/L** Analysis Date: **03-Jul-2023 12:29**
Client ID: Run ID: **ICPMS05_440420** SeqNo: **7398720** PrepDate: **27-Jun-2023** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Strontium	4.146	0.100	2	1.736	120	75 - 125				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196811 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS23061161-02SD** Units: **mg/L** Analysis Date: **30-Jun-2023 17:18**
Client ID: Run ID: **ICPMS05_440307** SeqNo: **7396502** PrepDate: **27-Jun-2023** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000599	0	10	
Barium	1.235	0.0200					1.347	8.38	10	
Cadmium	U	0.0100					0.000182	0	10	
Chromium	U	0.0200					0.001268	0	10	
Iron	0.3223	1.00					0.3465	0	10	J
Lead	U	0.0100					0.00054	0	10	
Magnesium	144.3	1.00					143.6	0.471	10	
Manganese	0.4781	0.0250					0.4736	0.948	10	
Nickel	0.003006	0.0100					0.002899	0	10	J
Potassium	2.686	1.00					2.661	0.94	10	
Selenium	U	0.0100					0.000487	0	10	
Silver	U	0.0100					-0.000014	0	10	
Vanadium	U	0.0250					0.001544	0	10	
Zinc	0.01939	0.0200					0.01044	0	10	J

SD Sample ID: **HS23061161-02SD** Units: **mg/L** Analysis Date: **03-Jul-2023 12:05**
Client ID: Run ID: **ICPMS05_440420** SeqNo: **7398545** PrepDate: **27-Jun-2023** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	280.9	50.0					278.6	0.83	10	
Sodium	338	20.0					334.4	1.06	10	
Strontium	1.758	0.500					1.736	1.23	10	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: 196965 (0) **Instrument: HG04** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-196965** Units: **mg/L** Analysis Date: **29-Jun-2023 17:37**
Client ID: Run ID: **HG04_440218** SeqNo: **7393805** PrepDate: **29-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000039	0.000200								J

LCS Sample ID: **LCS-196965** Units: **mg/L** Analysis Date: **29-Jun-2023 17:45**
Client ID: Run ID: **HG04_440218** SeqNo: **7393808** PrepDate: **29-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	0	101	80 - 120				

MS Sample ID: **HS23061171-01MS** Units: **mg/L** Analysis Date: **29-Jun-2023 17:55**
Client ID: Run ID: **HG04_440218** SeqNo: **7393810** PrepDate: **29-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00418	0.000200	0.005	0.000215	79.3	75 - 125				

MSD Sample ID: **HS23061171-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2023 17:57**
Client ID: Run ID: **HG04_440218** SeqNo: **7393811** PrepDate: **29-Jun-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00433	0.000200	0.005	0.000215	82.3	75 - 125	0.00418	3.53	20	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439666 (0) **Instrument: VOA11** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-230622** Units: **ug/L** Analysis Date: **23-Jun-2023 00:51**
Client ID: Run ID: **VOA11_439666** SeqNo: **7380190** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
o-Xylene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.74*	*1.0*	*50*	*0*	*91.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*43.2*	*1.0*	*50*	*0*	*86.4*	*77 - 113*				
Surr: Dibromofluoromethane	*45.6*	*1.0*	*50*	*0*	*91.2*	*73 - 126*				
Surr: Toluene-d8	*51.56*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-230622** Units: **ug/L** Analysis Date: **23-Jun-2023 00:09**
Client ID: Run ID: **VOA11_439666** SeqNo: **7380189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.59	1.0	20	0	93.0	74 - 120				
Ethylbenzene	18.62	1.0	20	0	93.1	77 - 117				
m,p-Xylene	35.98	2.0	40	0	89.9	77 - 122				
o-Xylene	17.53	1.0	20	0	87.7	75 - 119				
Toluene	19.96	1.0	20	0	99.8	77 - 118				
Xylenes, Total	53.51	1.0	60	0	89.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*43.3*	*1.0*	*50*	*0*	*86.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*45.13*	*1.0*	*50*	*0*	*90.3*	*77 - 113*				
Surr: Dibromofluoromethane	*45.82*	*1.0*	*50*	*0*	*91.6*	*73 - 126*				
Surr: Toluene-d8	*51.57*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439666 (0) **Instrument: VOA11** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS23061189-01MS** Units: **ug/L** Analysis Date: **23-Jun-2023 03:18**
Client ID: **019-580** Run ID: **VOA11_439666** SeqNo: **7380197** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.58	1.0	20	0	103	70 - 127				
Ethylbenzene	19.22	1.0	20	0	96.1	70 - 124				
m,p-Xylene	39.21	2.0	40	0	98.0	70 - 130				
o-Xylene	18.47	1.0	20	0	92.3	70 - 124				
Toluene	20.82	1.0	20	0	104	70 - 123				
Xylenes, Total	57.68	1.0	60	0	96.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*42.83*	*1.0*	*50*	*0*	*85.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*44.34*	*1.0*	*50*	*0*	*88.7*	*77 - 113*				
Surr: Dibromofluoromethane	*46.1*	*1.0*	*50*	*0*	*92.2*	*77 - 123*				
Surr: Toluene-d8	*50.64*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS23061189-01MSD** Units: **ug/L** Analysis Date: **23-Jun-2023 03:39**
Client ID: **019-580** Run ID: **VOA11_439666** SeqNo: **7380198** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.48	1.0	20	0	97.4	70 - 127	20.58	5.49	20	
Ethylbenzene	19.47	1.0	20	0	97.4	70 - 124	19.22	1.33	20	
m,p-Xylene	38.56	2.0	40	0	96.4	70 - 130	39.21	1.69	20	
o-Xylene	17.89	1.0	20	0	89.4	70 - 124	18.47	3.19	20	
Toluene	20.37	1.0	20	0	102	70 - 123	20.82	2.2	20	
Xylenes, Total	56.44	1.0	60	0	94.1	70 - 130	57.68	2.17	20	
Surr: 1,2-Dichloroethane-d4	*42.82*	*1.0*	*50*	*0*	*85.6*	*70 - 126*	*42.83*	*0.0299*	*20*	
Surr: 4-Bromofluorobenzene	*45.95*	*1.0*	*50*	*0*	*91.9*	*77 - 113*	*44.34*	*3.55*	*20*	
Surr: Dibromofluoromethane	*45.37*	*1.0*	*50*	*0*	*90.7*	*77 - 123*	*46.1*	*1.58*	*20*	
Surr: Toluene-d8	*51.87*	*1.0*	*50*	*0*	*104*	*82 - 127*	*50.64*	*2.41*	*20*	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: **R439425 (0)** **Instrument:** **Skalar 03** **Method:** **PH BY SM4500H+ B-2011**

DUP Sample ID: **HS23061189-01DUP** Units: **pH Units** Analysis Date: **20-Jun-2023 18:05**
Client ID: **019-580** Run ID: **Skalar 03_439425** SeqNo: **7374562** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.26	0.100					7.22	0.552	10	
Temp Deg C @pH	23.2	0					22.9	1.3	10	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439592 (0) **Instrument: Skalar 03** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-06222023** Units: **mg/L** Analysis Date: **22-Jun-2023 09:41**
Client ID: Run ID: **Skalar 03_439592** SeqNo: **7378078** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								

LCS Sample ID: **LCS-06222023** Units: **mg/L** Analysis Date: **22-Jun-2023 09:48**
Client ID: Run ID: **Skalar 03_439592** SeqNo: **7378079** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	942.6	5.00	1000	0	94.3	85 - 115				

LCSD Sample ID: **LCSD-06222023** Units: **mg/L** Analysis Date: **22-Jun-2023 09:54**
Client ID: Run ID: **Skalar 03_439592** SeqNo: **7378080** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	935.6	5.00	1000	0	93.6	85 - 115	942.6	0.745	20	

DUP Sample ID: **HS23061088-01DUP** Units: **mg/L** Analysis Date: **22-Jun-2023 10:15**
Client ID: Run ID: **Skalar 03_439592** SeqNo: **7378057** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	415.8	5.00					415.1	0.168	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439601 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-06202023** Units: **mg/L** Analysis Date: **21-Jun-2023 13:27**
Client ID: Run ID: **Balance1_439601** SeqNo: **7378341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-06202023** Units: **mg/L** Analysis Date: **21-Jun-2023 13:27**
Client ID: Run ID: **Balance1_439601** SeqNo: **7378342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1062	10.0	1000	0	106	85 - 115				

DUP Sample ID: **HS23061189-02DUP** Units: **mg/L** Analysis Date: **21-Jun-2023 13:27**
Client ID: **019-582** Run ID: **Balance1_439601** SeqNo: **7378333** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	188	10.0					190	1.06	20	

DUP Sample ID: **HS23061074-07DUP** Units: **mg/L** Analysis Date: **21-Jun-2023 13:27**
Client ID: Run ID: **Balance1_439601** SeqNo: **7378322** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2640	10.0					2638	0.0758	20	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439604 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WBLK-06202023** Units: **mg/L** Analysis Date: **21-Jun-2023 13:37**
Client ID: Run ID: **Balance1_439604** SeqNo: **7378476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-06202023** Units: **mg/L** Analysis Date: **21-Jun-2023 13:37**
Client ID: Run ID: **Balance1_439604** SeqNo: **7378477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1072	10.0	1000	0	107	85 - 115				

DUP Sample ID: **HS23061351-01DUP** Units: **mg/L** Analysis Date: **21-Jun-2023 13:37**
Client ID: Run ID: **Balance1_439604** SeqNo: **7378468** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2744	10.0					2742	0.0729	20	

DUP Sample ID: **HS23061189-05DUP** Units: **mg/L** Analysis Date: **21-Jun-2023 13:37**
Client ID: **Cottages** Run ID: **Balance1_439604** SeqNo: **7378464** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	240	10.0					244	1.65	20	

The following samples were analyzed in this batch: HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439643 (0) **Instrument: WetChem_HS** **Method: SULFIDE BY SM4500 S2-F-2011**

MBLK Sample ID: **MBLK-R439643** Units: **mg/L** Analysis Date: **23-Jun-2023 07:07**
Client ID: Run ID: **WetChem_HS_439643** SeqNo: **7379648** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	2.00								

LCS Sample ID: **LCS-R439643** Units: **mg/L** Analysis Date: **23-Jun-2023 07:07**
Client ID: Run ID: **WetChem_HS_439643** SeqNo: **7379647** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.28	2.00	25	0	89.1	85 - 115				

LCSD Sample ID: **LCSD-R439643** Units: **mg/L** Analysis Date: **23-Jun-2023 07:07**
Client ID: Run ID: **WetChem_HS_439643** SeqNo: **7379646** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.08	2.00	25	0	88.3	85 - 115	22.28	0.902	20	

MS Sample ID: **HS23061189-01MS** Units: **mg/L** Analysis Date: **23-Jun-2023 07:07**
Client ID: **019-580** Run ID: **WetChem_HS_439643** SeqNo: **7379645** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.08	2.00	25	-1.12	92.8	80 - 120				

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439645 (0) **Instrument: WetChem_HS** **Method: HYDROGEN SULFIDE BY E376.1**

MBLK Sample ID: **MBLK-R439645** Units: **mg/L** Analysis Date: **23-Jun-2023 07:23**
Client ID: Run ID: **WetChem_HS_439645** SeqNo: **7379670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	U	1.00								

LCS Sample ID: **LCS-R439645** Units: **mg/L** Analysis Date: **23-Jun-2023 07:23**
Client ID: Run ID: **WetChem_HS_439645** SeqNo: **7379669** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.67	1.00	25	0	94.7	80 - 120				

LCSD Sample ID: **LCSD-R439645** Units: **mg/L** Analysis Date: **23-Jun-2023 07:23**
Client ID: Run ID: **WetChem_HS_439645** SeqNo: **7379668** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.46	1.00	25	0	93.8	80 - 120	23.67	0.902	20	

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23061189

QC BATCH REPORT

Batch ID: R439655 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **22-Jun-2023 13:04**
Client ID: Run ID: **ICS-Integrion_439655** SeqNo: **7380055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.100								
Chloride	U	0.500								
Sulfate	U	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **22-Jun-2023 13:15**
Client ID: Run ID: **ICS-Integrion_439655** SeqNo: **7380056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.993	0.100	4	0	99.8	80 - 120				
Chloride	19.92	0.500	20	0	99.6	80 - 120				
Sulfate	20.33	0.500	20	0	102	80 - 120				

MS Sample ID: **HS23061481-01MS** Units: **mg/L** Analysis Date: **22-Jun-2023 12:17**
Client ID: Run ID: **ICS-Integrion_439655** SeqNo: **7379981** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.221	0.100	2	0	111	80 - 120				
Chloride	36.86	0.500	10	28.13	87.3	80 - 120				
Sulfate	501.1	0.500	10	517.1	-160	80 - 120				SEO

MSD Sample ID: **HS23061481-01MSD** Units: **mg/L** Analysis Date: **22-Jun-2023 12:23**
Client ID: Run ID: **ICS-Integrion_439655** SeqNo: **7379982** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.191	0.100	2	0	110	80 - 120	2.221	1.37	20	
Chloride	37.11	0.500	10	28.13	89.8	80 - 120	36.86	0.662	20	
Sulfate	504.2	0.500	10	517.1	-129	80 - 120	501.1	0.62	20	SEO

The following samples were analyzed in this batch: HS23061189-01 HS23061189-02 HS23061189-03 HS23061189-04 HS23061189-05 HS23061189-06

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: **HS23061189**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L23-358	31-May-2025
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352; 2022-2023	31-Jul-2023
Louisiana	03087-2023	30-Jun-2024
North Carolina	624-2023	31-Dec-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-23-31	30-Apr-2024
Utah	TX026932022-13	31-Jul-2023

Sample Receipt Checklist

Work Order ID: HS23061189 **Date/Time Received:** **16-Jun-2023 17:57**

Client Name: ERMSW-HOU **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	19-Jun-2023 10:59	**Reviewed by:**	/S/ Bernadette A. Fini	20-Jun-2023 08:42
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:297452
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.7C/0.6C; 0.6C/0.5C U/c	IR31	
Cooler(s)/Kit(s):	50266/51179		
Date/Time sample(s) sent to storage:	6/16/23 19:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	N/A ☐
pH adjusted?	Yes ☑	No ☐	N/A ☐
pH adjusted by:	Ragen Giga		

Login Notes: Samples : 019-1603; Cottages & 019-1055 MA-EPH Ambers 2 of 2 pH >2 (7). Presderved with 5ml HCL (Lot 3100605321) 6/19/23 @ 09:15. Final pH (1)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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

Chain of Custody Form

Page _____ of _____

COC ID: 297452

HS23061189

Environmental Resources Mgmt.
Sulphur Dome

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	0688077	Project Name	Sulphur Dome	A	8260_LL_W (Low Level VOC (8260) BTEX)
Work Order		Project Number		B	MA EPH_W_La (MA EPH)
Company Name	Environmental Resources Mgmt.	Bill To Company	Environmental Resources Mgmt.	C	MA VPH_LA_W (MA VPH)
Send Report To	Scott Himes	Invoice Attn	Accounts Payable	D	9056_anions_W (Cl,SO4,Br)
Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	E	ALK_W 2320B (carb, bicarb),pH
				F	H2S_W (H2S)
City/State/Zip	Houston, TX 77024	City/State/Zip	Houston TX 77024	G	HG_W (Mercury)
Phone	(281) 600-1000	Phone	(281) 600-1000	H	ICP_TW (As,Ba,Cd,Ca,Cr,Fe,Pb,Mg,Mn,K,Se,Ag,Na,Sr,Zn)
Fax	(281) 600-1001	Fax	(281) 600-1001	I	SULFD_4500S F (Sulfide)
e-Mail Address	scott.himes@erm.com	e-Mail Address	ERMNAAccountsPayable@erm.com	J	TDS_W 2540C (TDS)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	019-580	01/16/23	0745	W	1,2,8	12	X	X	X	X	X	X	X	X	X	X	
2	019-582		0815														
3	019-995		0845														
4	019-1603		0915														
5	Cottages		0930														
6	019-1055		0900														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: David Sanguinetti / DS / Taylor Brown

Shipment Method:

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

Results Due Date:

Relinquished by: DS	Date: 1/16/23	Time: 17:57	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory): 01/16/23 17:57	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: ERM Sulphur Dome

Cooler ID	Cooler Temp.
	4.5
50266	0.7°
51179	0.6°
	+3.1

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SVM/8/CLP
- [ ] Other _____
- [ ] TRRP Checklist
- [ ] TRRP Level IV

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

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

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

August 04, 2023

Scott Himes
Environmental Resources Mgmt.
CityCentre Four
840 W. Sam Houston Pkwy., Suite 600
Houston, TX 77024

Work Order: **HS23071235**

Laboratory Results for: **Sulphur Dome**

Dear Scott Himes,

ALS Environmental received 5 sample(s) on Jul 18, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Bernadette A. Fini
Project Manager

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Work Order: HS23071235

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23071235-01	BS-26	Water		17-Jul-2023 10:00	18-Jul-2023 09:33	☐
HS23071235-02	Cottages	Water		17-Jul-2023 11:15	18-Jul-2023 09:33	☐
HS23071235-03	019-1055	Water		17-Jul-2023 12:00	18-Jul-2023 09:33	☐
HS23071235-04	019-582	Water		17-Jul-2023 12:15	18-Jul-2023 09:33	☐
HS23071235-05	019-580	Water		17-Jul-2023 12:40	18-Jul-2023 09:33	☐

Client: Environmental Resources Mgmt. **CASE NARRATIVE**
Project: Sulphur Dome
Work Order: HS23071235

Work Order Comments

• Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method MA EPH

Batch ID: 198128

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

GC Volatiles by Method MA VPH

Batch ID: R442345,R442391

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

GCMS Volatiles by Method SW8260

Batch ID: R442378

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

Metals by Method SW7470A

Batch ID: 198239

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

Metals by Method SW6020A

Batch ID: 198238

Sample ID: Cottages (HS23071235-02MS)

• The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Sodium, Zinc.

• The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference. Manganese.

Sample ID: Cottages (HS23071235-02MSD)

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

Sample ID: Cottages (HS23071235-02PDS)

• The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. Sodium.

WetChemistry by Method SW9056

Batch ID: R442490

Sample ID: BS-26 (HS23071235-01MS)

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

Client: Environmental Resources Mgmt. **CASE NARRATIVE**
Project: Sulphur Dome
Work Order: HS23071235

WetChemistry by Method SM2320B

Batch ID: R442736,R442749

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

WetChemistry by Method SM4500H+ B

Batch ID: R442793

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

WetChemistry by Method M2540C

Batch ID: R442248

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

WetChemistry by Method E376.1

Batch ID: R442109

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

WetChemistry by Method SM4500 S2-F

Batch ID: R442091

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: BS-26
Collection Date: 17-Jul-2023 10:00

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
Benzene	U		0.20	1.0	ug/L	1	26-Jul-2023 17:33
Ethylbenzene	U		0.30	1.0	ug/L	1	26-Jul-2023 17:33
m,p-Xylene	U		0.50	2.0	ug/L	1	26-Jul-2023 17:33
o-Xylene	U		0.30	1.0	ug/L	1	26-Jul-2023 17:33
Toluene	**0.51**	J	**0.20**	**1.0**	**ug/L**	1	26-Jul-2023 17:33
Xylenes, Total	U		0.30	1.0	ug/L	1	26-Jul-2023 17:33
Surr: 1,2-Dichloroethane-d4	*118*			*70-126*	*%REC*	*1*	*26-Jul-2023 17:33*
Surr: 4-Bromofluorobenzene	*103*			*77-113*	*%REC*	*1*	*26-Jul-2023 17:33*
Surr: Dibromofluoromethane	*112*			*77-123*	*%REC*	*1*	*26-Jul-2023 17:33*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*26-Jul-2023 17:33*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8	U		0.0100	0.0100	mg/L	1	25-Jul-2023 18:22
Aliphatics >C8 - C10	U		0.0100	0.0100	mg/L	1	25-Jul-2023 18:22
Aromatics >C8 - C10	U		0.0100	0.0100	mg/L	1	25-Jul-2023 18:22
Surr: 2,5-Dibromotoluene (Aliphatic)	*94.3*			*70-130*	*%REC*	*1*	*25-Jul-2023 18:22*
Surr: 2,5-Dibromotoluene (Aromatic)	*105*			*70-130*	*%REC*	*1*	*25-Jul-2023 18:22*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 26-Jul-2023		Analyst: SAM
Aliphatics >C10 - C12	U		0.00100	0.00100	mg/L	1	02-Aug-2023 14:28
Aliphatics >C12 - C16	U		0.00200	0.00200	mg/L	1	02-Aug-2023 14:28
Aliphatics >C16 - C35	U		0.00800	0.00800	mg/L	1	02-Aug-2023 14:28
Aromatics >C10 - C12	U		0.00100	0.00100	mg/L	1	02-Aug-2023 14:28
Aromatics >C12 - C16	U		0.00400	0.00400	mg/L	1	02-Aug-2023 14:28
Aromatics >C16 - C21	U		0.00300	0.00300	mg/L	1	02-Aug-2023 14:28
Aromatics >C21 - C35	U		0.00900	0.00900	mg/L	1	02-Aug-2023 14:28
Surr: 1-Chlorooctadecane	*108*			*40-140*	*%REC*	*1*	*02-Aug-2023 14:28*
Surr: 2-Bromonaphthalene	*97.2*			*40-140*	*%REC*	*1*	*02-Aug-2023 14:28*
Surr: 2-Fluorobiphenyl	*77.6*			*40-140*	*%REC*	*1*	*02-Aug-2023 14:28*
Surr: o-Terphenyl	*110*			*40-140*	*%REC*	*1*	*02-Aug-2023 14:28*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: BS-26
Collection Date: 17-Jul-2023 10:00

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 28-Jul-2023		Analyst: JC
Arsenic	**0.00246**		**0.000400**	**0.00200**	**mg/L**	1	31-Jul-2023 23:45
Barium	**1.07**		**0.00190**	**0.00400**	**mg/L**	1	31-Jul-2023 23:45
Cadmium	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:45
Calcium	**11.5**		**0.0340**	**0.500**	**mg/L**	1	31-Jul-2023 23:45
Chromium	**0.00322**	J	**0.000400**	**0.00400**	**mg/L**	1	31-Jul-2023 23:45
Iron	**1.06**		**0.0120**	**0.200**	**mg/L**	1	31-Jul-2023 23:45
Lead	**0.00946**		**0.000600**	**0.00200**	**mg/L**	1	31-Jul-2023 23:45
Magnesium	**1.90**		**0.0100**	**0.200**	**mg/L**	1	31-Jul-2023 23:45
Manganese	**0.516**		**0.000700**	**0.00500**	**mg/L**	1	31-Jul-2023 23:45
Nickel	**0.00271**		**0.000600**	**0.00200**	**mg/L**	1	31-Jul-2023 23:45
Potassium	**1.19**		**0.0180**	**0.200**	**mg/L**	1	31-Jul-2023 23:45
Selenium	U		0.00110	0.00200	mg/L	1	31-Jul-2023 23:45
Silver	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:45
Sodium	**30.8**		**0.0140**	**0.200**	**mg/L**	1	31-Jul-2023 23:45
Strontium	**0.174**		**0.000200**	**0.00500**	**mg/L**	1	31-Jul-2023 23:45
Vanadium	**0.00483**	J	**0.000600**	**0.00500**	**mg/L**	1	31-Jul-2023 23:45
Zinc	**0.0638**		**0.00200**	**0.00400**	**mg/L**	1	31-Jul-2023 23:45
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 28-Jul-2023		Analyst: JS
Mercury	**0.0000500**	J	**0.0000300**	**0.000200**	**mg/L**	1	28-Jul-2023 14:44
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	24-Jul-2023 15:41
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**180**		**5.00**	**10.0**	**mg/L**	1	24-Jul-2023 15:29
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**48.8**		**5.00**	**5.00**	**mg/L**	1	29-Jul-2023 12:25
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	29-Jul-2023 12:25
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	24-Jul-2023 14:30
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.38**	H	**0.100**	**0.100**	**pH Units**	1	29-Jul-2023 14:52
Temp Deg C @pH	**23.8**	H	**0**	**0**	**°C**	1	29-Jul-2023 14:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	27-Jul-2023 01:50
Chloride	**35.9**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 01:50
Sulfate	**16.1**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 01:50

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: Cottages
Collection Date: 17-Jul-2023 11:15

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
Benzene		U	0.20	1.0	ug/L	1	26-Jul-2023 17:55
Ethylbenzene		U	0.30	1.0	ug/L	1	26-Jul-2023 17:55
m,p-Xylene		U	0.50	2.0	ug/L	1	26-Jul-2023 17:55
o-Xylene		U	0.30	1.0	ug/L	1	26-Jul-2023 17:55
Toluene		U	0.20	1.0	ug/L	1	26-Jul-2023 17:55
Xylenes, Total		U	0.30	1.0	ug/L	1	26-Jul-2023 17:55
Surr: 1,2-Dichloroethane-d4	*120*			*70-126*	*%REC*	*1*	*26-Jul-2023 17:55*
Surr: 4-Bromofluorobenzene	*103*			*77-113*	*%REC*	*1*	*26-Jul-2023 17:55*
Surr: Dibromofluoromethane	*111*			*77-123*	*%REC*	*1*	*26-Jul-2023 17:55*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*26-Jul-2023 17:55*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:00
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:00
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:00
Surr: 2,5-Dibromotoluene (Aliphatic)	*96.3*			*70-130*	*%REC*	*1*	*25-Jul-2023 19:00*
Surr: 2,5-Dibromotoluene (Aromatic)	*103*			*70-130*	*%REC*	*1*	*25-Jul-2023 19:00*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 26-Jul-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 16:57
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	02-Aug-2023 16:57
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	02-Aug-2023 16:57
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 16:57
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	02-Aug-2023 16:57
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	02-Aug-2023 16:57
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	02-Aug-2023 16:57
Surr: 1-Chlorooctadecane	*101*			*40-140*	*%REC*	*1*	*02-Aug-2023 16:57*
Surr: 2-Bromonaphthalene	*100*			*40-140*	*%REC*	*1*	*02-Aug-2023 16:57*
Surr: 2-Fluorobiphenyl	*95.4*			*40-140*	*%REC*	*1*	*02-Aug-2023 16:57*
Surr: o-Terphenyl	*95.6*			*40-140*	*%REC*	*1*	*02-Aug-2023 16:57*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: Cottages
Collection Date: 17-Jul-2023 11:15

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 28-Jul-2023		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	31-Jul-2023 23:20
Barium	**0.187**		**0.00190**	**0.00400**	**mg/L**	1	31-Jul-2023 23:20
Cadmium	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:20
Calcium	**13.4**		**0.0340**	**0.500**	**mg/L**	1	31-Jul-2023 23:20
Chromium	**0.00744**		**0.000400**	**0.00400**	**mg/L**	1	31-Jul-2023 23:20
Iron	**2.34**		**0.0120**	**0.200**	**mg/L**	1	31-Jul-2023 23:20
Lead	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:20
Magnesium	**3.72**		**0.0100**	**0.200**	**mg/L**	1	31-Jul-2023 23:20
Manganese	**0.190**		**0.000700**	**0.00500**	**mg/L**	1	31-Jul-2023 23:20
Nickel	**0.00239**		**0.000600**	**0.00200**	**mg/L**	1	31-Jul-2023 23:20
Potassium	**2.12**		**0.0180**	**0.200**	**mg/L**	1	31-Jul-2023 23:20
Selenium	U		0.00110	0.00200	mg/L	1	31-Jul-2023 23:20
Silver	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:20
Sodium	**71.2**		**0.0140**	**0.200**	**mg/L**	1	31-Jul-2023 23:20
Strontium	**0.157**		**0.000200**	**0.00500**	**mg/L**	1	31-Jul-2023 23:20
Vanadium	U		0.000600	0.00500	mg/L	1	31-Jul-2023 23:20
Zinc	**0.798**		**0.00200**	**0.00400**	**mg/L**	1	31-Jul-2023 23:20
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 28-Jul-2023		Analyst: JS
Mercury	**0.0000510**	J	**0.0000300**	**0.000200**	**mg/L**	1	28-Jul-2023 14:46
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	24-Jul-2023 15:41
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**308**		**5.00**	**10.0**	**mg/L**	1	24-Jul-2023 15:29
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**153**		**5.00**	**5.00**	**mg/L**	1	29-Jul-2023 12:25
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	29-Jul-2023 12:25
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	24-Jul-2023 14:30
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.91**	H	**0.100**	**0.100**	**pH Units**	1	29-Jul-2023 14:52
Temp Deg C @pH	**23.8**	H	**0**	**0**	**°C**	1	29-Jul-2023 14:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	**0.156**		**0.0300**	**0.100**	**mg/L**	1	27-Jul-2023 02:53
Chloride	**59.6**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 02:53
Sulfate	**0.277**	J	**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 02:53

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1055
Collection Date: 17-Jul-2023 12:00

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
Benzene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:16
Ethylbenzene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:16
m,p-Xylene		U	0.50	2.0	ug/L	1	26-Jul-2023 18:16
o-Xylene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:16
Toluene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:16
Xylenes, Total		U	0.30	1.0	ug/L	1	26-Jul-2023 18:16
Surr: 1,2-Dichloroethane-d4	*123*			*70-126*	*%REC*	*1*	*26-Jul-2023 18:16*
Surr: 4-Bromofluorobenzene	*104*			*77-113*	*%REC*	*1*	*26-Jul-2023 18:16*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*26-Jul-2023 18:16*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*26-Jul-2023 18:16*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:38
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:38
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 19:38
Surr: 2,5-Dibromotoluene (Aliphatic)	*97.9*			*70-130*	*%REC*	*1*	*25-Jul-2023 19:38*
Surr: 2,5-Dibromotoluene (Aromatic)	*106*			*70-130*	*%REC*	*1*	*25-Jul-2023 19:38*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 26-Jul-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 17:26
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	02-Aug-2023 17:26
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	02-Aug-2023 17:26
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 17:26
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	02-Aug-2023 17:26
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	02-Aug-2023 17:26
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	02-Aug-2023 17:26
Surr: 1-Chlorooctadecane	*70.6*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:26*
Surr: 2-Bromonaphthalene	*97.2*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:26*
Surr: 2-Fluorobiphenyl	*90.7*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:26*
Surr: o-Terphenyl	*75.1*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:26*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-1055
Collection Date: 17-Jul-2023 12:00

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 28-Jul-2023		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	31-Jul-2023 23:47
Barium	**0.262**		**0.00190**	**0.00400**	**mg/L**	1	31-Jul-2023 23:47
Cadmium	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:47
Calcium	**24.7**		**0.0340**	**0.500**	**mg/L**	1	31-Jul-2023 23:47
Chromium	U		0.000400	0.00400	mg/L	1	31-Jul-2023 23:47
Iron	**3.72**		**0.0120**	**0.200**	**mg/L**	1	31-Jul-2023 23:47
Lead	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:47
Magnesium	**7.45**		**0.0100**	**0.200**	**mg/L**	1	31-Jul-2023 23:47
Manganese	**0.369**		**0.000700**	**0.00500**	**mg/L**	1	31-Jul-2023 23:47
Nickel	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:47
Potassium	**2.59**		**0.0180**	**0.200**	**mg/L**	1	31-Jul-2023 23:47
Selenium	U		0.00110	0.00200	mg/L	1	31-Jul-2023 23:47
Silver	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:47
Sodium	**29.0**		**0.0140**	**0.200**	**mg/L**	1	31-Jul-2023 23:47
Strontium	**0.229**		**0.000200**	**0.00500**	**mg/L**	1	31-Jul-2023 23:47
Vanadium	U		0.000600	0.00500	mg/L	1	31-Jul-2023 23:47
Zinc	**0.0231**		**0.00200**	**0.00400**	**mg/L**	1	31-Jul-2023 23:47
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 28-Jul-2023		Analyst: JS
Mercury	**0.0000570**	J	**0.0000300**	**0.000200**	**mg/L**	1	28-Jul-2023 14:48
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	24-Jul-2023 15:41
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**272**		**5.00**	**10.0**	**mg/L**	1	24-Jul-2023 15:29
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**135**		**5.00**	**5.00**	**mg/L**	1	29-Jul-2023 12:25
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	29-Jul-2023 12:25
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	24-Jul-2023 14:30
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.70**	H	**0.100**	**0.100**	**pH Units**	1	29-Jul-2023 14:52
Temp Deg C @pH	**23.9**	H	**0**	**0**	**°C**	1	29-Jul-2023 14:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	27-Jul-2023 03:05
Chloride	**37.4**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:05
Sulfate	**3.77**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:05

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-582
Collection Date: 17-Jul-2023 12:15

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
Benzene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:38
Ethylbenzene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:38
m,p-Xylene		U	0.50	2.0	ug/L	1	26-Jul-2023 18:38
o-Xylene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:38
Toluene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:38
Xylenes, Total		U	0.30	1.0	ug/L	1	26-Jul-2023 18:38
Surr: 1,2-Dichloroethane-d4	*120*			*70-126*	*%REC*	*1*	*26-Jul-2023 18:38*
Surr: 4-Bromofluorobenzene	*103*			*77-113*	*%REC*	*1*	*26-Jul-2023 18:38*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*26-Jul-2023 18:38*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*26-Jul-2023 18:38*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:17
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:17
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:17
Surr: 2,5-Dibromotoluene (Aliphatic)	*92.6*			*70-130*	*%REC*	*1*	*25-Jul-2023 20:17*
Surr: 2,5-Dibromotoluene (Aromatic)	*102*			*70-130*	*%REC*	*1*	*25-Jul-2023 20:17*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 26-Jul-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 17:55
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	02-Aug-2023 17:55
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	02-Aug-2023 17:55
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 17:55
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	02-Aug-2023 17:55
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	02-Aug-2023 17:55
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	02-Aug-2023 17:55
Surr: 1-Chlorooctadecane	*53.3*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:55*
Surr: 2-Bromonaphthalene	*108*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:55*
Surr: 2-Fluorobiphenyl	*108*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:55*
Surr: o-Terphenyl	*65.0*			*40-140*	*%REC*	*1*	*02-Aug-2023 17:55*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-582
Collection Date: 17-Jul-2023 12:15

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 28-Jul-2023		Analyst: JC
Arsenic	**0.000436**	J	**0.000400**	**0.00200**	**mg/L**	1	31-Jul-2023 23:51
Barium	**0.217**		**0.00190**	**0.00400**	**mg/L**	1	31-Jul-2023 23:51
Cadmium	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:51
Calcium	**21.1**		**0.0340**	**0.500**	**mg/L**	1	31-Jul-2023 23:51
Chromium	U		0.000400	0.00400	mg/L	1	31-Jul-2023 23:51
Iron	**3.12**		**0.0120**	**0.200**	**mg/L**	1	31-Jul-2023 23:51
Lead	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:51
Magnesium	**6.45**		**0.0100**	**0.200**	**mg/L**	1	31-Jul-2023 23:51
Manganese	**0.349**		**0.000700**	**0.00500**	**mg/L**	1	31-Jul-2023 23:51
Nickel	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:51
Potassium	**2.28**		**0.0180**	**0.200**	**mg/L**	1	31-Jul-2023 23:51
Selenium	U		0.00110	0.00200	mg/L	1	31-Jul-2023 23:51
Silver	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:51
Sodium	**22.2**		**0.0140**	**0.200**	**mg/L**	1	31-Jul-2023 23:51
Strontium	**0.195**		**0.000200**	**0.00500**	**mg/L**	1	31-Jul-2023 23:51
Vanadium	U		0.000600	0.00500	mg/L	1	31-Jul-2023 23:51
Zinc	**0.0102**		**0.00200**	**0.00400**	**mg/L**	1	31-Jul-2023 23:51
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 28-Jul-2023		Analyst: JS
Mercury	**0.0000640**	J	**0.0000300**	**0.000200**	**mg/L**	1	28-Jul-2023 14:49
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	24-Jul-2023 15:41
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**234**		**5.00**	**10.0**	**mg/L**	1	24-Jul-2023 15:29
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**119**		**5.00**	**5.00**	**mg/L**	1	29-Jul-2023 12:25
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	29-Jul-2023 12:25
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	24-Jul-2023 14:30
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.75**	H	**0.100**	**0.100**	**pH Units**	1	29-Jul-2023 14:52
Temp Deg C @pH	**23.9**	H	**0**	**0**	**°C**	1	29-Jul-2023 14:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	27-Jul-2023 03:16
Chloride	**23.6**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:16
Sulfate	**4.41**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:16

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-580
Collection Date: 17-Jul-2023 12:40

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
Benzene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:59
Ethylbenzene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:59
m,p-Xylene		U	0.50	2.0	ug/L	1	26-Jul-2023 18:59
o-Xylene		U	0.30	1.0	ug/L	1	26-Jul-2023 18:59
Toluene		U	0.20	1.0	ug/L	1	26-Jul-2023 18:59
Xylenes, Total		U	0.30	1.0	ug/L	1	26-Jul-2023 18:59
Surr: 1,2-Dichloroethane-d4	*122*			*70-126*	*%REC*	*1*	*26-Jul-2023 18:59*
Surr: 4-Bromofluorobenzene	*102*			*77-113*	*%REC*	*1*	*26-Jul-2023 18:59*
Surr: Dibromofluoromethane	*113*			*77-123*	*%REC*	*1*	*26-Jul-2023 18:59*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*26-Jul-2023 18:59*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:55
Aliphatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:55
Aromatics >C8 - C10		U	0.0100	0.0100	mg/L	1	25-Jul-2023 20:55
Surr: 2,5-Dibromotoluene (Aliphatic)	*95.5*			*70-130*	*%REC*	*1*	*25-Jul-2023 20:55*
Surr: 2,5-Dibromotoluene (Aromatic)	*103*			*70-130*	*%REC*	*1*	*25-Jul-2023 20:55*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 26-Jul-2023		Analyst: SAM
Aliphatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 18:24
Aliphatics >C12 - C16		U	0.00200	0.00200	mg/L	1	02-Aug-2023 18:24
Aliphatics >C16 - C35		U	0.00800	0.00800	mg/L	1	02-Aug-2023 18:24
Aromatics >C10 - C12		U	0.00100	0.00100	mg/L	1	02-Aug-2023 18:24
Aromatics >C12 - C16		U	0.00400	0.00400	mg/L	1	02-Aug-2023 18:24
Aromatics >C16 - C21		U	0.00300	0.00300	mg/L	1	02-Aug-2023 18:24
Aromatics >C21 - C35		U	0.00900	0.00900	mg/L	1	02-Aug-2023 18:24
Surr: 1-Chlorooctadecane	*104*			*40-140*	*%REC*	*1*	*02-Aug-2023 18:24*
Surr: 2-Bromonaphthalene	*94.1*			*40-140*	*%REC*	*1*	*02-Aug-2023 18:24*
Surr: 2-Fluorobiphenyl	*93.7*			*40-140*	*%REC*	*1*	*02-Aug-2023 18:24*
Surr: o-Terphenyl	*105*			*40-140*	*%REC*	*1*	*02-Aug-2023 18:24*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 019-580
Collection Date: 17-Jul-2023 12:40

ANALYTICAL REPORT
WorkOrder:HS23071235
Lab ID:HS23071235-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 28-Jul-2023		Analyst: JC
Arsenic	**0.000556**	J	**0.000400**	**0.00200**	**mg/L**	1	31-Jul-2023 23:53
Barium	**0.200**		**0.00190**	**0.00400**	**mg/L**	1	31-Jul-2023 23:53
Cadmium	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:53
Calcium	**18.9**		**0.0340**	**0.500**	**mg/L**	1	31-Jul-2023 23:53
Chromium	U		0.000400	0.00400	mg/L	1	31-Jul-2023 23:53
Iron	**6.07**		**0.0120**	**0.200**	**mg/L**	1	31-Jul-2023 23:53
Lead	**0.00338**		**0.000600**	**0.00200**	**mg/L**	1	31-Jul-2023 23:53
Magnesium	**5.88**		**0.0100**	**0.200**	**mg/L**	1	31-Jul-2023 23:53
Manganese	**0.329**		**0.000700**	**0.00500**	**mg/L**	1	31-Jul-2023 23:53
Nickel	U		0.000600	0.00200	mg/L	1	31-Jul-2023 23:53
Potassium	**1.99**		**0.0180**	**0.200**	**mg/L**	1	31-Jul-2023 23:53
Selenium	U		0.00110	0.00200	mg/L	1	31-Jul-2023 23:53
Silver	U		0.000200	0.00200	mg/L	1	31-Jul-2023 23:53
Sodium	**19.7**		**0.0140**	**0.200**	**mg/L**	1	31-Jul-2023 23:53
Strontium	**0.175**		**0.000200**	**0.00500**	**mg/L**	1	31-Jul-2023 23:53
Vanadium	U		0.000600	0.00500	mg/L	1	31-Jul-2023 23:53
Zinc	**0.00934**		**0.00200**	**0.00400**	**mg/L**	1	31-Jul-2023 23:53
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 28-Jul-2023		Analyst: JS
Mercury	**0.0000520**	J	**0.0000300**	**0.000200**	**mg/L**	1	28-Jul-2023 14:51
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	24-Jul-2023 15:41
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**222**		**5.00**	**10.0**	**mg/L**	1	24-Jul-2023 15:29
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**118**		**5.00**	**5.00**	**mg/L**	1	29-Jul-2023 12:25
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	29-Jul-2023 12:25
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	24-Jul-2023 14:30
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**7.85**	H	**0.100**	**0.100**	**pH Units**	1	29-Jul-2023 14:52
Temp Deg C @pH	**24.0**	H	**0**	**0**	**°C**	1	29-Jul-2023 14:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		0.0300	0.100	mg/L	1	27-Jul-2023 03:28
Chloride	**23.7**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:28
Sulfate	**4.07**		**0.200**	**0.500**	**mg/L**	1	27-Jul-2023 03:28

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

Weight / Prep Log

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

Batch ID: 198128 **Start Date:** 26 Jul 2023 17:18 **End Date:** 26 Jul 2023 17:18
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071235-01	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23071235-02	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23071235-03	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23071235-04	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2
HS23071235-05	1	1000 (mL)	2 (mL)	0.002	1-litre amber glass, HCL to pH <2

Batch ID: 198238 **Start Date:** 28 Jul 2023 12:30 **End Date:** 28 Jul 2023 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071235-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-05		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 198239 **Start Date:** 28 Jul 2023 08:30 **End Date:** 28 Jul 2023 08:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071235-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS23071235-05		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 198128 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00		26 Jul 2023 17:18	02 Aug 2023 14:28	1
HS23071235-01	BS-26	17 Jul 2023 10:00		26 Jul 2023 17:18	02 Aug 2023 14:28	1
HS23071235-02	Cottages	17 Jul 2023 11:15		26 Jul 2023 17:18	02 Aug 2023 16:57	1
HS23071235-02	Cottages	17 Jul 2023 11:15		26 Jul 2023 17:18	02 Aug 2023 16:57	1
HS23071235-03	019-1055	17 Jul 2023 12:00		26 Jul 2023 17:18	02 Aug 2023 17:26	1
HS23071235-03	019-1055	17 Jul 2023 12:00		26 Jul 2023 17:18	02 Aug 2023 17:26	1
HS23071235-04	019-582	17 Jul 2023 12:15		26 Jul 2023 17:18	02 Aug 2023 17:55	1
HS23071235-04	019-582	17 Jul 2023 12:15		26 Jul 2023 17:18	02 Aug 2023 17:55	1
HS23071235-05	019-580	17 Jul 2023 12:40		26 Jul 2023 17:18	02 Aug 2023 18:24	1
HS23071235-05	019-580	17 Jul 2023 12:40		26 Jul 2023 17:18	02 Aug 2023 18:24	1
Batch ID: 198238 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00		28 Jul 2023 12:30	31 Jul 2023 23:45	1
HS23071235-02	Cottages	17 Jul 2023 11:15		28 Jul 2023 12:30	31 Jul 2023 23:20	1
HS23071235-03	019-1055	17 Jul 2023 12:00		28 Jul 2023 12:30	31 Jul 2023 23:47	1
HS23071235-04	019-582	17 Jul 2023 12:15		28 Jul 2023 12:30	31 Jul 2023 23:51	1
HS23071235-05	019-580	17 Jul 2023 12:40		28 Jul 2023 12:30	31 Jul 2023 23:53	1
Batch ID: 198239 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00		28 Jul 2023 08:30	28 Jul 2023 14:44	1
HS23071235-02	Cottages	17 Jul 2023 11:15		28 Jul 2023 08:30	28 Jul 2023 14:46	1
HS23071235-03	019-1055	17 Jul 2023 12:00		28 Jul 2023 08:30	28 Jul 2023 14:48	1
HS23071235-04	019-582	17 Jul 2023 12:15		28 Jul 2023 08:30	28 Jul 2023 14:49	1
HS23071235-05	019-580	17 Jul 2023 12:40		28 Jul 2023 08:30	28 Jul 2023 14:51	1
Batch ID: R442091 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			24 Jul 2023 14:30	1
HS23071235-02	Cottages	17 Jul 2023 11:15			24 Jul 2023 14:30	1
HS23071235-03	019-1055	17 Jul 2023 12:00			24 Jul 2023 14:30	1
HS23071235-04	019-582	17 Jul 2023 12:15			24 Jul 2023 14:30	1
HS23071235-05	019-580	17 Jul 2023 12:40			24 Jul 2023 14:30	1
Batch ID: R442109 (0)	**Test Name :** HYDROGEN SULFIDE BY E376.1				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			24 Jul 2023 15:41	1
HS23071235-02	Cottages	17 Jul 2023 11:15			24 Jul 2023 15:41	1
HS23071235-03	019-1055	17 Jul 2023 12:00			24 Jul 2023 15:41	1
HS23071235-04	019-582	17 Jul 2023 12:15			24 Jul 2023 15:41	1
HS23071235-05	019-580	17 Jul 2023 12:40			24 Jul 2023 15:41	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R442248 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			24 Jul 2023 15:29	1
HS23071235-02	Cottages	17 Jul 2023 11:15			24 Jul 2023 15:29	1
HS23071235-03	019-1055	17 Jul 2023 12:00			24 Jul 2023 15:29	1
HS23071235-04	019-582	17 Jul 2023 12:15			24 Jul 2023 15:29	1
HS23071235-05	019-580	17 Jul 2023 12:40			24 Jul 2023 15:29	1
Batch ID: R442345 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			25 Jul 2023 18:22	1
HS23071235-02	Cottages	17 Jul 2023 11:15			25 Jul 2023 19:00	1
HS23071235-03	019-1055	17 Jul 2023 12:00			25 Jul 2023 19:38	1
HS23071235-04	019-582	17 Jul 2023 12:15			25 Jul 2023 20:17	1
HS23071235-05	019-580	17 Jul 2023 12:40			25 Jul 2023 20:55	1
Batch ID: R442378 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			26 Jul 2023 17:33	1
HS23071235-02	Cottages	17 Jul 2023 11:15			26 Jul 2023 17:55	1
HS23071235-03	019-1055	17 Jul 2023 12:00			26 Jul 2023 18:16	1
HS23071235-04	019-582	17 Jul 2023 12:15			26 Jul 2023 18:38	1
HS23071235-05	019-580	17 Jul 2023 12:40			26 Jul 2023 18:59	1
Batch ID: R442391 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			25 Jul 2023 18:22	1
HS23071235-02	Cottages	17 Jul 2023 11:15			25 Jul 2023 19:00	1
HS23071235-03	019-1055	17 Jul 2023 12:00			25 Jul 2023 19:38	1
HS23071235-04	019-582	17 Jul 2023 12:15			25 Jul 2023 20:17	1
HS23071235-05	019-580	17 Jul 2023 12:40			25 Jul 2023 20:55	1
Batch ID: R442490 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			27 Jul 2023 01:50	1
HS23071235-02	Cottages	17 Jul 2023 11:15			27 Jul 2023 02:53	1
HS23071235-03	019-1055	17 Jul 2023 12:00			27 Jul 2023 03:05	1
HS23071235-04	019-582	17 Jul 2023 12:15			27 Jul 2023 03:16	1
HS23071235-05	019-580	17 Jul 2023 12:40			27 Jul 2023 03:28	1
Batch ID: R442736 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			29 Jul 2023 12:25	1
HS23071235-02	Cottages	17 Jul 2023 11:15			29 Jul 2023 12:25	1
Batch ID: R442749 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS23071235-03	019-1055	17 Jul 2023 12:00			29 Jul 2023 12:25	1
HS23071235-04	019-582	17 Jul 2023 12:15			29 Jul 2023 12:25	1
HS23071235-05	019-580	17 Jul 2023 12:40			29 Jul 2023 12:25	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R442793 (0)	**Test Name :** PH BY SM4500H+ B-2011				**Matrix:** Water	
HS23071235-01	BS-26	17 Jul 2023 10:00			29 Jul 2023 14:52	1
HS23071235-02	Cottages	17 Jul 2023 11:15			29 Jul 2023 14:52	1
HS23071235-03	019-1055	17 Jul 2023 12:00			29 Jul 2023 14:52	1
HS23071235-04	019-582	17 Jul 2023 12:15			29 Jul 2023 14:52	1
HS23071235-05	019-580	17 Jul 2023 12:40			29 Jul 2023 14:52	1

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198128 (0) **Instrument: FID-22** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-198128** Units: **mg/L** Analysis Date: **02-Aug-2023 11:07**
Client ID: Run ID: **FID-22_443163** SeqNo: **7471912** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	U	0.00100								
Aliphatics >C12 - C16	U	0.00200								
Aliphatics >C16 - C35	U	0.00800								
Surr: 1-Chlorooctadecane	*0.02673*	*0*	*0.04*	*0*	*66.8*	*40 - 140*				

MBLK Sample ID: **MBLK-198128** Units: **mg/L** Analysis Date: **02-Aug-2023 11:07**
Client ID: Run ID: **FID23_443169** SeqNo: **7471938** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	U	0.00100								
Aromatics >C12 - C16	U	0.00400								
Aromatics >C16 - C21	U	0.00300								
Aromatics >C21 - C35	U	0.00900								
Surr: 2-Bromonaphthalene	*0.04046*	*0*	*0.04*	*0*	*101*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03576*	*0*	*0.04*	*0*	*89.4*	*40 - 140*				
Surr: o-Terphenyl	*0.0266*	*0*	*0.04*	*0*	*66.5*	*40 - 140*				

LCS Sample ID: **LCS-198128** Units: **mg/L** Analysis Date: **02-Aug-2023 11:35**
Client ID: Run ID: **FID-22_443163** SeqNo: **7471913** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.06222	0.00100	0.05	0	124	40 - 140				
Aliphatics >C12 - C16	0.1167	0.00200	0.1	0	117	40 - 140				
Aliphatics >C16 - C35	0.5379	0.00800	0.4	0	134	40 - 140				
Surr: 1-Chlorooctadecane	*0.04113*	*0*	*0.04*	*0*	*103*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198128 (0) **Instrument: FID-22** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS-198128** Units: **mg/L** Analysis Date: **02-Aug-2023 11:35**
Client ID: Run ID: **FID23_443169** SeqNo: **7471939** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.02056	0.00100	0.05	0	41.1	40 - 140				
Aromatics >C12 - C16	0.1415	0.00400	0.2	0	70.7	40 - 140				
Aromatics >C16 - C21	0.1231	0.00300	0.15	0	82.0	40 - 140				
Aromatics >C21 - C35	0.2744	0.00900	0.45	0	61.0	40 - 140				
Surr: 2-Bromonaphthalene	*0.02812*	*0*	*0.04*	*0*	*70.3*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.02451*	*0*	*0.04*	*0*	*61.3*	*40 - 140*				
Surr: o-Terphenyl	*0.0268*	*0*	*0.04*	*0*	*67.0*	*40 - 140*				

MS Sample ID: **HS23071285-07MS** Units: **mg/L** Analysis Date: **02-Aug-2023 12:33**
Client ID: Run ID: **FID-22_443163** SeqNo: **7471914** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.04965	0.00100	0.05	0	99.3	40 - 140				
Aliphatics >C12 - C16	0.1144	0.00200	0.1	0	114	40 - 140				
Aliphatics >C16 - C35	0.4096	0.00800	0.4	0	102	40 - 140				
Surr: 1-Chlorooctadecane	*0.03066*	*0*	*0.04*	*0*	*76.7*	*40 - 140*				

MS Sample ID: **HS23071285-07MS** Units: **mg/L** Analysis Date: **02-Aug-2023 12:33**
Client ID: Run ID: **FID23_443169** SeqNo: **7471940** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.0433	0.00100	0.05	0	86.6	40 - 140				
Aromatics >C12 - C16	0.1681	0.00400	0.2	0	84.0	40 - 140				
Aromatics >C16 - C21	0.1395	0.00300	0.15	0	93.0	40 - 140				
Aromatics >C21 - C35	0.376	0.00900	0.45	0	83.6	40 - 140				
Surr: 2-Bromonaphthalene	*0.03688*	*0*	*0.04*	*0*	*92.2*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.02698*	*0*	*0.04*	*0*	*67.4*	*40 - 140*				
Surr: o-Terphenyl	*0.02771*	*0*	*0.04*	*0*	*69.3*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198128 (0) **Instrument: FID-22** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MSD Sample ID: **HS23071285-07MSD** Units: **mg/L** Analysis Date: **02-Aug-2023 13:01**
Client ID: Run ID: **FID-22_443163** SeqNo: **7471915** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.04708	0.00100	0.05	0	94.2	40 - 140	0.04965	5.31	50	
Aliphatics >C12 - C16	0.1054	0.00200	0.1	0	105	40 - 140	0.1144	8.16	50	
Aliphatics >C16 - C35	0.325	0.00800	0.4	0	81.3	40 - 140	0.4096	23	50	
Surr: 1-Chlorooctadecane	*0.03855*	*0*	*0.04*	*0*	*96.4*	*40 - 140*	*0.03066*	*22.8*	*50*	

MSD Sample ID: **HS23071285-07MSD** Units: **mg/L** Analysis Date: **02-Aug-2023 13:01**
Client ID: Run ID: **FID23_443169** SeqNo: **7471941** PrepDate: **26-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.05559	0.00100	0.05	0	111	40 - 140	0.0433	24.9	50	
Aromatics >C12 - C16	0.2063	0.00400	0.2	0	103	40 - 140	0.1681	20.4	50	
Aromatics >C16 - C21	0.1644	0.00300	0.15	0	110	40 - 140	0.1395	16.4	50	
Aromatics >C21 - C35	0.4525	0.00900	0.45	0	101	40 - 140	0.376	18.5	50	
Surr: 2-Bromonaphthalene	*0.04628*	*0*	*0.04*	*0*	*116*	*40 - 140*	*0.03688*	*22.6*	*50*	
Surr: 2-Fluorobiphenyl	*0.03234*	*0*	*0.04*	*0*	*80.9*	*40 - 140*	*0.02698*	*18.1*	*50*	
Surr: o-Terphenyl	*0.03106*	*0*	*0.04*	*0*	*77.6*	*40 - 140*	*0.02771*	*11.4*	*50*	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442345 (0) **Instrument:** FID-14 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 12:37**
Client ID: Run ID: **FID-14_442345** SeqNo: **7451607** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	U	0.0100								
Aliphatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2209*	*0.0100*	*0.25*	*0*	*88.3*	*70 - 130*				

LCS Sample ID: **LCS-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 10:42**
Client ID: Run ID: **FID-14_442345** SeqNo: **7451605** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02061	0.0100	0.025	0	82.5	70 - 130				
Aliphatics >C8 - C10	0.02034	0.0100	0.025	0	81.4	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2525*	*0.0100*	*0.25*	*0*	*101*	*70 - 130*				

LCSD Sample ID: **LCSD-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 11:20**
Client ID: Run ID: **FID-14_442345** SeqNo: **7451606** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02221	0.0100	0.025	0	88.8	70 - 130	0.02061	7.44	25	
Aliphatics >C8 - C10	0.0209	0.0100	0.025	0	83.6	70 - 130	0.02034	2.73	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2453*	*0.0100*	*0.25*	*0*	*98.1*	*70 - 130*	*0.2525*	*2.91*	*25*	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442391 (0) **Instrument: FID-15** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 12:37**
Client ID: Run ID: **FID-15_442391** SeqNo: **7452556** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2414*	*0.0100*	*0.25*	*0*	*96.6*	*70 - 130*				

LCS Sample ID: **LCS-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 10:42**
Client ID: Run ID: **FID-15_442391** SeqNo: **7452554** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.08308	0.0100	0.1	0	83.1	70 - 130				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2688*	*0.0100*	*0.25*	*0*	*108*	*70 - 130*				

LCSD Sample ID: **LCSD-230725** Units: **mg/L** Analysis Date: **25-Jul-2023 11:20**
Client ID: Run ID: **FID-15_442391** SeqNo: **7452555** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.0914	0.0100	0.1	0	91.4	70 - 130	0.08308	9.53	25	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2616*	*0.0100*	*0.25*	*0*	*105*	*70 - 130*	*0.2688*	*2.72*	*25*	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-198238** Units: **mg/L** Analysis Date: **31-Jul-2023 23:16**
Client ID: Run ID: **ICPMS06_442751** SeqNo: **7463376** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Iron	U	0.200								
Lead	U	0.00200								
Magnesium	0.01355	0.200								J
Manganese	U	0.00500								
Nickel	U	0.00200								
Potassium	U	0.200								
Selenium	U	0.00200								
Silver	U	0.00200								
Sodium	U	0.200								
Strontium	U	0.00500								
Vanadium	U	0.00500								
Zinc	U	0.00400								

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

LCS Sample ID: **LCS-198238** Units: **mg/L** Analysis Date: **31-Jul-2023 23:18**
Client ID: Run ID: **ICPMS06_442751** SeqNo: **7463377** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04369	0.00200	0.05	0	87.4	80 - 120				
Barium	0.04758	0.00400	0.05	0	95.2	80 - 120				
Cadmium	0.04892	0.00200	0.05	0	97.8	80 - 120				
Calcium	4.654	0.500	5	0	93.1	80 - 120				
Chromium	0.04697	0.00400	0.05	0	93.9	80 - 120				
Iron	4.664	0.200	5	0	93.3	80 - 120				
Lead	0.04775	0.00200	0.05	0	95.5	80 - 120				
Magnesium	4.587	0.200	5	0	91.7	80 - 120				
Manganese	0.0456	0.00500	0.05	0	91.2	80 - 120				
Nickel	0.04834	0.00200	0.05	0	96.7	80 - 120				
Potassium	4.469	0.200	5	0	89.4	80 - 120				
Selenium	0.04471	0.00200	0.05	0	89.4	80 - 120				
Silver	0.04685	0.00200	0.05	0	93.7	80 - 120				
Sodium	4.246	0.200	5	0	84.9	80 - 120				
Strontium	0.09419	0.00500	0.1	0	94.2	80 - 120				
Vanadium	0.04659	0.00500	0.05	0	93.2	80 - 120				
Zinc	0.04962	0.00400	0.05	0	99.2	80 - 120				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS23071235-02MS** Units: **mg/L** Analysis Date: **31-Jul-2023 23:26**
Client ID: **Cottages** Run ID: **ICPMS06_442751** SeqNo: **7463381** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04617	0.00200	0.05	0.000191	92.0	80 - 120				
Barium	0.2411	0.00400	0.05	0.187	108	80 - 120				
Cadmium	0.04978	0.00200	0.05	0.000049	99.5	80 - 120				
Calcium	17.49	0.500	5	13.4	81.9	80 - 120				
Chromium	0.05503	0.00400	0.05	0.007441	95.2	80 - 120				
Iron	7.087	0.200	5	2.34	94.9	80 - 120				
Lead	0.04889	0.00200	0.05	0.000215	97.4	80 - 120				
Magnesium	8.148	0.200	5	3.722	88.5	80 - 120				
Manganese	0.2186	0.00500	0.05	0.1895	58.1	80 - 120				S
Nickel	0.0503	0.00200	0.05	0.002386	95.8	80 - 120				
Potassium	6.417	0.200	5	2.122	85.9	80 - 120				
Selenium	0.04531	0.00200	0.05	0.000008	90.6	80 - 120				
Silver	0.04744	0.00200	0.05	0.000035	94.8	80 - 120				
Sodium	72.63	0.200	5	71.19	28.9	80 - 120				SO
Strontium	0.2495	0.00500	0.1	0.1575	92.0	80 - 120				
Vanadium	0.04848	0.00500	0.05	0.000216	96.5	80 - 120				
Zinc	0.8292	0.00400	0.05	0.7976	63.2	80 - 120				SO

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS23071235-02MSD** Units: **mg/L** Analysis Date: **31-Jul-2023 23:28**
Client ID: **Cottages** Run ID: **ICPMS06_442751** SeqNo: **7463382** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Arsenic	0.04567	0.00200	0.05	0.000191	91.0	80 - 120	0.04617	1.1	20	
Barium	0.2376	0.00400	0.05	0.187	101	80 - 120	0.2411	1.44	20	
Cadmium	0.04937	0.00200	0.05	0.000049	98.6	80 - 120	0.04978	0.825	20	
Calcium	17.56	0.500	5	13.4	83.2	80 - 120	17.49	0.356	20	
Chromium	0.0557	0.00400	0.05	0.007441	96.5	80 - 120	0.05503	1.21	20	
Iron	7.069	0.200	5	2.34	94.6	80 - 120	7.087	0.252	20	
Lead	0.04872	0.00200	0.05	0.000215	97.0	80 - 120	0.04889	0.346	20	
Magnesium	8.093	0.200	5	3.722	87.4	80 - 120	8.148	0.683	20	
Manganese	0.2192	0.00500	0.05	0.1895	59.3	80 - 120	0.2186	0.275	20	S
Nickel	0.05105	0.00200	0.05	0.002386	97.3	80 - 120	0.0503	1.48	20	
Potassium	6.436	0.200	5	2.122	86.3	80 - 120	6.417	0.298	20	
Selenium	0.04657	0.00200	0.05	0.000008	93.1	80 - 120	0.04531	2.74	20	
Silver	0.04713	0.00200	0.05	0.000035	94.2	80 - 120	0.04744	0.651	20	
Sodium	72.93	0.200	5	71.19	34.9	80 - 120	72.63	0.414	20	SO
Strontium	0.2488	0.00500	0.1	0.1575	91.3	80 - 120	0.2495	0.274	20	
Vanadium	0.04898	0.00500	0.05	0.000216	97.5	80 - 120	0.04848	1.02	20	
Zinc	0.827	0.00400	0.05	0.7976	58.7	80 - 120	0.8292	0.272	20	SO

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS23071235-02PDS** Units: **mg/L** Analysis Date: **31-Jul-2023 23:32**
Client ID: **Cottages** Run ID: **ICPMS06_442751** SeqNo: **7463384** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09923	0.00200	0.1	0	99.2	75 - 125				
Barium	0.2911	0.00400	0.1	0.187	104	75 - 125				
Cadmium	0.1065	0.00200	0.1	0	106	75 - 125				
Calcium	23.16	0.500	10	13.4	97.6	75 - 125				
Chromium	0.1128	0.00400	0.1	0.007441	105	75 - 125				
Iron	12.67	0.200	10	2.34	103	75 - 125				
Lead	0.1038	0.00200	0.1	0	104	75 - 125				
Magnesium	13.64	0.200	10	3.722	99.2	75 - 125				
Manganese	0.2679	0.00500	0.1	0.1895	78.4	75 - 125				
Nickel	0.1078	0.00200	0.1	0.002386	105	75 - 125				
Potassium	11.9	0.200	10	2.122	97.7	75 - 125				
Selenium	0.1001	0.00200	0.1	0	100	75 - 125				
Silver	0.09484	0.00200	0.1	0	94.8	75 - 125				
Sodium	77.7	0.200	10	71.19	65.1	75 - 125				SO
Strontium	0.3587	0.00500	0.2	0.1575	101	75 - 125				
Vanadium	0.1058	0.00500	0.1	0	106	75 - 125				
Zinc	0.8777	0.00400	0.1	0.7976	80.1	75 - 125				O

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198238 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS23071235-02SD** Units: **mg/L** Analysis Date: **31-Jul-2023 23:22**
Client ID: **Cottages** Run ID: **ICPMS06_442751** SeqNo: **7463379** PrepDate: **28-Jul-2023** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000191	0	10	
Barium	0.1898	0.0200					0.187	1.45	10	
Cadmium	U	0.0100					0.000049	0	10	
Calcium	13.72	2.50					13.4	2.39	10	
Chromium	0.007025	0.0200					0.007441	0	10	J
Iron	2.429	1.00					2.34	3.79	10	
Lead	U	0.0100					0.000215	0	10	
Magnesium	3.945	1.00					3.722	5.99	10	
Manganese	0.1925	0.0250					0.1895	1.55	10	
Nickel	U	0.0100					0.002386	0	10	
Potassium	2.096	1.00					2.122	1.22	10	
Selenium	U	0.0100					0.000008	0	10	
Silver	U	0.0100					0.000035	0	10	
Sodium	70.74	1.00					71.19	0.637	10	
Strontium	0.1625	0.0250					0.1575	3.17	10	
Vanadium	U	0.0250					0.000216	0	10	
Zinc	0.7895	0.0200					0.7976	1.02	10	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: 198239 (0) **Instrument: HG04** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-198239** Units: **mg/L** Analysis Date: **28-Jul-2023 14:13**
Client ID: Run ID: **HG04_442661** SeqNo: **7459079** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000045	0.000200								J

LCS Sample ID: **LCS-198239** Units: **mg/L** Analysis Date: **28-Jul-2023 14:18**
Client ID: Run ID: **HG04_442661** SeqNo: **7459080** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00543	0.000200	0.005	0	109	80 - 120				

MS Sample ID: **HS23071640-02MS** Units: **mg/L** Analysis Date: **28-Jul-2023 15:09**
Client ID: Run ID: **HG04_442661** SeqNo: **7459103** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00407	0.000200	0.005	0.000056	80.3	75 - 125				

MSD Sample ID: **HS23071640-02MSD** Units: **mg/L** Analysis Date: **28-Jul-2023 15:10**
Client ID: Run ID: **HG04_442661** SeqNo: **7459104** PrepDate: **28-Jul-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00408	0.000200	0.005	0.000056	80.5	75 - 125	0.00407	0.245	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442378 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-230726** Units: **ug/L** Analysis Date: **26-Jul-2023 12:12**
Client ID: Run ID: **VOA7_442378** SeqNo: **7452394** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
o-Xylene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 1,2-Dichloroethane-d4	*59.68*	*1.0*	*50*	*0*	*119*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.28*	*1.0*	*50*	*0*	*103*	*77 - 113*				
Surr: Dibromofluoromethane	*56.14*	*1.0*	*50*	*0*	*112*	*73 - 126*				
Surr: Toluene-d8	*52.73*	*1.0*	*50*	*0*	*105*	*81 - 120*				

LCS Sample ID: **VLCSW-230726** Units: **ug/L** Analysis Date: **26-Jul-2023 11:29**
Client ID: Run ID: **VOA7_442378** SeqNo: **7452392** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.86	1.0	20	0	99.3	74 - 120				
Ethylbenzene	18.71	1.0	20	0	93.6	77 - 117				
m,p-Xylene	37.41	2.0	40	0	93.5	77 - 122				
o-Xylene	19.03	1.0	20	0	95.2	75 - 119				
Toluene	19.24	1.0	20	0	96.2	77 - 118				
Xylenes, Total	56.44	3.0	60	0	94.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*58.62*	*1.0*	*50*	*0*	*117*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.27*	*1.0*	*50*	*0*	*105*	*77 - 113*				
Surr: Dibromofluoromethane	*56.47*	*1.0*	*50*	*0*	*113*	*73 - 126*				
Surr: Toluene-d8	*52.29*	*1.0*	*50*	*0*	*105*	*81 - 120*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442378 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS23071260-01MS** Units: **ug/L** Analysis Date: **26-Jul-2023 12:55**
Client ID: Run ID: **VOA7_442378** SeqNo: **7452421** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	23.44	1.0	20	0	117	70 - 127				
Ethylbenzene	23.86	1.0	20	0	119	70 - 124				
m,p-Xylene	47.23	2.0	40	0	118	70 - 130				
o-Xylene	23.41	1.0	20	0	117	70 - 124				
Toluene	24.07	1.0	20	0	120	70 - 123				
Xylenes, Total	70.64	3.0	60	0	118	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.47*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.12*	*1.0*	*50*	*0*	*100*	*77 - 113*				
Surr: Dibromofluoromethane	*48*	*1.0*	*50*	*0*	*96.0*	*77 - 123*				
Surr: Toluene-d8	*50.04*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS23071260-01MSD** Units: **ug/L** Analysis Date: **26-Jul-2023 13:16**
Client ID: Run ID: **VOA7_442378** SeqNo: **7452422** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	23.9	1.0	20	0	119	70 - 127	23.44	1.94	20	
Ethylbenzene	24.19	1.0	20	0	121	70 - 124	23.86	1.39	20	
m,p-Xylene	47.77	2.0	40	0	119	70 - 130	47.23	1.12	20	
o-Xylene	23.79	1.0	20	0	119	70 - 124	23.41	1.61	20	
Toluene	24.06	1.0	20	0	120	70 - 123	24.07	0.0296	20	
Xylenes, Total	71.55	3.0	60	0	119	70 - 130	70.64	1.28	20	
Surr: 1,2-Dichloroethane-d4	*59.51*	*1.0*	*50*	*0*	*119*	*70 - 126*	*51.47*	*14.5*	*20*	
Surr: 4-Bromofluorobenzene	*51.32*	*1.0*	*50*	*0*	*103*	*77 - 113*	*50.12*	*2.37*	*20*	
Surr: Dibromofluoromethane	*55.97*	*1.0*	*50*	*0*	*112*	*77 - 123*	*48*	*15.3*	*20*	
Surr: Toluene-d8	*51.63*	*1.0*	*50*	*0*	*103*	*82 - 127*	*50.04*	*3.13*	*20*	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442091 (0) **Instrument: WetChem_HS** **Method: SULFIDE BY SM4500 S2-F-2011**

MBLK Sample ID: **MBLK-R442091** Units: **mg/L** Analysis Date: **24-Jul-2023 14:30**
Client ID: Run ID: **WetChem_HS_442091** SeqNo: **7445786** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	2.00								

LCS Sample ID: **LCS-R442091** Units: **mg/L** Analysis Date: **24-Jul-2023 14:30**
Client ID: Run ID: **WetChem_HS_442091** SeqNo: **7445785** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.08	2.00	25	0	88.3	85 - 115				

LCSD Sample ID: **LCSD-R442091** Units: **mg/L** Analysis Date: **24-Jul-2023 14:30**
Client ID: Run ID: **WetChem_HS_442091** SeqNo: **7445784** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.28	2.00	25	0	89.1	85 - 115	22.08	0.902	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442109 (0) **Instrument: WetChem_HS** **Method: HYDROGEN SULFIDE BY E376.1**

MBLK Sample ID: **MBLK-R442109** Units: **mg/L** Analysis Date: **24-Jul-2023 15:41**
Client ID: Run ID: **WetChem_HS_442109** SeqNo: **7446227** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	U	1.00								

LCS Sample ID: **LCS-R442109** Units: **mg/L** Analysis Date: **24-Jul-2023 15:41**
Client ID: Run ID: **WetChem_HS_442109** SeqNo: **7446226** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.46	1.00	25	0	93.8	80 - 120				

LCSD Sample ID: **LCSD-R442109** Units: **mg/L** Analysis Date: **24-Jul-2023 15:41**
Client ID: Run ID: **WetChem_HS_442109** SeqNo: **7446225** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.67	1.00	25	0	94.7	80 - 120	23.46	0.902	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442248 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WMBLK-07242023** Units: **mg/L** Analysis Date: **24-Jul-2023 15:29**
Client ID: Run ID: **Balance1_442248** SeqNo: **7449296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-07242023** Units: **mg/L** Analysis Date: **24-Jul-2023 15:29**
Client ID: Run ID: **Balance1_442248** SeqNo: **7449295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1094	10.0	1000	0	109	85 - 115				

DUP Sample ID: **HS23071235-05DUP** Units: **mg/L** Analysis Date: **24-Jul-2023 15:29**
Client ID: **019-580** Run ID: **Balance1_442248** SeqNo: **7449291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	220	10.0					222	0.905	20	

DUP Sample ID: **HS23071215-03DUP** Units: **mg/L** Analysis Date: **24-Jul-2023 15:29**
Client ID: Run ID: **Balance1_442248** SeqNo: **7449276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1260	10.0					1264	0.317	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442490 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **27-Jul-2023 01:26**
Client ID: Run ID: **ICS-Integrion_442490** SeqNo: **7455143** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.100								
Chloride	U	0.500								
Sulfate	U	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **27-Jul-2023 01:44**
Client ID: Run ID: **ICS-Integrion_442490** SeqNo: **7455144** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.814	0.100	4	0	95.4	80 - 120				
Chloride	20.22	0.500	20	0	101	80 - 120				
Sulfate	19.48	0.500	20	0	97.4	80 - 120				

MS Sample ID: **HS23071235-01MS** Units: **mg/L** Analysis Date: **27-Jul-2023 01:55**
Client ID: **BS-26** Run ID: **ICS-Integrion_442490** SeqNo: **7455146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.5946	0.100	2	0	29.7	80 - 120				S
Chloride	44.66	0.500	10	35.87	87.9	80 - 120				
Sulfate	24.15	0.500	10	16.07	80.8	80 - 120				

MSD Sample ID: **HS23071235-01MSD** Units: **mg/L** Analysis Date: **27-Jul-2023 02:01**
Client ID: **BS-26** Run ID: **ICS-Integrion_442490** SeqNo: **7455147** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.6007	0.100	2	0	30.0	80 - 120	0.5946	1.02	20	S
Chloride	44.77	0.500	10	35.87	89.0	80 - 120	44.66	0.239	20	
Sulfate	24.27	0.500	10	16.07	82.0	80 - 120	24.15	0.509	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442736 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-R442736** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442736** SeqNo: **7461095** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								

LCS Sample ID: **LCS-R442736** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442736** SeqNo: **7461094** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	968.6	5.00	1000	0	96.9	85 - 115				

LCSD Sample ID: **LCSD-R442736** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442736** SeqNo: **7461093** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	986.3	5.00	1000	0	98.6	85 - 115	968.6	1.81	20	

DUP Sample ID: **HS23070912-01DUP** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442736** SeqNo: **7461096** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	345.2	5.00					358.4	3.76	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: R442749 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **MBLK-R442749** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442749** SeqNo: **7461284** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								

LCS Sample ID: **LCS-R442749** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442749** SeqNo: **7461283** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	991.4	5.00	1000	0	99.1	85 - 115				

LCSD Sample ID: **LCSD-R442749** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: Run ID: **ManTech01_442749** SeqNo: **7461282** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	997.2	5.00	1000	0	99.7	85 - 115	991.4	0.579	20	

DUP Sample ID: **HS23071235-03DUP** Units: **mg/L** Analysis Date: **29-Jul-2023 12:25**
Client ID: **019-1055** Run ID: **ManTech01_442749** SeqNo: **7461285** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	132.5	5.00					135.4	2.16	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	

The following samples were analyzed in this batch: HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071235

QC BATCH REPORT

Batch ID: **R442793 (0)** **Instrument:** **ManTech01** **Method:** **PH BY SM4500H+ B-2011**

DUP Sample ID: **HS23071235-03DUP** Units: **pH Units** Analysis Date: **29-Jul-2023 14:52**
Client ID: **019-1055** Run ID: **ManTech01_442793** SeqNo: **7462245** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.81	0.100					7.7	1.42	10	
Temp Deg C @pH	23.9	0					23.9	0	10	

The following samples were analyzed in this batch: HS23071235-01 HS23071235-02 HS23071235-03 HS23071235-04 HS23071235-05

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: **HS23071235**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L23-358	31-May-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Louisiana	03087-2023	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2023-2024	30-Apr-2024
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-23-31	30-Apr-2024
Utah	TX026932023-14	31-Jul-2024

Sample Receipt Checklist

Work Order ID: HS23071235 **Date/Time Received:** **18-Jul-2023 09:33**

Client Name: ERMSW-HOU **Received by:** **Donald Gilmore**

Completed By:	/S/ Nilesh D. Ranchod	21-Jul-2023 18:43	**Reviewed by:**	/S/ Bernadette A. Fini	24-Jul-2023 09:21
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:294871
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0C/1.9C ,4.3C/4.2C UC/C	IR31	
Cooler(s)/Kit(s):	50365/50458		
Date/Time sample(s) sent to storage:	07/18/2023 18:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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

Chain of Custody Form

Page _____ of _____

COC ID: 294871

HS23071235

Environmental Resources Mgmt.
Sulphur Dome

IV

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	0688077	Project Name	Sulphur Dome	A	8260_LL_W (Low Level VOC (8260) BTEX)
Work Order		Project Number		B	MA EPH_W_La (MA EPH)
Company Name	Environmental Resources Mgmt.	Bill To Company	Environmental Resources Mgmt.	C	MA VPH_LA_W (MA VPH)
Send Report To	Scott Himes	Invoice Attn	Accounts Payable	D	9056_anions_W (Cl,SO4,Br)
Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	E	ALK_W 2320B (carb, bicarb),pH
				F	H2S_W (H2S)
City/State/Zip	Houston, TX 77024	City/State/Zip	Houston TX 77024	G	HG_W (Mercury)
Phone	(281) 600-1000	Phone	(281) 600-1000	H	ICP_TW(As,Ba,Cd,Ca,Cr,Fe,Pb,Mg,Mn,K,Se,Ag,Na,Sr,Zn,Ni,V
Fax	(281) 600-1001	Fax	(281) 600-1001	I	SULFD_4500S F (Sulfide)
e-Mail Address	scott.himes@erm.com	e-Mail Address	ERMNAAccountsPayable@erm.com	J	TDS_W 2540C (TDS)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	BS-25	7/17/23	10:00	W	1,2,8	12	X	X	X	X	X	X	X	X	X	X	
2	Cottages		11:15														
3	W-19		12:00														
4	W-13		12:15														
5	W-11		12:40														
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Taylar Brown / Taylar Brown

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Other _____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Taylar Brown	Date: 7/18/23	Time: 9:33	Received by:		
Relinquished by:	Date:	Time:	Received by (Laboratory): DG 07/18/23	09:33	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

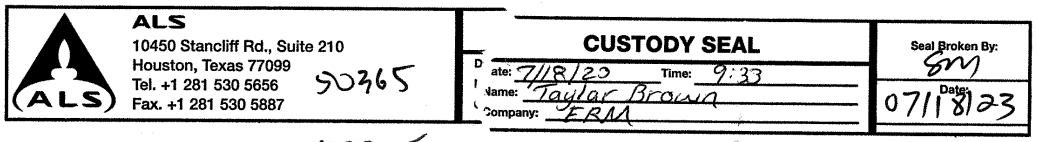
Notes: ERM Sulphur Dome

Cooler ID	Cooler Temp.
	4°C
50365	2.0
50458	4.3

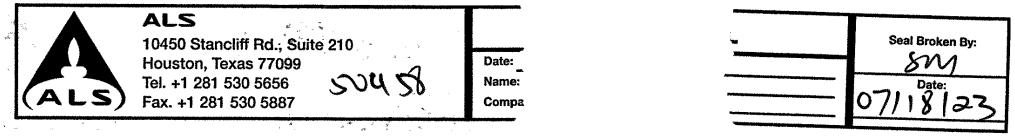
QC Package: (Check One Box Below)
- ☒ Level II Std QC
- ☐ Level III Std QC/Raw Date
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

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

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



50365 JUL 18 2023



50458 JUL 18 2023

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

August 11, 2023

Scott Himes
Environmental Resources Mgmt.
CityCentre Four
840 W. Sam Houston Pkwy., Suite 600
Houston, TX 77024

Work Order: **HS23071781**

Laboratory Results for: **Sulphur Dome**

Dear Scott Himes,

ALS Environmental received 1 sample(s) on Jul 27, 2023 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Bernadette A. Fini
Project Manager

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Work Order: HS23071781

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23071781-01	7B-Brine	Water		27-Jul-2023 10:45	27-Jul-2023 18:40	☐

Client: Environmental Resources Mgmt. **CASE NARRATIVE**
Project: Sulphur Dome
Work Order: HS23071781

Work Order Comments

• Login notes.
EPH container only received 200ml & container missing label. Limited volume

Work Order Comments

• Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method MA EPH

Batch ID: 198642

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

GC Volatiles by Method MA VPH

Batch ID: R443183,R443185

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

GCMS Volatiles by Method SW8260

Batch ID: R443043

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

Batch ID: R443083

Sample ID: HS23080127-06MS

• MS and MSD are for an unrelated sample

Metals by Method SW7470A

Batch ID: 198826

Sample ID: 7B-Brine (HS23071781-01MS)

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

Sample ID: 7B-Brine (HS23071781-01MSD)

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

Metals by Method SW6020A

Batch ID: 198707

Sample ID: 7B-Brine (HS23071781-01)

• Sample reported at 100x dilution due to high concentration of Sodium.

Sample ID: HS23080258-06MS

• MS/MSD and DUPs are for an unrelated sample

Client: Environmental Resources Mgmt. **CASE NARRATIVE**
Project: Sulphur Dome
Work Order: HS23071781

WetChemistry by Method M2540C

Batch ID: R443010

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

WetChemistry by Method SM2320B

Batch ID: R443514

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

WetChemistry by Method SW9056

Batch ID: R443631

Sample ID: 7B-Brine (HS23071781-01)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Bromide)

Sample ID: 7B-Brine (HS23071781-01MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

Sample ID: 7B-Brine (HS23071781-01MSD)

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

WetChemistry by Method SM4500H+ B

Batch ID: R442987

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

WetChemistry by Method E376.1

Batch ID: R442970

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

WetChemistry by Method SM4500 S2-F

Batch ID: R442803

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 7B-Brine
Collection Date: 27-Jul-2023 10:45

ANALYTICAL REPORT
WorkOrder:HS23071781
Lab ID:HS23071781-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: FT
Benzene	**360**		**2.0**	**10**	**ug/L**	10	03-Aug-2023 13:14
Ethylbenzene	**5.9**		**0.30**	**1.0**	**ug/L**	1	02-Aug-2023 18:06
m,p-Xylene	**7.9**		**0.50**	**2.0**	**ug/L**	1	02-Aug-2023 18:06
o-Xylene	**7.9**		**0.30**	**1.0**	**ug/L**	1	02-Aug-2023 18:06
Toluene	**130**		**0.20**	**1.0**	**ug/L**	1	02-Aug-2023 18:06
Xylenes, Total	**16**		**0.30**	**1.0**	**ug/L**	1	02-Aug-2023 18:06
Surr: 1,2-Dichloroethane-d4	*117*			*70-126*	*%REC*	*1*	*02-Aug-2023 18:06*
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*10*	*03-Aug-2023 13:14*
Surr: 4-Bromofluorobenzene	*93.0*			*77-113*	*%REC*	*1*	*02-Aug-2023 18:06*
Surr: 4-Bromofluorobenzene	*90.2*			*77-113*	*%REC*	*10*	*03-Aug-2023 13:14*
Surr: Dibromofluoromethane	*105*			*77-123*	*%REC*	*1*	*02-Aug-2023 18:06*
Surr: Dibromofluoromethane	*94.8*			*77-123*	*%REC*	*10*	*03-Aug-2023 13:14*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*02-Aug-2023 18:06*
Surr: Toluene-d8	*113*			*82-127*	*%REC*	*10*	*03-Aug-2023 13:14*
MASSACHUSETTS VPH, FEB 2018, REV 2.1		**Method:MA VPH**					Analyst: PJM
Aliphatics >C6 - C8	**0.147**		**0.0100**	**0.0100**	**mg/L**	1	03-Aug-2023 17:43
Aliphatics >C8 - C10	U		0.0100	0.0100	mg/L	1	03-Aug-2023 17:43
Aromatics >C8 - C10	**0.0373**		**0.0100**	**0.0100**	**mg/L**	1	03-Aug-2023 17:43
Surr: 2,5-Dibromotoluene (Aliphatic)	*124*			*70-130*	*%REC*	*1*	*03-Aug-2023 17:43*
Surr: 2,5-Dibromotoluene (Aromatic)	*125*			*70-130*	*%REC*	*1*	*03-Aug-2023 17:43*
MASSACHUSETTS EPH R2.1, DEC 2019		**Method:MA EPH**			Prep:SW3510 / 07-Aug-2023		Analyst: SAM
Aliphatics >C10 - C12	U		0.00192	0.00192	mg/L	1	09-Aug-2023 14:34
Aliphatics >C12 - C16	**0.0288**		**0.00385**	**0.00385**	**mg/L**	1	09-Aug-2023 14:34
Aliphatics >C16 - C35	**0.774**		**0.0154**	**0.0154**	**mg/L**	1	09-Aug-2023 14:34
Aromatics >C10 - C12	**0.00293**		**0.00192**	**0.00192**	**mg/L**	1	09-Aug-2023 14:34
Aromatics >C12 - C16	**0.0109**		**0.00769**	**0.00769**	**mg/L**	1	09-Aug-2023 14:34
Aromatics >C16 - C21	**0.0281**		**0.00577**	**0.00577**	**mg/L**	1	09-Aug-2023 14:34
Aromatics >C21 - C35	**0.161**		**0.0173**	**0.0173**	**mg/L**	1	09-Aug-2023 14:34
Surr: 1-Chlorooctadecane	*77.1*			*40-140*	*%REC*	*1*	*09-Aug-2023 14:34*
Surr: 2-Bromonaphthalene	*87.6*			*40-140*	*%REC*	*1*	*09-Aug-2023 14:34*
Surr: 2-Fluorobiphenyl	*83.8*			*40-140*	*%REC*	*1*	*09-Aug-2023 14:34*
Surr: o-Terphenyl	*74.4*			*40-140*	*%REC*	*1*	*09-Aug-2023 14:34*

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

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
Sample ID: 7B-Brine
Collection Date: 27-Jul-2023 10:45

ANALYTICAL REPORT
WorkOrder:HS23071781
Lab ID:HS23071781-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 08-Aug-2023		Analyst: JHD
Arsenic	U		0.0400	0.200	mg/L	100	10-Aug-2023 12:27
Barium	U		0.190	0.400	mg/L	100	10-Aug-2023 12:27
Cadmium	U		0.0200	0.200	mg/L	100	10-Aug-2023 12:27
Calcium	**1,360**		**3.40**	**50.0**	**mg/L**	100	10-Aug-2023 12:27
Chromium	**0.114**	J	**0.0400**	**0.400**	**mg/L**	100	10-Aug-2023 12:27
Iron	**2.78**	J	**1.20**	**20.0**	**mg/L**	100	10-Aug-2023 12:27
Lead	U		0.0600	0.200	mg/L	100	10-Aug-2023 12:27
Magnesium	**9.30**	J	**1.00**	**20.0**	**mg/L**	100	10-Aug-2023 12:27
Manganese	**0.361**	J	**0.0700**	**0.500**	**mg/L**	100	10-Aug-2023 12:27
Nickel	**0.211**		**0.0600**	**0.200**	**mg/L**	100	10-Aug-2023 12:27
Potassium	**14.0**	J	**1.80**	**20.0**	**mg/L**	100	10-Aug-2023 12:27
Selenium	U		0.110	0.200	mg/L	100	10-Aug-2023 12:27
Silver	U		0.0200	0.200	mg/L	100	10-Aug-2023 12:27
Sodium	**91,900**		**14.0**	**200**	**mg/L**	1000	10-Aug-2023 16:55
Strontium	**10.7**		**0.0200**	**0.500**	**mg/L**	100	10-Aug-2023 12:27
Vanadium	U		0.0600	0.500	mg/L	100	10-Aug-2023 12:27
Zinc	**1.55**		**0.200**	**0.400**	**mg/L**	100	10-Aug-2023 12:27
MERCURY BY SW7470A		**Method:SW7470A**			Prep:SW7470A / 10-Aug-2023		Analyst: JC
Mercury	U		0.0000300	0.000200	mg/L	1	10-Aug-2023 17:21
HYDROGEN SULFIDE BY E376.1		**Method:E376.1**					Analyst: CD
Hydrogen Sulfide	U		0.500	1.00	mg/L	1	31-Jul-2023 13:33
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**					Analyst: DC
Total Dissolved Solids (Residue, Filterable)	**255,000**		**5.00**	**10.0**	**mg/L**	1	01-Aug-2023 16:57
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	**124**		**5.00**	**5.00**	**mg/L**	1	08-Aug-2023 17:41
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	08-Aug-2023 17:41
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: CD
Sulfide	U		1.70	2.00	mg/L	1	31-Jul-2023 16:00
PH BY SM4500H+ B-2011		**Method:SM4500H+ B**					Analyst: DW
pH	**6.75**	H	**0.100**	**0.100**	**pH Units**	1	02-Aug-2023 12:52
Temp Deg C @pH	**18.7**	H	**0**	**0**	**°C**	1	02-Aug-2023 12:52
ANIONS BY SW9056A		**Method:SW9056**					Analyst: TH
Bromide	U		15.0	50.0	mg/L	500	09-Aug-2023 17:51
Chloride	**179,000**		**1000**	**2500**	**mg/L**	5000	09-Aug-2023 18:09
Sulfate	**3,270**		**100**	**250**	**mg/L**	500	09-Aug-2023 17:51

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

Weight / Prep Log

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

Batch ID: 198642 **Start Date:** 07 Aug 2023 11:38 **End Date:** 07 Aug 2023 11:38
Method: MA EPH EXTRACTION-FRACTIONATION **Prep Code:** MA EPH_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071781-01	1	520 (mL)	2 (mL)	0.003846	1-liter amber glass, HCl to pH <2

Batch ID: 198707 **Start Date:** 08 Aug 2023 13:30 **End Date:** 08 Aug 2023 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071781-01		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 198826 **Start Date:** 10 Aug 2023 14:21 **End Date:** 10 Aug 2023 14:21
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071781-01		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 198642 (0)	**Test Name :** MASSACHUSETTS EPH R2.1, DEC 2019				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45		07 Aug 2023 11:38	09 Aug 2023 14:34	1
HS23071781-01	7B-Brine	27 Jul 2023 10:45		07 Aug 2023 11:38	09 Aug 2023 14:34	1
Batch ID: 198707 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45		08 Aug 2023 13:30	10 Aug 2023 16:55	1000
HS23071781-01	7B-Brine	27 Jul 2023 10:45		08 Aug 2023 13:30	10 Aug 2023 12:27	100
Batch ID: 198826 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45		10 Aug 2023 14:21	10 Aug 2023 17:21	1
Batch ID: R442803 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			31 Jul 2023 16:00	1
Batch ID: R442970 (0)	**Test Name :** HYDROGEN SULFIDE BY E376.1				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			31 Jul 2023 13:33	1
Batch ID: R442987 (0)	**Test Name :** PH BY SM4500H+ B-2011				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			02 Aug 2023 12:52	1
Batch ID: R443010 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			01 Aug 2023 16:57	1
Batch ID: R443043 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			02 Aug 2023 18:06	1
Batch ID: R443083 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			03 Aug 2023 13:14	10
Batch ID: R443183 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			03 Aug 2023 17:43	1
Batch ID: R443185 (0)	**Test Name :** MASSACHUSETTS VPH, FEB 2018, REV 2.1				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			03 Aug 2023 17:43	1
Batch ID: R443514 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			08 Aug 2023 17:41	1
Batch ID: R443631 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS23071781-01	7B-Brine	27 Jul 2023 10:45			09 Aug 2023 18:09	5000
HS23071781-01	7B-Brine	27 Jul 2023 10:45			09 Aug 2023 17:51	500

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198642 (0) **Instrument: FID23** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

MBLK Sample ID: **MBLK-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 11:13**
Client ID: Run ID: **FID23_443662** SeqNo: **7483378** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	U	0.00100								
Aliphatics >C12 - C16	U	0.00200								
Aliphatics >C16 - C35	U	0.00800								
Surr: 1-Chlorooctadecane	*0.02048*	*0*	*0.04*	*0*	*51.2*	*40 - 140*				

MBLK Sample ID: **MBLK-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 11:13**
Client ID: Run ID: **FID-22_443665** SeqNo: **7483428** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	U	0.00100								
Aromatics >C12 - C16	U	0.00400								
Aromatics >C16 - C21	U	0.00300								
Aromatics >C21 - C35	U	0.00900								
Surr: 2-Bromonaphthalene	*0.03566*	*0*	*0.04*	*0*	*89.1*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.0328*	*0*	*0.04*	*0*	*82.0*	*40 - 140*				
Surr: o-Terphenyl	*0.02126*	*0*	*0.04*	*0*	*53.2*	*40 - 140*				

LCS Sample ID: **LCS2-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 13:08**
Client ID: Run ID: **FID23_443662** SeqNo: **7483382** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03735	0.00100	0.05	0	74.7	40 - 140				
Aliphatics >C12 - C16	0.07709	0.00200	0.1	0	77.1	40 - 140				
Aliphatics >C16 - C35	0.3163	0.00800	0.4	0	79.1	40 - 140				
Surr: 1-Chlorooctadecane	*0.02399*	*0*	*0.04*	*0*	*60.0*	*40 - 140*				

LCS Sample ID: **LCS-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 11:41**
Client ID: Run ID: **FID23_443662** SeqNo: **7483379** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03751	0.00100	0.05	0	75.0	40 - 140				
Aliphatics >C12 - C16	0.07735	0.00200	0.1	0	77.4	40 - 140				
Aliphatics >C16 - C35	0.3179	0.00800	0.4	0	79.5	40 - 140				
Surr: 1-Chlorooctadecane	*0.02411*	*0*	*0.04*	*0*	*60.3*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198642 (0) **Instrument: FID23** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS1-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 12:39**
Client ID: Run ID: **FID23_443662** SeqNo: **7483381** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03737	0.00100	0.05	0	74.7	40 - 140				
Aliphatics >C12 - C16	0.07731	0.00200	0.1	0	77.3	40 - 140				
Aliphatics >C16 - C35	0.317	0.00800	0.4	0	79.2	40 - 140				
Surr: 1-Chlorooctadecane	*0.02403*	*0*	*0.04*	*0*	*60.1*	*40 - 140*				

LCS Sample ID: **LCS2-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 13:08**
Client ID: Run ID: **FID-22_443665** SeqNo: **7483432** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04665	0.00100	0.05	0	93.3	40 - 140				
Aromatics >C12 - C16	0.1707	0.00400	0.2	0	85.4	40 - 140				
Aromatics >C16 - C21	0.1315	0.00300	0.15	0	87.7	40 - 140				
Aromatics >C21 - C35	0.4521	0.00900	0.45	0	100	40 - 140				
Surr: 2-Bromonaphthalene	*0.03487*	*0*	*0.04*	*0*	*87.2*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03432*	*0*	*0.04*	*0*	*85.8*	*40 - 140*				
Surr: o-Terphenyl	*0.02561*	*0*	*0.04*	*0*	*64.0*	*40 - 140*				

LCS Sample ID: **LCS-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 11:41**
Client ID: Run ID: **FID-22_443665** SeqNo: **7483429** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04894	0.00100	0.05	0	97.9	40 - 140				
Aromatics >C12 - C16	0.1794	0.00400	0.2	0	89.7	40 - 140				
Aromatics >C16 - C21	0.1377	0.00300	0.15	0	91.8	40 - 140				
Aromatics >C21 - C35	0.4708	0.00900	0.45	0	105	40 - 140				
Surr: 2-Bromonaphthalene	*0.03659*	*0*	*0.04*	*0*	*91.5*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03596*	*0*	*0.04*	*0*	*89.9*	*40 - 140*				
Surr: o-Terphenyl	*0.02683*	*0*	*0.04*	*0*	*67.1*	*40 - 140*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198642 (0) **Instrument: FID23** **Method: MASSACHUSETTS EPH R2.1, DEC 2019**

LCS Sample ID: **LCS1-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 12:39**
Client ID: Run ID: **FID-22_443665** SeqNo: **7483431** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04819	0.00100	0.05	0	96.4	40 - 140				
Aromatics >C12 - C16	0.1774	0.00400	0.2	0	88.7	40 - 140				
Aromatics >C16 - C21	0.1378	0.00300	0.15	0	91.9	40 - 140				
Aromatics >C21 - C35	0.4735	0.00900	0.45	0	105	40 - 140				
Surr: 2-Bromonaphthalene	*0.03614*	*0*	*0.04*	*0*	*90.4*	*40 - 140*				
Surr: 2-Fluorobiphenyl	*0.03554*	*0*	*0.04*	*0*	*88.9*	*40 - 140*				
Surr: o-Terphenyl	*0.0267*	*0*	*0.04*	*0*	*66.7*	*40 - 140*				

LCSD Sample ID: **LCSD-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 12:10**
Client ID: Run ID: **FID23_443662** SeqNo: **7483380** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C10 - C12	0.03604	0.00100	0.05	0	72.1	40 - 140	0.03751	3.98	50	
Aliphatics >C12 - C16	0.07351	0.00200	0.1	0	73.5	40 - 140	0.07735	5.1	50	
Aliphatics >C16 - C35	0.312	0.00800	0.4	0	78.0	40 - 140	0.3179	1.85	50	
Surr: 1-Chlorooctadecane	*0.02263*	*0*	*0.04*	*0*	*56.6*	*40 - 140*	*0.02411*	*6.34*	*50*	

LCSD Sample ID: **LCSD-198642** Units: **mg/L** Analysis Date: **09-Aug-2023 12:10**
Client ID: Run ID: **FID-22_443665** SeqNo: **7483430** PrepDate: **07-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C10 - C12	0.04171	0.00100	0.05	0	83.4	40 - 140	0.04894	15.9	50	
Aromatics >C12 - C16	0.1529	0.00400	0.2	0	76.4	40 - 140	0.1794	16	50	
Aromatics >C16 - C21	0.119	0.00300	0.15	0	79.4	40 - 140	0.1377	14.5	50	
Aromatics >C21 - C35	0.4128	0.00900	0.45	0	91.7	40 - 140	0.4708	13.1	50	
Surr: 2-Bromonaphthalene	*0.03444*	*0*	*0.04*	*0*	*86.1*	*40 - 140*	*0.03659*	*6.05*	*50*	
Surr: 2-Fluorobiphenyl	*0.03475*	*0*	*0.04*	*0*	*86.9*	*40 - 140*	*0.03596*	*3.42*	*50*	
Surr: o-Terphenyl	*0.02324*	*0*	*0.04*	*0*	*58.1*	*40 - 140*	*0.02683*	*14.3*	*50*	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443183 (0) **Instrument: FID-14** **Method: MASSACHUSETTS VPH, FEB 2018, REV 2.1**

MBLK Sample ID: **MBLK-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 14:31**
Client ID: Run ID: **FID-14_443183** SeqNo: **7472059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	U	0.0100								
Aliphatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2383*	*0.0100*	*0.25*	*0*	*95.3*	*70 - 130*				

LCS Sample ID: **LCS-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 13:15**
Client ID: Run ID: **FID-14_443183** SeqNo: **7472057** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02197	0.0100	0.025	0	87.9	70 - 130				
Aliphatics >C8 - C10	0.02128	0.0100	0.025	0	85.1	70 - 130				
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2783*	*0.0100*	*0.25*	*0*	*111*	*70 - 130*				

LCSD Sample ID: **LCSD-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 13:53**
Client ID: Run ID: **FID-14_443183** SeqNo: **7472058** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics >C6 - C8	0.02324	0.0100	0.025	0	93.0	70 - 130	0.02197	5.62	25	
Aliphatics >C8 - C10	0.0222	0.0100	0.025	0	88.8	70 - 130	0.02128	4.27	25	
Surr: 2,5-Dibromotoluene (Aliphatic)	*0.2792*	*0.0100*	*0.25*	*0*	*112*	*70 - 130*	*0.2783*	*0.311*	*25*	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443185 (0) **Instrument:** FID-15 **Method:** MASSACHUSETTS VPH, FEB 2018, REV 2.1

MBLK Sample ID: **MBLK-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 14:31**
Client ID: Run ID: **FID-15_443185** SeqNo: **7472099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	U	0.0100								
Surr: 2,5-Dibromotoluene (Aromatic)	*0.264*	*0.0100*	*0.25*	*0*	*106*	*70 - 130*				

LCS Sample ID: **LCS-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 13:15**
Client ID: Run ID: **FID-15_443185** SeqNo: **7472097** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.09291	0.0100	0.1	0	92.9	70 - 130				
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2966*	*0.0100*	*0.25*	*0*	*119*	*70 - 130*				

LCSD Sample ID: **LCSD-230803** Units: **mg/L** Analysis Date: **03-Aug-2023 13:53**
Client ID: Run ID: **FID-15_443185** SeqNo: **7472098** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >C8 - C10	0.09911	0.0100	0.1	0	99.1	70 - 130	0.09291	6.46	25	
Surr: 2,5-Dibromotoluene (Aromatic)	*0.2975*	*0.0100*	*0.25*	*0*	*119*	*70 - 130*	*0.2966*	*0.306*	*25*	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-198707** Units: **mg/L** Analysis Date: **10-Aug-2023 12:42**
Client ID: Run ID: **ICPMS06_443666** SeqNo: **7483864** PrepDate: **08-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								
Barium	U	0.00400								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Iron	U	0.200								
Lead	U	0.00200								
Magnesium	U	0.200								
Manganese	U	0.00500								
Nickel	U	0.00200								
Potassium	0.02929	0.200								J
Selenium	U	0.00200								
Silver	U	0.00200								
Sodium	0.1339	0.200								J
Strontium	U	0.00500								
Vanadium	U	0.00500								
Zinc	U	0.00400								

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

LCS Sample ID: **LCS-198707** Units: **mg/L** Analysis Date: **09-Aug-2023 20:21**
Client ID: Run ID: **ICPMS06_443563** SeqNo: **7482098** PrepDate: **08-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04809	0.00200	0.05	0	96.2	80 - 120				
Barium	0.047	0.00400	0.05	0	94.0	80 - 120				
Cadmium	0.04836	0.00200	0.05	0	96.7	80 - 120				
Calcium	4.786	0.500	5	0	95.7	80 - 120				
Chromium	0.04703	0.00400	0.05	0	94.1	80 - 120				
Iron	4.671	0.200	5	0	93.4	80 - 120				
Lead	0.04606	0.00200	0.05	0	92.1	80 - 120				
Magnesium	4.885	0.200	5	0	97.7	80 - 120				
Manganese	0.04702	0.00500	0.05	0	94.0	80 - 120				
Nickel	0.04717	0.00200	0.05	0	94.3	80 - 120				
Potassium	4.784	0.200	5	0	95.7	80 - 120				
Selenium	0.04811	0.00200	0.05	0	96.2	80 - 120				
Silver	0.0459	0.00200	0.05	0	91.8	80 - 120				
Sodium	5.561	0.200	5	0	111	80 - 120				
Strontium	0.09463	0.00500	0.1	0	94.6	80 - 120				
Vanadium	0.04574	0.00500	0.05	0	91.5	80 - 120				
Zinc	0.05037	0.00400	0.05	0	101	80 - 120				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS23080258-06MS** Units: **mg/L** Analysis Date: **09-Aug-2023 20:27**
Client ID: Run ID: **ICPMS06_443563** SeqNo: **7482101** PrepDate: **08-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.3767	0.00200	0.05	0.3211	111	80 - 120				O
Barium	0.2076	0.00400	0.05	0.1617	92.0	80 - 120				
Cadmium	0.04862	0.00200	0.05	0.00003	97.2	80 - 120				
Calcium	69.22	0.500	5	62.89	127	80 - 120				SO
Chromium	0.0501	0.00400	0.05	0.000708	98.8	80 - 120				
Iron	5.248	0.200	5	0.3395	98.2	80 - 120				
Lead	0.04949	0.00200	0.05	0.001893	95.2	80 - 120				
Magnesium	18.9	0.200	5	13.94	99.2	80 - 120				
Manganese	0.337	0.00500	0.05	0.285	104	80 - 120				O
Nickel	0.05614	0.00200	0.05	0.008466	95.4	80 - 120				
Potassium	5.821	0.200	5	0.701	102	80 - 120				
Selenium	0.0491	0.00200	0.05	0.000107	98.0	80 - 120				
Silver	0.04584	0.00200	0.05	0.000033	91.6	80 - 120				
Sodium	528	0.200	5	524	80.9	80 - 120				EO
Strontium	0.3582	0.00500	0.1	0.2614	96.8	80 - 120				
Vanadium	0.05632	0.00500	0.05	0.005256	102	80 - 120				
Zinc	0.05267	0.00400	0.05	0.001732	102	80 - 120				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS23080258-06MSD** Units: **mg/L** Analysis Date: **09-Aug-2023 20:29**
Client ID: Run ID: **ICPMS06_443563** SeqNo: **7482102** PrepDate: **08-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.3707	0.00200	0.05	0.3211	99.2	80 - 120	0.3767	1.61	20	O
Barium	0.2125	0.00400	0.05	0.1617	102	80 - 120	0.2076	2.3	20	
Cadmium	0.04966	0.00200	0.05	0.00003	99.3	80 - 120	0.04862	2.12	20	
Calcium	68.41	0.500	5	62.89	110	80 - 120	69.22	1.19	20	O
Chromium	0.05016	0.00400	0.05	0.000708	98.9	80 - 120	0.0501	0.134	20	
Iron	5.216	0.200	5	0.3395	97.5	80 - 120	5.248	0.6	20	
Lead	0.04929	0.00200	0.05	0.001893	94.8	80 - 120	0.04949	0.399	20	
Magnesium	19.08	0.200	5	13.94	103	80 - 120	18.9	0.97	20	
Manganese	0.3387	0.00500	0.05	0.285	107	80 - 120	0.337	0.504	20	O
Nickel	0.05711	0.00200	0.05	0.008466	97.3	80 - 120	0.05614	1.7	20	
Potassium	5.831	0.200	5	0.701	103	80 - 120	5.821	0.162	20	
Selenium	0.0503	0.00200	0.05	0.000107	100	80 - 120	0.0491	2.41	20	
Silver	0.04626	0.00200	0.05	0.000033	92.5	80 - 120	0.04584	0.914	20	
Sodium	536	0.200	5	524	242	80 - 120	528	1.51	20	SEO
Strontium	0.3628	0.00500	0.1	0.2614	101	80 - 120	0.3582	1.27	20	
Vanadium	0.05623	0.00500	0.05	0.005256	102	80 - 120	0.05632	0.16	20	
Zinc	0.05251	0.00400	0.05	0.001732	102	80 - 120	0.05267	0.304	20	

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS23080258-06PDS** Units: **mg/L** Analysis Date: **09-Aug-2023 20:31**
Client ID: Run ID: **ICPMS06_443563** SeqNo: **7482103** PrepDate: **08-Aug-2023** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.4361	0.00200	0.1	0.3211	115	75 - 125				
Barium	0.2733	0.00400	0.1	0.1617	112	75 - 125				
Cadmium	0.1059	0.00200	0.1	0.00003	106	75 - 125				
Calcium	75.88	0.500	10	62.89	130	75 - 125				SO
Chromium	0.1051	0.00400	0.1	0.000708	104	75 - 125				
Iron	10.72	0.200	10	0.3395	104	75 - 125				
Lead	0.1055	0.00200	0.1	0.001893	104	75 - 125				
Magnesium	25.26	0.200	10	13.94	113	75 - 125				
Manganese	0.4048	0.00500	0.1	0.285	120	75 - 125				
Nickel	0.1108	0.00200	0.1	0.008466	102	75 - 125				
Potassium	11.6	0.200	10	0.701	109	75 - 125				
Selenium	0.105	0.00200	0.1	0.000107	105	75 - 125				
Silver	0.09943	0.00200	0.1	0.000033	99.4	75 - 125				
Vanadium	0.114	0.00500	0.1	0.005256	109	75 - 125				
Zinc	0.1232	0.00400	0.1	0.001732	121	75 - 125				

PDS Sample ID: **HS23080258-06PDS** Units: **mg/L** Analysis Date: **10-Aug-2023 12:37**
Client ID: Run ID: **ICPMS06_443666** SeqNo: **7483861** PrepDate: **08-Aug-2023** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	4.556	0.100	5	0.001506	91.1	75 - 125				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198707 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS23080258-06SD** Units: **mg/L** Analysis Date: **09-Aug-2023 20:25**
Client ID: Run ID: **ICPMS06_443563** SeqNo: **7482100** PrepDate: **08-Aug-2023** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.3196	0.0100					0.3211	0.478	10	
Barium	0.1585	0.0200					0.1617	1.97	10	
Cadmium	U	0.0100					0.00003	0	10	
Calcium	63.54	2.50					62.89	1.02	10	
Chromium	U	0.0200					0.000708	0	10	
Iron	0.3316	1.00					0.3395	0	10	J
Lead	U	0.0100					0.001893	0	10	
Magnesium	14.44	1.00					13.94	3.56	10	
Manganese	0.2855	0.0250					0.285	0.185	10	
Nickel	0.009227	0.0100					0.008466	0	10	J
Potassium	0.693	1.00					0.701	0	10	J
Selenium	U	0.0100					0.000107	0	10	
Silver	U	0.0100					0.000033	0	10	
Strontium	0.2602	0.0250					0.2614	0.458	10	
Vanadium	0.004107	0.0250					0.005256	0	10	J
Zinc	U	0.0200					0.001732	0	10	

SD Sample ID: **HS23080258-06SD** Units: **mg/L** Analysis Date: **10-Aug-2023 12:23**
Client ID: Run ID: **ICPMS06_443666** SeqNo: **7483854** PrepDate: **08-Aug-2023** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	526.2	50.0					534.1	1.47	10	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: 198826 (0) **Instrument: HG04** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-198826** Units: **mg/L** Analysis Date: **10-Aug-2023 17:16**
Client ID: Run ID: **HG04_443696** SeqNo: **7484307** PrepDate: **10-Aug-2023** DF: **1**

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

LCS Sample ID: **LCS-198826** Units: **mg/L** Analysis Date: **10-Aug-2023 17:17**
Client ID: Run ID: **HG04_443696** SeqNo: **7484308** PrepDate: **10-Aug-2023** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00459		0.000200	0.005	0	91.8	80 - 120				

MS Sample ID: **HS23071781-01MS** Units: **mg/L** Analysis Date: **10-Aug-2023 17:22**
Client ID: **7B-Brine** Run ID: **HG04_443696** SeqNo: **7484310** PrepDate: **10-Aug-2023** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000962		0.000200	0.005	-0.000012	19.5	75 - 125				S

MSD Sample ID: **HS23071781-01MSD** Units: **mg/L** Analysis Date: **10-Aug-2023 17:24**
Client ID: **7B-Brine** Run ID: **HG04_443696** SeqNo: **7484311** PrepDate: **10-Aug-2023** DF: **1**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00104		0.000200	0.005	-0.000012	21.0	75 - 125	0.000962	7.79	20	S

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443043 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-230802** Units: **ug/L** Analysis Date: **02-Aug-2023 10:20**
Client ID: Run ID: **VOA10_443043** SeqNo: **7468757** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
o-Xylene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 1,2-Dichloroethane-d4	*58.21*	*1.0*	*50*	*0*	*116*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*45.94*	*1.0*	*50*	*0*	*91.9*	*77 - 113*				
Surr: Dibromofluoromethane	*53.74*	*1.0*	*50*	*0*	*107*	*73 - 126*				
Surr: Toluene-d8	*51.52*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-230802** Units: **ug/L** Analysis Date: **02-Aug-2023 09:38**
Client ID: Run ID: **VOA10_443043** SeqNo: **7468756** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	17.71	1.0	20	0	88.5	77 - 117				
m,p-Xylene	36.39	2.0	40	0	91.0	77 - 122				
o-Xylene	16.94	1.0	20	0	84.7	75 - 119				
Toluene	18.78	1.0	20	0	93.9	77 - 118				
Xylenes, Total	53.33	3.0	60	0	88.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*59.15*	*1.0*	*50*	*0*	*118*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*77 - 113*				
Surr: Dibromofluoromethane	*54.75*	*1.0*	*50*	*0*	*109*	*73 - 126*				
Surr: Toluene-d8	*53.09*	*1.0*	*50*	*0*	*106*	*81 - 120*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443043 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS23071906-01MS** Units: **ug/L** Analysis Date: **02-Aug-2023 11:23**
Client ID: Run ID: **VOA10_443043** SeqNo: **7468759** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	353.6	20	400	0	88.4	70 - 124				
m,p-Xylene	707.3	40	800	0	88.4	70 - 130				
o-Xylene	336.1	20	400	0	84.0	70 - 124				
Toluene	387.2	20	400	0	96.8	70 - 123				
Xylenes, Total	1043	60	1200	0	87.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*1147*	*20*	*1000*	*0*	*115*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*939.9*	*20*	*1000*	*0*	*94.0*	*77 - 113*				
Surr: Dibromofluoromethane	*1067*	*20*	*1000*	*0*	*107*	*77 - 123*				
Surr: Toluene-d8	*1028*	*20*	*1000*	*0*	*103*	*82 - 127*				

MSD Sample ID: **HS23071906-01MSD** Units: **ug/L** Analysis Date: **02-Aug-2023 11:44**
Client ID: Run ID: **VOA10_443043** SeqNo: **7468760** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	360.5	20	400	0	90.1	70 - 124	353.6	1.96	20	
m,p-Xylene	728.3	40	800	0	91.0	70 - 130	707.3	2.93	20	
o-Xylene	345.3	20	400	0	86.3	70 - 124	336.1	2.69	20	
Toluene	378.2	20	400	0	94.5	70 - 123	387.2	2.36	20	
Xylenes, Total	1074	60	1200	0	89.5	70 - 130	1043	2.85	20	
Surr: 1,2-Dichloroethane-d4	*1180*	*20*	*1000*	*0*	*118*	*70 - 126*	*1147*	*2.85*	*20*	
Surr: 4-Bromofluorobenzene	*937.5*	*20*	*1000*	*0*	*93.8*	*77 - 113*	*939.9*	*0.25*	*20*	
Surr: Dibromofluoromethane	*1062*	*20*	*1000*	*0*	*106*	*77 - 123*	*1067*	*0.528*	*20*	
Surr: Toluene-d8	*1055*	*20*	*1000*	*0*	*106*	*82 - 127*	*1028*	*2.57*	*20*	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443083 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-230803** Units: **ug/L** Analysis Date: **03-Aug-2023 10:45**
Client ID: Run ID: **VOA10_443083** SeqNo: **7469628** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Surr: 1,2-Dichloroethane-d4	*52.91*	*1.0*	*50*	*0*	*106*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*45.48*	*1.0*	*50*	*0*	*91.0*	*77 - 113*				
Surr: Dibromofluoromethane	*48.94*	*1.0*	*50*	*0*	*97.9*	*73 - 126*				
Surr: Toluene-d8	*54.57*	*1.0*	*50*	*0*	*109*	*81 - 120*				

LCS Sample ID: **VLCSW-230803** Units: **ug/L** Analysis Date: **03-Aug-2023 10:03**
Client ID: Run ID: **VOA10_443083** SeqNo: **7469627** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.73	1.0	20	0	98.6	74 - 120				
Surr: 1,2-Dichloroethane-d4	*50.2*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*44.78*	*1.0*	*50*	*0*	*89.6*	*77 - 113*				
Surr: Dibromofluoromethane	*45.91*	*1.0*	*50*	*0*	*91.8*	*73 - 126*				
Surr: Toluene-d8	*55.29*	*1.0*	*50*	*0*	*111*	*81 - 120*				

MS Sample ID: **HS23080127-06MS** Units: **ug/L** Analysis Date: **03-Aug-2023 11:27**
Client ID: Run ID: **VOA10_443083** SeqNo: **7469630** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	685.9	1.0	20	683.1	13.8	70 - 127				SEO
Surr: 1,2-Dichloroethane-d4	*51.12*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.75*	*1.0*	*50*	*0*	*105*	*77 - 113*				
Surr: Dibromofluoromethane	*44.98*	*1.0*	*50*	*0*	*90.0*	*77 - 123*				
Surr: Toluene-d8	*52.32*	*1.0*	*50*	*0*	*105*	*82 - 127*				

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443083 (0) **Instrument: VOA10** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS23080127-06MSD** Units: **ug/L** Analysis Date: **03-Aug-2023 11:48**
Client ID: Run ID: **VOA10_443083** SeqNo: **7469631** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	684.4	1.0	20	683.1	6.11	70 - 127	685.9	0.226	20	SEO
Surr: 1,2-Dichloroethane-d4	*51.17*	*1.0*	*50*	*0*	*102*	*70 - 126*	*51.12*	*0.104*	*20*	
Surr: 4-Bromofluorobenzene	*51.67*	*1.0*	*50*	*0*	*103*	*77 - 113*	*52.75*	*2.07*	*20*	
Surr: Dibromofluoromethane	*44.48*	*1.0*	*50*	*0*	*89.0*	*77 - 123*	*44.98*	*1.11*	*20*	
Surr: Toluene-d8	*52.55*	*1.0*	*50*	*0*	*105*	*82 - 127*	*52.32*	*0.436*	*20*	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R442803 (0) **Instrument: WetChem_HS** **Method: SULFIDE BY SM4500 S2-F-2011**

MBLK Sample ID: **MBLK-R442803** Units: **mg/L** Analysis Date: **31-Jul-2023 16:00**
Client ID: Run ID: **WetChem_HS_442803** SeqNo: **7462397** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	2.00								

LCS Sample ID: **LCS-R442803** Units: **mg/L** Analysis Date: **31-Jul-2023 16:00**
Client ID: Run ID: **WetChem_HS_442803** SeqNo: **7462396** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.12	2.00	25	0	88.5	85 - 115				

LCSD Sample ID: **LCSD-R442803** Units: **mg/L** Analysis Date: **31-Jul-2023 16:00**
Client ID: Run ID: **WetChem_HS_442803** SeqNo: **7462395** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.32	2.00	25	0	89.3	85 - 115	22.12	0.9	20	

MS Sample ID: **HS23071781-01MS** Units: **mg/L** Analysis Date: **31-Jul-2023 16:00**
Client ID: **7B-Brine** Run ID: **WetChem_HS_442803** SeqNo: **7462398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.12	2.00	25	-1.88	96.0	80 - 120				

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R442970 (0) **Instrument: WetChem_HS** **Method: HYDROGEN SULFIDE BY E376.1**

MBLK Sample ID: **MBLK-R442970** Units: **mg/L** Analysis Date: **31-Jul-2023 13:33**
Client ID: Run ID: **WetChem_HS_442970** SeqNo: **7466689** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	U	1.00								

LCS Sample ID: **LCS-R442970** Units: **mg/L** Analysis Date: **31-Jul-2023 13:33**
Client ID: Run ID: **WetChem_HS_442970** SeqNo: **7466688** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.5	1.00	25	0	94.0	80 - 120				

LCSD Sample ID: **LCSD-R442970** Units: **mg/L** Analysis Date: **31-Jul-2023 13:33**
Client ID: Run ID: **WetChem_HS_442970** SeqNo: **7466687** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Hydrogen Sulfide	23.72	1.00	25	0	94.9	80 - 120	23.5	0.9	20	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R442987 (0) **Instrument: Skalar 03** **Method: PH BY SM4500H+ B-2011**

DUP Sample ID: **HS23071607-01DUP** Units: **pH Units** Analysis Date: **02-Aug-2023 12:32**
Client ID: Run ID: **Skalar 03_442987** SeqNo: **7467056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.47	0.100					7.44	0.402	10	
Temp Deg C @pH	18.5	0					18.5	0	10	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443010 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WMBLK-08012023** Units: **mg/L** Analysis Date: **01-Aug-2023 16:57**
Client ID: Run ID: **Balance1_443010** SeqNo: **7467631** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-08012023** Units: **mg/L** Analysis Date: **01-Aug-2023 16:57**
Client ID: Run ID: **Balance1_443010** SeqNo: **7467630** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1106	10.0	1000	0	111	85 - 115				

DUP Sample ID: **HS23071935-06DUP** Units: **mg/L** Analysis Date: **01-Aug-2023 16:57**
Client ID: Run ID: **Balance1_443010** SeqNo: **7467625** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1364	10.0					1372	0.585	20	

DUP Sample ID: **HS23071809-23DUP** Units: **mg/L** Analysis Date: **01-Aug-2023 16:57**
Client ID: Run ID: **Balance1_443010** SeqNo: **7467614** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	860	10.0					858	0.233	20	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443514 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **WBLKW1-080823** Units: **mg/L** Analysis Date: **08-Aug-2023 16:56**
Client ID: Run ID: **ManTech01_443514** SeqNo: **7480150** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								

LCS Sample ID: **LCS1-080823** Units: **mg/L** Analysis Date: **08-Aug-2023 17:05**
Client ID: Run ID: **ManTech01_443514** SeqNo: **7480151** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	987.7	5.00	1000	0	98.8	85 - 115				

LCSD Sample ID: **LCSD1-080823** Units: **mg/L** Analysis Date: **08-Aug-2023 17:14**
Client ID: Run ID: **ManTech01_443514** SeqNo: **7480152** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	995.8	5.00	1000	0	99.6	85 - 115	987.7	0.82	20	

DUP Sample ID: **HS23080018-03DUP** Units: **mg/L** Analysis Date: **08-Aug-2023 17:30**
Client ID: Run ID: **ManTech01_443514** SeqNo: **7480154** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	832.8	5.00					830.4	0.281	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: HS23071781

QC BATCH REPORT

Batch ID: R443631 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **09-Aug-2023 16:19**
Client ID: Run ID: **ICS-Integrion_443631** SeqNo: **7482872** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.100								
Chloride	U	0.500								
Sulfate	U	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **09-Aug-2023 16:24**
Client ID: Run ID: **ICS-Integrion_443631** SeqNo: **7482873** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.216	0.100	4	0	105	80 - 120				
Chloride	20.33	0.500	20	0	102	80 - 120				
Sulfate	21.38	0.500	20	0	107	80 - 120				

MS Sample ID: **HS23071781-01MS** Units: **mg/L** Analysis Date: **09-Aug-2023 17:57**
Client ID: **7B-Brine** Run ID: **ICS-Integrion_443631** SeqNo: **7482885** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1139	50.0	1000	0	114	80 - 120				
Chloride	179500	250	5000	180100	-12.3	80 - 120				SEO
Sulfate	8029	250	5000	3268	95.2	80 - 120				

MSD Sample ID: **HS23071781-01MSD** Units: **mg/L** Analysis Date: **09-Aug-2023 18:03**
Client ID: **7B-Brine** Run ID: **ICS-Integrion_443631** SeqNo: **7482886** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1234	50.0	1000	0	123	80 - 120	1139	7.96	20	S
Chloride	179600	250	5000	180100	-10.6	80 - 120	179500	0.0476	20	SEO
Sulfate	8203	250	5000	3268	98.7	80 - 120	8029	2.14	20	

The following samples were analyzed in this batch: HS23071781-01

Client: Environmental Resources Mgmt.
Project: Sulphur Dome
WorkOrder: **HS23071781**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L23-358	31-May-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Louisiana	03087-2023	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2023-2024	30-Apr-2024
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-23-31	30-Apr-2024
Utah	TX026932023-14	31-Jul-2024

Sample Receipt Checklist

Work Order ID: HS23071781 **Date/Time Received:** **27-Jul-2023 18:40**

Client Name: ERMSW-HOU **Received by:** **Corey Grandits**

Completed By: */S/ Corey Grandits* 27-Jul-2023 19:45 **Reviewed by:** */S/ Bernadette A. Fini* 28-Jul-2023 10:19

eSignature Date/Time eSignature Date/Time

Matrices: **W** Carrier name: **Client**

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

Temperature(s)/Thermometer(s):	3.0uc/2.9c	IR31
Cooler(s)/Kit(s):	Red	
Date/Time sample(s) sent to storage:	7/27/23	

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

Login Notes: EPH container only received 200ml & container missing label

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS Environmental

Laboratory location: Houston

Chain of Custody Form

Page 1 of 1

HS23071781

Environmental Resources Mgmt.
Sulphur Dome

ALS Project Manager:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	0688077	Project Name	Sulphur Dome	A	8260_LL_W (Low Level VOC (8260) BTEX)
Work Order		Project Number	0688077	B	MA_EPH_W_La (MA EPH)
Company Name	Environmental Resources Mgmt.	Bill To Company	Environmental Resources Mgmt.	C	MA_VPH_LA_W (MA VPH)
Send Report To	Scott Himes	Invoice Attn.	Accounts Payable	D	9056_anions_W_ (Cl, SO4, Br)
Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	Address	CityCentre Four 840 W. Sam Houston Pkwy., Suite 6	E	ALK_W_ 2320B (carb, bicarb, pH)
				F	H2S_W (H2S)
City/State/Zip	Houston, TX 77024	City/State/Zip	Houston, TX 77024	G	HG_W (mercury)
Phone	281 - 600 - 1000	Phone	281 - 600 - 1000	H	ICP_TW (As, Ba, Cd, Ca, Cr, Fe, Pb, Mg, Mn, K, Se, Ag, Na, Sr, Zn)
Fax	281 - 600 - 1001	Fax	281 - 600 - 1001	I	SULFD_4500S F (Sulfide)
e-Mail Address	scott.himes@erm.com	e-Mail Address	ERMNAAccountsPayable@erm.com	J	TDS_W 2540C (TDS)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	FB - Brine	7/27/23	10:45	W	1,2,8	11	X	X	X	X	X	X	X	X	X	X	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Taylar Brown TA/MBrown

Shipment Method:

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: TA/MBrown	**Date:** 7/27/23	**Time:** 6:40pm	**Received by:**	**Notes:** RED 10231
Relinquished by:	**Date:**	**Time:**	**Received by (Laboratory):** CA 7-27-23 1840	**Cooler Temp.** VLC
Logged by (Laboratory):	**Date:**	**Time:**	**Checked by (Laboratory):**	3.0

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ TRRP-Checklist
- ☐ TRRP Level IV
- ☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group. CLF-0-1

Isotech Laboratory Reports

ISOTECH
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Lab #:	872033	Job #:	54683	IS-102884	Co. Job#:
Sample Name:	Brine Well 7A				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoBag				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation:					
Sampling Point:					
Date Sampled:	5/17/2023 14:25	Date Received:	5/22/2023	Date Reported:	7/17/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	nd			
Argon	0.823			
Oxygen	18.25			
Nitrogen	66.37			
Carbon Dioxide	0.070			
Methane	14.30	-34.94	-144.2	
Ethane	0.132			
Ethylene	0.0001			
Propane	0.0372			
Propylene	nd			
Iso-butane	0.0130			
N-butane	0.0050			
Iso-pentane	0.0011			
N-pentane	0.0003			
Hexanes +	0.0022			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 149

Specific gravity, calculated: 0.938

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872057	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-17				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023 10:45	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.17					
Helium	na					
Hydrogen	nd					
Argon	1.57					
Oxygen	17.08					
Nitrogen	66.25					
Carbon Dioxide	7.42					
Methane	7.42	-39.07	-179		1.5	1.0
Ethane	0.0714				0.016	0.020
Ethylene	nd					
Propane	0.0090				0.0019	0.0035
Propylene	nd					
Iso-butane	0.0025					
N-butane	0.0016					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0025					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.88
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
dD of methane data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872058	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-5				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023	11:45	Date Received:	5/22/2023	Date Reported: 8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.099					
Helium	na					
Hydrogen	nd					
Argon	1.12					
Oxygen	15.89					
Nitrogen	73.83					
Carbon Dioxide	2.79					
Methane	6.20	-39.21	-159.8		3.8	2.5
Ethane	0.0488				0.032	0.040
Ethylene	0.0042					
Propane	0.0120				0.0075	0.014
Propylene	nd					
Iso-butane	0.0030					
N-butane	0.0021					
Iso-pentane	0.0006					
N-pentane	nd					
Hexanes +	0.0009					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.67
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872059	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-18				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023 12:15	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.066					
Helium	na					
Hydrogen	nd					
Argon	1.09					
Oxygen	16.45					
Nitrogen	79.94					
Carbon Dioxide	1.67					
Methane	0.784	-46.8	-200		0.61	0.41
Ethane	0.0028				0.0023	0.0029
Ethylene	nd					
Propane	0.0007				0.00059	0.0011
Propylene	nd					
Iso-butane	0.0002					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0006					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.46
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872060	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-21				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023 14:15	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.25					
Helium	na					
Hydrogen	nd					
Argon	1.61					
Oxygen	18.44					
Nitrogen	73.33					
Carbon Dioxide	5.64					
Methane	0.721	-48.0			0.15	0.10
Ethane	0.0015				0.00035	0.00044
Ethylene	nd					
Propane	0.0008				0.0002	0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0031					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.87
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872061	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-22				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023 14:35	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.11					
Helium	na					
Hydrogen	nd					
Argon	1.25					
Oxygen	16.79					
Nitrogen	79.02					
Carbon Dioxide	2.54					
Methane	0.288	-44.4			0.12	0.081
Ethane	0.0010				0.00047	0.00058
Ethylene	nd					
Propane	0.0003				0.0001	0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0010					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.71
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872062	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-7				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/17/2023 15:00	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.31					
Helium	na					
Hydrogen	nd					
Argon	1.64					
Oxygen	17.64					
Nitrogen	73.45					
Carbon Dioxide	6.46					
Methane	0.493	-48.9			0.095	0.063
Ethane	0.0057				0.0012	0.0015
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0041					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.88
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872063	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-23				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023	8:15	Date Received:	5/22/2023	Date Reported: 8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.25					
Helium	na					
Hydrogen	nd					
Argon	1.68					
Oxygen	14.37					
Nitrogen	74.50					
Carbon Dioxide	6.71					
Methane	2.47	-33.0	-99		0.46	0.31
Ethane	0.0124				0.0025	0.0032
Ethylene	nd					
Propane	0.0044				0.00085	0.0016
Propylene	nd					
Iso-butane	0.0015					
N-butane	0.0007					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0037					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.86
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872064	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-6				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 8:40	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.22					
Helium	na					
Hydrogen	nd					
Argon	1.63					
Oxygen	21.22					
Nitrogen	72.30					
Carbon Dioxide	4.39					
Methane	0.234				0.045	0.030
Ethane	0.0014				0.00029	0.00037
Ethylene	nd					
Propane	0.0014				0.00028	0.00051
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0028					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.86
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872065	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-12				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023	9:00	Date Received:	5/22/2023	Date Reported: 8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.23					
Helium	na					
Hydrogen	nd					
Argon	1.68					
Oxygen	20.99					
Nitrogen	72.41					
Carbon Dioxide	4.56					
Methane	0.122				0.024	0.016
Ethane	0.0014				0.00031	0.00039
Ethylene	nd					
Propane	0.0007				0.0001	0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0058					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.86
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872066	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-8				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023	9:30	Date Received:	5/22/2023	Date Reported: 8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.33					
Helium	na					
Hydrogen	nd					
Argon	1.71					
Oxygen	12.99					
Nitrogen	75.89					
Carbon Dioxide	7.63					
Methane	1.44	-60.3			0.29	0.19
Ethane	0.0040				0.00086	0.0011
Ethylene	nd					
Propane	0.0008				0.0002	0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0040					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.87
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872067	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-9				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 10:20	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.26					
Helium	na					
Hydrogen	nd					
Argon	1.50					
Oxygen	30.16					
Nitrogen	63.88					
Carbon Dioxide	2.70					
Methane	1.49	-38.9			0.32	0.22
Ethane	0.0032				0.00075	0.00094
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0040					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.88
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872068	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-19				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 11:00	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.26					
Helium	na					
Hydrogen	nd					
Argon	1.50					
Oxygen	28.03					
Nitrogen	63.87					
Carbon Dioxide	2.92					
Methane	3.40	-36.1	-139		0.75	0.50
Ethane	0.0130				0.0031	0.0039
Ethylene	nd					
Propane	0.0007				0.0002	0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0036					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.86
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872069	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS-1				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 13:30	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	0.18					
Helium	na					
Hydrogen	nd					
Argon	1.31					
Oxygen	17.47					
Nitrogen	64.50					
Carbon Dioxide	6.37					
Methane	10.00	-24.86	-81.1		2.7	1.8
Ethane	0.110				0.032	0.041
Ethylene	nd					
Propane	0.0412				0.011	0.021
Propylene	nd					
Iso-butane	0.0070					
N-butane	0.0070					
Iso-pentane	0.0017					
N-pentane	0.0012					
Hexanes +	0.0064					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.83
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872070	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	MW019-1603				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 13:00	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.57					
Oxygen	10.06					
Nitrogen	73.32					
Carbon Dioxide	4.67					
Methane	10.37	-57.53	-110.9		2.7	1.8
Ethane	0.0075				0.0021	0.0026
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0035					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.83
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872071	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	BS 7B Brine				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 14:45	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.58					
Oxygen	25.16					
Nitrogen	68.50					
Carbon Dioxide	1.69					
Methane	3.00	-38.2	-117		0.62	0.41
Ethane	0.0427				0.0096	0.012
Ethylene	nd					
Propane	0.0192				0.0041	0.0075
Propylene	nd					
Iso-butane	0.0043					
N-butane	0.0043					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0028					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.86
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872072	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	Cottages				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 15:50	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.58					
Oxygen	17.31					
Nitrogen	70.87					
Carbon Dioxide	7.44					
Methane	2.80	-94.4	-278		0.95	0.63
Ethane	nd				< 0.0002	< 0.0002
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0014					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.79
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872073	Job #:	54685	IS-102884	Co. Job#:
Sample Name:	MW019-1055				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	0688077				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/18/2023 16:30	Date Received:	5/22/2023	Date Reported:	8/14/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.64					
Oxygen	11.70					
Nitrogen	76.17					
Carbon Dioxide	10.09					
Methane	0.396	-51.3			0.096	0.064
Ethane	0.0021				0.00057	0.00071
Ethylene	nd					
Propane	nd				< 0.0001	< 0.0002
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0021					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.81
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
d13C methane isotope data obtained online via GC-IRMS.
Insufficient methane concentration for dD analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872437	Job #:	54723	IS-102884	Co. Job#:
Sample Name:	019-580				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, Louisiana				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/22/2023 13:40	Date Received:	5/24/2023	Date Reported:	6/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.76					
Oxygen	11.60					
Nitrogen	72.37					
Carbon Dioxide	14.23					
Methane	0.0348				0.0069	0.0046
Ethane	nd				< 0.0002	< 0.0002
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0030					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.87
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane concentration insufficient for isotope analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872438	Job #:	54723	IS-102884	Co. Job#:
Sample Name:	019-582				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, Louisiana				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/22/2023 14:00	Date Received:	5/24/2023	Date Reported:	6/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.27					
Oxygen	4.94					
Nitrogen	88.21					
Carbon Dioxide	5.26					
Methane	0.313	-57.6			0.17	0.11
Ethane	0.0012				0.00069	0.00087
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0012					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.66
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane carbon isotope data obtained online via GC-C-IRMS. Methane concentration insufficient for d2H isotope analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872439	Job #:	54723	IS-102884	Co. Job#:
Sample Name:	019-995				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, Louisiana				
Formation/Depth:					
Sampling Point:					
Date Sampled:	5/22/2023 14:20	Date Received:	5/24/2023	Date Reported:	6/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.77					
Oxygen	10.41					
Nitrogen	76.58					
Carbon Dioxide	10.71					
Methane	0.532	-78.7			0.12	0.083
Ethane	nd				< 0.0002	< 0.0002
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0020					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.85
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane carbon isotope data obtained online via GC-C-IRMS. Methane concentration insufficient for d2H isotope analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872960	Job #:	54770	IS-102884	Co. Job#:
Sample Name:	189416				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoBag				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, Louisiana				
Formation:					
Sampling Point:					
Date Sampled:	5/25/2023 12:00	Date Received:	5/30/2023	Date Reported:	8/15/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	0.0089			
Hydrogen	0.0169			
Argon	0.0630			
Oxygen	0.13			
Nitrogen	9.27			
Carbon Dioxide	nd			
Methane	89.63	-53.33	-174.4	
Ethane	0.592			
Ethylene	0.0001			
Propane	0.202			
Propylene	nd			
Iso-butane	0.0326			
N-butane	0.0381			
Iso-pentane	0.0072			
N-pentane	0.0053			
Hexanes +	0.0069			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 927

Specific gravity, calculated: 0.600

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	872961	Job #:	54770	IS-102884	Co. Job#:
Sample Name:	246792				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoBag				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, Louisiana				
Formation:					
Sampling Point:					
Date Sampled:	5/25/2023 12:30	Date Received:	5/30/2023	Date Reported:	8/15/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{15}N$ ‰
Carbon Monoxide	nd			
Helium	nd			
Hydrogen	3.37			
Argon	0.0125			
Oxygen	0.24			
Nitrogen	0.83			
Carbon Dioxide	nd			
Methane	89.59	-47.78	-179.8	
Ethane	4.39			
Ethylene	0.0002			
Propane	1.17			
Propylene	nd			
Iso-butane	0.117			
N-butane	0.135			
Iso-pentane	0.0273			
N-pentane	0.0189			
Hexanes +	0.0948			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1042

Specific gravity, calculated: 0.582

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875875	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	019-995				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023 8:45	Date Received:	6/20/2023	Date Reported:	7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.60					
Oxygen	14.54					
Nitrogen	75.78					
Carbon Dioxide	8.00					
Methane	0.0701				0.017	0.011
Ethane	0.0016				0.00043	0.00054
Ethylene	nd					
Propane	0.0005				0.0001	0.0002
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0032					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.81
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875876	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	019-1055				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023 9:00	Date Received:	6/20/2023	Date Reported:	7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.55					
Oxygen	15.55					
Nitrogen	75.03					
Carbon Dioxide	7.82					
Methane	0.0493				0.012	0.0081
Ethane	0.0005				0.0001	0.0002
Ethylene	nd					
Propane	nd				< 0.0001	< 0.0002
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0021					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.81
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875877	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	019-580				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023 7:45	Date Received:	6/20/2023	Date Reported:	7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.48					
Oxygen	17.51					
Nitrogen	73.84					
Carbon Dioxide	7.13					
Methane	0.0321				0.0088	0.0059
Ethane	0.0005				0.0002	0.0002
Ethylene	nd					
Propane	nd				< 0.0001	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0041					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.80
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875878	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	019-582				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023 8:15	Date Received:	6/20/2023	Date Reported:	7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.56					
Oxygen	16.60					
Nitrogen	73.36					
Carbon Dioxide	8.46					
Methane	0.0154				0.0036	0.0024
Ethane	nd				< 0.0001	< 0.0002
Ethylene	nd					
Propane	nd				< 0.0001	< 0.0002
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0023					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.83
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875879	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	019-1603				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023	9:15	Date Received:	6/20/2023	Date Reported: 7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.56					
Oxygen	13.05					
Nitrogen	82.13					
Carbon Dioxide	3.25					
Methane	0.0095				0.0071	0.0047
Ethane	nd				< 0.0002	< 0.0002
Ethylene	nd					
Propane	nd				< 0.0002	< 0.0003
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0010					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.59
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Insufficient methane concentration for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

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Lab #:	875880	Job #:	55025	IS-102884	Co. Job#:
Sample Name:	Cottages				Co. Lab#:
Company:	Environmental Resources Management (ERM)				
API/Well:					
Container:	IsoFlask				
Field/Site Name:	Sulphur Dome				
Location:	Sulphur, LA				
Formation/Depth:					
Sampling Point:					
Date Sampled:	6/16/2023	9:50	Date Received:	6/20/2023	Date Reported: 7/27/2023

Component	Chemical mol. %	$\delta^{13}C$ ‰	δD ‰	$\delta^{18}O$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide	nd					
Helium	na					
Hydrogen	nd					
Argon	1.33					
Oxygen	18.77					
Nitrogen	68.11					
Carbon Dioxide	9.81					
Methane	1.98	-93.2	-265		0.66	0.44
Ethane	nd				< 0.0003	< 0.0003
Ethylene	nd					
Propane	nd				< 0.0003	< 0.0005
Propylene	nd					
Iso-butane	nd					
N-butane	nd					
Iso-pentane	nd					
N-pentane	nd					
Hexanes +	0.0030					

Remarks:
Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.87
*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.
Methane isotope data obtained online via GC-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.