TIMBERWOLF ENVIRONMENTAL

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April 25, 2022

Mr. Nelson Velez
Environmental Specialist
NMOCD District 3
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: C-141 Remediation Plan and Supplemental Investigation and Work Plan
San Juan 27-5 No. 69
NMOCD Incident No. NVF1703333740
Hilcorp Energy Company
Rio Arriba County, NM

Dear Mr. Velez,

On behalf of Hilcorp Energy Company, Timberwolf Environmental, LLC (Timberwolf) submits the attached C-141 Remediation Plan, OCD Conditions of Approval, and Supplemental Investigation and Work Plan for the San Juan 27-5 No. 69 (NVF1703333740). This work plan has been approved by the Bureau of Land Management Sundry ID: 2658307.

If you have any questions regarding this report or need further assistance, please do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC

Jim Foster
President

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	NVF1703333740
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- [ ] Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- [ ] Extents of contamination must be fully delineated.
- [ ] Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Jim Foste Title: Consultant for Hilcorp Energy

Signature: Date: 4/25/22

email: jim@teamtimberwolf.com Telephone: 979-324-2139

OCD Only

Received by: Date:

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: Nelson Velez Date: 04/28/2022

From: Lindsay Dumas <ldumas@hilcorp.com>
Sent: Monday, September 17, 2018 10:35 AM
To: Jim Foster <jim@teamtimberwolf.com>
Subject: FW: [EXTERNAL EMAIL]San Juan 27-5 #69 (30-039-07139) Incident#nvf170333370

---------- Forwarded message ----------
From: "**Smith, Cory, EMNRD**" <Cory.Smith@state.nm.us>
Date: Thu, Jun 21, 2018 at 10:09 AM -0700
Subject: [EXTERNAL EMAIL]San Juan 27-5 #69 (30-039-07139) Incident#nvf170333370
To: "Clara Cardoza" <ccardoza@hilcorp.com>
Cc: "Fields, Vanessa, EMNRD" <Vanessa.Fields@state.nm.us>

Clara,

OCD has received a ConocoPhillips now HilCorp C-141 "Initial" on 3/10/2017 for the San Juan 27-5 #69. After Review the OCD has approved the Initial C-141 "Assessment report" with the following conditions of approval.

- OCD has denied HEC request for risk base closure.
- OCD agrees with HEC site assessment the site ranking is a 10 due to distance from significant water course. The Closure standards will be 1,000 mg/kg TPH, 50 mg/kg BTEX and 10 mg/kg Benzene.
- HEC must return to the site and initiate remediation no later than September 21, 2018 this time frame includes submittal of a work plan and associated approval if needed.
- HEC will schedule with OCD District III to witness any final soil confirmation sampling.

If you have any questions please give me a call.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
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TIMBERWOLF ENVIRONMENTAL

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February 21, 2022

Mr. Billy Ginn
Environmental Specialist
Hilcorp Energy Company
1111 Travis Street
Houston, Texas 77002

Re: Supplemental Investigation and Work Plan
San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Dear Mr. Ginn:

At the request of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this supplemental investigation report to document assessment activities at the San Juan 27-5 No. 69 (Site). In addition, this report provides a work plan to achieve regulatory compliance for impacted soil at the Site. The Site is located approximately 38.8 miles east-southeast of Bloomfield, in Rio Arriba County, New Mexico (Figures 1-3).

Environmental Setting

The Site is situated on federal land managed by the Bureau of Land Management (BLM) in western Rio Arriba County, New Mexico. Area terrain is comprised of plateaus or mesas divided by canyons. The primary canyon in the area is Carrizo Canyon, which drains to the northwest into the San Juan River, approximately 19 miles from the Site (Figures 2 and 3).

The Site is situated on a mesa approximately 0.25 miles south of Santos Peak. The nearest surface water is a 0.3-acre pond located approximately 0.6 miles east-southeast of the Site; however, Site watershed is to the southwest towards an unnamed intermittent stream located 160 feet (ft) west of the Site. The intermittent stream drains into Canon del Camino, which is a side-canyon to Carrizo Canyon. Groundwater is expected to be greater than 100 ft below ground surface (bgs).

The area consists of sparse vegetative cover comprised primarily of scrub brush. Average elevation at the Site is approximately 6,650 feet (ft) above mean sea level. The Site is situated immediately adjacent to an unnamed rural road.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), the Site soil consists of the Vessilla-Menefee-Orlie complex, 1 to 30 percent slopes. The surface layer consists of sand, underlain by lithic bedrock encountered between 6 to 20 inches bgs. Native salinity of the soil is nonsaline to very slightly saline (0.0 to 2.0 millimhos per centimeter (mmhos/cm)). A soil map is provided in Figure 4.

Site History

On 05/05/2014, Conoco Phillips Company (ConocoPhillips) field personnel were on Site conducting a facility reset when soil staining was discovered beneath a produced water tank. GHD Services (GHD) on behalf of ConocoPhillips. Horizontal delineation via hand auger indicated impacted subsurface soils. Following initial delineation attempts, a direct push boring program was initiated to advance fourteen borings to 15 ft bgs.

Lab analysis revealed that hydrocarbon impacts were present outside berm. Based on this assessment, constituents of concern (COCs) at the Site are benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), and chloride. At the time of the release, ConocoPhillips was the operator of record; however, Hilcorp assumed operations of the Site during 2017.

On 08/24/2018, Timberwolf conducted an assessment to:

1) Evaluate the effectiveness of initial response actions conducted by ConocoPhillips
2) Determine the distribution of COCs across the Site
3) Determine the horizontal and vertical extents of the impacted soil, and
4) Develop recommendations for further action to remedy impacted soil.

Initial characterization showed that 5 of 20 soil samples collected for laboratory analysis exceeded the regulatory criteria for total BTEX and TPH. One sample exceeded regulatory criteria for TPH only. Remedial action at the site included excavation and commercial disposal of impacted soil along with confirmation samples taken from the excavation sidewall and bottom.

The excavation activities were conducted on-site by Hilcorp construction crews. Confirmation soil samples were collected between 11/02/2018 and 12/11/2018. Samples were collected from each of the excavation side walls and base to confirm that soil exceeding NMOCD criteria had been removed. Analytical results revealed impacted soil had been successfully remediated near the source, and to the north, east, and south of the point of release (i.e., produced water tank). All samples collected from the base of the excavation were below NMOCD criteria. However, samples collected from the southwest side wall and excavation ramp exceeded NMOCD criteria for total BTEX and/or TPH. A high-density polyethylene (HDPE) liner was placed on the excavation sidewall adjacent to the road to prevent unexcavated impacted soil from leaching into the clean backfilled material.

Initial soil assessment and remedial activities are presented in Timberwolf's report entitled: *Project Status Report – Site Characterization, Remedial Actions, and Proposed Further Actions,* dated 03/06/2019. The proposed further actions included additional investigation south and southwest of the Site to determine the horizontal extent of impacted soil.

Archeological Investigation

In May 2019, an archaeological assessment of the Site was conducted by SWCA Environmental Consultants (SWCA) of Albuquerque, New Mexico. This assessment included a 19.9-acre area surrounding the Site. One location was identified as a prehistoric Navajo site; this site is located north of the main lease road and east of the Site's tank battery as shown in Figure 7.

The identified archeological site is not in proximity to the proposed disturbance areas or operational areas for this project. Cultural resource findings are documented in SWCA's report, entitled: *Class III Archaeological Investigation for the Timberwolf Environmental Remediation Project*, dated May 2019. SWCA's investigation revealed no cultural resources within the area of interest for this project, which includes the road detour, construction entrance, and excavation area. A copy of SWCA's report is attached.

Supplemental Investigation

Timberwolf returned to the Site on four separate occasions to delineate impacted soil located beneath the lease road and to the southwest of the Site. On 08/08/2019, 08/14/2019, and 09/24/2019, Timberwolf contracted Mo-Te Drilling Company, Inc. (Mo-Te) of Farmington, NM to install soil borings at the Site. A total of 25 soil borings were installed utilizing a hollow-stem auger (i.e., HSA3(DUP), HSA9 – HSA32). All borings were plugged with bentonite and hydrated to seal each hole.

On 10/08/2019, Timberwolf installed a single boring (i.e., HSA32) using a hand-auger. This boring was installed as a twin of a previous boring to evaluate constituent concentrations at the 7 to 8 ft depth interval. Soil boring locations for each sampling event are presented in Figure 5.

Sampling Methodology

Soil boring were advanced using rotary drilling equipment (primary hollow-stem augers) or hand auger. Soil borings were logged continuously from the ground surface to the total depth of each boring. Borings were logged for morphological characteristics and field screened for volatile organic carbons (VOC) using a photoionization detector (PID). The total depth of each boring ranged from 14 ft to 22 ft bgs.

Samples selected for laboratory analysis from each boring included the depth interval exhibiting the highest PID readings and the total depth of each boring. Sample selected for laboratory analysis were placed in laboratory-provided sample containers, stored on ice, and transported under proper chain-of-custody protocol to an accredited laboratory for chemical analysis. Samples were analyzed for one or more of the following constituents:

- BTEX by SW-846 EPA Method 8260
- GRO, DRO, and MRO (extended range) by SW-846 EPS Method 8015M.

Regulatory Criteria

This Site's release occurred on 05/05/14, and therefore, has been grandfathered from the *New Spill Rule.* The Site is subject to the regulatory criteria presented below.

The New Mexico Oil Conservation Division (NMOCD) established remediation action levels for soil impacted by oilfield products or wastes, which are documented in the *Guidelines for Remediation of Leaks and Releases*. The closure criteria utilize a ranking system that scores the potential to contaminate based upon a site's distance to water resources. The ranking system is summarized in Table 1 below.

Table 1. NMOCD Ranking System

Category	Distance to Resource (Feet)	Score
Depth to groundwater	< 50	20
	50 to 99	10
	> 100	0
Water wellhead protection	< 200	20
	> 200	0
Surface water protection	< 200	20
	200 to 1,000	10
	> 1,000	0

NMOCD – New Mexico Oil Conservation Division

Sites receive a score from each category. The three scores are summed to reach a total ranking score that correspond to site-specific remedial action levels.

Based on prior drilling activities and public data available in this area of the San Juan Basin, the upper groundwater-bearing unit is expected to be greater than 100 ft bgs, which results in a score of 0. No perennial surface water bodies were identified within 1,000 ft of the Site; however, an intermittent stream is situated 160 ft northwest of the Site, which results in a score of 10. No water wellheads are located within 200 ft of the Site, which results in a score of 0. Therefore, the total ranking score at the Site is 10.

Based on the NMOCD criteria, the site-specific remedial action levels are presented in Table 2.

Table 2. NMOCD Remediation Action Levels by Total Ranking Score

Constituent	Total Ranking Score		
	> 19	10-19	0-9
	Corresponding Remediation Action Level (mg/kg)		
Benzene	10	**10**	10
Total BTEX	50	**50**	50
TPH	100	**1,000**	5,000

BTEX – benzene, toluene, ethylbenzene and xylenes
TPH – total petroleum hydrocarbons
mg/kg – milligrams per kilogram
Bold – scores utilized for the Site
NMOCD – New Mexico Oil and Conservation Division

The regulatory soil closure criteria ("closure criteria" or "remedial targets") for the Site is as follows:

- Benzene < 10 milligrams per kilogram (mg/kg)
- Total BTEX < 50 mg/kg
- TPH < 1,000 mg/kg.

The analytical results from the supplemental soil investigation are summarized in Table 3 below. Constituents that exceeded site-specific closure criteria are denoted in yellow highlights.

Table 3. Soil Analytical Results – Supplemental Investigation

Sample ID	Volatile Organic Compounds (mg/kg)		GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Total TPH (mg/kg)
	Benzene	Total BTEX				
HSA3 14-15'	< 0.001	< 0.0065	< 0.1	< 4.0	< 4.0	< 4.0
HSA3(DUP) 8-9'	< 0.021	< 0.082	< 4.1	< 8.4	< 42	< 42
HSA9 4'-5'	< 0.021	< 0.083	< 4.1	< 10	< 50	< 50
HSA9 8'-9'	1.1	106.9	1,100	160	< 47	1,260
HSA9 10'-11'	< 0.023	< 0.09	< 4.5	< 9.4	< 47	< 47
HSA9 13'-14'	< 0.015	< 0.06	< 3.0	< 9.8	< 49	< 49
HSA10 5'-6'	< 0.022	0.24	28	3,000	< 490	3,028
HSA10 8'-9'	0.093	25.093	250	1,800	< 490	2,050
HSA10 11'-12'	0.37	26.57	550	970	< 460	1,520
HSA10 14'-15'	< 0.02	< 0.079	< 3.9	< 9.0	< 45	< 45
HSA11 5'-6'	< 0.018	< 0.07	< 3.5	240	< 47	240
HSA11 10'-11'	< 0.018	3.4	83	440	< 49	523
HSA11 14'-15'	0.079	10.079	120	330	< 47	450
HSA12 9'-10'	< 0.018	< 0.072	< 3.6	46	< 49	46
HSA12 12'-13'	< 0.088	2.25	73	200	< 46	273
HSA12 14'-15'	< 0.016	1.5	34	290	< 47	324
HSA13 9'-10'	< 0.086	< 0.34	< 17	51	< 41	51
HSA13 14'-15'	< 0.12	10.37	230	570	< 43	700
HSA14 9'-10'	< 0.089	< 0.36	< 18	< 9.6	< 48	< 48
HSA14 14'-15'	< 0.018	0.75	25	280	< 47	305
HSA15 9'-10'	< 0.023	< 0.093	< 4.6	< 9.8	< 49	< 49
HSA15 11'-12'	< 0.12	< 0.48	< 24	< 9.2	< 46	< 46
HSA15 14'-15'	< 0.024	< 0.096	< 4.8	< 9.5	< 47	< 47
HSA16 9'-10'	< 0.024	< 0.095	< 4.7	120	< 47	120
HSA16 13'-14'	< 0.020	7.95	130	150	< 50	280
HSA16 14'-15'	< 0.024	< 0.098	< 4.9	< 9.6	< 48	< 48
HSA17 9'-10'	< 0.025	< 0.099	< 4.9	< 10	< 50	< 50
HSA17 12'-13'	< 0.021	0.085	68	520	< 47	588
HSA17 14'-15'	< 0.024	0.077	25	190	< 45	215
HSA18 9'-10'	< 0.024	< 0.096	< 4.8	< 8.8	< 44	< 44
HSA18 12'-13'	< 0.019	< 0.076	< 3.8	34	< 48	34
HSA18 14'-15'	< 0.023	< 0.094	< 4.7	150	< 49	150
HSA19 9'-10'	< 0.023	< 0.093	< 4.7	< 9.1	< 45	< 45
HSA19 12'-13'	< 0.023	< 0.090	< 4.5	< 9.8	< 49	< 49
HSA19 14'-15'	< 0.023	< 0.098	< 4.7	< 9.3	< 47	< 47
Regulatory Limit	**10**	**50**	**--**	**--**	**--**	**1,000**

TPH – total petroleum hydrocarbons (TPH = GRO+DRO+MRO)
BTEX – benzene, toluene, ethylbenzene, and xylenes
mg/kg – milligrams per kilogram
N/A – constituent not analyzed
– exceeds regulatory criteria

GRO – gasoline range organics
DRO – diesel range organics
MRO – motor oil range organics
-- – no applicable regulatory criteria

Table 3. Soil Analytical Results – Supplemental Investigation *(continued)*

Sample ID	Volatile Organic Compounds (mg/kg)		GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Total TPH (mg/kg)
	Benzene	Total BTEX				
HSA20 8-9'	< 0.021	< 0.083	< 4.1	< 9.6	< 48	< 48
HSA20 14-15'	< 0.085	< 0.34	< 17	< 8.4	< 42	< 42
HSA21 8-9'	< 0.023	< 0.091	< 4.6	< 9.6	< 48	< 48
HSA21 11-12'	< 0.088	8.2	160	530	< 49	690
HSA21 14-15'	< 0.09	< 0.36	< 18	110	< 47	110
HSA22 10-11'	0.16	22.76	260	520	< 48	780
HSA22 14-15'	0.21	64.01	960	2,400	< 480	3,360
HSA22 19-20'	0.52	38.22	420	230	< 46	650
HSA22 21-22'	< 0.02	< 0.081	< 4.0	< 9.2	< 46	< 46
HSA23A 9-10'	< 0.097	< 0.39	< 19	500	< 45	500
HSA23A 10-11'	0.11	10.95	250	850	< 49	1,100
HSA23A 14-15'	< 0.098	< 0.39	< 20	13	< 45	13
HSA24 7-8'	< 0.024	< 0.096	< 4.8	< 9.3	< 46	< 46
HSA24 9-10'	< 0.11	35.1	530	120	< 43	650
HSA24 14-15'	< 0.1	< 0.42	< 21	< 8.5	< 42	< 42
HSA25 5-6'	< 0.092	11	180	750	< 46	930
HSA25 9-10'	3.4	623.4	2,500	3,700	< 420	6,200
HSA25 10-11'	1.2	160.1	1,700	1,600	< 480	3,300
HSA25 14-15'	< 0.019	< 0.075	< 3.8	< 10	< 50	< 50
HSA25 16-17'	0.068	0.748	68	98	< 44	166
HSA25 17-18'	< 0.11	3.11	110	36	< 45	146
HSA26 6-7'	< 0.08	< 0.32	< 16	11	< 45	11
HSA26 9-10'	0.29	228.29	2,600	6,600	< 440	9,200
HSA26 14-15'	< 0.11	< 0.45	< 23	14	< 39	14
HSA27 9-10'	< 0.11	0.71	41	190	< 47	231
HSA27 12-13'	< 0.097	5.12	130	280	< 48	410
HSA27 14-15'	< 0.094	15.97	270	280	< 45	550
HSA28 3-4'	< 0.024	< 0.096	< 4.8	< 9.8	< 49	< 49
HSA28 8-9'	< 0.024	< 0.096	< 4.8	< 9.3	< 47	< 47
HSA28 9.25-10.25'	< 0.024	8.5	260	520	< 42	780
HSA28 13-14'	< 0.023	0.14	< 4.6	< 10	< 50	< 50
HSA29 4-5'	< 0.024	< 0.098	< 4.9	< 9.6	< 48	< 48
Regulatory Limit	**10**	**50**	**--**	**--**	**--**	**1,000**

TPH – total petroleum hydrocarbons (TPH = GRO+DRO+MRO)
BTEX – benzene, toluene, ethylbenzene, and xylenes
mg/kg – milligrams per kilogram
N/A – constituent not analyzed
– exceeds regulatory criteria

GRO – gasoline range organics
DRO – diesel range organics
MRO – motor oil range organics
-- – no applicable regulatory criteria

Table 3. Soil Analytical Results – Supplemental Investigation *(continued)*

Sample ID	Volatile Organic Compounds (mg/kg)		GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Total TPH (mg/kg)
	Benzene	Total BTEX				
HSA29 7-8'	< 0.024	< 0.095	< 4.8	540	830	1,370
HSA29 10-11'	< 0.025	< 0.098	< 4.9	690	< 49	690
HSA29 14-15'	< 0.024	< 0.094	< 4.7	< 9.9	< 50	< 50
HSA30 5-6'	< 0.025	< 0.099	< 4.9	< 9.9	< 50	< 50
HSA30 9-10'	< 0.12	1.1	96	770	< 46	866
HSA30 10-11'	< 0.12	25.7	360	1,100	< 48	1,460
HSA30 14-15'	< 0.024	< 0.096	< 4.8	< 10	< 50	< 50
HSA31 9-10'	< 0.025	< 0.099	< 4.9	< 9.7	< 49	< 49
HSA31 10-11'	< 0.025	< 0.098	< 4.9	< 9.5	< 48	< 48
HSA31 13-14'	< 0.024	< 0.096	< 4.8	330	< 50	330
HSA31 14-15'	< 0.024	< 0.096	< 4.8	170	< 47	170
HSA32 7-8'	< 0.020	0.098	< 4.0	370	610	980
HSA32 9-10'	< 0.024	< 0.095	< 4.8	< 9.1	< 46	< 46
HSA32 10-11'	< 0.025	< 0.099	< 4.9	< 9.8	< 49	< 49
HSA32 13-14'	< 0.025	< 0.099	< 4.9	< 9.9	< 49	< 49
Regulatory Limit	**10**	**50**	**--**	**--**	**--**	**1,000**

TPH – total petroleum hydrocarbons (TPH = GRO+DRO+MRO)
BTEX – benzene, toluene, ethylbenzene, and xylenes
mg/kg – milligrams per kilogram
N/A – constituent not analyzed
– exceeds regulatory criteria

GRO – gasoline range organics
DRO – diesel range organics
MRO – motor oil range organics
-- – no applicable regulatory criteria

Conclusions

Based on the supplemental investigation and the applicable NMOCD site-specific closure criteria, the following is concluded:

- Total BTEX concentrations exceeded regulatory criteria in four soil borings (i.e., HSA9, HSA22, HSA25, and HSA26) and five soil samples:
  - Total BTEX exceeded regulatory criteria in HSA9 8'-9', HSA22 14-15', HSA25 9-10', HSA25 10-11', and HSA26 9-10'
  - Total BTEX in these samples ranged from 64.01 mg/kg to 623.4 mg/kg; the highest total BTEX concentration was observed in HSA25 9-10'
- TPH concentrations exceeded regulatory criteria in eight soil borings (i.e., HSA9, HSA10, HSA22, HSA23A, HSA25, HSA26, HSA29, and HSA30) and 11 soil samples
  - TPH exceeded regulatory criteria in HSA9 8'-9', HSA10 5'-6', HSA10 8'-9', HSA10 11'-12', HSA22 14-15', HSA23A 10-11', HSA25 9-10', HSA25 10-11', HSA26 9-10', HSA29 7-8', and HSA30 10-11'
  - TPH exceedances ranged from 1,100 mg/kg to 9,200 mg/kg; the highest TPH concentration was observed in SB26 9-10'
- Areas impacted by total BTEX and/or TPH are approximately 4,200 square ft (ft^2) (Figure 6)

- Soil within the area of concern (AOC) was characterized as: (1) clean overburden soil, (2) leachable soil, or (3) non-leachable but impacted soil.
    - Clean overburden soil had an averaged depth of 8.5 ft bgs; the estimated volume of clean overburden soil is 1,300 yd^3
    - The base of contamination ranged from 9 to 17 ft bgs; the estimated volume of impacted soil is 950 cubic yards (yd^3)
        - Leachable soil (soil impacted by petroleum hydrocarbons that has the potential to leach into underlying soil) had a calculated volume of 350 yd^3
        - Non-leachable but impacted soil (soil that exceeded site-specific cleanup criteria but was tested leachable) had a calculated volume of 600 yd^3

Work Plan

Impacted soil which exceeded site-specific closure criteria was identified beneath the lease road and extended to the southwest. The impacted area has an overall length of 95 ft and an overall width of 50 ft; the footprint is approximately 4,200 ft^2.

To bring the Site into compliance with NMOCD regulatory criteria, the main lease road needs to be closed to facilitate remedial activities. To maintain traffic flow, a detour road is proposed over a previously disturbed area. The proposed detour road will be approximately 18-ft wide with 3-ft drainage ditches on either side and approximately 120 ft long. These road dimensions provide a like-in-kind substitute for the main lease road. Additionally, a construction entrance to the San Juan 27-5 No. 69 well pad is proposed to facilitate construction traffic; this access point will be approximately 18-ft wide with 3-ft drainage ditches on either side and approximately 35 ft long.

The temporary roads represent disturbance areas of approximately 2,000 ft^2 and 475 ft^2, respectively. The excavation will create a disturbance area of 1,500 ft^2. The total disturbance area for this project is 3,975 ft^2 or 0.09 acres.

In May 2019, SWCA conducted a 19.9-acre archaeological investigation which identified one cultural resource near the Site. The identified feature is located east of the Site's tank battery and is not within the proposed operational area for this project; therefore, the identified feature will not be disturbed as a result of the proposed activities in the work plan.

A detailed work plan is provided below; a corresponding Site Plan is provided in Figure 7. Attributes in Figure 7 are which are referenced in the work plan are denoted in italics. The following work plan is proposed to bring the Site into regulatory compliance:

1. Construct a *Road Detour* to connect the south lease road to the main lease road by way of the *San Juan 27-5 No. 76 well pad*.
2. Build a *Construction Entrance* from the main lease road to the San Juan 27-5 No. 69 well pad.
3. Install silt fencing along the detour and construction entrance routes.
4. Position *detour signs* at each point of diversion.
5. Erect *barricades* on main lease road adjacent to the excavation.

6. Erect a *safety fence* surrounding the excavation.
7. Excavate and *stockpile overburden* soil on the San Juan 27-5 No. 69 well pad.
8. Excavate, transport, and dispose of leachable soil at a permitted commercial disposal facility.
9. Treat non-leachable but impacted soil in place using in-situ techniques:
    a. Incorporate soil amendments (i.e., **B**ioWash® (surfactant) and ag fertilizers)
    b. Mix impacted soil and amendments 3 to 5 times to promote rapid biodegradation.
10. Collect and analyze confirmation samples from excavation sidewalls, excavation base, and stockpiled overburden soil. All confirmation samples will be analyzed for BTEX and TPH and will be collected in accordance with the sample rates specified below:
    a. Sample rates for stockpiled overburden soil to be one composite sample per 100 yd^3
    b. Sample rates for excavation sidewall and base to be one composite sample per 400 ft^2.
11. Conduct additional excavation activities, if required, to remove and treat any soil where base or sidewall confirmation samples indicated an exceedance of closure criteria.
12. Conduct a second mixing of treated soil at 7 to 10 days post initial treatment.
13. Two weeks post second mixing event, collect and analyze confirmation samples:
    a. Sample rates for treated soil to be one composite sample per 50 yd^3
    b. Resample sidewall or base area that required additional excavation and treatment.
14. After all confirmation samples reveal that all samples from excavation base, excavation sidewalls, stockpiled overburden, and treated soil meets closure criteria and OCD approval to backfill has been obtained, the excavation will be backfilled. Material used to backfill the exaction will include treated soil, overburden soil, and clean fill. The backfill process will be conducted as follows:
    a. Spread soil over base of excavation in 1-ft lifts
    b. Compact soil with vibratory roller or weighted equipment (i.e., loader with a full bucket)
    c. Continue the backfill and compaction process until backfill is completed.
15. Remove road base material from detour and construction entrance.
16. Install approximately 6 to 8 inches of road base to restore main lease road to present condition.
17. Reclaim *Road Detour* and *Excavation* areas by incorporating topsoil and seeding with BLM approved seed mix.
18. Once reclamation goals are achieved, remove silt fencing.

Initiation of the Work Plan will begin within 30 days of OCD approval. The road detour is expected to remain in place for approximate 45 days. A timeline of tasks associated with Work Plan is provided in Table 4 below.

Table 4. Planned Remedial Tasks and Timeline

Task	Days			
	0-15	16-30	31-45	46-60
OCD Approval				
Construct detour road and construction entrance				
Erect detour signs, silt fencing, barricades, and safety fence				
Remove and stockpile clean overburden soil				
Excavate, transport, and dispose of leachable soil				
Treat non-leachable but impacted soil				
Collect confirmation samples from overburden stockpile, excavation base, and sidewalls				
Remix treated soil				
Collect and analyze confirmation samples from treated soil and excavation sidewall or base (if required)				
Submit confirmation sample results to OCD and receive regulatory approval to backfill				
Backfill				
Restore main lease road and remove road detour				
Reclaim disturbance areas (road detour and excavation)				

Timberwolf appreciates the opportunity to provide Hilcorp with our professional consulting services. If you have any questions regarding this report or need further assistance, do not hesitate to contact us.

Sincerely,
Timberwolf Environmental, LLC

Ryan S. Mersmann, P.G., CPSS
Vice President of Operations

Jim Foster
President

Attachments: Figures
Tables
Laboratory Reports and Chain-of-Custody Documents
Cultural Resources Assessment - SWCA

Figures

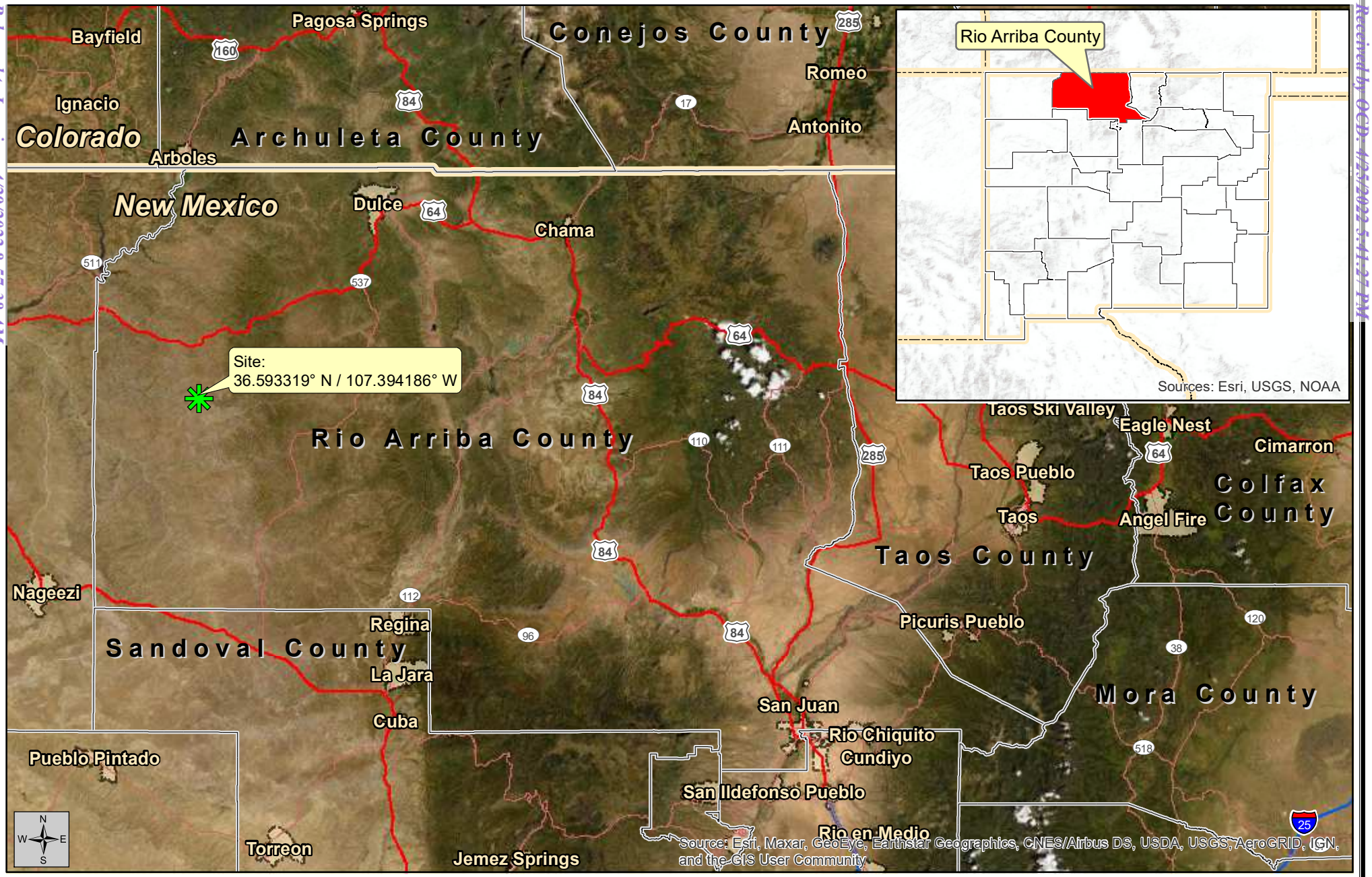


Figure 1 **Site Location Map**	**Supplemental Investigation and Work Plan**	**January 28, 2022**
TIMBERWOLF ENVIRONMENTAL	1:1,250,000 0 20 40 60 80 100 120 Miles **San Juan 27-5 No. 69** **Hilcorp Energy Company** **Rio Arriba County, New Mexico**	Site
Created By: Kevin Cole TE Project No.: HEC-180034	Datum: NAD83 Imagery Source: ESRI Vector Source: ESRI and TE	

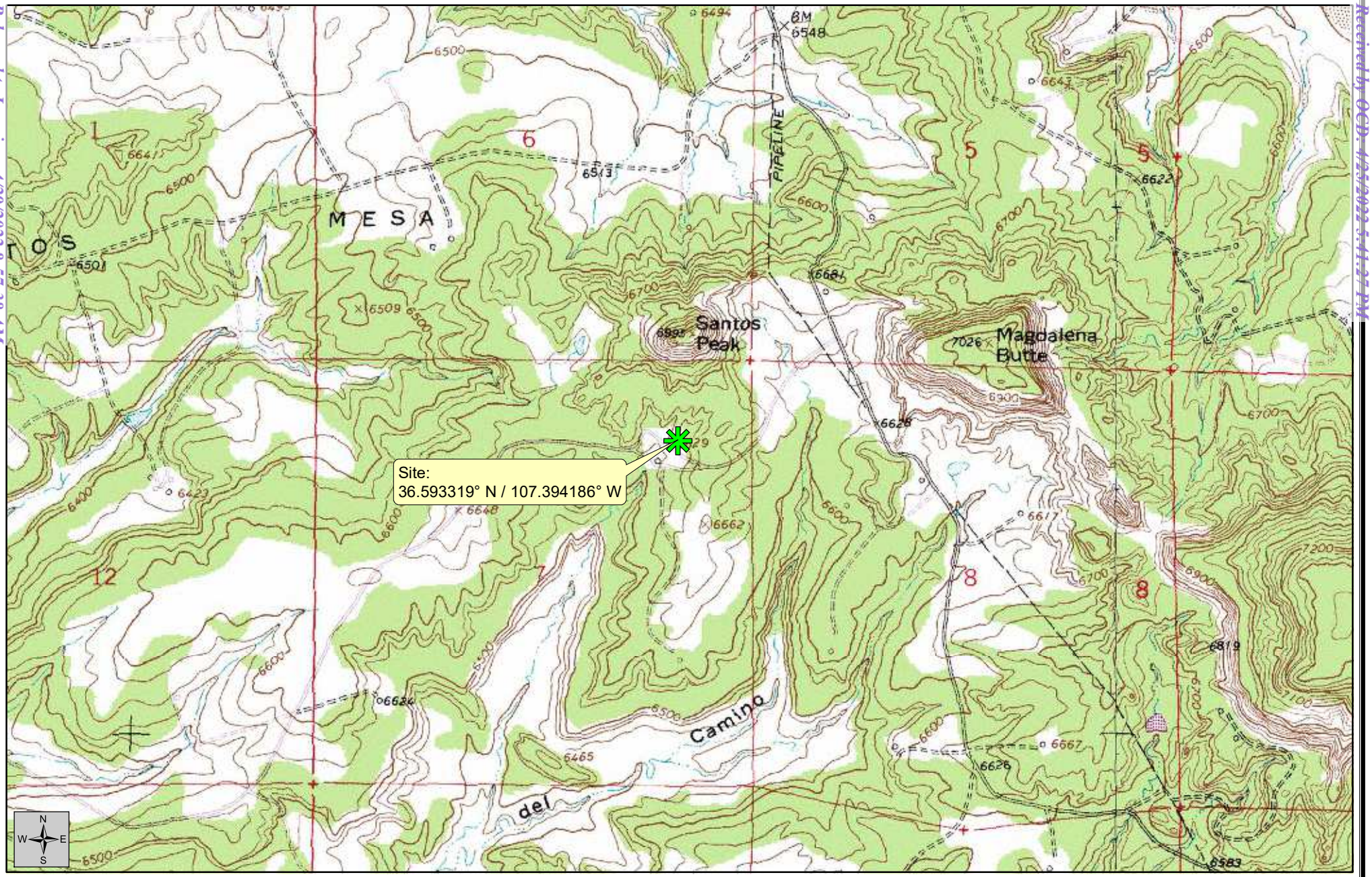


Figure 2 Topographic Map	**Supplemental Investigation and Work Plan**	January 28, 2022

1:24,000

0 0.5 1 1.5 2 Miles

TIMBERWOLF ENVIRONMENTAL

Created By:
Kevin Cole
TE Project No.: HEC-180034

San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: USGS
Quads: Santos Peak and Vigas Canyon
Vector Source: TE

Site

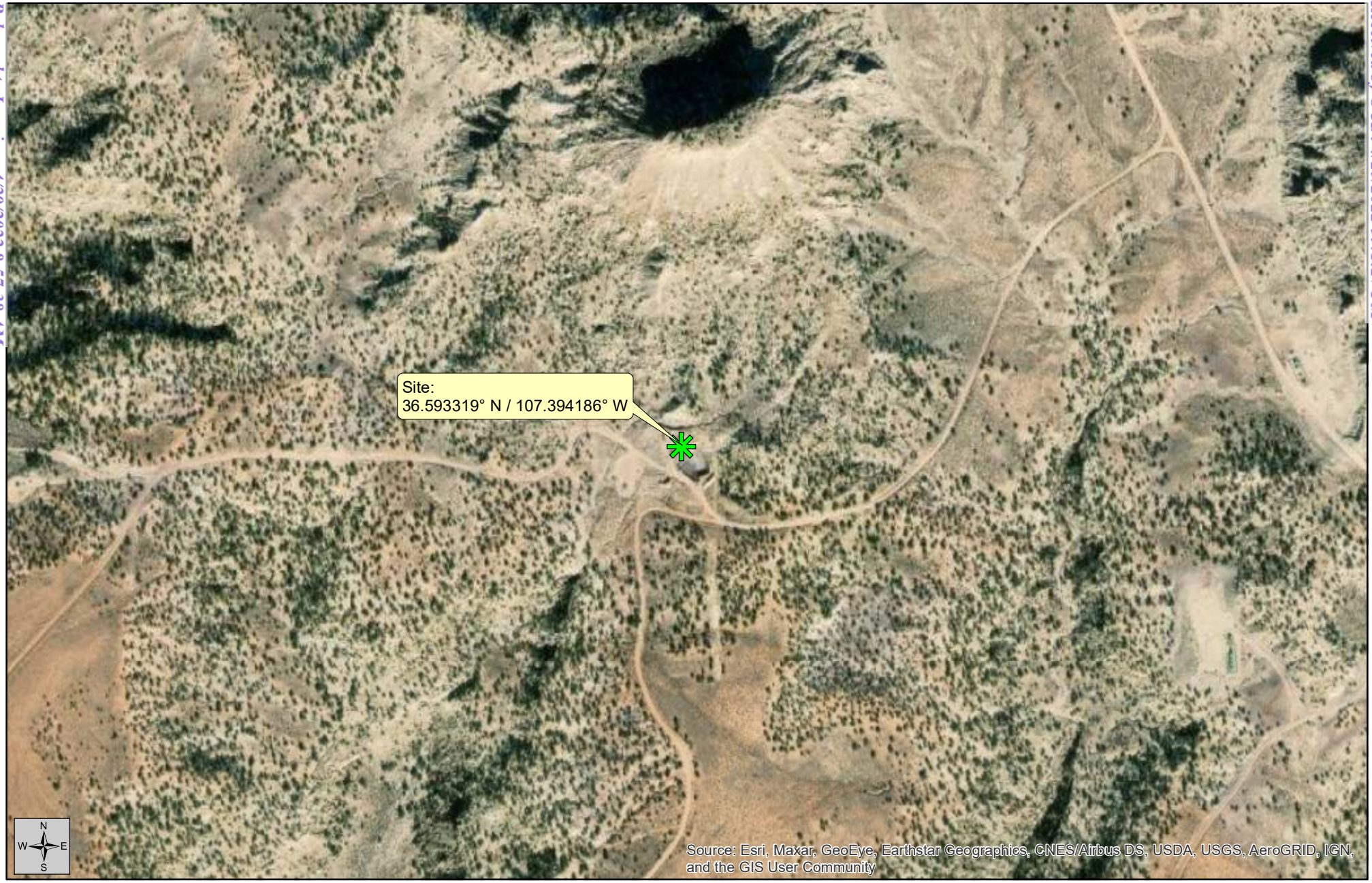


Figure 3
Aerial Map

Supplemental Investigation and Work Plan

January 28, 2022

1:8,000

0 1,000 2,000 3,000 4,000 Feet

TIMBERWOLF ENVIRONMENTAL

Created By:
Kevin Cole
TE Project No.: HEC-180034

San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: ESRI
Vector Source: TE

Site

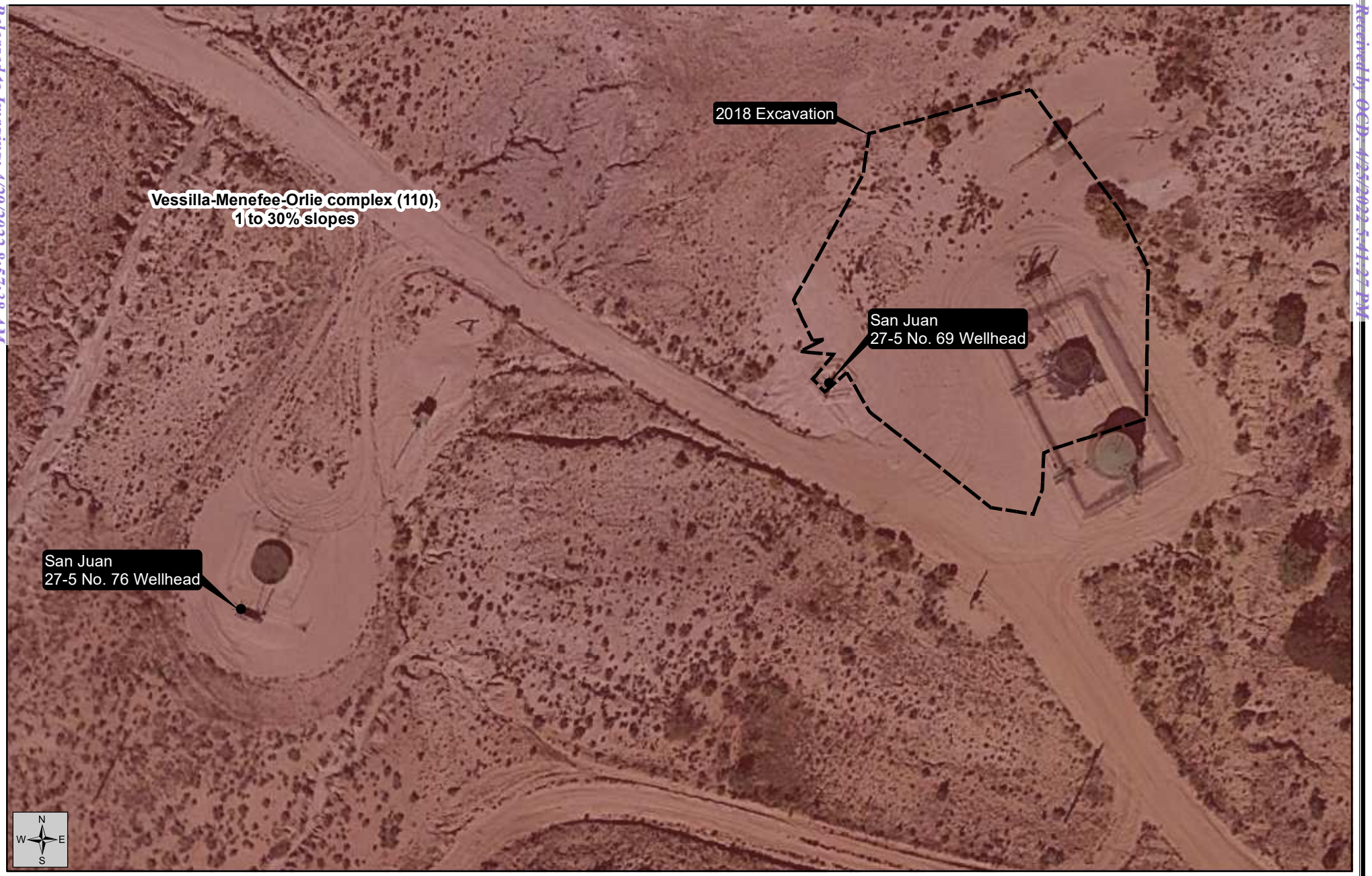


Figure 4
Soil Map

Supplemental Investigation and Work Plan

January 28, 2022

TIMBERWOLF ENVIRONMENTAL

1:750

0 100 200 300 Feet

Created By:
Kevin Cole
TE Project No.: HEC-180034

San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: GoogleEarth
Vector Source: TE

2018 Excavation
Vessilla-Menefee-Orlie complex (110)
Well Head

Sample ID	Date	Volatile Organic Compounds (mg/kg)		Total TPH (mg/kg)
		Benzene	Total BTEX	
HSA3 14-15'	08/24/18	< 0.001	< 0.0065	< 4.00
HSA3(DUP) 8-9'	08/14/19	< 0.021	< 0.082	< 42
HSA9 4'-5'	08/08/19	< 0.021	< 0.083	< 50
HSA9 8'-9'	08/08/19	1.1	106.9	1,260
HSA9 10'-11'	08/08/19	< 0.023	< 0.09	< 47
HSA9 13'-14'	08/08/19	< 0.015	< 0.06	< 49
HSA10 5'-6'	08/08/19	< 0.022	0.24	3,028
HSA10 8'-9'	08/08/19	0.093	25.093	2,050
HSA10 11'-12'	08/08/19	0.37	26.57	1,520
HSA10 14'-15'	08/08/19	< 0.02	< 0.079	< 45
HSA11 5'-6'	08/08/19	< 0.018	< 0.07	240
HSA11 10'-11'	08/08/19	< 0.018	3.4	523
HSA11 14'-15'	08/08/19	0.079	10.079	450
HSA12 9'-10'	08/08/19	< 0.018	< 0.072	46
HSA12 12'-13'	08/08/19	< 0.088	2.25	273
HSA12 14'-15'	08/08/19	< 0.016	1.5	324
HSA13 9'-10'	08/08/19	< 0.086	< 0.34	51
HSA13 14'-15'	08/08/19	< 0.12	10.37	700
HSA14 9'-10'	08/08/19	< 0.089	< 0.36	< 48
HSA14 14'-15'	08/08/19	< 0.018	0.75	305
HSA15 9'-10'	08/08/19	< 0.023	< 0.093	< 49
HSA15 11'-12'	08/08/19	< 0.12	< 0.48	< 46
HSA15 14'-15'	08/08/19	< 0.024	< 0.096	< 47
HSA16 9'-10'	08/08/19	< 0.024	< 0.095	120
HSA16 13'-14'	08/08/19	< 0.020	7.95	280
HSA16 14'-15'	08/08/19	< 0.024	< 0.098	< 48
HSA17 9'-10'	08/08/19	< 0.025	< 0.099	< 50
HSA17 12'-13'	08/08/19	< 0.021	0.085	588
HSA17 14'-15'	08/08/19	< 0.024	0.077	215
HSA18 9'-10'	08/08/19	< 0.024	< 0.096	< 44
HSA 18 12'-13'	08/08/19	< 0.019	< 0.076	34
HSA 18 14'-15'	08/08/19	< 0.023	< 0.094	150
HSA19 9'-10'	08/08/19	< 0.023	< 0.093	< 45
HSA19 12'-13'	08/08/19	< 0.023	< 0.090	< 49
HSA19 14'-15'	08/08/19	< 0.023	< 0.098	< 47
HSA20 8-9'	08/14/19	< 0.021	< 0.083	< 48
HSA20 14-15'	08/14/19	< 0.085	< 0.34	< 42
HSA21 8-9'	08/14/19	< 0.023	< 0.091	< 48
HSA21 11-12'	08/14/19	< 0.088	8.2	690
HSA21 14-15'	08/14/19	< 0.09	< 0.36	110
HSA22 10-11'	08/14/19	0.16	22.76	780
HSA22 14-15'	08/14/19	0.21	64.01	3,360
HSA22 19-20'	08/14/19	0.52	38.22	650
HSA22 21-22'	08/14/19	< 0.02	< 0.081	< 46
HSA23A 9-10'	08/14/19	< 0.097	< 0.39	500
HSA23A 10-11'	08/14/19	0.11	10.95	1,100
HSA23A 14-15'	08/14/19	< 0.098	< 0.39	13
HSA24 7-8'	08/14/19	< 0.024	< 0.096	< 46
HSA24 9-10'	08/14/19	< 0.11	35.1	650
HSA24 14-15'	08/14/19	< 0.1	< 0.42	< 42
HSA25 5-6'	08/14/19	< 0.092	11	930
HSA25 9-10'	08/14/19	3.4	623.4	6,200
HSA25 10-11'	08/14/19	1.2	160.1	3,300
HSA25 14-15'	08/14/19	< 0.019	< 0.075	< 50
HSA25 16-17'	08/14/19	0.068	0.748	166
HSA25 17-18'	08/14/19	< 0.11	3.11	146
NMOCD Regulatory Limit		10	50	1,000

Sample ID	Date	Volatile Organic Compounds (mg/kg)		Total TPH (mg/kg)
		Benzene	Total BTEX	
HSA26 6-7'	08/14/19	< 0.08	< 0.32	11
HSA26 9-10'	08/14/19	0.29	228.29	9,200
HSA26 14-15'	08/14/19	< 0.11	< 0.45	14
HSA27 9-10'	08/14/19	< 0.11	0.71	231
HSA27 12-13'	08/14/19	< 0.097	5.12	410
HSA27 14-15'	08/14/19	< 0.094	15.97	550
HSA28 3-4'	09/24/19	< 0.024	< 0.096	< 49
HSA28 8-9'	09/24/19	< 0.024	< 0.096	< 47
HSA28 9.25-10.25'	09/24/19	< 0.024	8.5	780
HSA28 13-14'	09/24/19	< 0.023	0.14	< 50
HSA29 4-5'	09/24/19	< 0.024	< 0.098	< 48
HSA29 7-8'	09/24/19	< 0.024	< 0.095	1,370
HSA29 10-11'	09/24/19	< 0.025	< 0.098	690
HSA29 14-15'	09/24/19	< 0.024	< 0.094	< 50
HSA30 5-6'	09/24/19	< 0.025	< 0.099	< 50
HSA30 9-10'	09/24/19	< 0.12	1.1	866
HSA30 10-11'	09/24/19	< 0.12	25.7	1,460
HSA30 14-15'	09/24/19	< 0.024	< 0.096	< 50
HSA31 9-10'	09/24/19	< 0.025	< 0.099	< 49
HSA31 10-11'	09/24/19	< 0.025	< 0.098	< 48
HSA31 13-14'	09/24/19	< 0.024	< 0.096	330
HSA31 14-15'	09/24/19	< 0.024	< 0.096	170
HSA32 7-8'	10/08/19	< 0.020	0.098	980
HSA32 9-10'	09/24/19	< 0.024	< 0.095	< 46
HSA32 10-11'	09/24/19	< 0.025	< 0.099	< 49
HSA32 13-14'	09/24/19	< 0.025	< 0.099	< 49
NMOCD Regulatory Limit		10	50	1,000

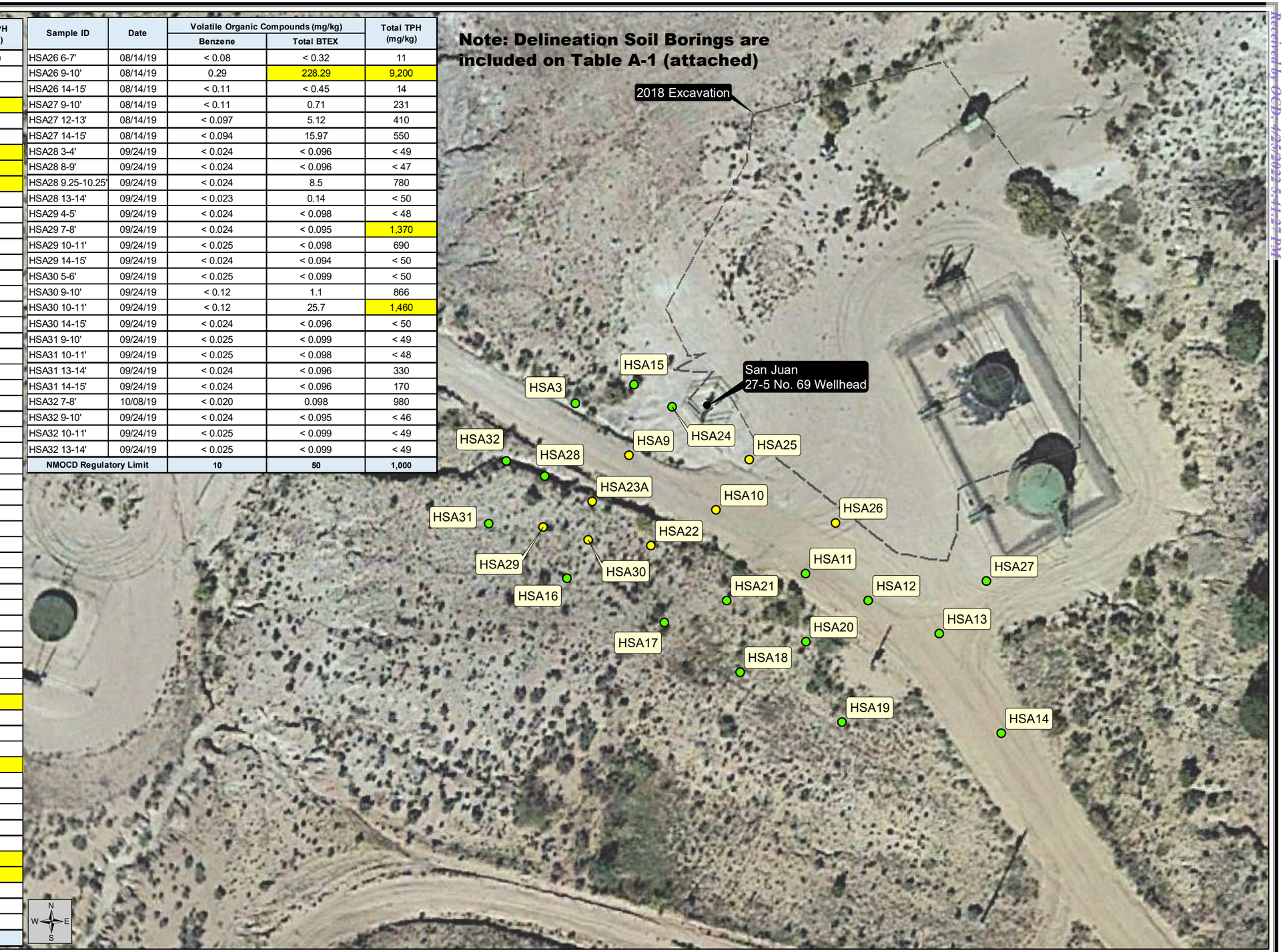


Figure 5
Soil Boring Location Map

Supplemental Investigation and Work Plan

TIMBERWOLF ENVIRONMENTAL

1:500

0 100 200 300 400 Feet

Created By:
Kevin Cole
February 3, 2022
TE Project No.: HEC-180034

San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Datum: NAD83
Imagery Source: GoogleEarth
Vector Source: TE

Sample Dates:
08/24/18, 08/08/19,
08/14/19, 09/24/19, and 10/08/19

- Soil Boring (clean)
- Soil Boring (elevated)
- Well Head
- Excavation

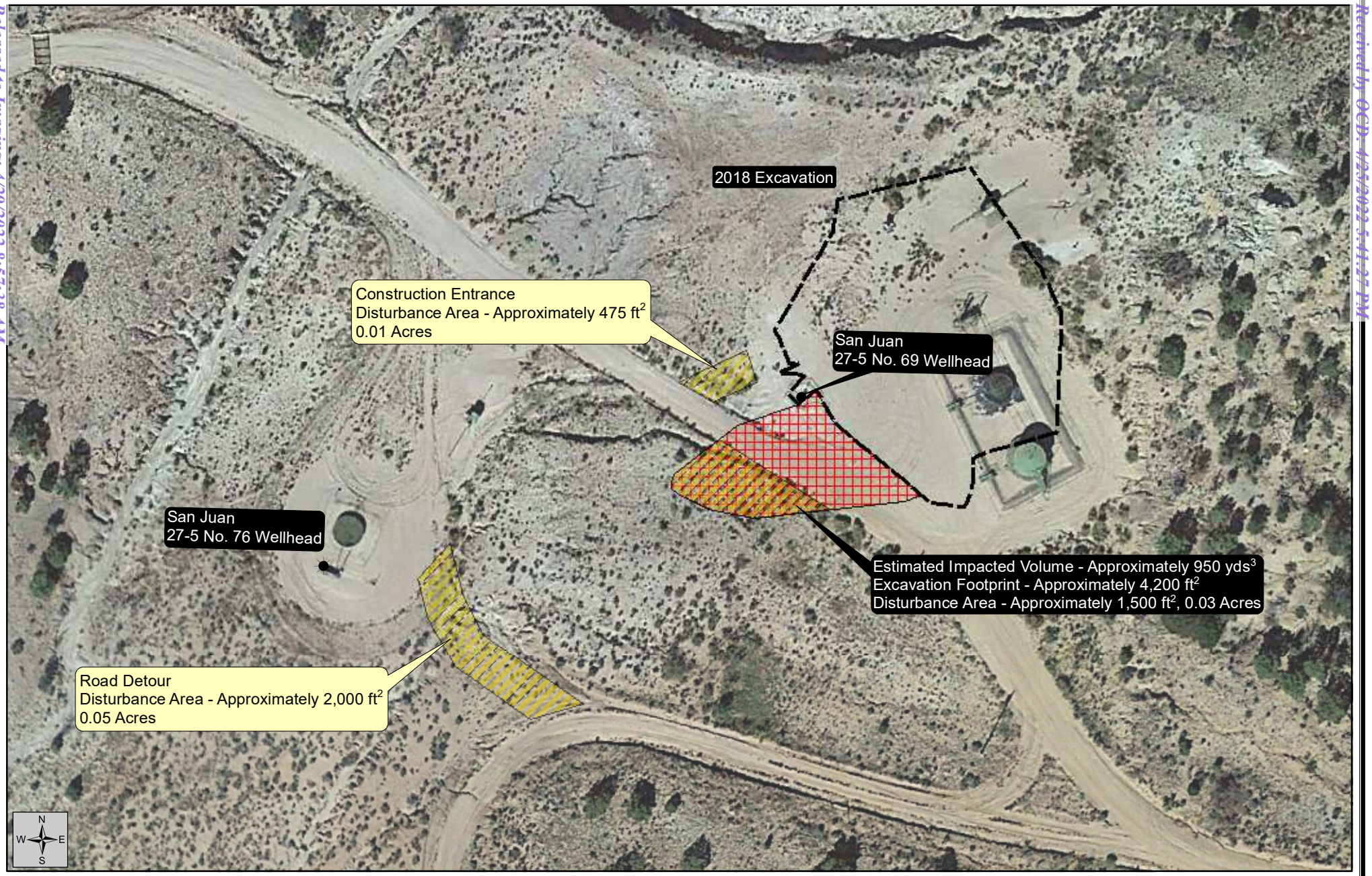


Figure 6
Proposed Excavation & Disturbance Area Map

Supplemental Investigation and Work Plan

January 28, 2022

TIMBERWOLF ENVIRONMENTAL

1:750

0 100 200 300 Feet

San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Created By:
Kevin Cole
TE Project No.: HEC-180034

Datum: NAD83
Imagery Source: GoogleEarth
Vector Source: TE

- Proposed Excavation
- Road/Disturbance Area
- 2018 Excavation
- Well Head

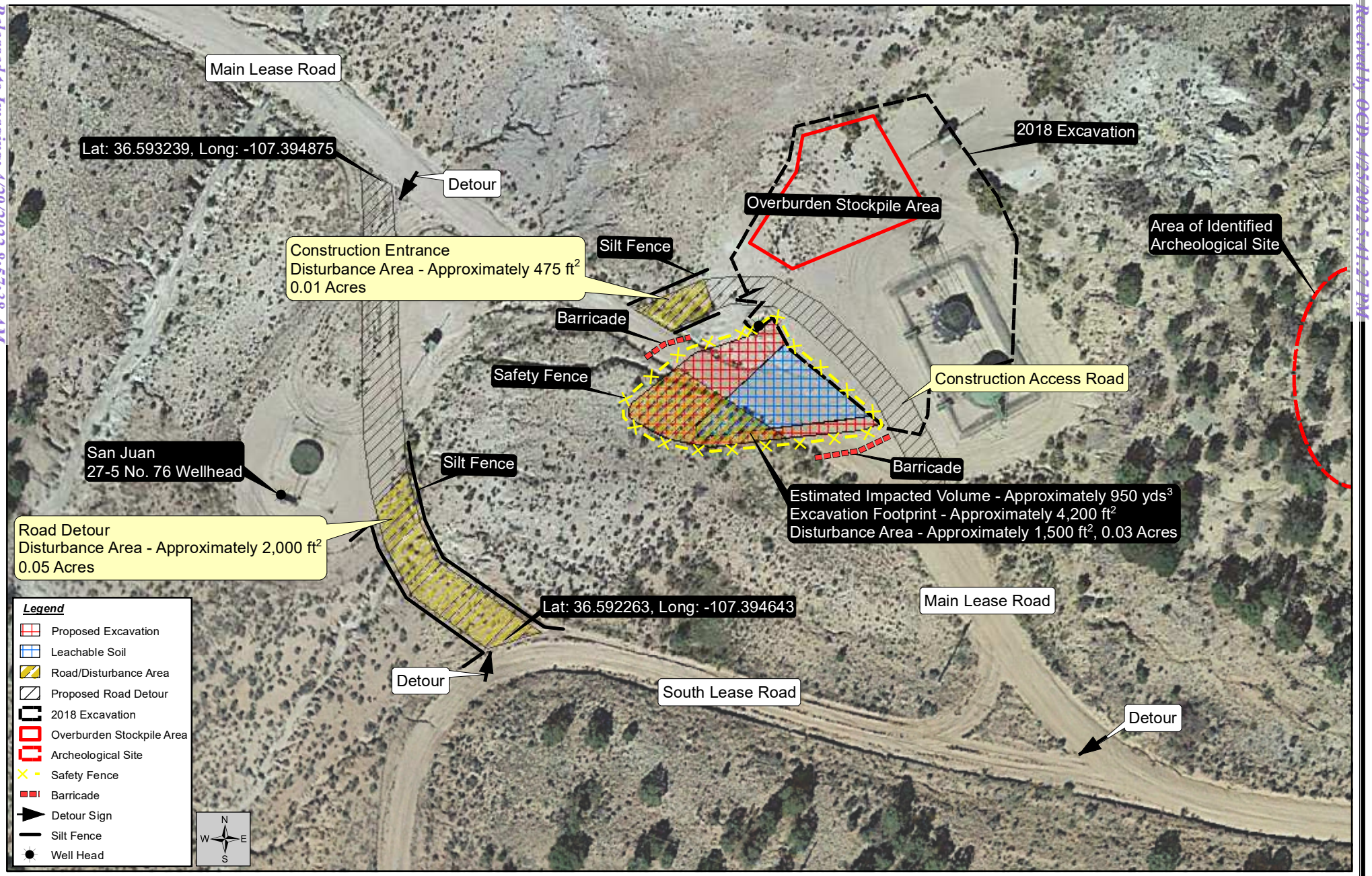


Figure 7 **Site Plan**	**Supplemental Investigation and Work Plan**	**January 28, 2022**
TIMBERWOLF ENVIRONMENTAL Created By: Kevin Cole TE Project No.: HEC-180034	1:750 0 100 200 300 Feet **San Juan 27-5 No. 69** **Hilcorp Energy Company** **Rio Arriba County, New Mexico**	Datum: NAD83 Imagery Source: GoogleEarth Vector Source: TE

Tables

Table A1. Coordinates for Delienation Soil Borings

Supplemental Investigation and Work Plan
San Juan 27-5 No. 69
Hilcorp Energy Company
Rio Arriba County, New Mexico

Soil Boring ID	Latitude*	Longitude*
HSA3	36.593013	-107.394281
HSA11	36.592900	-107.394123
HSA12	36.592870	-107.394033
HSA15	36.593025	-107.394163
HSA16	36.592856	-107.394332
HSA17	36.592831	-107.394266
HSA21	36.592871	-107.394215
HSA24	36.593001	-107.394083
HSA27	36.592902	-107.393902
HSA28	36.592945	-107.394301
HSA31	36.592881	-107.394410
HSA32	36.592972	-107.394363

* World Geodetic System 1984 (WGS-84) Datum

Archaeological Investigation – SWCA

A Class III Archaeological Investigation for the Timberwolf Environmental Remediation Project, Rio Arriba County, New Mexico

MAY 2019

PREPARED FOR

U.S. Bureau of Land Management

ON BEHALF OF

Timberwolf Environmental

PREPARED BY

SWCA Environmental Consultants

A CLASS III ARCHAEOLOGICAL INVESTIGATION FOR THE TIMBERWOLF ENVIRONMENTAL REMEDIATION PROJECT, RIO ARRIBA COUNTY, NEW MEXICO

Prepared for

U.S. Bureau of Land Management, Farmington Field Office
6251 College Blvd., Suite A
Farmington, NM 87402

On behalf of

Timberwolf Environmental
691 CR 233, Suite B-4
Durango, CO 81301

Prepared by

Mark R. Williams

SWCA Environmental Consultants
5647 Jefferson Street NE
Albuquerque, New Mexico 87109
Telephone: (505) 254-1115; Facsimile: (505) 254-1116
www.swca.com

Cherie Walth, Principal Investigator

SWCA Project No. 54303

SWCA Cultural Resources Report No. 19-267

May 2019

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.:	2a. Lead (Sponsoring) Agency:	2b. Other Permitting Agency(ies):	3. Lead Agency Report No.:
142989	Bureau of Land Management Farmington Field Office		

4. Title of Report: A Class III Archaeological Investigation for the Timberwolf Environmental Remediation Project, Rio Arriba County, New Mexico

Author(s): Mark R. Williams

5. Type of Report
☐ **Negative** ☒ **Positive**

6. Investigation Type
☐ Research Design ☒ Survey/Inventory ☐ Test Excavation ☐ Excavation ☐ Collections/Non-Field Study
☐ Overview/Lit Review ☐ Monitoring ☐ Ethnographic study ☐ Site specific visit ☐ Other

7. Description of Undertaking (what does the project entail?):

Timberwolf Environmental (Timberwolf) proposes to conduct a remediation project in Rio Arriba County, New Mexico. The proposed project would involve remediating a decommissioned oil pad and addressing any areas of soil contaminated by oil spillage. The project is located on land managed by the Bureau of Land Management (BLM) Farmington Field Office. BLM is the lead agency for this undertaking.

In accordance with policies and regulations implementing Section 106 of the National Historic Preservation Act (Public Law 89-665), as amended, this cultural resources inventory was completed to locate, identify, and record any cultural resources that might be affected within the area of potential effects (APE) of the proposed project and provide recommendations for their eligibility for the National Register of Historic Places (NRHP).

SWCA Environmental Consultants (SWCA) surveyed a total of 19.91 acres (8.04 hectares). This survey area consists of 12.07 acres (4.88 hectares) within the APE, plus the remaining area of 30.5 m (100 feet) to clear a buffer area for cultural resources.

During the current undertaking, SWCA recorded one newly identified site. No previously recorded sites or isolated manifestations were observed within the survey area. SWCA recommends that there will be *no adverse effect* to the cultural resources by this undertaking if the mitigation and avoidance recommendations are adhered to during the project planning and implementation.

8. Dates of Investigation: April 18–19, 2019

9. Report Date: May 6, 2019

10. Performing Agency/Consultant:
SWCA Environmental Consultants
Principal Investigator: Cherie Walth
Project Manager: Alissa Healy
Field Supervisor: Cherie Walth
Field Technician: Mark Williams

11. Performing Agency/Consultant Report No.:
SWCA Cultural Resources Report No. 19-267

12. Applicable Cultural Resource Permit No(s):
BLM Permit: 110-2920-18-GGG (expires 12/31/2020)

13. Client/Customer (project proponent):
Timberwolf Environmental
Contact: Jim Foster
Address: 691 CR 233, Suite B-4
Durango, CO 81301
Phone: 970-516-8419

14. Client/Customer Project No.:
SWCA Project No. 54303

15. Land Ownership Status *(Must be indicated on project map):*

Landowner	Acres Surveyed	Acres in APE
BLM, Farmington Field Office	19.91	12.07
Total	**19.91**	**12.07**

16. Records Search(es):

Date(s) of ARMS File Review: April 9, 2019	**Name of Reviewer(s):** Alissa Healy	
Date(s) of NR/SR File Review: April 9, 2019	**Name of Reviewer(s):** Alissa Healy	
Date(s) of Other Agency File Review: April 15, 2019	**Name of Reviewer(s):** Alissa Healy	**Agency:** BLM, Farmington Field Office

17. Survey Data:

a. Source Graphics ☐ **NAD 27** ☒ **NAD 83**

☒ **USGS 7.5' (1:24,000) topo map** ☐ **Other topo map, Scale:**

☒ **GPS Unit** **Accuracy** ☒**<1.0m** ☐ **1-10m** ☐ **10-100m** ☐**>100m**

b. USGS 7.5' Topographic Map Name **USGS Quad Code**

Santos Peak, 1981, 1983	36107-E4

c. County(ies): Rio Arriba

d. Nearest City or Town: Navajo City, NM

e. Legal Description:

Available PLSS Data for the Survey Area:

Township	Range	Section	Quarters
27 North	5 West	7	SE, NW, NE
			SW, NE, NE
			SE, NE, NE
			NE, SW, NE
			NW, SE, NE
			NE, SE, NE

Projected legal description? Yes ☐ **, No** ☒ **Unplatted** ☐

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.): The center portion of the proposed project area contained a decommissioned well pad. The pumpjack had been removed and the area was infilled with uncontaminated soil.

18. Survey Field Methods:

Intensity: ☐ 100% coverage ☒ <100% coverage

Configuration: ☒ block survey units: 1253 x 699 ft ☐ linear survey units (l × w): ☐ other survey units (specify):

Scope: ☒ non-selective (all sites recorded) ☐ selective/thematic (selected sites recorded)

Coverage Method: ☒ systematic pedestrian coverage ☐ other method (describe)

Survey Interval (m): 15 **Crew Size:** 2 **Fieldwork Dates:** April 18–19, 2019

Survey Person Hours: 19.5 **Recording Person Hours:** 15 **Total Hours:** 34.5

Additional Narrative: Large machinery was already working within the proposed survey area when SWCA archaeologists arrived. The crew was treating a small oil spill in the center of the previously cleared well pad. The area where the heavy machinery was actively working was not included in the current survey.

19. Environmental Setting (NRCS soil designation; vegetation community; elevation; etc.):

The project area is surrounded by rolling hills and drainages and is located at an elevation of 2,029 m (6,656 feet) above mean sea level. Santos Peak is present to the north of the project area. Notable topographic features in the surrounding area include Devils Spring Mesa, Fourmile Mesa, Ensenada Mesa, and Cereza Canyon. The nearest water source to the project area is the intermittently flowing Canyon de Camino, which trends generally east-west and joins the San Juan River near Gobernador Canyon. This likely served as the primary water source for prehistoric occupations.

The geologic units within the project area include San Jose Formation fluvial deposits that date to the Eocene geologic period. The project area soils are classified as Vessilla-Menefee-Orlie complex, which is found on hillslopes and undulating plateaus with slopes ranging from 0 to 30 percent. The soils are well drained and are derived from weathered sandstone and shale alluvium with low (1–3 percent) organic matter content (Natural Resources Conservation Service 2019).

Weather data for the project area were compiled using the Bloomfield 3 SE, New Mexico (291063) climate station, with a period of record from December 1, 1892, to June 10, 2016. Rainfall in the project area can occur year-round, but it is most abundant from July through October. Annual precipitation in the area averages 22.12 cm (8.71 inches). Temperatures are coldest in January at 16.3 degrees Fahrenheit (-8.7 degrees Celsius) and warmest in July at 92.1 degrees Fahrenheit (33.4 degrees Celsius). The average annual snowfall is 31.24 cm (12.3 inches) with the majority falling between December and March (Western Regional Climate Center 2019).

The project is located within the Near-Rockies Valleys and Mesas subregion of the Arizona/New Mexico Plateau ecoregion (Brown 1994). The vegetation is a shrubland interspersed with evergreen woodland and savanna. Common plant species include one-seed and Rocky Mountain juniper, Indian ricegrass, big sagebrush, sand dropseed, galleta, threeawns, blue grama, and rabbitbrush (Griffith et al. 2006). A variety of animals may be found in the project area, including black bear, bobcat, red fox, American badger, long-tailed weasel, western spotted skunk, common raccoon, mule deer, elk, pronghorn, Rocky Mountain bighorn sheep, coyote, spotted ground squirrel, and several bird, reptile, and raptor species (Biota Information System of New Mexico 2019). During the survey, deer scat was observed.

References Cited:

Biota Information System of New Mexico

2019 Database Query for Rio Arriba County. Available at: http://www.bison-m.org/. Accessed April 25, 2019.

Brown, David E. (editor)

1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.

Griffith, G.E., J.M. Omernik, M.M. McGraw, G.Z. Jacobi, C.M. Canavan, T.S. Schrader, D. Mercer, R. Hill, and B.C. Moran

2006 Ecoregions of New Mexico. Color poster with map, descriptive text, summary tables, and photographs, scale 1:1,400,000. U.S. Geological Survey, Reston, Virginia.

Natural Resources Conservation Services

2019 Web Soil Survey Tool. Available at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Accessed April 25, 2019.

Western Regional Climate Center

2019 Monthly Climate Summary, Bloomfield 3 SE, New Mexico (291063). Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm1063. Accessed April 25, 2019.

20.a. Percent Ground Visibility: The survey area had excellent ground surface visibility of approximately 76 to 99 percent, with some areas obscured by pinyon and juniper trees, shrub brush, and sparse patches of rice grass and other forbs.

b. Condition of Survey Area (grazed, bladed, undisturbed, etc.): The project area has been impacted by natural eolian and alluvial erosional processes. Additionally, roads have been graded through the project area to provide access to other well pads. The well pad that once occupied the center portion of the project area had been removed, and the resulting hole has been filled in with trucked-in soil and regraded. Evidence of livestock grazing was observed throughout the entire project area.

21. CULTURAL RESOURCE FINDINGS ☒ **Yes, See Page 3** ☐ **No, Discuss Why:**

22. Required Attachments (check all appropriate boxes):

- ☒ **USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn**
- ☒ **Copy of NMCRIS Mapserver Map Check**
- ☒ **LA Site Forms - new sites (*with sketch map & topographic map*)**
- ☐ **LA Site Forms (update) - previously recorded & un-relocated sites (*first 2 pages minimum*)**
- ☐ **Historic Cultural Property Inventory and Historic Water Delivery System Forms**
- ☐ **List and Description of isolates, if applicable**
- ☐ **List and Description of Collections, if applicable**

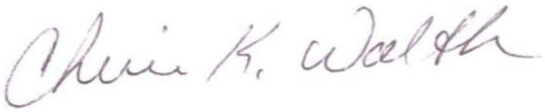
23. Other Attachments:

- ☒ **Photographs and Log**
- ☒ **Other Attachments**

***(Describe)*:** BLM Authorization Form and Mapserver Map Check

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator/Responsible Archaeologist: Cherie K. Walth

Signature:  **Date:** 05/7/2019 **Title (if not PI):**

25. Reviewing Agency:	**26. SHPO**
Reviewer's Name/Date	**Reviewer's Name/Date:**
Accepted ( ) Rejected ( )	**HPD Log #:**
Tribal Consultation (if applicable): ☐ **Yes** ☐ **No**	**SHPO File Location:**
	Date sent to ARMS:

CULTURAL RESOURCE FINDINGS

1. NMCRIS Activity No.:	**2a. Lead (Sponsoring) Agency:**	**2b. Other Permitting Agency(ies):**	**3. Lead Agency Report No.:**
142989	Bureau of Land Management Farmington Field Office		

SURVEY RESULTS:

Sites discovered and registered: 1
Sites discovered and NOT registered: 0
Previously recorded sites revisited (*site update form required*): 0
Previously recorded sites not relocated *(site update form required):* 0
TOTAL SITES VISITED: 1
Total isolates recorded: 0 **Non-selective isolate recording?** ☒
Total structures recorded (*new and previously recorded, including acequias*): 0

MANAGEMENT SUMMARY

SWCA surveyed a total of 19.91 acres (8.04 hectares). This survey area consists of 12.07 acres (4.88 hectares) within the APE, plus the area within a 30.5-m (100-foot) cultural resources survey buffer.

SWCA recorded one newly identified site (LA 194067), a Navajo temporary camp with signs of a possible sweat lodge or shelter. The site is recommended eligible for the NRHP because of intact charcoal stained deposits in Feature 2. There were no previously recorded sites or isolated manifestations encountered during this survey.

IF REPORT IS NEGATIVE YOU ARE DONE AT THIS POINT.

Newly Recorded Sites:

LA No.	Field/Agency No.	Eligibility Recommendation
194067	54303 CKW 001	Eligible, Criterion D

CONTENTS

Appendices

Figures

Tables

CHAPTER 1. INTRODUCTION AND PROJECT DESCRIPTION

Timberwolf Environmental (Timberwolf) proposes to conduct a remediation project in Rio Arriba County, New Mexico. The proposed project would involve remediating a decommissioned oil pad and addressing any areas of soil contaminated by oil spillage. This remediation would involve the use of earth-moving equipment to remove any contaminated soil, to deposit sterile fill dirt, and to regrade the affected area (Figure 1). The project is located on land managed by the Bureau of Land Management (BLM) Farmington Field Office. BLM is the lead agency for this undertaking.

Figure 1. Overview of the project area with the decommissioned well pad in the center, facing north (Frame T56-7288).

SWCA Environmental Consultants (SWCA) conducted a pedestrian survey for a block parcel of 19.91 acres (8.04 hectares). The proposed footprint for the entire undertaking is 12.07 acres (4.88 hectares). An additional 30.5 m (100 foot) buffer was included in the survey per the BLM Farmington Field Office stipulations for the protection of nearby cultural resources.

The project is located on the Santos Peak 1981 U.S. Geological Survey (USGS) 7.5-minute quadrangle map. The Public Land Survey System (PLSS) data are presented in Table 1. The project location is shown in Figure 2 and Figure 3.

In accordance with policies and regulations implementing Section 106 of the National Historic Preservation Act (Public Law 89-665), as amended, this cultural resources inventory was completed to locate, identify, and record any cultural resources that might be affected within the area of potential effects (APE) of the proposed project and provide recommendations for their eligibility for the National Register of Historic Places (NRHP).

Table 1. Public Land Survey System Legal Description for the Survey Area

Township	Range	Section	Quarters
27 North	5 West	7	SE, NW, NE
			SW, NE, NE
			SE, NE, NE
			NE, SW, NE
			NW, SE, NE
			NE, SE, NE

The project was conducted out of SWCA's Albuquerque office (5647 Jefferson Street NE, Albuquerque, New Mexico 87109; telephone [505] 254-1115). Cherie K. Walth (cwalth@swca.com) served as principal investigator and field lead, Alissa Healy (alissa.healy@swca.com) served as project manager, and the field crew included Mark Williams as field technician. Anne Russell served as the geographic information system (GIS) specialist. Rhiannon Held conducted a technical edit of the document and Kelley Cox provided formatting assistance. Jim Foster is the point of contact for Timberwolf (691 CR 233, Suite B-4, Durango, CO 81301; telephone: [970] 516-8419).

Details on the locations of investigated archaeological sites, including Archaeological Records Management Section (ARMS) data on previous investigations and archaeological sites and surveys within 0.4 km (0.25 mile) of the project area are provided in Appendix A.

Locational information is confidential and for official use only—public disclosure of archaeological site locations is prohibited by 16 United States Code (USC) 470hh and 36 Code of Federal Regulations (CFR) 296.18.

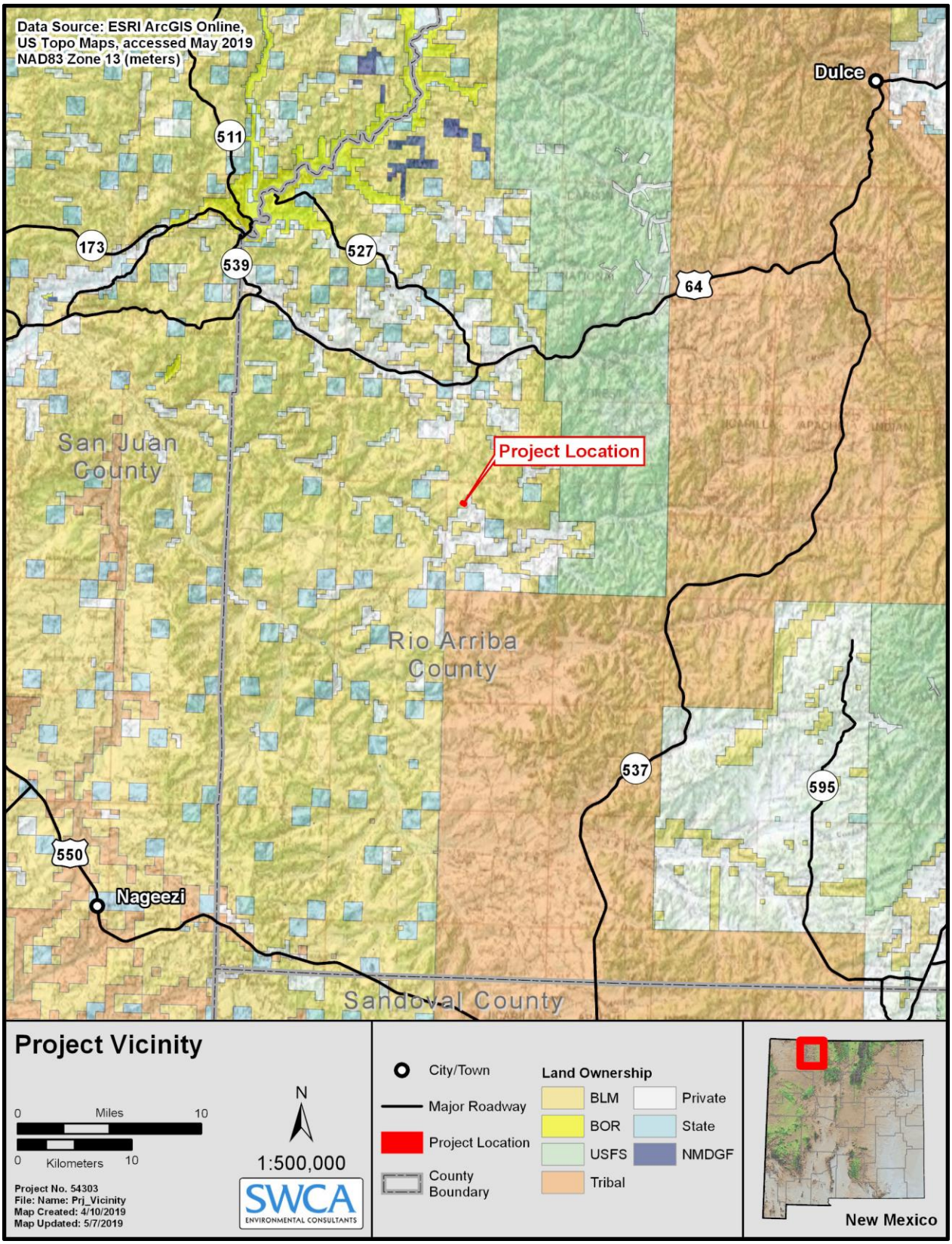


Figure 2. Project vicinity map.

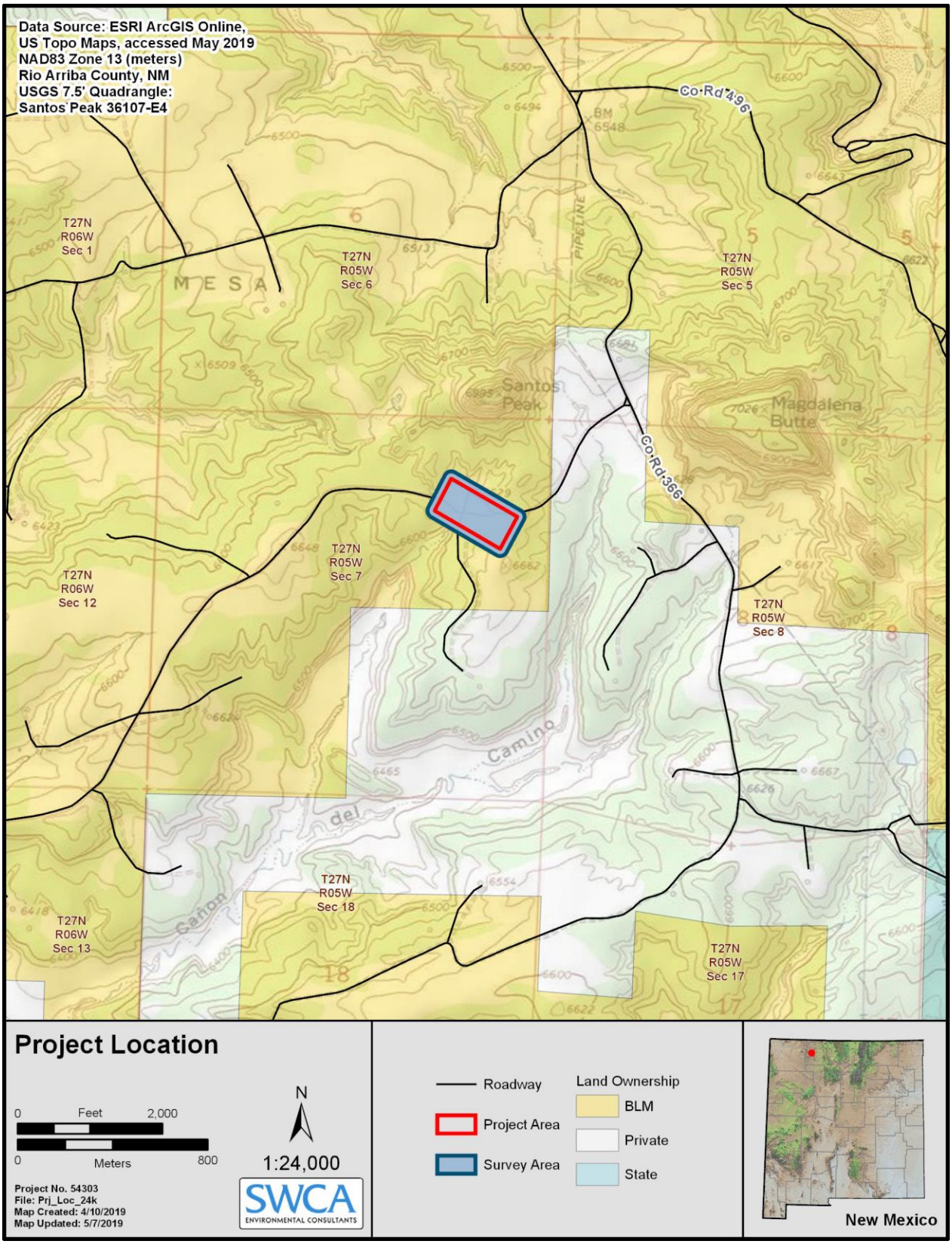


Figure 3. Project location map.

CHAPTER 2. ENVIRONMENTAL SETTING

ENVIRONMENT

The project area is surrounded by rolling hills and drainages and is located at an elevation of 2,029 m (6,656 feet) amsl. Santos Peak is present to the north of the project area. Notable topographic features in the surrounding area include Devils Spring Mesa, Fourmile Mesa, Encenada Mesa, and Cereza Canyon. The nearest water source to the project area is the intermittent Canyon de Camino, which trends generally east-west and joins the San Juan River near Gobernator Canyon. This likely served as the primary water source for prehistoric occupations.

SOILS

The project area soils are classified as Vessilla-Menefee-Orlie complex, which is found on hillslopes and undulating plateaus with slopes ranging from 0 to 30 percent. The soils are well drained and are derived from weathered sandstone and shale alluvium with low (1 to 3 percent) organic matter content (Natural Resources Conservation Service 2019).

CLIMATE

Climate data for the project area was compiled using the Bloomfield 3 SE, New Mexico (291063), climate station data with a period of record from December 1, 1892, to June 10, 2016. Rainfall in the project area can occur year-round, but it is most abundant from July through October. Annual precipitation in the area averages 22.12 cm (8.71 inches). Temperatures are coldest in January at 16.3 degrees Fahrenheit (-8.7 degrees Celsius) and warmest in July at 92.1 degrees Fahrenheit (33.4 degrees Celsius). The average annual snowfall is 31.24 cm (12.3 inches) with the majority falling between December and March (Western Regional Climate Center 2019).

FLORA AND FAUNA

The project is located within the Near-Rockies Valleys and Mesas subregion of the Arizona/New Mexico Plateau ecoregion (Brown 1994). The vegetation is a shrubland interspersed with evergreen woodland and savanna. Common plant species include one-seed and Rocky Mountain juniper, Indian ricegrass, big sagebrush, sand dropseed, galleta, threeawns, blue grama, and rabbitbrush (Griffith et al. 2006). A variety of animals may be found in the project area, including black bear, bobcat, red fox, American badger, long-tailed weasel, western spotted skunk, common raccoon, mule deer, elk, pronghorn, Rocky Mountain bighorn sheep, coyote, spotted ground squirrel, and several bird, reptile, and raptor species (Biota Information System of New Mexico 2019). During the survey, deer and elk droppings were observed.

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CHAPTER 3. CULTURE HISTORY

Human settlement in the Southwest is firmly documented from the earliest known inhabitants of North America, the Paleoindians, continuing through to the Historic period. A brief chronology below (Eddy 1966; Gerow and Hogan 2000; Lipe et al. 1999; describes the hallmarks of the major chronological divisions for the BLM, Dinetah region.

PALEOINDIAN PERIOD (10,000–5,500 B.C.)

The earliest known human occupations of the region occurred during the Paleoindian tradition, which dates from 10,000 to 5,500 B.C. The Paleoindian tradition is characterized by kill sites, game processing sites, and temporary camps. Tool assemblages consist of flaked stone implements—dart points and specialized hide-processing tools—used for hunting large animals, including now-extinct megafauna such as mammoth, ancient bison, camels, and sloth. The settlement and subsistence patterns suggest a high degree of residential mobility.

ARCHAIC PERIOD (5,500 B.C.–A.D. 400)

Following the Paleoindian period is the Archaic tradition, which dates from 5,500 B.C. to A.D. 400. The Archaic was a time of changing environment that necessitated modifying the preceding lifestyle to fit warmer, drier conditions. This resulted in intensive foraging of plant resources and hunting of deer and smaller game, leading to a general decrease in the size of dart points. The importance of plant resources is evidenced by an increasing number of ground stone milling implements, and the earliest maize appears in the Late Archaic. Sites are numerous, are found in both open settings and in caves and rockshelters, and contain features such as firepits, storage cists, and rather rudimentary house structures. In the Rio Puerco drainage—to the south of the project area—is an Archaic phase sequence defined by Irwin-Williams (1973) as the Oshara Tradition. This sequence consists of the Jay-Bajada (Early Archaic), San Jose (Middle Archaic), Armijo (early Late Archaic), and En Medio (later Late Archaic) phases. Although archaic sites are less common in the Dinetah region, many Archaic components may be obscured by remains of later occupations. Archaic style projectile points offer one marker that can be used to identify sites of this period, although collecting of earlier points by Pueblo period peoples may have displaced many from their original discard context.

The Basketmaker II/Los Pinos phase, A.D. 1–400 (Eddy 1966), is difficult to distinguish from the earlier Archaic period based on surface remains only and is generally associated with the beginnings of farming-based economies. This phase is marked by the appearance of expanding-stem, corner-notched dart points; the presence of exotic trade ornaments; a general absence of ceramics except for small quantities of brown ware toward the end; and the presence of one- and two-handed manos. Although maize and squash were important subsistence crops, hunting and collecting of wild foods remained important subsistence pursuits. Pits, bins, and other storage facilities are common, as well as sheet middens. Rockshelters and open pit house sites are common habitation sites. Structures are shallow circular depressions (cobble rings) with occasional antechambers or benches. One oversized structure per village suggests that communal structures (proto-kivas) were an established form by the Los Pinos phase. Sites are located on Pleistocene benches overlooking the river valleys.

BASKETMAKER III/SAMBRITO PHASE (A.D. 400–700)

The Basketmaker III/Sambrito phase, A.D. 400–700 (Eddy 1966:478–484), is characterized by distinct architecture and ceramic styles. Ceramic types include brown ware (Sambrito Utility) and gray ware; Sambrito Utility comprises the majority of the ceramic assemblage and is used for utility or storage vessels. The presence of small projectile points suggests the introduction of the bow and arrow during this phase. Pit

structures are the primary domestic structure with extramural features such as storage pits and hearths. Pit structures change in style from a shallow circular pit to a deeper pit with a formal central hearth, slab deflectors, wingwalls, storage bins, and an antechamber that is circular to sub-rectangular in plan. Near the end of this stage, the antechamber is less often seen and the main chamber is deeper with formal ventilators. As with the preceding phase, one oversized structure per village suggests that kivas were an established form in this phase. Site types in this period are hamlets or residential sites with single- and multi-residential features, landscape features (for example, petroglyph panels), and limited activity sites. Eddy (1966:479) suggests that a Mogollon migration may have entered the area but that the number of immigrants may have been low. Exotic goods, such as marine shells, imply that trade routes had been established, probably through the Hohokam of southern Arizona. There is an increasing dependence on cultivated crops (maize, beans, and squash), and storage is evident in the numerous extramural storage features. Sites are common on alluvial terraces, first benches of rivers, or ridges and bluffs overlooking drainage valleys.

PUEBLO I (A.D. 700–850)

The Pueblo I period is divided into the Rosa phase and Piedra phase. Eddy (1966:484) places the Rosa phase in the interval A.D. 700–850. This phase witnessed rapid demographic and organizational developments, with changes in architectural styles, ceramic assemblages, and site types (Eddy 1966). Population density appears to have been greatest in the Navajo Reservoir District for the early Pueblo I period (Eddy 1966). Pit houses and rectangular, jacal surface structures are present. Pit structures are square or rectangular with ventilators rather than antechambers and are deeper and more elaborate. Plain ware (gray ware) is commonly found and replaces the Sambrito Utility of the previous phase. Trade wares such as Rosa Black-on-white or Piedra Black-on-white are found. There are seven different site types that are recognized in the settlement pattern for this period: villages, large hamlets, small hamlets, great kivas, field houses, and nonresidential artifact scatters with and without features. Village-size sites surrounded by smaller habitations are present and may represent simple nuclear-centered communities. Rosa habitations are commonly located on Pleistocene benches. Site locations suggest a river-oriented pattern, although not as strong a one as in the Los Pinos phase. Campsites are found on recent alluvial sediments in the floodplain. Cultivated crops, especially maize, were the mainstay of the subsistence with wild foods still an important contribution to the diet.

PIEDRA PHASE (AD. 850–950)

During the Piedra phase, which according to Eddy (1966:492) dates to A.D. 850–950, population levels remained high in the Navajo Reservoir area. Pit houses, surface structures, kivas, exterior pits, and occasional stockades are found. The surface structures are large rooms, some with paved floors. The elaborate pit house is the most common pit structure, with no shallow pit houses. Great kivas are found in both Rosa and Piedra phase sites. Site types include villages that are generally larger than those in the Rosa phase, hamlets, field houses, landscape features, and limited activity sites. Stockade walls were likely built for defensive reasons, with evidence of warfare suggested in the increased number of burned structures and cannibalized human remains. There was an environmentally determined upstream shift in site locations (Eddy 1966). Pottery includes painted, neck-banded, and gray ware. Bancos Black-on-white and Piedra Black-on-white are found, and gray ware is tempered with crushed igneous rock. San Juan Red Ware (trade ware) is replaced by La Plata Black-on-red. Arboles type pottery is present in the later part of this phase, and milling stones peak during this phase. As hunting decreased and maize agriculture became even more important, axe-form hoes first appear.

PUEBLO II/ARBOLES PHASE (A.D. 950–1050)

The early Pueblo II/Arboles phase dates to the interval A.D. 950–1050 according to Eddy (1966:500). Slipped and corrugated pottery and masonry architecture mark this period. The Navajo Reservoir area

experienced a population decrease and a continuing shift upstream. The population increase in areas such as Chimney Rock may have been a result of the continuing northward movement and resettlement of local inhabitants. Single- and multiple-unit sites are common, with plain and elaborate pit houses and masonry surface structures (with and without paved floors) that were used for storage or residences (typically distinguished by the presence or absence of a fire hearth). Sites are located near stable water sources. Arboles Black-on-white, a slipped decorated white ware, is a common pottery type found in Arboles phase sites. A decline in imported marine ornaments is also recorded for this phase. The Arboles phase represents the last prehistoric occupation of the project area before what appears to be a long occupational hiatus that begins in late Pueblo II times (Eddy 1966).

By the end of Pueblo II times there was a dramatic population decrease in the Navajo Reservoir area and in the Dinetah region. There are 14 recorded sites in this region where Largo-Gallina phase components (A.D. 1050–1300) have been recorded. At most, the area may have been used only for seasonal hunting and gathering activities during this time interval (Gerow and Hogan 2000). Climate change may be one possible cause of the abandonment of the area. A long drought occurred over the Colorado Plateau and was thought to be a contributing element to the collapse of the Chacoan cultures to the south during this time.

DINETAH AND GOBERNADOR PHASE (A.D. 1540–1700)

The post-Pueblo period includes the Navajo period (Dinétah and Gobernador phases). The Dinétah phase, A.D. 1540–1700 (Eddy 1966), was originally determined by subtracting the traits known to be of Pueblo origin. This left a suite of characterizations that was thought to represent the Navajo culture. The Gobernador phase, A.D. 1700–1775, was based on positive characteristics and is generally reflective of the cultural changes to Navajo life after the Pueblo Revolt (A.D. 1680–1692) (Eddy 1966).

Archaeological evidence indicates that the Navajo occupied the area by at least the mid-sixteenth century, and Navajo traditional histories place them in northwest New Mexico even earlier. By about 1600, most Navajos were probably located west of Abiquiu and the Rio Chama, having been driven out by conflicts with Utes. The Dinétah phase is typified by what appear to be seasonally occupied sites with forked-pole hogans excavated slightly into the ground or ramada-like surface structures (Gerow and Hogan 2000). Dinétah gray pottery and grooved shaft abraders are characteristic artifacts. Hunting and gathering were important subsistence practices, with occasional domestic plant foods recovered. The latter may be present as a result of trading or raiding.

The Gobernador phase is characterized by the presence of Pueblitos, fortified sites, hogans, lean-tos, ramadas, masonry rooms, exterior pits, sweat-lodges, and refuse piles. Pueblitos were defensive sites used by the Navajo in response to Ute incursions (Gerow and Hogan 2000) and possibly to Spanish slave raiding as well. Site types include villages, single- and multiple-unit sites, and campsites and sites were often located at the confluences of creeks, rivers, or major drainages. Pottery types are predominantly Dinetah Gray and Gobernador Polychrome, but numerous Puebloan trade wares are also known (Reed and Goff 2007). Hunting, gathering, and farming comprised the subsistence basis for this phase.

HISTORIC PERIOD (A.D. 1680–1960)

The Historic period, A.D. 1680–1960, represents the occupation of the project vicinity by Euro-Americans. There is very little documentary evidence regarding the use of the area by the Spanish. The Old Spanish Trail crosses the Jicarilla Ranger District through Carracas Canyon, and the Dominguez-Escalante Expedition of 1776 crossed the San Juan River in the vicinity (Warner 1995), possibly within the present-day Dinetah district. Undoubtedly, Spanish settlements in the area introduced new technologies and ways of life to indigenous peoples. Some of the most important introductions were the

use of metal; the introduction of domestic animals; the introduction of new crops including wheat, barley, onions, garlic, and chili peppers; and the introduction of Old World diseases.

Mexico's declaration of independence from Spain in 1821 was accompanied by the opening of the Santa Fe Trail. This inaugurated a period of progressively greater interaction between Euro-Americans and Native American residents. The United States annexed the territory in 1846. Raids on Euro-American settlements continued in the area until 1863, the date of the defeat of the Navajo and Mescalero Apache.

Euro-American settlements in the Dinetah region did not emerge until the late 1870s. Farming and ranching were important early industries in the area. The mineral wealth in the area was recognized early but remained undeveloped because of problems relating to transportation. It was not until the 1950s, with improving transportation corridors, that energy industries began to boom in the area. The booming economy and improving transportation corridors also led to a boom in the tourism industry. These two industries are important economic factors today.

CHAPTER 4. PRE-FIELD INVESTIGATIONS AND FIELD METHODS

PRE-FIELD INVESTIGATIONS

Prior to conducting fieldwork, SWCA archaeologist Alissa Healy conducted record searches using the New Mexico Cultural Resource Information System (NMCRIS), the online ARMS database, and the BLM Farmington Field Office records check through e-mail with the archaeologist in the Farmington Field Office. These resources were searched for previously recorded archaeological sites and previously conducted archaeological surveys within 0.4 km (0.25 mile) of the survey area. The ARMS online records search also included properties listed in the NRHP as well as the State Register of Cultural Properties (SRCP) that are within 0.4 km (0.25 mile) of the survey area.

Results of the record searches show that eight previous archaeological investigations have been completed within 0.4 km (0.25 mile) of the survey area. No previously recorded sites are located within the survey area and three sites are present within the 0.4-km (0.25-mile) radius of the current project area (Table A.1, Appendix A).

FIELD METHODS

SWCA archaeologists conducted a 100-percent (intensive) cultural resources pedestrian inventory of the current survey parcel by walking parallel transects spaced no more than 15 m (approximately 50 feet) apart. The survey parcel consisted of a total of 19.91 acres (8.04 hectares), all of which are on BLM-managed lands. Recording of newly discovered cultural manifestations was initiated by pin-flagging all observed surface artifacts and other cultural items such as features. Isolated manifestations (IMs) were defined as 9 or fewer artifacts in a 100-m^2 area, an isolated feature with no potential for dating, or manifestations that are not related to other nearby IMs or sites. Archaeological sites are defined as locations dating to an age or likely age of 50 years or more (pre-1968) that contained 10 or more artifacts in a 100-m^2 area, or as a feature or features in association with any artifacts meeting the 50-year age criterion.

Cultural locations were described and recorded according to current archaeological standards using ODK Collect and NextGIS Mobile software. ODK Collect is used to document archaeological data (artifacts, features, etc.), and NextGIS Mobile is used to record spatial data (site and survey boundaries). Both programs were run on Samsung Galaxy Android tablets connected to a Juniper Geode global positioning system (GPS) receiver with submeter accuracy. Resource recording consisted of preparing a plan map (post-field using GPS data), taking photographs, completing a New Mexico Laboratory of Anthropology (LA) site form or Historic Cultural Property Inventory (HCPI) form, recording all artifacts and features, and recording the resource boundaries with the GPS system.

Prehistoric artifacts were identified and recorded as follows: debitage was categorized by each flake's maximum size recorded in 1-cm increments (0–1 cm, 1–2 cm, 2–3 cm, 3–4 cm, 4–5 cm, and 5+ cm), along with the percent of cortex present and material type. For ground stone, cores, and lithic tools, attributes recorded were type (e.g., mano, projectile point, core, metate, biface); maximum length, width, and thickness (in cm); completeness (broken or complete); material; and percent cortex. Recorded ceramic attributes included ware, type, form (e.g., bowl, jar, plate), and portion (e.g., rim, body). All \projectile points and other formal tools were photographed with a centimeter scale in the photograph. A representative sample sufficient to illustrate assemblage diversity was photographed of other objects, including ceramics, bifaces, and ground stone.

Historic-period artifacts were recorded in a similar manner as prehistoric artifacts. Diagnostic artifacts (or a representative sample) were measured and recorded using the Imperial system based on inches and broken down into sixteenths of an inch (e.g., a can with a diameter of 3½ inches would be recorded as 3 8/16 inches in diameter). For cans, the maximum length, width, thickness, and diameter, when applicable (in inches); completeness (broken, complete, or crushed); and seams or closures were recorded. Historic-period ceramic attributes included ware, type, form (e.g., bowl, jar, plate), and portion (e.g., rim, body). The most temporally diagnostic historic-period artifacts are retail glass containers, and manufacture dates can be inferred from maker's marks, product labeling, or indicators of technology of production (e.g., handmade vs. machine-made). Metal cans and ceramic sherds also have dateable attributes, although these are not typically as precise as are those for glass containers. Dates of manufacture are important for determining the temporal range of historic-period activity at a site. Diagnostic artifacts (or a representative sample) were photographed with a scale in the photograph. Dateable maker's marks, labels, etc., were similarly photographed as applicable.

When 100 or fewer artifacts were observed at a site (whether prehistoric or historic-period), all surface artifacts were recorded. At sites with more than 100 artifacts, concentrations and general scatters were defined and the assemblages were sampled so that artifact totals could be estimated. Detailed information as described above was still collected for the sampled artifacts. At least 100 artifacts were recorded per site, and more if concentrations showed different cultural/temporal affiliations. All lithic tools and ground stone artifacts, as well as features and diagnostic historic-period artifacts, were fully recorded. All field records from the survey are on file at SWCA's Albuquerque office.

CHAPTER 5. SURVEY RESULTS

During the current survey, SWCA recorded one newly identified site (LA 194067), a Navajo temporary camp with signs of a possible sweat lodge or shelter. No previously recorded sites were in the survey area and no IMs were encountered. The newly recorded site is described in detail below.

NEWLY RECORDED RESOURCES

LA 194067

Additional Site Numbers: 54303 CKW 001 *(SWCA Temporary Site Number)*
Universal Transverse Mercator (UTM)/PLSS Data: See Appendix A
USGS: Santos Peak (36107-E4)
County: Rio Arriba
Elevation: 7,222 feet (2,201 m) amsl
Landowner: BLM
Cultural Affiliation and Age: Navajo, Unspecified Navajo (A.D. 1500–1620)
Site Type: Artifact scatter with features
Size: 41.21 × 23.54 m (561.5 m^2 / 0.14 acres)
NRHP Eligibility: Recommended eligible, Criterion D
Management Recommendations: Avoidance of the site

Site Description

LA 194067 is a prehistoric Navajo site dating from A.D. 1500 to 1620 that consists of a thermal feature and ash stain in addition to a fairly sparse artifact scatter. The site likely served as a temporary camp with a possible sweat lodge or shelter. The overall landform is on a west-facing hill with a slope of 2 to 5 degrees. A large drainage is south of the site and several smaller rills cut through the site. Sediments are a pale brown loamy sand with patches of natural sandstone cobbles and exposed bedrock intermixed. Santos Peak can be seen above the trees to the north, but general visibility is blocked by vegetation in most directions. The site is in a pinyon juniper woodland, and the ground surface is relatively clear of vegetation, resulting in surface visibility of approximately 76 to 99 percent. Vegetation is sparse and consists of pinyon and juniper trees, shrub brush, and sparse patches of rice grass and other forbs (Figure 4 to Figure 7). The entire observed artifact assemblage at LA 194067 consists of 30 artifacts that include lithic debitage, an edge-modified flake tool, and Dinetah gray ware ceramics. Additionally, two features were observed and recorded on a somewhat flat portion of the hillslope in the site.

LA 194067 is in excellent condition, around 76–99 percent intact with impacts from eolian and alluvial erosion. Alluvial erosion is the primary disturbance, with small rills cutting through the site and moving artifacts downslope to the west. Features 1 and 2 have been particularly affected by alluvial erosion and will continue to erode into the adjacent rill over time. Eolian erosion may have also shifted surface sediments. Construction activity has occurred in the surrounding area but has not impacted the site itself. The edge of the disturbed area is 5 m west of the site boundary.

Figure 4. LA 194067, general site overview, facing southeast (Frame T56-9460).

Figure 5. LA 194067, general site overview, facing southwest (Frame T56-1581).

Figure 6. LA 194067, general site overview with drainage in foreground, facing west (Frame T56-3193).

Figure intentionally removed

Figure 7. LA 194067, site plan map.

Features

Two features were recorded at LA 194067: one thermal feature (Feature 1) and one ash stain (Feature 2). These features combined may represent the remains of a sweat lodge with stones heated in Feature 1 for use in Feature 2. Feature 1 is a semicircular alignment of partially buried sandstone slabs located directly south of and adjacent to Feature 2. Feature 1 measures 1 m in diameter and the three largest cobbles measure 30 to 50 cm, the largest of which is an upright slab (Figure 8 and Figure 9). Burned wood and charcoal are partially buried at the base of the center stone. Smaller (5–20 cm) fire-reddened sandstone cobbles are visible on the surface and are eroding downslope to the west into an adjacent drainage. More stones are likely to be present subsurface. Fresh deer scat is present inside the feature.

Figure 8. LA 194067, Feature 1, thermal feature, facing north (Frame T46-4767).

Figure 9. LA 194067, Feature 1, thermal feature, facing southwest (Frame T46-6815).

Feature 2 is an area of soil staining containing charcoal and ash measuring 1.3 m north-south by 3.2 m east-west (Figure 10). It is located adjacent to and directly north of Feature 1. Partially buried fragments of charcoal and burned wood are visible on the surface and are eroding downslope into the drainage directly to the west. Several burned sandstone cobbles ranging in size from 20 to 50 cm are partially buried near the edges of the feature, suggesting that a structure may possibly be a sweat lodge. Artifacts within the feature include one white chert noncortical flake measuring 0 to 1 cm, two noncortical Washington Pass chert flakes measuring 1 to 2 and 2 to 3 cm, , and one Dinetah gray ware rim sherd (PL 2; Figure 11).

Figure 10. LA 194067, Feature 2, ash stain with single pin flags marking the edges of the feature, facing southwest (Frame T46-5120).

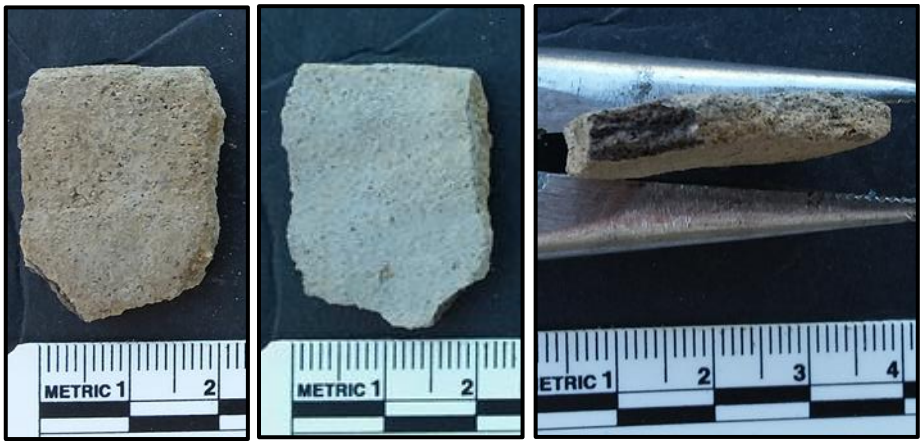

Figure 11. LA 194067, PL 2 Dinetah gray ware sherd, exterior, interior, cross section (Frames T46-7179, T46-0186, T46-9385).

Materials Identified

The entire observed artifact assemblage at LA 194067 consists of 30 artifacts and was recorded in full. The general scatter consists of five pieces of chalcedony, obsidian, and chert debitage ranging in size from less than 1 cm to 3 to 4 cm in length. The majority of the flakes in the general scatter have no cortex with only two having less than 50 percent cortex (Table 2). Artifacts recorded with Feature 2 are shown in (Table 3).

One white chert edge-modified flake measured 6.0 × 2.7 × 0.8 cm and had evidence of utilization on both lateral margins, a multifaceted platform, and no cortex. This modified flake was recorded in a small rill downslope and to the west of Features 1 and 2 and approximately 5 m east of the disturbed area.

A small pot drop was recorded as PL 1 (Figure 12) and was east of Features 1 and 2 with 20 sherds of Dinetah gray ware and three chert flakes. Two types of ceramics were noted during this investigation: corrugated Dinetah gray ware and plain Dinetah gray ware. All the sherds contain a sand temper and black fine-grain paste.

Table 2. General Scatter Lithic Debitage Observed at LA 194067

Material Color/Type	Type	Maximum Length of Flake (cm)						Type Total	Material Total
		1	2	3	4	5	5+		
White chert	<50% cortex				1			1	2
	No cortex		1					1	
Chalcedony	<50% cortex				1			1	1
Obsidian	No cortex		1		1			2	2
Total			**2**		**3**				**5**

Table 3. Feature 2 Lithic Debitage Observed at LA 194067

Material Color/Type	Type	Maximum Length of Flake (cm)						Type Total	Material Total
		1	2	3	4	5	5+		
White Chert	No cortex		1					1	1
Washington Pass Chert	No cortex			1	1			2	3
Total								**3**	**3**

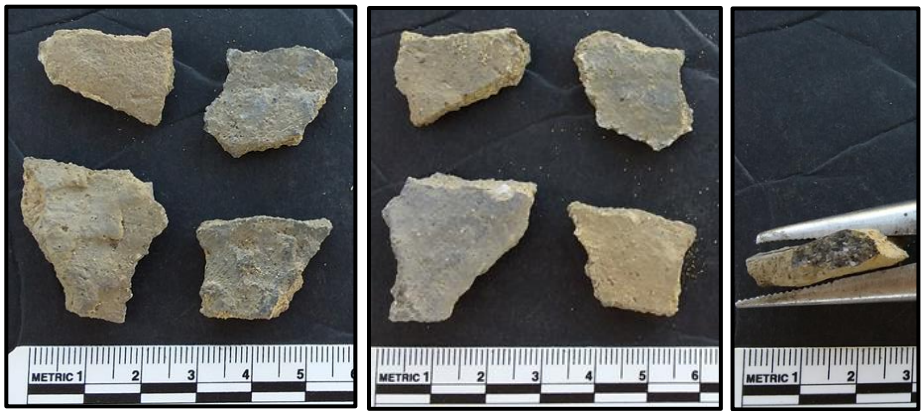

Figure 12. LA 194067, PL 1, corrugated Dinetah gray ware jar body sherds within a pot drop, exterior, interior, cross section (Frames T46-4706, T46-5142, T46-7478).

Site Chronology

The presence of diagnostic Dinetah gray ware ceramic sherds indicates the site dates from A.D. 1500 to 1620 (Reed and Goff 2007).

Site Summary and Interpretation

LA 194067 is a prehistoric Navajo site consisting of a thermal feature and ash stain. The entire observed artifact assemblage consists of 30 artifacts. Artifacts consisted of lithic debitage, an edge-modified flake tool, and Dinetah gray ware ceramics. The site likely served as a temporary camp with a possible sweat lodge or shelter. The location may have been chosen because of its proximity to Santos Peak.

Eligibility Recommendations

LA 194067 retains integrity of location. The site has diminished integrity of feeling and setting because transmission lines, a maintenance road, and a decommissioned oil pad that has been constructed around the site. Integrity of design, materials, and workmanship are not evident in the surface expression. The site has integrity of association because the assemblage can be linked to a specific time period and cultural group. Examination of drainages that cross the site indicate that cultural deposits containing ash and charcoal extend approximately 20 cm below modern ground surface. The charcoal contained within these features retains the potential to provide material for radiocarbon dating. The site has the potential to provide significant information on land use and potential habitation during the Navajo period (Criterion D). LA 194067 is not associated with any significant events and does not make a significant contribution to the broad patterns of history (Criterion A) nor is it associated with the lives of significant individuals in our past (Criterion B). Additionally, the site does not exemplify a distinctive type, period, or construction style, or the work of a master (Criterion C). SWCA recommends the site eligible for the NRHP under Criterion D.

Management Recommendations

LA 194067 should be avoided by all ground-disturbing activities.

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CHAPTER 6. SUMMARY OF ELIGIBILITY AND MANAGEMENT RECOMMENDATIONS

One newly identified prehistoric Navajo site was recorded during the course of this investigation. The site includes two intact features located along the northeast edge and within the 30.5 m (100 foot) buffer of the APE. The associated artifact scatter has been dispersed by alluvial erosion and extends downslope into the project area. The site is recommended eligible for the NRHP under Criterion D because of intact subsurface deposits with material suitable for radiocarbon dating. Although the site is recommended eligible for the NRHP, it does not extend far it on the project APE and is not likely to be impacted. Avoidance is recommended (Table 4).

SWCA recommends that there will be *no adverse effect* to the cultural resources within the boundaries of this proposed project if the site is avoided during the project planning and implementation.

Table 4. Site Summary, Eligibility, and Mitigation Recommendations

Site No.	Site Type/Cultural Affiliation and Dates	NRHP Eligibility Recommendation	Recommended Mitigation
LA 194067	Navajo (A.D. 1500–1620)	Eligible, Criterion D	Avoidance

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CHAPTER 7. REFERENCES CITED

Biota Information System of New Mexico
2019 Database Query for Rio Arriba County. Available at: http://www.bison-m.org/. Accessed April 25, 2019.

Brown, David E. (editor)
1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.

Eddy, F. W.
1966 *Prehistory in the Navajo Reservoir District, Northwestern New Mexico*. Papers in Anthropology, Number 15, Part II. Museum of New Mexico Press, Santa Fe, New Mexico.

Gerow, P. A., and P. Hogan
2000 *Investigations at LA 110299, a Late Dinétah Phase Occupation along U.S. 550, North of Cedar Hill, New Mexico*. Prepared for the New Mexico State Highway and Transportation Department, NH-550-1 (29). Office of Contract Archeology, University of New Mexico, Albuquerque.

Griffith, G.E., J.M. Omernik, M.M. McGraw, G.Z. Jacobi, C.M. Canavan, T.S. Schrader, D. Mercer, R. Hill, and B.C. Moran
2006 Ecoregions of New Mexico. Color poster with map, descriptive text, summary tables, and photographs, scale 1:1,400,000. U.S. Geological Survey, Reston, Virginia.

Irwin-Williams, Cynthia
1973 *The Oshara Tradition: Origins of Anasazi Culture.* Contributions in Anthropology No. 5, Vol. 1. Eastern New Mexico University, Portales.

Lipe, W. D., M. D. Varien, and R. H. Wilshusen
1999 *Colorado Prehistory: A Context for the Southern Colorado River Basin*. Colorado Council of Professional Archaeologists.

Natural Resources Conservation Services
2019 Web Soil Survey Tool. Available at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. April 25, 2019.

Reed, Lori, and Joel Goff
2007 *A Field Guide to Upper San Juan Anasazi and Navajo Pottery*. Prepared for the NMAC Ceramic Workshop, Farmington District Office. Document on file, Bureau of Land Management, Farmington.

Warner, Ted J.
1995 *The Dominguez-Escalante Journal: There Expedition through Colorado, Utah, Arizona, and New Mexico in 1776.* University of Utah Press, Salt Lake City.

Western Regional Climate Center
2019 Monthly Climate Summary, Bloomfield 3 SE, New Mexico (291063). Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm1063. Accessed April 25, 2019.

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APPENDIX A

Cultural Resources Locational Information

This appendix provides the locations of cultural properties and is marked as confidential. Public disclosure is prohibited by 16 United States Code (USC) 470hh and 36 Code of Federal Regulations (CFR) 296.18.

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Table A.1. Previously Recorded Cultural Resources within 400 m (0.25 mile) of the Project Area

Site Number	NMCRIS No.	Site Type / Cultural Affiliation and Age	NRHP Eligibility	Relationship to Project Area
8948	25989	Archaeology/Features / Navajo, Post Pueblo Revolt (A.D. 1693–1753)	Undetermined	Outside
174546	125608	Archaeology/No Features / Navajo, Pre-Pueblo Revolt (A.D. 1693–1753)	Undetermined	Outside
129477	67717	Archaeology/Features / Navajo, Post-Pueblo Revolt (A.D. 1692–1753)	Eligible, Criterion D HPD Log No.: 59636	Outside

Note: NRHP = National Register of Historic Places.

Table A.2. Archaeological Surveys Conducted within 500 m (0.3 mile) of the Original Project Area

NMCRIS No.	Performing Agency	End Date	Acres Surveyed	Resources Visited
6049	San Juan County Museum Association Division of Conservation Archaeology	December 31, 1983	106.42	10
7025	Jicarilla Archaeological Services	December 31, 1985	19.86	4
21517	San Juan County Museum Association Division of Conservation Archaeology	June 28, 1988	191.31	4
41485	Bureau of Land Management New Mexico State Office	December 31, 1992	9.90	0
67717	Arboles Contract Archaeology	February 26, 2000	6.30	1
106677	Aztec Archaeological	May 22, 2007	9.90	2
109987	Aztec Archaeological	April 9, 2008	49.12	7
125608	La Plata Archaeological Consultants	September 14, 2012	7.30	1

Note: NMCRIS = New Mexico Cultural Resource Information System.

Table A.3. Cultural Resources Universal Transverse Mercator Coordinates and Public Land Survey System Data

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Table A.4. Features and Point-Located Artifacts Universal Transverse Mercator Coordinates

Table intentionally removed

Figure intentionally removed

Figure A.1. Project location map showing cultural resources.

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Figure A.2. Archaeological Records Management Section screenshot of the project vicinity, showing previously recorded sites (red and blue) and surveys (gold and purple). Yellow pin marks the approximate center point of the current project area.

Laboratory Report and Chain-of-Custody Documents

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

September 06, 2018

HilCorp-Farmington, NM

Sample Delivery Group:	L1021246
Samples Received:	08/28/2018
Project Number:	HEC-180034
Description:	San Juan 27-5 No. 69
Report To:	Joe Whiteley
	382 Road 3100
	Aztec, NM 87401

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

HSA-1 7.5' L1021246-01 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 09:21
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159793	1	08/31/18 10:59	08/31/18 11:10	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 18:33	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1161622	5000	08/29/18 07:59	09/05/18 14:12	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160196	40	08/29/18 07:59	08/31/18 19:29	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160849	800	08/29/18 07:59	09/02/18 17:25	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 21:05	MG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	200	09/01/18 15:04	09/06/18 16:46	KLM

HSA-1 10.5-11' L1021246-02 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 09:36
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
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Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 18:42	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	250	08/29/18 07:59	08/30/18 04:56	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160849	4	08/29/18 07:59	09/02/18 17:06	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 21:17	MG

HSA-1 20-21' L1021246-03 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 09:51
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159793	1	08/31/18 10:59	08/31/18 11:10	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 18:51	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 05:20	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160196	1	08/29/18 07:59	08/31/18 16:17	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 21:30	MG

HSA-1 25-26' L1021246-04 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 10:04
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159793	1	08/31/18 10:59	08/31/18 11:10	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 18:59	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 05:44	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160196	1	08/29/18 07:59	08/31/18 16:37	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 21:43	MG

HSA-2 8-9' L1021246-05 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 10:30
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159793	1	08/31/18 10:59	08/31/18 11:10	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 19:26	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1161622	2000	08/29/18 07:59	09/05/18 14:34	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160196	20	08/29/18 07:59	08/31/18 18:51	BMB
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160849	400	08/29/18 07:59	09/02/18 17:44	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 21:56	MG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	200	09/01/18 15:04	09/06/18 16:59	KLM

HSA-2 13-14' L1021246-06 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 10:41
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 19:34	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1161622	1	08/29/18 07:59	09/05/18 14:57	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160196	1	08/29/18 07:59	08/31/18 16:56	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 22:08	MG

HSA-2 19-20' L1021246-07 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 10:54
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 19:43	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 06:56	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 00:58	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 22:21	MG

HSA-2 24-25' L1021246-08 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 11:10
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:10	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 07:20	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 01:18	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 22:34	MG

HSA-3 14-15' L1021246-09 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 11:53
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:18	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 07:43	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 01:39	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159854	1	09/01/18 15:04	09/02/18 22:47	MG

HSA-4 4-5' L1021246-10 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 12:12
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:27	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	500	08/29/18 07:59	08/30/18 08:08	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	40	08/29/18 07:59	09/02/18 01:59	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 20:22	MTJ
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	50	09/04/18 08:26	09/06/18 00:24	MG

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

HSA-4 6.5-7.5' L1021246-11 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 12:17
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:36	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1161622	2000	08/29/18 07:59	09/05/18 15:41	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	40	08/29/18 07:59	09/02/18 02:19	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1161576	400	08/29/18 07:59	09/05/18 12:31	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 20:36	MTJ
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	50	09/04/18 08:26	09/06/18 00:38	MG

HSA-4 13-14' L1021246-12 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 12:55
Received date/time: 08/28/18 08:45

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Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:45	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 09:03	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 02:40	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1161576	1	08/29/18 07:59	09/05/18 11:30	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 20:49	MTJ

HSA-5 6-7' L1021246-13 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 13:15
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158742	1	08/29/18 14:05	08/30/18 00:10	ELN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1161622	1000	08/29/18 07:59	09/05/18 16:03	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	20	08/29/18 07:59	09/02/18 03:00	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 22:38	MTJ
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	200	09/04/18 08:26	09/06/18 01:05	MG

HSA-5 9-10' L1021246-14 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 13:18
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 20:54	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	100	08/29/18 07:59	08/30/18 09:51	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	8	08/29/18 07:59	09/02/18 03:20	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 21:03	MTJ

HSA-6 6-7' L1021246-15 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 13:41
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1159796	1	08/31/18 12:46	08/31/18 12:56	KS
Wet Chemistry by Method 300.0	WG1158685	1	08/28/18 22:15	08/29/18 21:02	MAJ
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 10:15	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 03:41	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1161576	1	08/29/18 07:59	09/05/18 11:50	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 21:17	MTJ

HSA-7 9-10' L1021246-16 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 14:04
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1160201	1	09/04/18 09:35	09/04/18 09:43	JD
Wet Chemistry by Method 300.0	WG1158706	1	08/28/18 22:18	08/31/18 23:30	MCG
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	250	08/29/18 07:59	08/30/18 10:39	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	20	08/29/18 07:59	09/02/18 04:01	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 21:30	MTJ

HSA-7 12' L1021246-17 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 14:13
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1160201	1	09/04/18 09:35	09/04/18 09:43	JD
Wet Chemistry by Method 300.0	WG1158706	1	08/28/18 22:18	08/31/18 23:48	MCG
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	100	08/29/18 07:59	08/30/18 11:02	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	8	08/29/18 07:59	09/02/18 04:21	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 21:44	MTJ
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	5	09/04/18 08:26	09/06/18 00:51	MG

HSA-7 15' L1021246-18 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 14:15
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1160201	1	09/04/18 09:35	09/04/18 09:43	JD
Wet Chemistry by Method 300.0	WG1158706	1	08/28/18 22:18	08/31/18 23:56	MCG
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 11:26	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 04:42	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1161576	1	08/29/18 07:59	09/05/18 12:11	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 21:57	MTJ

HSA-8 5-6' L1021246-19 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 14:40
Received date/time: 08/28/18 08:45

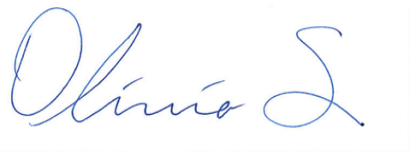
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1160201	1	09/04/18 09:35	09/04/18 09:43	JD
Wet Chemistry by Method 300.0	WG1158706	1	08/28/18 22:18	09/01/18 00:05	MCG
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 11:50	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 05:02	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 22:11	MTJ

HSA-8 9-10' L1021246-20 Solid

Collected by: JW / JF
Collected date/time: 08/24/18 14:42
Received date/time: 08/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1160201	1	09/04/18 09:35	09/04/18 09:43	JD
Wet Chemistry by Method 300.0	WG1158706	1	08/28/18 22:18	09/01/18 00:14	MCG
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1159249	1	08/29/18 07:59	08/30/18 12:14	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1160396	1	08/29/18 07:59	09/02/18 05:22	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1159856	1	09/04/18 08:26	09/05/18 22:25	MTJ

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Olivia Studebaker
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	82.8		1	08/31/2018 11:10	WG1159793

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	120		10.0	1	08/29/2018 18:33	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	8000		500	5000	09/05/2018 14:12	WG1161622
(S) a,a,a-Trifluorotoluene(FID)	*94.6*		*77.0-120*		*09/05/2018 14:12*	WG1161622

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	6.02		0.0400	40	08/31/2018 19:29	WG1160196
Toluene	0.365		0.200	40	08/31/2018 19:29	WG1160196
Ethylbenzene	49.4		0.100	40	08/31/2018 19:29	WG1160196
Total Xylenes	508		5.20	800	09/02/2018 17:25	WG1160849
(S) Toluene-d8	*115*		*75.0-131*		*08/31/2018 19:29*	WG1160196
(S) Toluene-d8	*112*		*75.0-131*		*09/02/2018 17:25*	WG1160849
(S) Dibromofluoromethane	*95.8*		*65.0-129*		*08/31/2018 19:29*	WG1160196
(S) Dibromofluoromethane	*102*		*65.0-129*		*09/02/2018 17:25*	WG1160849
(S) a,a,a-Trifluorotoluene	*87.3*		*80.0-120*		*08/31/2018 19:29*	WG1160196
(S) a,a,a-Trifluorotoluene	*91.1*		*80.0-120*		*09/02/2018 17:25*	WG1160849
(S) 4-Bromofluorobenzene	*109*		*67.0-138*		*08/31/2018 19:29*	WG1160196
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*09/02/2018 17:25*	WG1160849

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7520		800	200	09/06/2018 16:46	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 21:05	WG1159854
(S) o-Terphenyl	*329*	J1	*18.0-148*		*09/02/2018 21:05*	WG1159854
(S) o-Terphenyl	*273*	J7	*18.0-148*		*09/06/2018 16:46*	WG1159854

Sample Narrative:

L1021246-01 WG1159854: Surrogate failure due to matrix interference

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.0		1	08/31/2018 11:10	WG1159793

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	165		10.0	1	08/29/2018 18:42	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	588		25.0	250	08/30/2018 04:56	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.2*		*77.0-120*		*08/30/2018 04:56*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00649		0.00400	4	09/02/2018 17:06	WG1160849
Toluene	ND		0.0200	4	09/02/2018 17:06	WG1160849
Ethylbenzene	1.68		0.0100	4	09/02/2018 17:06	WG1160849
Total Xylenes	4.99		0.0260	4	09/02/2018 17:06	WG1160849
(S) Toluene-d8	*114*		*75.0-131*		*09/02/2018 17:06*	WG1160849
(S) Dibromofluoromethane	*97.9*		*65.0-129*		*09/02/2018 17:06*	WG1160849
(S) a,a,a-Trifluorotoluene	*87.8*		*80.0-120*		*09/02/2018 17:06*	WG1160849
(S) 4-Bromofluorobenzene	*104*		*67.0-138*		*09/02/2018 17:06*	WG1160849

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	302		4.00	1	09/02/2018 21:17	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 21:17	WG1159854
(S) o-Terphenyl	*89.6*		*18.0-148*		*09/02/2018 21:17*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.2		1	08/31/2018 11:10	WG1159793

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	62.8		10.0	1	08/29/2018 18:51	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 05:20	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.4*		*77.0-120*		*08/30/2018 05:20*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00137		0.00100	1	08/31/2018 16:17	WG1160196
Toluene	ND		0.00500	1	08/31/2018 16:17	WG1160196
Ethylbenzene	0.00882		0.00250	1	08/31/2018 16:17	WG1160196
Total Xylenes	0.00887		0.00650	1	08/31/2018 16:17	WG1160196
(S) Toluene-d8	*117*		*75.0-131*		*08/31/2018 16:17*	WG1160196
(S) Dibromofluoromethane	*89.3*		*65.0-129*		*08/31/2018 16:17*	WG1160196
(S) a,a,a-Trifluorotoluene	*77.7*	J2	*80.0-120*		*08/31/2018 16:17*	WG1160196
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*08/31/2018 16:17*	WG1160196

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/02/2018 21:30	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 21:30	WG1159854
(S) o-Terphenyl	*84.9*		*18.0-148*		*09/02/2018 21:30*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	96.9		1	08/31/2018 11:10	WG1159793

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	59.6		10.0	1	08/29/2018 18:59	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 05:44	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*77.0-120*		*08/30/2018 05:44*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	08/31/2018 16:37	WG1160196
Toluene	ND		0.00500	1	08/31/2018 16:37	WG1160196
Ethylbenzene	ND		0.00250	1	08/31/2018 16:37	WG1160196
Total Xylenes	ND		0.00650	1	08/31/2018 16:37	WG1160196
(S) Toluene-d8	*116*		*75.0-131*		*08/31/2018 16:37*	WG1160196
(S) Dibromofluoromethane	*90.0*		*65.0-129*		*08/31/2018 16:37*	WG1160196
(S) a,a,a-Trifluorotoluene	*78.1*	J2	*80.0-120*		*08/31/2018 16:37*	WG1160196
(S) 4-Bromofluorobenzene	*98.3*		*67.0-138*		*08/31/2018 16:37*	WG1160196

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7.43		4.00	1	09/02/2018 21:43	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 21:43	WG1159854
(S) o-Terphenyl	*78.9*		*18.0-148*		*09/02/2018 21:43*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.1		1	08/31/2018 11:10	WG1159793

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	200		10.0	1	08/29/2018 19:26	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	9500		200	2000	09/05/2018 14:34	WG1161622
(S) a,a,a-Trifluorotoluene(FID)	*95.0*		*77.0-120*		*09/05/2018 14:34*	WG1161622

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.60		0.0200	20	08/31/2018 18:51	WG1160196
Toluene	0.404		0.100	20	08/31/2018 18:51	WG1160196
Ethylbenzene	37.2		0.0500	20	08/31/2018 18:51	WG1160196
Total Xylenes	761		2.60	400	09/02/2018 17:44	WG1160849
(S) Toluene-d8	*112*		*75.0-131*		*08/31/2018 18:51*	WG1160196
(S) Toluene-d8	*113*		*75.0-131*		*09/02/2018 17:44*	WG1160849
(S) Dibromofluoromethane	*93.5*		*65.0-129*		*08/31/2018 18:51*	WG1160196
(S) Dibromofluoromethane	*104*		*65.0-129*		*09/02/2018 17:44*	WG1160849
(S) a,a,a-Trifluorotoluene	*83.7*		*80.0-120*		*08/31/2018 18:51*	WG1160196
(S) a,a,a-Trifluorotoluene	*91.5*		*80.0-120*		*09/02/2018 17:44*	WG1160849
(S) 4-Bromofluorobenzene	*116*		*67.0-138*		*08/31/2018 18:51*	WG1160196
(S) 4-Bromofluorobenzene	*110*		*67.0-138*		*09/02/2018 17:44*	WG1160849

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	10100		800	200	09/06/2018 16:59	WG1159854
C28-C40 Oil Range	5.74		4.00	1	09/02/2018 21:56	WG1159854
(S) o-Terphenyl	*297*	J1	*18.0-148*		*09/02/2018 21:56*	WG1159854
(S) o-Terphenyl	*351*	J7	*18.0-148*		*09/06/2018 16:59*	WG1159854

Sample Narrative:

L1021246-05 WG1159854: Surrogate failure due to matrix interference

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.4		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	98.6		10.0	1	08/29/2018 19:34	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	1.07		0.100	1	09/05/2018 14:57	WG1161622
(S) a,a,a-Trifluorotoluene(FID)	*92.5*		*77.0-120*		*09/05/2018 14:57*	WG1161622

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	08/31/2018 16:56	WG1160196
Toluene	ND		0.00500	1	08/31/2018 16:56	WG1160196
Ethylbenzene	ND		0.00250	1	08/31/2018 16:56	WG1160196
Total Xylenes	0.0155		0.00650	1	08/31/2018 16:56	WG1160196
(S) Toluene-d8	*118*		*75.0-131*		*08/31/2018 16:56*	WG1160196
(S) Dibromofluoromethane	*83.2*		*65.0-129*		*08/31/2018 16:56*	WG1160196
(S) a,a,a-Trifluorotoluene	*77.2*	J2	*80.0-120*		*08/31/2018 16:56*	WG1160196
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*08/31/2018 16:56*	WG1160196

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	11.4		4.00	1	09/02/2018 22:08	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 22:08	WG1159854
(S) o-Terphenyl	*81.8*		*18.0-148*		*09/02/2018 22:08*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.2		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	107		10.0	1	08/29/2018 19:43	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 06:56	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.6*		*77.0-120*		*08/30/2018 06:56*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 00:58	WG1160396
Toluene	ND		0.00500	1	09/02/2018 00:58	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 00:58	WG1160396
Total Xylenes	ND		0.00650	1	09/02/2018 00:58	WG1160396
(S) Toluene-d8	*107*		*75.0-131*		*09/02/2018 00:58*	WG1160396
(S) Dibromofluoromethane	*97.5*		*65.0-129*		*09/02/2018 00:58*	WG1160396
(S) a,a,a-Trifluorotoluene	*106*		*80.0-120*		*09/02/2018 00:58*	WG1160396
(S) 4-Bromofluorobenzene	*100*		*67.0-138*		*09/02/2018 00:58*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/02/2018 22:21	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 22:21	WG1159854
(S) o-Terphenyl	*78.4*		*18.0-148*		*09/02/2018 22:21*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.3		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	46.5		10.0	1	08/29/2018 20:10	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 07:20	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*08/30/2018 07:20*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 01:18	WG1160396
Toluene	ND		0.00500	1	09/02/2018 01:18	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 01:18	WG1160396
Total Xylenes	ND		0.00650	1	09/02/2018 01:18	WG1160396
(S) Toluene-d8	*105*		*75.0-131*		*09/02/2018 01:18*	WG1160396
(S) Dibromofluoromethane	*98.7*		*65.0-129*		*09/02/2018 01:18*	WG1160396
(S) a,a,a-Trifluorotoluene	*105*		*80.0-120*		*09/02/2018 01:18*	WG1160396
(S) 4-Bromofluorobenzene	*103*		*67.0-138*		*09/02/2018 01:18*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	9.66		4.00	1	09/02/2018 22:34	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 22:34	WG1159854
(S) o-Terphenyl	*77.3*		*18.0-148*		*09/02/2018 22:34*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.3		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	143		10.0	1	08/29/2018 20:18	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 07:43	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*08/30/2018 07:43*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 01:39	WG1160396
Toluene	ND		0.00500	1	09/02/2018 01:39	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 01:39	WG1160396
Total Xylenes	ND		0.00650	1	09/02/2018 01:39	WG1160396
(S) Toluene-d8	*105*		*75.0-131*		*09/02/2018 01:39*	WG1160396
(S) Dibromofluoromethane	*101*		*65.0-129*		*09/02/2018 01:39*	WG1160396
(S) a,a,a-Trifluorotoluene	*106*		*80.0-120*		*09/02/2018 01:39*	WG1160396
(S) 4-Bromofluorobenzene	*101*		*67.0-138*		*09/02/2018 01:39*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/02/2018 22:47	WG1159854
C28-C40 Oil Range	ND		4.00	1	09/02/2018 22:47	WG1159854
(S) o-Terphenyl	*80.0*		*18.0-148*		*09/02/2018 22:47*	WG1159854

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.3		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	93.5		10.0	1	08/29/2018 20:27	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	4090		50.0	500	08/30/2018 08:08	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*96.4*		*77.0-120*		*08/30/2018 08:08*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.585		0.0400	40	09/02/2018 01:59	WG1160396
Toluene	ND		0.200	40	09/02/2018 01:59	WG1160396
Ethylbenzene	10.8		0.100	40	09/02/2018 01:59	WG1160396
Total Xylenes	168		0.260	40	09/02/2018 01:59	WG1160396
(S) Toluene-d8	*107*		*75.0-131*		*09/02/2018 01:59*	WG1160396
(S) Dibromofluoromethane	*106*		*65.0-129*		*09/02/2018 01:59*	WG1160396
(S) a,a,a-Trifluorotoluene	*103*		*80.0-120*		*09/02/2018 01:59*	WG1160396
(S) 4-Bromofluorobenzene	*133*		*67.0-138*		*09/02/2018 01:59*	WG1160396

Sample Narrative:

L1021246-10 WG1160396: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7380		200	50	09/06/2018 00:24	WG1159856
C28-C40 Oil Range	7.61		4.00	1	09/05/2018 20:22	WG1159856
(S) o-Terphenyl	*113*		*18.0-148*		*09/05/2018 20:22*	WG1159856
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/06/2018 00:24*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.5		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	83.4		10.0	1	08/29/2018 20:36	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	6530		200	2000	09/05/2018 15:41	WG1161622
(S) a,a,a-Trifluorotoluene(FID)	*88.4*		*77.0-120*		*09/05/2018 15:41*	WG1161622

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.34		0.0400	40	09/02/2018 02:19	WG1160396
Toluene	1.32		0.200	40	09/02/2018 02:19	WG1160396
Ethylbenzene	39.6		0.100	40	09/02/2018 02:19	WG1160396
Total Xylenes	323		2.60	400	09/05/2018 12:31	WG1161576
(S) Toluene-d8	*119*		*75.0-131*		*09/02/2018 02:19*	WG1160396
(S) Toluene-d8	*104*		*75.0-131*		*09/05/2018 12:31*	WG1161576
(S) Dibromofluoromethane	*103*		*65.0-129*		*09/02/2018 02:19*	WG1160396
(S) Dibromofluoromethane	*106*		*65.0-129*		*09/05/2018 12:31*	WG1161576
(S) a,a,a-Trifluorotoluene	*99.9*		*80.0-120*		*09/02/2018 02:19*	WG1160396
(S) a,a,a-Trifluorotoluene	*104*		*80.0-120*		*09/05/2018 12:31*	WG1161576
(S) 4-Bromofluorobenzene	*118*		*67.0-138*		*09/02/2018 02:19*	WG1160396
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*09/05/2018 12:31*	WG1161576

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	6490		200	50	09/06/2018 00:38	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 20:36	WG1159856
(S) o-Terphenyl	*73.3*		*18.0-148*		*09/05/2018 20:36*	WG1159856
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/06/2018 00:38*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.0		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	46.5		10.0	1	08/29/2018 20:45	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 09:03	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*99.0*		*77.0-120*		*08/30/2018 09:03*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 02:40	WG1160396
Toluene	ND		0.00500	1	09/02/2018 02:40	WG1160396
Ethylbenzene	ND		0.00250	1	09/05/2018 11:30	WG1161576
Total Xylenes	ND		0.00650	1	09/05/2018 11:30	WG1161576
(S) Toluene-d8	*103*		*75.0-131*		*09/02/2018 02:40*	WG1160396
(S) Toluene-d8	*108*		*75.0-131*		*09/05/2018 11:30*	WG1161576
(S) Dibromofluoromethane	*99.6*		*65.0-129*		*09/02/2018 02:40*	WG1160396
(S) Dibromofluoromethane	*98.8*		*65.0-129*		*09/05/2018 11:30*	WG1161576
(S) a,a,a-Trifluorotoluene	*106*		*80.0-120*		*09/02/2018 02:40*	WG1160396
(S) a,a,a-Trifluorotoluene	*105*		*80.0-120*		*09/05/2018 11:30*	WG1161576
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*09/02/2018 02:40*	WG1160396
(S) 4-Bromofluorobenzene	*103*		*67.0-138*		*09/05/2018 11:30*	WG1161576

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/05/2018 20:49	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 20:49	WG1159856
(S) o-Terphenyl	*59.7*		*18.0-148*		*09/05/2018 20:49*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.8		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	153		10.0	1	08/30/2018 00:10	WG1158742

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	2750		100	1000	09/05/2018 16:03	WG1161622
(S) a,a,a-Trifluorotoluene(FID)	*90.4*		*77.0-120*		*09/05/2018 16:03*	WG1161622

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.269		0.0200	20	09/02/2018 03:00	WG1160396
Toluene	9.76		0.100	20	09/02/2018 03:00	WG1160396
Ethylbenzene	7.07		0.0500	20	09/02/2018 03:00	WG1160396
Total Xylenes	102		0.130	20	09/02/2018 03:00	WG1160396
(S) Toluene-d8	*116*		*75.0-131*		*09/02/2018 03:00*	WG1160396
(S) Dibromofluoromethane	*104*		*65.0-129*		*09/02/2018 03:00*	WG1160396
(S) a,a,a-Trifluorotoluene	*101*		*80.0-120*		*09/02/2018 03:00*	WG1160396
(S) 4-Bromofluorobenzene	*138*		*67.0-138*		*09/02/2018 03:00*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7980		800	200	09/06/2018 01:05	WG1159856
C28-C40 Oil Range	6.44		4.00	1	09/05/2018 22:38	WG1159856
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*09/06/2018 01:05*	WG1159856
(S) o-Terphenyl	*50.9*		*18.0-148*		*09/05/2018 22:38*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.5		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	83.4		10.0	1	08/29/2018 20:54	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	920		10.0	100	08/30/2018 09:51	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*96.3*		*77.0-120*		*08/30/2018 09:51*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0304		0.00800	8	09/02/2018 03:20	WG1160396
Toluene	1.05		0.0400	8	09/02/2018 03:20	WG1160396
Ethylbenzene	2.16		0.0200	8	09/02/2018 03:20	WG1160396
Total Xylenes	14.8		0.0520	8	09/02/2018 03:20	WG1160396
(S) Toluene-d8	*103*		*75.0-131*		*09/02/2018 03:20*	WG1160396
(S) Dibromofluoromethane	*101*		*65.0-129*		*09/02/2018 03:20*	WG1160396
(S) a,a,a-Trifluorotoluene	*103*		*80.0-120*		*09/02/2018 03:20*	WG1160396
(S) 4-Bromofluorobenzene	*123*		*67.0-138*		*09/02/2018 03:20*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	281		4.00	1	09/05/2018 21:03	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 21:03	WG1159856
(S) o-Terphenyl	*48.9*		*18.0-148*		*09/05/2018 21:03*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.5		1	08/31/2018 12:56	WG1159796

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	215		10.0	1	08/29/2018 21:02	WG1158685

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 10:15	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*08/30/2018 10:15*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 03:41	WG1160396
Toluene	ND		0.00500	1	09/02/2018 03:41	WG1160396
Ethylbenzene	ND		0.00250	1	09/05/2018 11:50	WG1161576
Total Xylenes	ND		0.00650	1	09/05/2018 11:50	WG1161576
(S) Toluene-d8	*105*		*75.0-131*		*09/02/2018 03:41*	WG1160396
(S) Toluene-d8	*108*		*75.0-131*		*09/05/2018 11:50*	WG1161576
(S) Dibromofluoromethane	*100*		*65.0-129*		*09/02/2018 03:41*	WG1160396
(S) Dibromofluoromethane	*100*		*65.0-129*		*09/05/2018 11:50*	WG1161576
(S) a,a,a-Trifluorotoluene	*105*		*80.0-120*		*09/02/2018 03:41*	WG1160396
(S) a,a,a-Trifluorotoluene	*107*		*80.0-120*		*09/05/2018 11:50*	WG1161576
(S) 4-Bromofluorobenzene	*104*		*67.0-138*		*09/02/2018 03:41*	WG1160396
(S) 4-Bromofluorobenzene	*102*		*67.0-138*		*09/05/2018 11:50*	WG1161576

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/05/2018 21:17	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 21:17	WG1159856
(S) o-Terphenyl	*61.3*		*18.0-148*		*09/05/2018 21:17*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.3		1	09/04/2018 09:43	WG1160201

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	28.1	J3	10.0	1	08/31/2018 23:30	WG1158706

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	524		25.0	250	08/30/2018 10:39	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.4*		*77.0-120*		*08/30/2018 10:39*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0202		0.0200	20	09/02/2018 04:01	WG1160396
Toluene	0.763		0.100	20	09/02/2018 04:01	WG1160396
Ethylbenzene	0.670		0.0500	20	09/02/2018 04:01	WG1160396
Total Xylenes	9.21		0.130	20	09/02/2018 04:01	WG1160396
(S) Toluene-d8	*104*		*75.0-131*		*09/02/2018 04:01*	WG1160396
(S) Dibromofluoromethane	*103*		*65.0-129*		*09/02/2018 04:01*	WG1160396
(S) a,a,a-Trifluorotoluene	*104*		*80.0-120*		*09/02/2018 04:01*	WG1160396
(S) 4-Bromofluorobenzene	*103*		*67.0-138*		*09/02/2018 04:01*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	124		4.00	1	09/05/2018 21:30	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 21:30	WG1159856
(S) o-Terphenyl	*45.8*		*18.0-148*		*09/05/2018 21:30*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	09/04/2018 09:43	WG1160201

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	57.4		10.0	1	08/31/2018 23:48	WG1158706

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	326		10.0	100	08/30/2018 11:02	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*99.6*		*77.0-120*		*08/30/2018 11:02*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00800	8	09/02/2018 04:21	WG1160396
Toluene	0.0613		0.0400	8	09/02/2018 04:21	WG1160396
Ethylbenzene	0.387		0.0200	8	09/02/2018 04:21	WG1160396
Total Xylenes	5.32		0.0520	8	09/02/2018 04:21	WG1160396
(S) Toluene-d8	*104*		*75.0-131*		*09/02/2018 04:21*	WG1160396
(S) Dibromofluoromethane	*105*		*65.0-129*		*09/02/2018 04:21*	WG1160396
(S) a,a,a-Trifluorotoluene	*103*		*80.0-120*		*09/02/2018 04:21*	WG1160396
(S) 4-Bromofluorobenzene	*115*		*67.0-138*		*09/02/2018 04:21*	WG1160396

Sample Narrative:

L1021246-17 WG1160396: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	332		20.0	5	09/06/2018 00:51	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 21:44	WG1159856
(S) o-Terphenyl	*64.8*		*18.0-148*		*09/05/2018 21:44*	WG1159856
(S) o-Terphenyl	*89.0*		*18.0-148*		*09/06/2018 00:51*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.6		1	09/04/2018 09:43	WG1160201

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	43.8		10.0	1	08/31/2018 23:56	WG1158706

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.448		0.100	1	08/30/2018 11:26	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*97.8*		*77.0-120*		*08/30/2018 11:26*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 04:42	WG1160396
Toluene	ND		0.00500	1	09/02/2018 04:42	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 04:42	WG1160396
Total Xylenes	ND		0.00650	1	09/05/2018 12:11	WG1161576
(S) Toluene-d8	*108*		*75.0-131*		*09/02/2018 04:42*	WG1160396
(S) Toluene-d8	*106*		*75.0-131*		*09/05/2018 12:11*	WG1161576
(S) Dibromofluoromethane	*98.2*		*65.0-129*		*09/02/2018 04:42*	WG1160396
(S) Dibromofluoromethane	*101*		*65.0-129*		*09/05/2018 12:11*	WG1161576
(S) a,a,a-Trifluorotoluene	*105*		*80.0-120*		*09/02/2018 04:42*	WG1160396
(S) a,a,a-Trifluorotoluene	*106*		*80.0-120*		*09/05/2018 12:11*	WG1161576
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*09/02/2018 04:42*	WG1160396
(S) 4-Bromofluorobenzene	*102*		*67.0-138*		*09/05/2018 12:11*	WG1161576

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/05/2018 21:57	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 21:57	WG1159856
(S) o-Terphenyl	*67.9*		*18.0-148*		*09/05/2018 21:57*	WG1159856

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.2		1	09/04/2018 09:43	WG1160201

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	56.6		10.0	1	09/01/2018 00:05	WG1158706

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 11:50	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.8*		*77.0-120*		*08/30/2018 11:50*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 05:02	WG1160396
Toluene	ND		0.00500	1	09/02/2018 05:02	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 05:02	WG1160396
Total Xylenes	ND		0.00650	1	09/02/2018 05:02	WG1160396
(S) Toluene-d8	*105*		*75.0-131*		*09/02/2018 05:02*	WG1160396
(S) Dibromofluoromethane	*101*		*65.0-129*		*09/02/2018 05:02*	WG1160396
(S) a,a,a-Trifluorotoluene	*104*		*80.0-120*		*09/02/2018 05:02*	WG1160396
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*09/02/2018 05:02*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/05/2018 22:11	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 22:11	WG1159856
(S) o-Terphenyl	*86.9*		*18.0-148*		*09/05/2018 22:11*	WG1159856

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.3		1	09/04/2018 09:43	WG1160201

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Chloride	65.8		10.0	1	09/01/2018 00:14	WG1158706

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	08/30/2018 12:14	WG1159249
(S) a,a,a-Trifluorotoluene(FID)	*98.6*		*77.0-120*		*08/30/2018 12:14*	WG1159249

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	09/02/2018 05:22	WG1160396
Toluene	ND		0.00500	1	09/02/2018 05:22	WG1160396
Ethylbenzene	ND		0.00250	1	09/02/2018 05:22	WG1160396
Total Xylenes	ND		0.00650	1	09/02/2018 05:22	WG1160396
(S) Toluene-d8	*109*		*75.0-131*		*09/02/2018 05:22*	WG1160396
(S) Dibromofluoromethane	*98.5*		*65.0-129*		*09/02/2018 05:22*	WG1160396
(S) a,a,a-Trifluorotoluene	*106*		*80.0-120*		*09/02/2018 05:22*	WG1160396
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*09/02/2018 05:22*	WG1160396

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	8.81		4.00	1	09/05/2018 22:25	WG1159856
C28-C40 Oil Range	ND		4.00	1	09/05/2018 22:25	WG1159856
(S) o-Terphenyl	*47.0*		*18.0-148*		*09/05/2018 22:25*	WG1159856

Method Blank (MB)

(MB) R3338802-1 08/31/18 11:10

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1021246-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1021246-03 08/31/18 11:10 • (DUP) R3338802-3 08/31/18 11:10

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	94.2	93.9	1	0.342		10

Laboratory Control Sample (LCS)

(LCS) R3338802-2 08/31/18 11:10

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3338812-1 08/31/18 12:56

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1021246-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1021246-11 08/31/18 12:56 • (DUP) R3338812-3 08/31/18 12:56

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	84.5	84.2	1	0.316		10

Laboratory Control Sample (LCS)

(LCS) R3338812-2 08/31/18 12:56

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3339093-1 09/04/18 09:43

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1021250-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1021250-01 09/04/18 09:43 • (DUP) R3339093-3 09/04/18 09:43

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	87.8	87.7	1	0.113		10

Laboratory Control Sample (LCS)

(LCS) R3339093-2 09/04/18 09:43

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3337795-1 08/29/18 16:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	U		0.795	10.0

L1021110-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1021110-01 08/29/18 17:14 • (DUP) R3337795-4 08/29/18 17:23

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	810	596	5	30.3	J3	20

L1021246-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1021246-15 08/29/18 21:02 • (DUP) R3337795-7 08/29/18 21:11

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	215	203	1	5.75		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3337795-2 08/29/18 16:29 • (LCSD) R3337795-3 08/29/18 16:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	200	201	204	101	102	90.0-110			1.29	20

L1021246-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1021246-04 08/29/18 18:59 • (MS) R3337795-5 08/29/18 19:08 • (MSD) R3337795-6 08/29/18 19:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	500	59.6	565	549	101	97.9	1	80.0-120			2.81	20

Method Blank (MB)

(MB) R3338911-1 08/31/18 22:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	U		0.795	10.0

L1021246-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1021246-16 08/31/18 23:30 • (DUP) R3338911-4 08/31/18 23:39

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	28.1	86.5	1	102	J3	20

L1021288-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1021288-12 09/01/18 03:01 • (DUP) R3338911-5 09/01/18 03:09

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2470	2250	5	9.46		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338911-2 08/31/18 23:04 • (LCSD) R3338911-3 08/31/18 23:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	200	198	196	98.9	97.9	90.0-110			1.03	20

L1021288-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1021288-02 09/01/18 01:15 • (MS) R3338911-6 09/01/18 12:49 • (MSD) R3338911-7 09/01/18 12:57

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	5.66	45900	41800	33800	0.000	0.000	100	80.0-120	V	J3 V	21.2	20

Method Blank (MB)

(MB) R3337860-1 08/29/18 21:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	U		0.795	10.0

L1021250-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1021250-07 08/30/18 00:45 • (DUP) R3337860-6 08/30/18 00:53

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	5910	5630	20	4.76		20

L1021301-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1021301-01 08/30/18 01:46 • (DUP) R3337860-7 08/30/18 01:55

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	564	598	1	5.73		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3337860-2 08/29/18 22:06 • (LCSD) R3337860-3 08/29/18 22:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Chloride	200	197	200	98.5	100	90.0-110			1.69	20

Method Blank (MB)

(MB) R3339169-3 08/30/18 04:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0424	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3339169-1 08/30/18 03:21 • (LCSD) R3339169-2 08/30/18 03:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.88	5.91	107	107	72.0-127			0.435	20
(S) a,a,a-Trifluorotoluene(FID)				*106*	*105*	*77.0-120*				

Method Blank (MB)

(MB) R3339326-3 09/05/18 12:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*99.0*			*77.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3339326-1 09/05/18 11:46 • (LCSD) R3339326-2 09/05/18 12:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.39	5.46	98.0	99.2	72.0-127			1.25	20
(S) a,a,a-Trifluorotoluene(FID)				*103*	*103*	*77.0-120*				

Method Blank (MB)

(MB) R3338627-2 08/31/18 12:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*113*			*75.0-131*
(S) Dibromofluoromethane	*91.1*			*65.0-129*
(S) a,a,a-Trifluorotoluene	*84.5*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*67.0-138*

Laboratory Control Sample (LCS)

(LCS) R3338627-1 08/31/18 11:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.117	93.6	70.0-123	
Ethylbenzene	0.125	0.113	90.7	74.0-126	
Toluene	0.125	0.114	91.0	75.0-121	
Xylenes, Total	0.375	0.334	89.1	72.0-127	
(S) Toluene-d8			*106*	*75.0-131*	
(S) Dibromofluoromethane			*99.5*	*65.0-129*	
(S) a,a,a-Trifluorotoluene			*90.0*	*80.0-120*	
(S) 4-Bromofluorobenzene			*98.4*	*67.0-138*	

L1021491-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1021491-01 08/31/18 18:32 • (MS) R3338627-3 08/31/18 19:48 • (MSD) R3338627-4 08/31/18 20:07

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.140	3.55	3.50	3.75	0.000	18.3	8	10.0-149	J6		7.03	37
Ethylbenzene	0.140	9.35	8.44	9.02	0.000	0.000	8	10.0-160	V	E V	6.68	38
Toluene	0.140	11.4	10.2	10.9	0.000	0.000	8	10.0-156	E V	E V	7.15	38
Xylenes, Total	0.420	28.6	25.9	27.5	0.000	0.000	8	10.0-160	E V	E V	5.83	38
(S) Toluene-d8					*103*	*107*		*75.0-131*				
(S) Dibromofluoromethane					*98.4*	*96.7*		*65.0-129*				
(S) a,a,a-Trifluorotoluene					*88.7*	*89.1*		*80.0-120*				
(S) 4-Bromofluorobenzene					*106*	*121*		*67.0-138*				

Method Blank (MB)

(MB) R3339147-3 09/02/18 00:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*108*			*75.0-131*
(S) Dibromofluoromethane	*98.1*			*65.0-129*
(S) a,a,a-Trifluorotoluene	*107*			*80.0-120*
(S) 4-Bromofluorobenzene	*98.2*			*67.0-138*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3339147-1 09/01/18 23:18 • (LCSD) R3339147-2 09/01/18 23:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.115	0.116	91.9	93.1	70.0-123			1.30	20
Ethylbenzene	0.125	0.118	0.116	94.6	92.9	74.0-126			1.79	20
Toluene	0.125	0.119	0.121	94.9	96.6	75.0-121			1.81	20
Xylenes, Total	0.375	0.315	0.323	84.0	86.1	72.0-127			2.51	20
(S) Toluene-d8				*104*	*107*	*75.0-131*				
(S) Dibromofluoromethane				*105*	*105*	*65.0-129*				
(S) a,a,a-Trifluorotoluene				*104*	*103*	*80.0-120*				
(S) 4-Bromofluorobenzene				*101*	*101*	*67.0-138*				

L1021250-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1021250-06 09/02/18 07:24 • (MS) R3339147-4 09/02/18 07:44 • (MSD) R3339147-5 09/02/18 08:05

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.131	U	0.125	0.113	95.5	86.3	1	10.0-149			10.1	37
Ethylbenzene	0.131	U	0.128	0.128	98.2	97.6	1	10.0-160			0.693	38
Toluene	0.131	U	0.129	0.128	99.0	97.7	1	10.0-156			1.36	38
Xylenes, Total	0.392	U	0.361	0.351	92.0	89.6	1	10.0-160			2.64	38
(S) Toluene-d8					*105*	*109*		*75.0-131*				
(S) Dibromofluoromethane					*102*	*98.1*		*65.0-129*				
(S) a,a,a-Trifluorotoluene					*104*	*106*		*80.0-120*				
(S) 4-Bromofluorobenzene					*98.8*	*105*		*67.0-138*				

Method Blank (MB)

(MB) R3338698-2 09/02/18 12:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*115*			*75.0-131*
(S) Dibromofluoromethane	*87.7*			*65.0-129*
(S) a,a,a-Trifluorotoluene	*83.5*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*67.0-138*

Laboratory Control Sample (LCS)

(LCS) R3338698-1 09/02/18 11:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.121	96.7	70.0-123	
Ethylbenzene	0.125	0.104	83.1	74.0-126	
Toluene	0.125	0.113	90.6	75.0-121	
Xylenes, Total	0.375	0.311	82.9	72.0-127	
(S) Toluene-d8			*106*	*75.0-131*	
(S) Dibromofluoromethane			*103*	*65.0-129*	
(S) a,a,a-Trifluorotoluene			*86.3*	*80.0-120*	
(S) 4-Bromofluorobenzene			*112*	*67.0-138*	

Method Blank (MB)

(MB) R3339239-3 09/05/18 09:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Ethylbenzene	U		0.000530	0.00250
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*106*			*75.0-131*
(S) Dibromofluoromethane	*98.0*			*65.0-129*
(S) a,a,a-Trifluorotoluene	*105*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*67.0-138*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3339239-1 09/05/18 08:35 • (LCSD) R3339239-2 09/05/18 08:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylbenzene	0.125	0.119	0.128	95.5	103	74.0-126			7.30	20
Xylenes, Total	0.375	0.325	0.335	86.7	89.3	72.0-127			3.03	20
(S) Toluene-d8				*106*	*106*	*75.0-131*				
(S) Dibromofluoromethane				*102*	*102*	*65.0-129*				
(S) a,a,a-Trifluorotoluene				*104*	*101*	*80.0-120*				
(S) 4-Bromofluorobenzene				*102*	*101*	*67.0-138*				

Method Blank (MB)

(MB) R3338874-1 09/02/18 20:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*78.4*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3338874-2 09/02/18 20:39 • (LCSD) R3338874-3 09/02/18 20:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	46.2	46.0	92.4	92.0	50.0-150			0.434	20
(S) o-Terphenyl				*89.5*	*88.6*	*18.0-148*				

Method Blank (MB)

(MB) R3339395-1 09/05/18 14:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*77.2*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3339395-2 09/05/18 14:44 • (LCSD) R3339395-3 09/05/18 14:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	36.2	37.7	72.4	75.4	50.0-150			4.06	20
(S) o-Terphenyl				*69.2*	*71.2*	*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

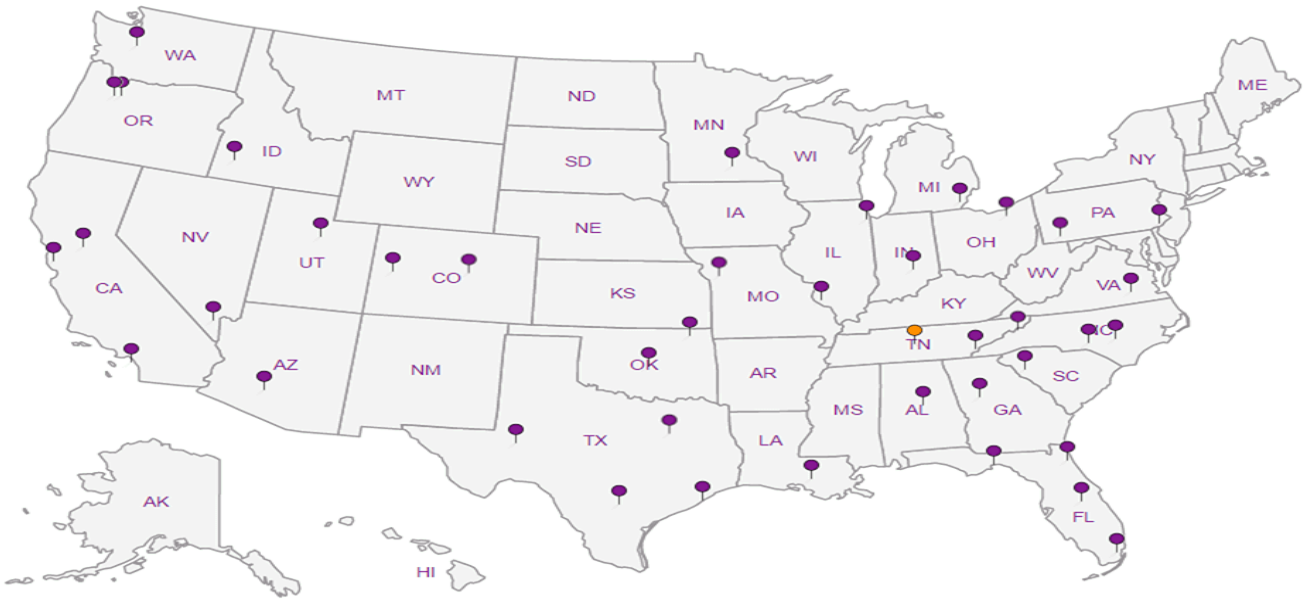
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



ACCOUNT:	PROJECT:	SDG:	DATE/TIME:	PAGE:
HilCorp-Farmington, NM	HEC-180034	L1021246	09/06/18 21:34	43 of 45

HilCorp
382 Road 3100
Aztec, NM 87401

Billing Information: LINDSAY DUMAS
HILCORP ENERGY - L48 W
Office: 832-839-4585
Mobile: 281-794-9159

Report to: ~~Kurt Hoekstra~~ JOE WHITELEY

Email To: joe@teamfinkerwolf.com ~~khoekstra@hilcorp.com~~ .com

Project Description: San Juan 27-5 No. 69

City/State Collected: RIO ARRIBA CO. NM

Phone: 405-209-7670
Fax:

Client Project # HEC-180034

Lab Project #

Collected by (print): JOE WHITELEY / JIM FOSTER

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day ✓ Standard (7 days)

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX - 8260	GRO / DRO (EXTENDED RANGE) - 8015	CHLORIDE - 300.0	Remarks	Sample # (lab only)
HSA-1 7.5'	G	SS	7.5'	8/24/18	0921	1	✓	✓	✓		-01
HSA-1 10.5-11'	G	SS	10.5-11'	8/24	0936	1	✓	✓	✓		02
HSA-1 20-21'	G	SS	20-21'	8/24	0951	1	✓	✓	✓		03
HSA-1 25-26'	G	SS	25-26'	8/24	1004	1	✓	✓	✓		04
HSA-2 8-9'	G	SS	8-9'	8/24	1030	1	✓	✓	✓		05
HSA-2 13-14'	G	SS	13-14'	8/24	1041	1	✓	✓	✓		06
HSA-2 19-20'	G	SS	19-20'	8/24	1054	1	✓	✓	✓		07
HSA-2 24-25'	G	SS	24-25'	8/24	1110	1	✓	✓	✓		08
HSA-3 14-15'	G	SS	14-15'	8/24	1153	1	✓	✓	✓		09
HSA-4 4-5'	G	SS	4-5'	8/24	1212	1	✓	✓	✓		10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier __ _____

Tracking # 4430 3426 1834

Trip Blank Received: Yes (No) HCL / MeoH TBR

Temp: 3.0°C Bottles Received: 20

If preservation required by Login: Date/Time

Hold:

Condition: NCF (OK)

Relinquished by: (Signature) JOE WHITELEY — Date: 8/27 — Time: 1100

Received by: (Signature)

Relinquished by: (Signature) — Date: — Time:

Received by: (Signature)

Relinquished by: (Signature) — Date: — Time:

Received for lab by: (Signature) — Date: 8/28/18 — Time: 8:45

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1021246

E077

Acctnum: HILCORANM
Template:
Prelogin:
TSR:
PB:
Shipped Via: FEDEX

HilCorp
382 Road 3100
Aztec, NM 87401

Billing Information: LINDSAY DUMAS
HILCORP ENERGY - L48 W
Office: 832-839-4585
Mobile: 281-794-9159

Report to: ~~Kurt Hoekstra~~ JOE WHITELEY

Email To: joe@teamtimberwolf.com
khoekstra@hilcorp.com

Project Description: San Juan 27-15 No. 69

City/State Collected: RIO ARRIBA Co. NM

Phone: 405-209-7670
Fax:

Client Project # HEC-180034

Lab Project #

Collected by (print): JOE WHITELEY / JIM FOSTER

Site/Facility ID #

P.O. #

Collected by (signature): Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day ✓ STANDARD (7 days)

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX - 8260	GRO/DRO (EXTENDED RANGE) - 8015	CHLORIDE - 300.0	Remarks	Sample # (lab only)
HSA-4 6.5-7.5'	G	SS	6.5-7.5'	8/24/18	1217	1	✓	✓	✓		-11
HSA-4 13-14'	G	SS	13-14'	8/24	1255	1	✓	✓	✓		12
HSA-5 6-7'	G	SS	6-7'	8/24	1315	1	✓	✓	✓		13
HSA-5 9-10'	G	SS	9-10'	8/24	1318	1	✓	✓	✓		14
HSA-6 6-7'	G	SS	6-7'	8/24	1341	1	✓	✓	✓		15
HSA-7 9-10'	G	SS	9-10'	8/24	1404	1	✓	✓	✓		16
HSA-7 12'	G	SS	12'	8/24	1413	1	✓	✓	✓		17
HSA-7 15'	G	SS	15'	8/24	1415	1	✓	✓	✓		18
HSA-8 5-6'	G	SS	5-6'	8/24	1440	1	✓	✓	✓		19
HSA-8 9-10'	G	SS	9-10'	8/24	1442	1	✓	✓	✓		20

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx ✓ Courier __ _____

Tracking #

Relinquished by: (Signature) Joe Whiteley — Date: 8/27 — Time: 1100 — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received by: (Signature)

Relinquished by: (Signature) — Date: — Time: — Received for lab by: (Signature) — Date: 8/28/18 — Time: 8:45

Trip Blank Received: Yes ✓ No — HCL / MeoH — TBR

Temp: 3.6°C Bottles Received: 20

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1021246

Table #

Acctnum: HILCORANM

Template:

Prelogin:

TSR:

PB:

Shipped Via: FEDEX

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 14, 2019

Jim Foster

Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX:

RE: SJ27 5 69 OrderNo.: 1908487

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 22 sample(s) on 8/9/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager
4901 Hawkins NE

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 9 4-5
Project: SJ27 5 69
Collection Date: 8/8/2019 10:55:00 AM
Lab ID: 1908487-001 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/12/2019 10:14:20 A	46715
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/12/2019 10:14:20 A	46715
Surr: DNOP	117	70-130		%Rec	1	8/12/2019 10:14:20 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	8/10/2019 10:13:18 A	G62044
Surr: BFB	95.5	77.4-118		%Rec	1	8/10/2019 10:13:18 A	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.021		mg/Kg	1	8/10/2019 10:13:18 A	B62044
Toluene	ND	0.041		mg/Kg	1	8/10/2019 10:13:18 A	B62044
Ethylbenzene	ND	0.041		mg/Kg	1	8/10/2019 10:13:18 A	B62044
Xylenes, Total	ND	0.083		mg/Kg	1	8/10/2019 10:13:18 A	B62044
Surr: 4-Bromofluorobenzene	98.2	80-120		%Rec	1	8/10/2019 10:13:18 A	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 9 10-11
Project: SJ27 5 69
Collection Date: 8/8/2019 11:08:00 AM
Lab ID: 1908487-002 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/12/2019 10:36:23 A	46715
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 10:36:23 A	46715
Surr: DNOP	111	70-130		%Rec	1	8/12/2019 10:36:23 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	8/10/2019 12:34:29 P	G62044
Surr: BFB	99.2	77.4-118		%Rec	1	8/10/2019 12:34:29 P	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/10/2019 12:34:29 P	B62044
Toluene	ND	0.045		mg/Kg	1	8/10/2019 12:34:29 P	B62044
Ethylbenzene	ND	0.045		mg/Kg	1	8/10/2019 12:34:29 P	B62044
Xylenes, Total	0.14	0.090		mg/Kg	1	8/10/2019 12:34:29 P	B62044
Surr: 4-Bromofluorobenzene	96.0	80-120		%Rec	1	8/10/2019 12:34:29 P	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 9 13-14
Project: SJ27 5 69
Collection Date: 8/8/2019 11:12:00 AM
Lab ID: 1908487-003 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/12/2019 10:58:28 A	46715
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/12/2019 10:58:28 A	46715
Surr: DNOP	93.7	70-130		%Rec	1	8/12/2019 10:58:28 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	3.0		mg/Kg	1	8/10/2019 11:00:16 A	G62044
Surr: BFB	94.8	77.4-118		%Rec	1	8/10/2019 11:00:16 A	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.015		mg/Kg	1	8/10/2019 11:00:16 A	B62044
Toluene	ND	0.030		mg/Kg	1	8/10/2019 11:00:16 A	B62044
Ethylbenzene	ND	0.030		mg/Kg	1	8/10/2019 11:00:16 A	B62044
Xylenes, Total	ND	0.060		mg/Kg	1	8/10/2019 11:00:16 A	B62044
Surr: 4-Bromofluorobenzene	96.1	80-120		%Rec	1	8/10/2019 11:00:16 A	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 10 5-6
Project: SJ27 5 69
Collection Date: 8/8/2019 11:25:00 AM
Lab ID: 1908487-004 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	3000	98		mg/Kg	10	8/12/2019 1:53:17 PM	46715
Motor Oil Range Organics (MRO)	ND	490		mg/Kg	10	8/12/2019 1:53:17 PM	46715
Surr: DNOP	0	70-130	S	%Rec	10	8/12/2019 1:53:17 PM	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	28	4.5		mg/Kg	1	8/10/2019 11:23:47 A	G62044
Surr: BFB	179	77.4-118	S	%Rec	1	8/10/2019 11:23:47 A	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.022		mg/Kg	1	8/10/2019 11:23:47 A	B62044
Toluene	ND	0.045		mg/Kg	1	8/10/2019 11:23:47 A	B62044
Ethylbenzene	ND	0.045		mg/Kg	1	8/10/2019 11:23:47 A	B62044
Xylenes, Total	0.24	0.090		mg/Kg	1	8/10/2019 11:23:47 A	B62044
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	8/10/2019 11:23:47 A	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-005 **Matrix:** SOIL

Client Sample ID: HSA 10 8-9
Collection Date: 8/8/2019 11:30:00 AM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	1800	98		mg/Kg	10	8/12/2019 2:17:45 PM	46715
Motor Oil Range Organics (MRO)	ND	490		mg/Kg	10	8/12/2019 2:17:45 PM	46715
Surr: DNOP	0	70-130	S	%Rec	10	8/12/2019 2:17:45 PM	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	250	3.2		mg/Kg	1	8/10/2019 1:45:04 PM	G62044
Surr: BFB	1800	77.4-118	S	%Rec	1	8/10/2019 1:45:04 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.093	0.016		mg/Kg	1	8/10/2019 1:45:04 PM	B62044
Toluene	ND	0.032		mg/Kg	1	8/10/2019 1:45:04 PM	B62044
Ethylbenzene	ND	0.032		mg/Kg	1	8/10/2019 1:45:04 PM	B62044
Xylenes, Total	25	1.3		mg/Kg	20	8/12/2019 9:31:36 AM	B62044
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	20	8/12/2019 9:31:36 AM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 10 14-15
Project: SJ27 5 69
Collection Date: 8/8/2019 11:40:00 AM
Lab ID: 1908487-006 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	8/12/2019 8:54:34 AM	46715
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/12/2019 8:54:34 AM	46715
Surr: DNOP	104	70-130		%Rec	1	8/12/2019 8:54:34 AM	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	3.9		mg/Kg	1	8/12/2019 9:55:04 AM	G62044
Surr: BFB	114	77.4-118		%Rec	1	8/12/2019 9:55:04 AM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.020		mg/Kg	1	8/12/2019 9:55:04 AM	B62044
Toluene	ND	0.039		mg/Kg	1	8/12/2019 9:55:04 AM	B62044
Ethylbenzene	ND	0.039		mg/Kg	1	8/12/2019 9:55:04 AM	B62044
Xylenes, Total	ND	0.079		mg/Kg	1	8/12/2019 9:55:04 AM	B62044
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	8/12/2019 9:55:04 AM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 11 5-6
Project: SJ27 5 69
Collection Date: 8/8/2019 11:50:00 AM
Lab ID: 1908487-007 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	240	9.4		mg/Kg	1	8/12/2019 9:18:42 AM	46715
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 9:18:42 AM	46715
Surr: DNOP	113	70-130		%Rec	1	8/12/2019 9:18:42 AM	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	8/10/2019 2:32:12 PM	G62044
Surr: BFB	116	77.4-118		%Rec	1	8/10/2019 2:32:12 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.018		mg/Kg	1	8/10/2019 2:32:12 PM	B62044
Toluene	ND	0.035		mg/Kg	1	8/10/2019 2:32:12 PM	B62044
Ethylbenzene	ND	0.035		mg/Kg	1	8/10/2019 2:32:12 PM	B62044
Xylenes, Total	ND	0.070		mg/Kg	1	8/10/2019 2:32:12 PM	B62044
Surr: 4-Bromofluorobenzene	97.7	80-120		%Rec	1	8/10/2019 2:32:12 PM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 11 14-15
Project: SJ27 5 69
Collection Date: 8/8/2019 12:00:00 PM
Lab ID: 1908487-008 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	330	9.5		mg/Kg	1	8/12/2019 9:42:48 AM	46715
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 9:42:48 AM	46715
Surr: DNOP	88.1	70-130		%Rec	1	8/12/2019 9:42:48 AM	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	120	3.6		mg/Kg	1	8/10/2019 2:55:48 PM	G62044
Surr: BFB	396	77.4-118	S	%Rec	1	8/10/2019 2:55:48 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.079	0.018		mg/Kg	1	8/10/2019 2:55:48 PM	B62044
Toluene	ND	0.036		mg/Kg	1	8/10/2019 2:55:48 PM	B62044
Ethylbenzene	ND	0.036		mg/Kg	1	8/10/2019 2:55:48 PM	B62044
Xylenes, Total	10	0.71		mg/Kg	10	8/12/2019 10:18:28 A	B62044
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	10	8/12/2019 10:18:28 A	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 12 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 12:10:00 PM
Lab ID: 1908487-009 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	46	9.9		mg/Kg	1	8/12/2019 10:07:18 A	46715
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/12/2019 10:07:18 A	46715
Surr: DNOP	101	70-130		%Rec	1	8/12/2019 10:07:18 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	3.6		mg/Kg	1	8/10/2019 3:19:26 PM	G62044
Surr: BFB	11.9	77.4-118	S	%Rec	1	8/10/2019 3:19:26 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.018		mg/Kg	1	8/10/2019 3:19:26 PM	B62044
Toluene	ND	0.036		mg/Kg	1	8/10/2019 3:19:26 PM	B62044
Ethylbenzene	ND	0.036		mg/Kg	1	8/10/2019 3:19:26 PM	B62044
Xylenes, Total	ND	0.072		mg/Kg	1	8/10/2019 3:19:26 PM	B62044
Surr: 4-Bromofluorobenzene	98.1	80-120		%Rec	1	8/10/2019 3:19:26 PM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-010 **Matrix:** SOIL

Client Sample ID: HSA 12 14-15
Collection Date: 8/8/2019 12:20:00 PM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	290	9.5		mg/Kg	1	8/12/2019 10:31:37 A	46715
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 10:31:37 A	46715
Surr: DNOP	88.3	70-130		%Rec	1	8/12/2019 10:31:37 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	34	3.1		mg/Kg	1	8/10/2019 4:53:53 PM	G62044
Surr: BFB	540	77.4-118	S	%Rec	1	8/10/2019 4:53:53 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.016		mg/Kg	1	8/10/2019 4:53:53 PM	B62044
Toluene	ND	0.031		mg/Kg	1	8/10/2019 4:53:53 PM	B62044
Ethylbenzene	ND	0.031		mg/Kg	1	8/10/2019 4:53:53 PM	B62044
Xylenes, Total	1.5	0.062		mg/Kg	1	8/10/2019 4:53:53 PM	B62044
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	1	8/10/2019 4:53:53 PM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-011 **Matrix:** SOIL

Client Sample ID: HSA 13 14-15
Collection Date: 8/8/2019 12:40:00 PM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	570	8.6		mg/Kg	1	8/11/2019 2:20:44 PM	46709
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	8/11/2019 2:20:44 PM	46709
Surr: DNOP	89.4	70-130		%Rec	1	8/11/2019 2:20:44 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	230	23		mg/Kg	5	8/10/2019 10:28:25 A	46708
Surr: BFB	425	77.4-118	S	%Rec	5	8/10/2019 10:28:25 A	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.12		mg/Kg	5	8/10/2019 10:28:25 A	46708
Toluene	ND	0.23		mg/Kg	5	8/10/2019 10:28:25 A	46708
Ethylbenzene	0.37	0.23		mg/Kg	5	8/10/2019 10:28:25 A	46708
Xylenes, Total	10	0.47		mg/Kg	5	8/10/2019 10:28:25 A	46708
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	5	8/10/2019 10:28:25 A	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-012 **Matrix:** SOIL

Client Sample ID: HSA 14 14-15
Collection Date: 8/8/2019 1:15:00 PM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	280	9.3		mg/Kg	1	8/12/2019 10:55:50 A	46715
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 10:55:50 A	46715
Surr: DNOP	88.3	70-130		%Rec	1	8/12/2019 10:55:50 A	46715
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	25	3.6		mg/Kg	1	8/10/2019 5:17:27 PM	G62044
Surr: BFB	394	77.4-118	S	%Rec	1	8/10/2019 5:17:27 PM	G62044
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.018		mg/Kg	1	8/10/2019 5:17:27 PM	B62044
Toluene	ND	0.036		mg/Kg	1	8/10/2019 5:17:27 PM	B62044
Ethylbenzene	ND	0.036		mg/Kg	1	8/10/2019 5:17:27 PM	B62044
Xylenes, Total	0.75	0.071		mg/Kg	1	8/10/2019 5:17:27 PM	B62044
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	1	8/10/2019 5:17:27 PM	B62044

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 15 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 1:25:00 PM
Lab ID: 1908487-013 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/11/2019 3:34:32 PM	46709
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/11/2019 3:34:32 PM	46709
Surr: DNOP	82.7	70-130		%Rec	1	8/11/2019 3:34:32 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/10/2019 12:22:53 P	46708
Surr: BFB	103	77.4-118		%Rec	1	8/10/2019 12:22:53 P	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/10/2019 12:22:53 P	46708
Toluene	ND	0.046		mg/Kg	1	8/10/2019 12:22:53 P	46708
Ethylbenzene	ND	0.046		mg/Kg	1	8/10/2019 12:22:53 P	46708
Xylenes, Total	ND	0.093		mg/Kg	1	8/10/2019 12:22:53 P	46708
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	8/10/2019 12:22:53 P	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-014 **Matrix:** SOIL

Client Sample ID: HSA 15 14-15
Collection Date: 8/8/2019 1:35:00 PM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/11/2019 3:59:06 PM	46709
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/11/2019 3:59:06 PM	46709
Surr: DNOP	78.5	70-130		%Rec	1	8/11/2019 3:59:06 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/10/2019 12:45:51 P	46708
Surr: BFB	102	77.4-118		%Rec	1	8/10/2019 12:45:51 P	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/10/2019 12:45:51 P	46708
Toluene	ND	0.048		mg/Kg	1	8/10/2019 12:45:51 P	46708
Ethylbenzene	ND	0.048		mg/Kg	1	8/10/2019 12:45:51 P	46708
Xylenes, Total	ND	0.096		mg/Kg	1	8/10/2019 12:45:51 P	46708
Surr: 4-Bromofluorobenzene	97.9	80-120		%Rec	1	8/10/2019 12:45:51 P	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA16 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 1:45:00 PM
Lab ID: 1908487-015 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	120	9.4		mg/Kg	1	8/11/2019 4:23:47 PM	46709
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/11/2019 4:23:47 PM	46709
Surr: DNOP	89.8	70-130		%Rec	1	8/11/2019 4:23:47 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/10/2019 1:08:48 PM	46708
Surr: BFB	104	77.4-118		%Rec	1	8/10/2019 1:08:48 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/10/2019 1:08:48 PM	46708
Toluene	ND	0.047		mg/Kg	1	8/10/2019 1:08:48 PM	46708
Ethylbenzene	ND	0.047		mg/Kg	1	8/10/2019 1:08:48 PM	46708
Xylenes, Total	ND	0.095		mg/Kg	1	8/10/2019 1:08:48 PM	46708
Surr: 4-Bromofluorobenzene	96.7	80-120		%Rec	1	8/10/2019 1:08:48 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 16 14-15
Project: SJ27 5 69
Collection Date: 8/8/2019 2:00:00 PM
Lab ID: 1908487-016 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/11/2019 4:48:20 PM	46709
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/11/2019 4:48:20 PM	46709
Surr: DNOP	79.1	70-130		%Rec	1	8/11/2019 4:48:20 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/10/2019 1:31:45 PM	46708
Surr: BFB	104	77.4-118		%Rec	1	8/10/2019 1:31:45 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/10/2019 1:31:45 PM	46708
Toluene	ND	0.049		mg/Kg	1	8/10/2019 1:31:45 PM	46708
Ethylbenzene	ND	0.049		mg/Kg	1	8/10/2019 1:31:45 PM	46708
Xylenes, Total	ND	0.098		mg/Kg	1	8/10/2019 1:31:45 PM	46708
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/10/2019 1:31:45 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 17 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 2:10:00 PM
Lab ID: 1908487-017 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: **BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/11/2019 5:12:52 PM	46709
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/11/2019 5:12:52 PM	46709
Surr: DNOP	84.0	70-130		%Rec	1	8/11/2019 5:12:52 PM	46709
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/10/2019 1:54:43 PM	46708
Surr: BFB	103	77.4-118		%Rec	1	8/10/2019 1:54:43 PM	46708
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	8/10/2019 1:54:43 PM	46708
Toluene	ND	0.049		mg/Kg	1	8/10/2019 1:54:43 PM	46708
Ethylbenzene	ND	0.049		mg/Kg	1	8/10/2019 1:54:43 PM	46708
Xylenes, Total	ND	0.099		mg/Kg	1	8/10/2019 1:54:43 PM	46708
Surr: 4-Bromofluorobenzene	99.2	80-120		%Rec	1	8/10/2019 1:54:43 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 17 14-15
Project: SJ27 5 69
Collection Date: 8/8/2019 2:25:00 PM
Lab ID: 1908487-018 **Matrix:** SOIL
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	190	8.9		mg/Kg	1	8/11/2019 6:02:06 PM	46709
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/11/2019 6:02:06 PM	46709
Surr: DNOP	83.8	70-130		%Rec	1	8/11/2019 6:02:06 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	25	4.8		mg/Kg	1	8/10/2019 2:17:42 PM	46708
Surr: BFB	590	77.4-118	S	%Rec	1	8/10/2019 2:17:42 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/10/2019 2:17:42 PM	46708
Toluene	ND	0.048		mg/Kg	1	8/10/2019 2:17:42 PM	46708
Ethylbenzene	0.077	0.048		mg/Kg	1	8/10/2019 2:17:42 PM	46708
Xylenes, Total	ND	0.095		mg/Kg	1	8/10/2019 2:17:42 PM	46708
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	8/10/2019 2:17:42 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 18 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 2:40:00 PM
Lab ID: 1908487-019 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	8/11/2019 6:26:32 PM	46709
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	8/11/2019 6:26:32 PM	46709
Surr: DNOP	75.5	70-130		%Rec	1	8/11/2019 6:26:32 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/10/2019 2:40:43 PM	46708
Surr: BFB	102	77.4-118		%Rec	1	8/10/2019 2:40:43 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/10/2019 2:40:43 PM	46708
Toluene	ND	0.048		mg/Kg	1	8/10/2019 2:40:43 PM	46708
Ethylbenzene	ND	0.048		mg/Kg	1	8/10/2019 2:40:43 PM	46708
Xylenes, Total	ND	0.096		mg/Kg	1	8/10/2019 2:40:43 PM	46708
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	1	8/10/2019 2:40:43 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Project: SJ27 5 69
Lab ID: 1908487-020 **Matrix:** SOIL

Client Sample ID: HSA 18 14-15
Collection Date: 8/8/2019 2:50:00 PM
Received Date: 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	150	9.7		mg/Kg	1	8/11/2019 6:51:09 PM	46709
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/11/2019 6:51:09 PM	46709
Surr: DNOP	71.6	70-130		%Rec	1	8/11/2019 6:51:09 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/10/2019 3:49:49 PM	46708
Surr: BFB	138	77.4-118	S	%Rec	1	8/10/2019 3:49:49 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/10/2019 3:49:49 PM	46708
Toluene	ND	0.047		mg/Kg	1	8/10/2019 3:49:49 PM	46708
Ethylbenzene	ND	0.047		mg/Kg	1	8/10/2019 3:49:49 PM	46708
Xylenes, Total	ND	0.094		mg/Kg	1	8/10/2019 3:49:49 PM	46708
Surr: 4-Bromofluorobenzene	97.6	80-120		%Rec	1	8/10/2019 3:49:49 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 19 9-10
Project: SJ27 5 69
Collection Date: 8/8/2019 3:00:00 PM
Lab ID: 1908487-021 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/12/2019 1:23:14 PM	46709
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/12/2019 1:23:14 PM	46709
Surr: DNOP	89.1	70-130		%Rec	1	8/12/2019 1:23:14 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/10/2019 4:12:49 PM	46708
Surr: BFB	102	77.4-118		%Rec	1	8/10/2019 4:12:49 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/10/2019 4:12:49 PM	46708
Toluene	ND	0.047		mg/Kg	1	8/10/2019 4:12:49 PM	46708
Ethylbenzene	ND	0.047		mg/Kg	1	8/10/2019 4:12:49 PM	46708
Xylenes, Total	ND	0.093		mg/Kg	1	8/10/2019 4:12:49 PM	46708
Surr: 4-Bromofluorobenzene	98.8	80-120		%Rec	1	8/10/2019 4:12:49 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908487**
Date Reported **8/14/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 19 14-15
Project: SJ27 5 69
Collection Date: 8/8/2019 3:10:00 PM
Lab ID: 1908487-022 **Matrix:** SOIL **Received Date:** 8/9/2019 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/12/2019 1:47:16 PM	46709
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/12/2019 1:47:16 PM	46709
Surr: DNOP	89.8	70-130		%Rec	1	8/12/2019 1:47:16 PM	46709
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/10/2019 4:35:52 PM	46708
Surr: BFB	102	77.4-118		%Rec	1	8/10/2019 4:35:52 PM	46708
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/10/2019 4:35:52 PM	46708
Toluene	ND	0.047		mg/Kg	1	8/10/2019 4:35:52 PM	46708
Ethylbenzene	ND	0.047		mg/Kg	1	8/10/2019 4:35:52 PM	46708
Xylenes, Total	ND	0.094		mg/Kg	1	8/10/2019 4:35:52 PM	46708
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	8/10/2019 4:35:52 PM	46708

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	1908487-011AMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	HSA 13 14-15	Batch ID:	46709	RunNo:	62043					
Prep Date:	8/9/2019	Analysis Date:	8/11/2019	SeqNo:	2105665	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	440	8.2	40.85	568.3	-312	57	142			S
Surr: DNOP	3.2		4.085		78.4	70	130			

Sample I	1908487-011AMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	HSA 13 14-15	Batch ID:	46709	RunNo:	62043					
Prep Date:	8/9/2019	Analysis Date:	8/11/2019	SeqNo:	2105666	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	500	9.4	46.77	568.3	-138	57	142	13.3	20	S
Surr: DNOP	3.6		4.677		77.5	70	130	0	0	

Sample I	LCS-46709	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	46709	RunNo:	62043					
Prep Date:	8/9/2019	Analysis Date:	8/11/2019	SeqNo:	2105685	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	89.7	63.9	124			
Surr: DNOP	3.7		5.000		74.1	70	130			

Sample I	MB-46709	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	46709	RunNo:	62043					
Prep Date:	8/9/2019	Analysis Date:	8/11/2019	SeqNo:	2105686	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		84.6	70	130			

Sample I	MB-46715	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	46715	RunNo:	62048					
Prep Date:	8/11/2019	Analysis Date:	8/12/2019	SeqNo:	2105898	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	15		10.00		146	70	130			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	**LCS-46715**	SampType: **LCS**		TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID: **46715**		RunNo: **62060**					
Prep Date:	**8/11/2019**	Analysis Date: **8/12/2019**		SeqNo: **2105924**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	10	50.00	0	118	63.9	124			
Surr: DNOP	6.1		5.000		121	70	130			

Sample I	**1908487-001AMS**	SampType: **MS**		TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**HSA 9 4-5**	Batch ID: **46715**		RunNo: **62067**					
Prep Date:	**8/11/2019**	Analysis Date: **8/12/2019**		SeqNo: **2107758**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.6	47.98	0	106	57	142			
Surr: DNOP	4.2		4.798		87.3	70	130			

Sample I	**1908487-001AMSD**	SampType: **MSD**		TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**HSA 9 4-5**	Batch ID: **46715**		RunNo: **62067**					
Prep Date:	**8/11/2019**	Analysis Date: **8/12/2019**		SeqNo: **2107759**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.0	45.05	0	112	57	142	0.0623	20	
Surr: DNOP	4.2		4.505		93.7	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	RB	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	G62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105119	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1000		94.5	77.4	118			

Sample I	2.5UG GRO LCSB	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	G62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105120	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.2	80	120			
Surr: BFB	1100		1000		110	77.4	118			

Sample I	1908487-001AMS	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	HSA 9 4-5	Batch ID:	G62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105122	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.1	20.73	0	100	69.1	142			
Surr: BFB	1000		829.2		125	77.4	118			S

Sample I	1908487-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	HSA 9 4-5	Batch ID:	G62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105123	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.1	20.73	0	98.4	69.1	142	1.93	20	
Surr: BFB	930		829.2		112	77.4	118	0	0	

Sample I	MB-46708	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	46708	RunNo:	62045					
Prep Date:	8/9/2019	Analysis Date:	8/10/2019	SeqNo:	2105176	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		99.2	77.4	118			

Sample I	LCS-46708	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	46708	RunNo:	62045					
Prep Date:	8/9/2019	Analysis Date:	8/10/2019	SeqNo:	2105177	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	**LCS-46708**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**		
Client ID:	**LCSS**	Batch ID:	**46708**	RunNo:	**62045**		
Prep Date:	**8/9/2019**	Analysis Date:	**8/10/2019**	SeqNo:	**2105177**	Units:	**mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.4	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	RB	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	B62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105148	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	80	120			

Sample I	100NG BTEX LCS	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	B62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105149	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	103	80	120			
Toluene	1.1	0.050	1.000	0	107	80	120			
Ethylbenzene	1.1	0.050	1.000	0	108	80	120			
Xylenes, Total	3.2	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample I	1908487-002AMS	SampType:	MS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	HSA 9 10-11	Batch ID:	B62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105154	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.023	0.9042	0.01609	94.7	63.9	127			
Toluene	0.92	0.045	0.9042	0.009042	101	69.9	131			
Ethylbenzene	0.96	0.045	0.9042	0.02260	103	71	132			
Xylenes, Total	2.9	0.090	2.713	0.1418	103	71.8	131			
Surr: 4-Bromofluorobenzene	0.90		0.9042		99.4	80	120			

Sample I	1908487-002AMSD	SampType:	MSD	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	HSA 9 10-11	Batch ID:	B62044	RunNo:	62044					
Prep Date:		Analysis Date:	8/10/2019	SeqNo:	2105155	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.023	0.9042	0.01609	93.9	63.9	127	0.770	20	
Toluene	0.91	0.045	0.9042	0.009042	99.7	69.9	131	0.890	20	
Ethylbenzene	0.94	0.045	0.9042	0.02260	101	71	132	1.66	20	
Xylenes, Total	2.9	0.090	2.713	0.1418	102	71.8	131	0.984	20	
Surr: 4-Bromofluorobenzene	0.89		0.9042		98.6	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908487**

14-Aug-19

Client: Timberwolf Environmental

Project: SJ27 5 69

Sample I	**MB-46708**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**46708**	RunNo:	**62045**					
Prep Date:	**8/9/2019**	Analysis Date:	**8/10/2019**	SeqNo:	**2105203**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.97		1.000		97.2	80	120			

Sample I	**LCS-46708**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**46708**	RunNo:	**62045**					
Prep Date:	**8/9/2019**	Analysis Date:	**8/10/2019**	SeqNo:	**2105204**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	96.6	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	104	80	120			
Xylenes, Total	3.1	0.10	3.000	0	104	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **TIMBERWOLF ENVIRON** Work Order Number: **1908487** RcptNo: **1**

Received By: **Erin Melendrez** **8/9/2019 8:05:00 AM**

Completed By: **Leah Baca** **8/9/2019 9:01:27 AM**

Reviewed By: LB 8/10/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: DAD 8/9/19
DAD 8/10/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Yes			

Results 8/12

Chain-of-Custody Record

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979-324-2139

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 48 HR
☐ Standard ☒ Rush TAT

Project Name: 5527-5 #69

Project #: Lindsay Dumas

Invoice: Hilcorp Energy

Project Manager:

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.9-0.1(CF)=3.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1908487	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	BTEX
8/8/19	10:55	S	HSA 9 4-5'	4/1	Ice	-001		X									X
8/8/19	11:08	S	HSA 9 10-11	4/1	Ice	-002		X									X
8/8/19	11:12	S	HSA 9 13-14	4/1	Ice	-003		X									X
8/8/19	11:25	S	HSA 10 5-6	4/1	Ice	-004		X									X
8/8/19	11:30	S	HSA 10 8-9	4/1	Ice	-005		X									X
8/8/19	11:40	S	HSA 10 14-15	4/1	Ice	-006		X									X
8/8/19	11:50	S	HSA 11 5-6	4/1	Ice	-007		X									X
8/8/19	12:00	S	HSA 11 14-15	4/1	Ice	-008		X									X
8/8/19	12:10	S	HSA 12 9-10	4/1	Ice	-009		X									X
8/8/19	12:20	S	HSA 12 14-15	4/1	Ice	-010		X									X
8/8/19	12:40	S	HSA 13 14-15	4/1	Ice	-011		X									X
8/8/19	13:15	S	HSA 14 14-15	4/1	Ice	-012		X									X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
8/8/19	17:30	James McNatt	Chantal Walt		8/8/19	1736
8/8/19	2021	Chantal Walt		Courier	8/9/19	0805

Remarks:
48 Hour Turn Around Time
Received samples 001→010, -012 on 8/10/19 @0810 5.4

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Results 8/12

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979-324-2139

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 48 HR
☐ Standard ☒ Rush TAT

Project Name: SS 27-5 #69

Project #: Invoice: Lindsay Dumas Hilcorp Energy

Project Manager:

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.9-0.1(CF)=3.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1908487	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	BTEX
8/8/19	13:25	S	HSA 15 9-10	4/1	Ice	-013		X									X
8/8/19	13:35	S	HSA 15 14-15	4/1	Ice	-014		X									X
8/8/19	13:45	S	HSA 16 9-10	4/1	Ice	-015		X									X
8/8/19	14:00	S	HSA 16 14-15	4/1	Ice	-016		X									X
8/8/19	14:10	S	HSA 17 9-10	4/1	Ice	-017		X									X
8/8/19	14:25	S	HSA 17 14-15	4/1	Ice	-018		X									X
8/8/19	14:40	S	HSA 18 9-10	4/1	Ice	-019		X									X
8/8/19	14:50	S	HSA 18 14-15	4/1	Ice	-020		X									X
8/8/19	15:00	S	HSA 19 9-10	4/1	Ice	-021		X									X
8/8/19	15:10	S	HSA 19 14-15	4/1	Ice	-022		X									X

Date	Time	Relinquished by	Received by	Via	Date	Time
8/8/19	17:30	James McNutt				
8/8/19	2021			Courier	8/9/19	0805

Remarks: 48 Hour Turn Around Time

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 16, 2019

Jim Foster

Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: SJ 27 5 69 OrderNo.: 1908840

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 29 sample(s) on 8/15/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 20 8-9
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:20:00 AM
Lab ID: 1908840-001
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/15/2019 10:08:29 AM	46805
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/15/2019 10:08:29 AM	46805
Surr: DNOP	92.7	70-130		%Rec	1	8/15/2019 10:08:29 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	8/15/2019 10:36:56 AM	G62164
Surr: BFB	94.8	77.4-118		%Rec	1	8/15/2019 10:36:56 AM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.021		mg/Kg	1	8/15/2019 10:36:56 AM	B62164
Toluene	ND	0.041		mg/Kg	1	8/15/2019 10:36:56 AM	B62164
Ethylbenzene	ND	0.041		mg/Kg	1	8/15/2019 10:36:56 AM	B62164
Xylenes, Total	ND	0.083		mg/Kg	1	8/15/2019 10:36:56 AM	B62164
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	8/15/2019 10:36:56 AM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 20 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:23:00 AM
Lab ID: 1908840-002
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	8/15/2019 5:46:10 PM	46805
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	8/15/2019 5:46:10 PM	46805
Surr: DNOP	92.6	70-130		%Rec	1	8/15/2019 5:46:10 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	17		mg/Kg	5	8/15/2019 3:19:12 PM	G62164
Surr: BFB	11.6	77.4-118	S	%Rec	5	8/15/2019 3:19:12 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.085		mg/Kg	5	8/15/2019 3:19:12 PM	B62164
Toluene	ND	0.17		mg/Kg	5	8/15/2019 3:19:12 PM	B62164
Ethylbenzene	ND	0.17		mg/Kg	5	8/15/2019 3:19:12 PM	B62164
Xylenes, Total	ND	0.34		mg/Kg	5	8/15/2019 3:19:12 PM	B62164
Surr: 4-Bromofluorobenzene	99.4	80-120		%Rec	5	8/15/2019 3:19:12 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 21 8-9
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:30:00 AM
Lab ID: 1908840-003
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/15/2019 10:32:18 AM	46805
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/15/2019 10:32:18 AM	46805
Surr: DNOP	97.7	70-130		%Rec	1	8/15/2019 10:32:18 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/15/2019 11:00:25 AM	G62164
Surr: BFB	96.8	77.4-118		%Rec	1	8/15/2019 11:00:25 AM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	8/15/2019 11:00:25 AM	B62164
Toluene	ND	0.046		mg/Kg	1	8/15/2019 11:00:25 AM	B62164
Ethylbenzene	ND	0.046		mg/Kg	1	8/15/2019 11:00:25 AM	B62164
Xylenes, Total	ND	0.091		mg/Kg	1	8/15/2019 11:00:25 AM	B62164
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	8/15/2019 11:00:25 AM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 21 11-12
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:40:00 AM
Lab ID: 1908840-004
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	530	9.8		mg/Kg	1	8/15/2019 10:56:16 AM	46805
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/15/2019 10:56:16 AM	46805
Surr: DNOP	96.0	70-130		%Rec	1	8/15/2019 10:56:16 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	160	18		mg/Kg	5	8/15/2019 11:23:49 AM	G62164
Surr: BFB	225	77.4-118	S	%Rec	5	8/15/2019 11:23:49 AM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.088		mg/Kg	5	8/15/2019 11:23:49 AM	B62164
Toluene	ND	0.18		mg/Kg	5	8/15/2019 11:23:49 AM	B62164
Ethylbenzene	ND	0.18		mg/Kg	5	8/15/2019 11:23:49 AM	B62164
Xylenes, Total	8.2	0.35		mg/Kg	5	8/15/2019 11:23:49 AM	B62164
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	5	8/15/2019 11:23:49 AM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 21 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:43:00 AM
Lab ID: 1908840-005
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	110	9.4		mg/Kg	1	8/15/2019 6:10:32 PM	46805
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/15/2019 6:10:32 PM	46805
Surr: DNOP	93.6	70-130		%Rec	1	8/15/2019 6:10:32 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	18		mg/Kg	5	8/15/2019 3:42:47 PM	G62164
Surr: BFB	125	77.4-118	S	%Rec	5	8/15/2019 3:42:47 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.090		mg/Kg	5	8/15/2019 3:42:47 PM	B62164
Toluene	ND	0.18		mg/Kg	5	8/15/2019 3:42:47 PM	B62164
Ethylbenzene	ND	0.18		mg/Kg	5	8/15/2019 3:42:47 PM	B62164
Xylenes, Total	ND	0.36		mg/Kg	5	8/15/2019 3:42:47 PM	B62164
Surr: 4-Bromofluorobenzene	99.7	80-120		%Rec	5	8/15/2019 3:42:47 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 22 10-11
Project: SJ 27 5 69
Collection Date: 8/14/2019 9:55:00 AM
Lab ID: 1908840-006
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	520	9.6		mg/Kg	1	8/15/2019 11:20:13 AM	46805
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/15/2019 11:20:13 AM	46805
Surr: DNOP	95.8	70-130		%Rec	1	8/15/2019 11:20:13 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	260	17		mg/Kg	5	8/15/2019 11:47:13 AM	G62164
Surr: BFB	331	77.4-118	S	%Rec	5	8/15/2019 11:47:13 AM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.16	0.084		mg/Kg	5	8/15/2019 11:47:13 AM	B62164
Toluene	ND	0.17		mg/Kg	5	8/15/2019 11:47:13 AM	B62164
Ethylbenzene	1.6	0.17		mg/Kg	5	8/15/2019 11:47:13 AM	B62164
Xylenes, Total	21	0.34		mg/Kg	5	8/15/2019 11:47:13 AM	B62164
Surr: 4-Bromofluorobenzene	122	80-120	S	%Rec	5	8/15/2019 11:47:13 AM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 22 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 10:00:00 AM
Lab ID: 1908840-007
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	2400	96		mg/Kg	10	8/15/2019 1:20:26 PM	46805
Motor Oil Range Organics (MRO)	ND	480		mg/Kg	10	8/15/2019 1:20:26 PM	46805
Surr: DNOP	0	70-130	S	%Rec	10	8/15/2019 1:20:26 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	960	170		mg/Kg	50	8/15/2019 4:29:56 PM	G62164
Surr: BFB	255	77.4-118	S	%Rec	50	8/15/2019 4:29:56 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.21	0.017		mg/Kg	1	8/15/2019 12:10:37 PM	B62164
Toluene	0.30	0.034		mg/Kg	1	8/15/2019 12:10:37 PM	B62164
Ethylbenzene	2.5	0.034		mg/Kg	1	8/15/2019 12:10:37 PM	B62164
Xylenes, Total	61	3.4		mg/Kg	50	8/15/2019 4:29:56 PM	B62164
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	50	8/15/2019 4:29:56 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 22 19-20
Project: SJ 27 5 69
Collection Date: 8/14/2019 10:04:00 AM
Lab ID: 1908840-008
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	230	9.2		mg/Kg	1	8/15/2019 12:08:14 PM	46805
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/15/2019 12:08:14 PM	46805
Surr: DNOP	94.1	70-130		%Rec	1	8/15/2019 12:08:14 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	420	77		mg/Kg	20	8/15/2019 4:53:33 PM	G62164
Surr: BFB	206	77.4-118	S	%Rec	20	8/15/2019 4:53:33 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.52	0.019		mg/Kg	1	8/15/2019 12:34:10 PM	B62164
Toluene	5.4	0.77		mg/Kg	20	8/15/2019 4:53:33 PM	B62164
Ethylbenzene	2.3	0.038		mg/Kg	1	8/15/2019 12:34:10 PM	B62164
Xylenes, Total	30	1.5		mg/Kg	20	8/15/2019 4:53:33 PM	B62164
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	20	8/15/2019 4:53:33 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 22 21-22
Project: SJ 27 5 69
Collection Date: 8/14/2019 10:25:00 AM
Lab ID: 1908840-009
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/15/2019 12:32:21 PM	46805
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/15/2019 12:32:21 PM	46805
Surr: DNOP	96.7	70-130		%Rec	1	8/15/2019 12:32:21 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	8/15/2019 5:17:08 PM	G62164
Surr: BFB	129	77.4-118	S	%Rec	1	8/15/2019 5:17:08 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.020		mg/Kg	1	8/15/2019 12:57:40 PM	B62164
Toluene	ND	0.040		mg/Kg	1	8/15/2019 12:57:40 PM	B62164
Ethylbenzene	ND	0.040		mg/Kg	1	8/15/2019 12:57:40 PM	B62164
Xylenes, Total	ND	0.081		mg/Kg	1	8/15/2019 12:57:40 PM	B62164
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	8/15/2019 12:57:40 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 3 (DUP) 8-9
Project: SJ 27 5 69
Collection Date: 8/14/2019 11:20:00 AM
Lab ID: 1908840-010
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	8/15/2019 10:12:04 AM	46805
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	8/15/2019 10:12:04 AM	46805
Surr: DNOP	79.5	70-130		%Rec	1	8/15/2019 10:12:04 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	8/15/2019 1:21:11 PM	G62164
Surr: BFB	118	77.4-118	S	%Rec	1	8/15/2019 1:21:11 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.021		mg/Kg	1	8/15/2019 1:21:11 PM	B62164
Toluene	ND	0.041		mg/Kg	1	8/15/2019 1:21:11 PM	B62164
Ethylbenzene	ND	0.041		mg/Kg	1	8/15/2019 1:21:11 PM	B62164
Xylenes, Total	ND	0.082		mg/Kg	1	8/15/2019 1:21:11 PM	B62164
Surr: 4-Bromofluorobenzene	98.8	80-120		%Rec	1	8/15/2019 1:21:11 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 3 (DUP) 12.5-13.5
Project: SJ 27 5 69
Collection Date: 8/14/2019 11:30:00 AM
Lab ID: 1908840-011
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/15/2019 6:34:53 PM	46805
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/15/2019 6:34:53 PM	46805
Surr: DNOP	93.7	70-130		%Rec	1	8/15/2019 6:34:53 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	19		mg/Kg	5	8/15/2019 4:06:20 PM	G62164
Surr: BFB	99.8	77.4-118		%Rec	5	8/15/2019 4:06:20 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.095		mg/Kg	5	8/15/2019 4:06:20 PM	B62164
Toluene	ND	0.19		mg/Kg	5	8/15/2019 4:06:20 PM	B62164
Ethylbenzene	ND	0.19		mg/Kg	5	8/15/2019 4:06:20 PM	B62164
Xylenes, Total	ND	0.38		mg/Kg	5	8/15/2019 4:06:20 PM	B62164
Surr: 4-Bromofluorobenzene	97.9	80-120		%Rec	5	8/15/2019 4:06:20 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 23A 9-10
Project: SJ 27 5 69
Collection Date: 8/14/2019 11:45:00 AM
Lab ID: 1908840-012
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	500	8.9		mg/Kg	1	8/15/2019 10:34:11 AM	46805
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/15/2019 10:34:11 AM	46805
Surr: DNOP	85.0	70-130		%Rec	1	8/15/2019 10:34:11 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	19		mg/Kg	5	8/15/2019 2:32:00 PM	G62164
Surr: BFB	122	77.4-118	S	%Rec	5	8/15/2019 2:32:00 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.097		mg/Kg	5	8/15/2019 2:32:00 PM	B62164
Toluene	ND	0.19		mg/Kg	5	8/15/2019 2:32:00 PM	B62164
Ethylbenzene	ND	0.19		mg/Kg	5	8/15/2019 2:32:00 PM	B62164
Xylenes, Total	ND	0.39		mg/Kg	5	8/15/2019 2:32:00 PM	B62164
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	5	8/15/2019 2:32:00 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 23A 10-11
Project: SJ 27 5 69
Collection Date: 8/14/2019 11:48:00 AM
Lab ID: 1908840-013
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	850	9.7		mg/Kg	1	8/15/2019 10:56:12 AM	46805
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/15/2019 10:56:12 AM	46805
Surr: DNOP	82.6	70-130		%Rec	1	8/15/2019 10:56:12 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	250	21		mg/Kg	5	8/15/2019 2:55:38 PM	G62164
Surr: BFB	850	77.4-118	S	%Rec	5	8/15/2019 2:55:38 PM	G62164
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.11	0.11		mg/Kg	5	8/15/2019 2:55:38 PM	B62164
Toluene	0.24	0.21		mg/Kg	5	8/15/2019 2:55:38 PM	B62164
Ethylbenzene	2.0	0.21		mg/Kg	5	8/15/2019 2:55:38 PM	B62164
Xylenes, Total	8.6	0.42		mg/Kg	5	8/15/2019 2:55:38 PM	B62164
Surr: 4-Bromofluorobenzene	136	80-120	S	%Rec	5	8/15/2019 2:55:38 PM	B62164

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 23A 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 11:50:00 AM
Lab ID: 1908840-014
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	13	9.1		mg/Kg	1	8/15/2019 6:59:03 PM	46805
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/15/2019 6:59:03 PM	46805
Surr: DNOP	88.3	70-130		%Rec	1	8/15/2019 6:59:03 PM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	20		mg/Kg	5	8/15/2019 3:30:32 PM	G62165
Surr: BFB	127	77.4-118	S	%Rec	5	8/15/2019 3:30:32 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.098		mg/Kg	5	8/15/2019 3:30:32 PM	B62165
Toluene	ND	0.20		mg/Kg	5	8/15/2019 3:30:32 PM	B62165
Ethylbenzene	ND	0.20		mg/Kg	5	8/15/2019 3:30:32 PM	B62165
Xylenes, Total	ND	0.39		mg/Kg	5	8/15/2019 3:30:32 PM	B62165
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	5	8/15/2019 3:30:32 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 24 7-8
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:00:00 PM
Lab ID: 1908840-015
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/15/2019 11:18:16 AM	46805
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/15/2019 11:18:16 AM	46805
Surr: DNOP	81.8	70-130		%Rec	1	8/15/2019 11:18:16 AM	46805
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/15/2019 11:18:29 AM	G62165
Surr: BFB	106	77.4-118		%Rec	1	8/15/2019 11:18:29 AM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	8/15/2019 11:18:29 AM	B62165
Toluene	ND	0.048		mg/Kg	1	8/15/2019 11:18:29 AM	B62165
Ethylbenzene	ND	0.048		mg/Kg	1	8/15/2019 11:18:29 AM	B62165
Xylenes, Total	ND	0.096		mg/Kg	1	8/15/2019 11:18:29 AM	B62165
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	8/15/2019 11:18:29 AM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 24 9-10
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:05:00 PM
Lab ID: 1908840-016
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	120	8.5		mg/Kg	1	8/15/2019 11:40:16 AM	46806
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	8/15/2019 11:40:16 AM	46806
Surr: DNOP	86.5	70-130		%Rec	1	8/15/2019 11:40:16 AM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	530	22		mg/Kg	5	8/15/2019 11:41:17 AM	G62165
Surr: BFB	713	77.4-118	S	%Rec	5	8/15/2019 11:41:17 AM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.11		mg/Kg	5	8/15/2019 11:41:17 AM	B62165
Toluene	ND	0.22		mg/Kg	5	8/15/2019 11:41:17 AM	B62165
Ethylbenzene	2.1	0.22		mg/Kg	5	8/15/2019 11:41:17 AM	B62165
Xylenes, Total	33	0.43		mg/Kg	5	8/15/2019 11:41:17 AM	B62165
Surr: 4-Bromofluorobenzene	126	80-120	S	%Rec	5	8/15/2019 11:41:17 AM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 24 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:10:00 PM
Lab ID: 1908840-017
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	8/15/2019 7:23:05 PM	46806
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	8/15/2019 7:23:05 PM	46806
Surr: DNOP	90.2	70-130		%Rec	1	8/15/2019 7:23:05 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	21		mg/Kg	5	8/15/2019 3:53:28 PM	G62165
Surr: BFB	115	77.4-118		%Rec	5	8/15/2019 3:53:28 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.10		mg/Kg	5	8/15/2019 3:53:28 PM	B62165
Toluene	ND	0.21		mg/Kg	5	8/15/2019 3:53:28 PM	B62165
Ethylbenzene	ND	0.21		mg/Kg	5	8/15/2019 3:53:28 PM	B62165
Xylenes, Total	ND	0.42		mg/Kg	5	8/15/2019 3:53:28 PM	B62165
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	5	8/15/2019 3:53:28 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 5-6
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:22:00 PM
Lab ID: 1908840-018
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	750	9.3		mg/Kg	1	8/15/2019 7:47:13 PM	46806
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/15/2019 7:47:13 PM	46806
Surr: DNOP	96.9	70-130		%Rec	1	8/15/2019 7:47:13 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	180	18		mg/Kg	5	8/15/2019 4:16:25 PM	G62165
Surr: BFB	503	77.4-118	S	%Rec	5	8/15/2019 4:16:25 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.092		mg/Kg	5	8/15/2019 4:16:25 PM	B62165
Toluene	ND	0.18		mg/Kg	5	8/15/2019 4:16:25 PM	B62165
Ethylbenzene	ND	0.18		mg/Kg	5	8/15/2019 4:16:25 PM	B62165
Xylenes, Total	11	0.37		mg/Kg	5	8/15/2019 4:16:25 PM	B62165
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	5	8/15/2019 4:16:25 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 9-10
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:25:00 PM
Lab ID: 1908840-019
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	3700	83		mg/Kg	10	8/15/2019 1:08:30 PM	46806
Motor Oil Range Organics (MRO)	ND	420		mg/Kg	10	8/15/2019 1:08:30 PM	46806
Surr: DNOP	0	70-130	S	%Rec	10	8/15/2019 1:08:30 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2500	54		mg/Kg	20	8/15/2019 10:32:48 AM	G62165
Surr: BFB	904	77.4-118	S	%Rec	20	8/15/2019 10:32:48 AM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	3.4	0.27		mg/Kg	20	8/15/2019 10:32:48 AM	B62165
Toluene	ND	0.54		mg/Kg	20	8/15/2019 10:32:48 AM	B62165
Ethylbenzene	20	0.54		mg/Kg	20	8/15/2019 10:32:48 AM	B62165
Xylenes, Total	600	9.8		mg/Kg	100	8/15/2019 3:07:32 PM	B62165
Surr: 4-Bromofluorobenzene	115	80-120		%Rec	100	8/15/2019 3:07:32 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 10-11
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:30:00 PM
Lab ID: 1908840-020
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	1600	96		mg/Kg	10	8/15/2019 1:30:37 PM	46806
Motor Oil Range Organics (MRO)	ND	480		mg/Kg	10	8/15/2019 1:30:37 PM	46806
Surr: DNOP	0	70-130	S	%Rec	10	8/15/2019 1:30:37 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1700	80		mg/Kg	20	8/15/2019 10:55:42 AM	G62165
Surr: BFB	690	77.4-118	S	%Rec	20	8/15/2019 10:55:42 AM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	1.2	0.40		mg/Kg	20	8/15/2019 10:55:42 AM	B62165
Toluene	ND	0.80		mg/Kg	20	8/15/2019 10:55:42 AM	B62165
Ethylbenzene	8.9	0.80		mg/Kg	20	8/15/2019 10:55:42 AM	B62165
Xylenes, Total	150	1.6		mg/Kg	20	8/15/2019 10:55:42 AM	B62165
Surr: 4-Bromofluorobenzene	123	80-120	S	%Rec	20	8/15/2019 10:55:42 AM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:34:00 PM
Lab ID: 1908840-021
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/15/2019 11:57:04 AM	46806
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/15/2019 11:57:04 AM	46806
Surr: DNOP	73.1	70-130		%Rec	1	8/15/2019 11:57:04 AM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	8/15/2019 12:04:08 PM	G62165
Surr: BFB	106	77.4-118		%Rec	1	8/15/2019 12:04:08 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.019		mg/Kg	1	8/15/2019 12:04:08 PM	B62165
Toluene	ND	0.038		mg/Kg	1	8/15/2019 12:04:08 PM	B62165
Ethylbenzene	ND	0.038		mg/Kg	1	8/15/2019 12:04:08 PM	B62165
Xylenes, Total	ND	0.075		mg/Kg	1	8/15/2019 12:04:08 PM	B62165
Surr: 4-Bromofluorobenzene	96.2	80-120		%Rec	1	8/15/2019 12:04:08 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 16-17
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:40:00 PM
Lab ID: 1908840-022
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	98	8.8		mg/Kg	1	8/15/2019 12:21:23 PM	46806
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	8/15/2019 12:21:23 PM	46806
Surr: DNOP	87.5	70-130		%Rec	1	8/15/2019 12:21:23 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	68	4.2		mg/Kg	1	8/15/2019 12:26:59 PM	G62165
Surr: BFB	310	77.4-118	S	%Rec	1	8/15/2019 12:26:59 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.068	0.021		mg/Kg	1	8/15/2019 12:26:59 PM	B62165
Toluene	ND	0.042		mg/Kg	1	8/15/2019 12:26:59 PM	B62165
Ethylbenzene	0.44	0.042		mg/Kg	1	8/15/2019 12:26:59 PM	B62165
Xylenes, Total	0.24	0.084		mg/Kg	1	8/15/2019 12:26:59 PM	B62165
Surr: 4-Bromofluorobenzene	124	80-120	S	%Rec	1	8/15/2019 12:26:59 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 25 17-18
Project: SJ 27 5 69
Collection Date: 8/14/2019 12:45:00 PM
Lab ID: 1908840-023
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	36	9.0		mg/Kg	1	8/15/2019 12:45:49 PM	46806
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/15/2019 12:45:49 PM	46806
Surr: DNOP	82.8	70-130		%Rec	1	8/15/2019 12:45:49 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	110	21		mg/Kg	5	8/15/2019 12:49:54 PM	G62165
Surr: BFB	262	77.4-118	S	%Rec	5	8/15/2019 12:49:54 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.11		mg/Kg	5	8/15/2019 12:49:54 PM	B62165
Toluene	ND	0.21		mg/Kg	5	8/15/2019 12:49:54 PM	B62165
Ethylbenzene	0.61	0.21		mg/Kg	5	8/15/2019 12:49:54 PM	B62165
Xylenes, Total	2.5	0.42		mg/Kg	5	8/15/2019 12:49:54 PM	B62165
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	5	8/15/2019 12:49:54 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 26 6-7
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:05:00 PM
Lab ID: 1908840-024
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	11	9.1		mg/Kg	1	8/15/2019 8:11:35 PM	46806
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/15/2019 8:11:35 PM	46806
Surr: DNOP	99.8	70-130		%Rec	1	8/15/2019 8:11:35 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	16		mg/Kg	5	8/15/2019 4:39:25 PM	G62165
Surr: BFB	109	77.4-118		%Rec	5	8/15/2019 4:39:25 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.080		mg/Kg	5	8/15/2019 4:39:25 PM	B62165
Toluene	ND	0.16		mg/Kg	5	8/15/2019 4:39:25 PM	B62165
Ethylbenzene	ND	0.16		mg/Kg	5	8/15/2019 4:39:25 PM	B62165
Xylenes, Total	ND	0.32		mg/Kg	5	8/15/2019 4:39:25 PM	B62165
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	5	8/15/2019 4:39:25 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 26 9-10
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:10:00 PM
Lab ID: 1908840-025
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	6600	87		mg/Kg	10	8/15/2019 1:34:51 PM	46806
Motor Oil Range Organics (MRO)	ND	440		mg/Kg	10	8/15/2019 1:34:51 PM	46806
Surr: DNOP	0	70-130	S	%Rec	10	8/15/2019 1:34:51 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2600	170		mg/Kg	50	8/15/2019 8:28:28 PM	G62165
Surr: BFB	588	77.4-118	S	%Rec	50	8/15/2019 8:28:28 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.29	0.086		mg/Kg	5	8/15/2019 1:58:42 PM	B62165
Toluene	ND	0.17		mg/Kg	5	8/15/2019 1:58:42 PM	B62165
Ethylbenzene	8.0	0.17		mg/Kg	5	8/15/2019 1:58:42 PM	B62165
Xylenes, Total	220	3.4		mg/Kg	50	8/15/2019 8:28:28 PM	B62165
Surr: 4-Bromofluorobenzene	119	80-120		%Rec	50	8/15/2019 8:28:28 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 26 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:15:00 PM
Lab ID: 1908840-026
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	14	7.8		mg/Kg	1	8/15/2019 8:36:12 PM	46806
Motor Oil Range Organics (MRO)	ND	39		mg/Kg	1	8/15/2019 8:36:12 PM	46806
Surr: DNOP	92.6	70-130		%Rec	1	8/15/2019 8:36:12 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	23		mg/Kg	5	8/15/2019 5:02:20 PM	G62165
Surr: BFB	130	77.4-118	S	%Rec	5	8/15/2019 5:02:20 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.11		mg/Kg	5	8/15/2019 5:02:20 PM	B62165
Toluene	ND	0.23		mg/Kg	5	8/15/2019 5:02:20 PM	B62165
Ethylbenzene	ND	0.23		mg/Kg	5	8/15/2019 5:02:20 PM	B62165
Xylenes, Total	ND	0.45		mg/Kg	5	8/15/2019 5:02:20 PM	B62165
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	5	8/15/2019 5:02:20 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 27 9-10
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:28:00 PM
Lab ID: 1908840-027
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	190	9.4		mg/Kg	1	8/15/2019 12:46:27 PM	46806
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/15/2019 12:46:27 PM	46806
Surr: DNOP	81.8	70-130		%Rec	1	8/15/2019 12:46:27 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	41	23		mg/Kg	5	8/15/2019 8:51:19 PM	G62165
Surr: BFB	193	77.4-118	S	%Rec	5	8/15/2019 8:51:19 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.11		mg/Kg	5	8/15/2019 8:51:19 PM	B62165
Toluene	ND	0.23		mg/Kg	5	8/15/2019 8:51:19 PM	B62165
Ethylbenzene	ND	0.23		mg/Kg	5	8/15/2019 8:51:19 PM	B62165
Xylenes, Total	0.71	0.45		mg/Kg	5	8/15/2019 8:51:19 PM	B62165
Surr: 4-Bromofluorobenzene	107	80-120		%Rec	5	8/15/2019 8:51:19 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 27 12-13
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:33:00 PM
Lab ID: 1908840-028
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	280	9.6		mg/Kg	1	8/15/2019 12:56:22 PM	46806
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/15/2019 12:56:22 PM	46806
Surr: DNOP	100	70-130		%Rec	1	8/15/2019 12:56:22 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	130	19		mg/Kg	5	8/15/2019 2:44:37 PM	G62165
Surr: BFB	383	77.4-118	S	%Rec	5	8/15/2019 2:44:37 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.097		mg/Kg	5	8/15/2019 2:44:37 PM	B62165
Toluene	ND	0.19		mg/Kg	5	8/15/2019 2:44:37 PM	B62165
Ethylbenzene	0.22	0.19		mg/Kg	5	8/15/2019 2:44:37 PM	B62165
Xylenes, Total	4.9	0.39		mg/Kg	5	8/15/2019 2:44:37 PM	B62165
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	5	8/15/2019 2:44:37 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1908840**
Date Reported: **8/16/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 27 14-15
Project: SJ 27 5 69
Collection Date: 8/14/2019 1:36:00 PM
Lab ID: 1908840-029
Matrix: MEOH (SOIL)
Received Date: 8/15/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	280	9.0		mg/Kg	1	8/15/2019 9:00:55 PM	46806
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/15/2019 9:00:55 PM	46806
Surr: DNOP	91.6	70-130		%Rec	1	8/15/2019 9:00:55 PM	46806
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	270	19		mg/Kg	5	8/15/2019 5:25:22 PM	G62165
Surr: BFB	532	77.4-118	S	%Rec	5	8/15/2019 5:25:22 PM	G62165
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.094		mg/Kg	5	8/15/2019 5:25:22 PM	B62165
Toluene	ND	0.19		mg/Kg	5	8/15/2019 5:25:22 PM	B62165
Ethylbenzene	0.97	0.19		mg/Kg	5	8/15/2019 5:25:22 PM	B62165
Xylenes, Total	15	0.38		mg/Kg	5	8/15/2019 5:25:22 PM	B62165
Surr: 4-Bromofluorobenzene	119	80-120		%Rec	5	8/15/2019 5:25:22 PM	B62165

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908840**
16-Aug-19

Client: Timberwolf Environmental
Project: SJ 27 5 69

Sample ID: **MB-46805**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **46805**	RunNo: **62154**							
Prep Date: **8/15/2019**	Analysis Date: **8/15/2019**	SeqNo: **2109604**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		94.6	70	130			

Sample ID: **LCS-46805**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **46805**	RunNo: **62154**							
Prep Date: **8/15/2019**	Analysis Date: **8/15/2019**	SeqNo: **2109605**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	95.9	63.9	124			
Surr: DNOP	4.7		5.000		93.3	70	130			

Sample ID: **LCS-46806**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **46806**	RunNo: **62155**							
Prep Date: **8/15/2019**	Analysis Date: **8/15/2019**	SeqNo: **2109675**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	103	63.9	124			
Surr: DNOP	3.8		5.000		76.3	70	130			

Sample ID: **MB-46806**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **46806**	RunNo: **62155**							
Prep Date: **8/15/2019**	Analysis Date: **8/15/2019**	SeqNo: **2109676**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.1		10.00		81.0	70	130			

Sample ID: **LCS-46758**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **46758**	RunNo: **62154**							
Prep Date: **8/13/2019**	Analysis Date: **8/15/2019**	SeqNo: **2110663**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.7		5.000		94.9	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1908840**

16-Aug-19

Client: Timberwolf Environmental

Project: SJ 27 5 69

Sample ID: **1908840-016AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **HSA 24 9-10** Batch ID: **46806** RunNo: **62154**

Prep Date: **8/15/2019** Analysis Date: **8/15/2019** SeqNo: **2110673** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	150	9.9	49.46	120.7	49.8	57	142			S
Surr: DNOP	4.8		4.946		96.8	70	130			

Sample ID: **1908840-016AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **HSA 24 9-10** Batch ID: **46806** RunNo: **62154**

Prep Date: **8/15/2019** Analysis Date: **8/15/2019** SeqNo: **2110675** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.5	47.48	120.7	11.1	57	142	14.2	20	S
Surr: DNOP	4.3		4.748		91.3	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908840**
16-Aug-19

Client: Timberwolf Environmental
Project: SJ 27 5 69

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G62164**	RunNo: **62164**
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		108	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G62164**	RunNo: **62164**
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110718** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.0	80	120			
Surr: BFB	1100		1000		109	77.4	118			

Sample ID: **MB-46796**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **46796**	RunNo: **62164**
Prep Date: **8/14/2019**	Analysis Date: **8/15/2019**	SeqNo: **2110752** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		104	77.4	118			

Sample ID: **LCS-46796**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **46796**	RunNo: **62164**
Prep Date: **8/14/2019**	Analysis Date: **8/15/2019**	SeqNo: **2110754** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		105	77.4	118			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G62165**	RunNo: **62165**
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110831** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		103	77.4	118			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G62165**	RunNo: **62165**
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110832** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.8	80	120			
Surr: BFB	1200		1000		122	77.4	118			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908840**
16-Aug-19

Client: Timberwolf Environmental
Project: SJ 27 5 69

Sample ID: **RB** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **B62164** RunNo: **62164**
Prep Date: Analysis Date: **8/15/2019** SeqNo: **2110774** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Sample ID: **100NG BTEX LCS** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **B62164** RunNo: **62164**
Prep Date: Analysis Date: **8/15/2019** SeqNo: **2110775** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	80	120			
Toluene	1.1	0.050	1.000	0	106	80	120			
Ethylbenzene	1.1	0.050	1.000	0	107	80	120			
Xylenes, Total	3.2	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID: **MB-46796** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **46796** RunNo: **62164**
Prep Date: **8/14/2019** Analysis Date: **8/15/2019** SeqNo: **2110793** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.97		1.000		96.6	80	120			

Sample ID: **LCS-46796** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **46796** RunNo: **62164**
Prep Date: **8/14/2019** Analysis Date: **8/15/2019** SeqNo: **2110794** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.96		1.000		96.1	80	120			

Sample ID: **RB** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **B62165** RunNo: **62165**
Prep Date: Analysis Date: **8/15/2019** SeqNo: **2110859** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1908840**
16-Aug-19

Client: Timberwolf Environmental
Project: SJ 27 5 69

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **B62165**	RunNo: **62165**							
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110859**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.97		1.000		97.0	80	120			

Sample ID: **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **B62165**	RunNo: **62165**							
Prep Date:	Analysis Date: **8/15/2019**	SeqNo: **2110862**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	95.7	80	120			
Toluene	1.0	0.050	1.000	0	100	80	120			
Ethylbenzene	1.0	0.050	1.000	0	102	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **TIMBERWOLF ENVIRON** Work Order Number: **1908840** RcptNo: 1

Received By: **Erin Melendrez** **8/15/2019 8:00:00 AM**

Completed By: **Erin Melendrez** **8/15/2019 8:26:35 AM**

Reviewed By: ~~EO~~ IO 8/15/19 8/15/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: IO 8/15/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			
2	4.3	Good	Yes			
3	3.8	Good	Yes			

1 of 3

Chain-of-Custody Record

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979-324-2139

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush Same Day

Project Name:

Project #: SJ 27-5 #69

Project Manager: Jim Foster

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5+0.2(CF)=1.7°C; 4.1+0.2(CF)=4.3°C; 3.6+0.2(CF)=3.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908840	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX				Air Bubbles (Y or N)
~~8/14/19~~	~~920~~	~~S~~	~~HSA 20 8-9~~																			
8/14/19	920	S	HSA 20 8-9	4oz/1	Ice	*-001			X									X				
8/14/19	923	S	HSA 20 14-15	4oz/1	Ice	-002			X									X				
8/14/19	930	S	HSA 21 8-9	4oz/1	Ice	*-003			X									X				
8/14/19	940	S	HSA 21 11-12	4oz/1	Ice	*-004			X									X				
8/14/19	943	S	HSA 21 14-15	4oz/1	Ice	-005			X									X				
8/14/19	955	S	HSA 22 10-11	4oz/1	Ice	*-006			X									X				
8/14/19	1000	S	HSA 22 14-15	4oz/1	Ice	*-007			X									X				
8/14/19	1004	S	HSA 22 19-20	4oz/1	Ice	*-008			X									X				
8/14/19	1025	S	HSA 22 21-22	4oz/1	Ice	*-009			X									X				
8/14/19	1120	S	HSA 3(DUP) 8-9	4oz/1	Ice	*-010			X									X				
8/14/19	1130	S	HSA 3(DUP) 12.5-13.5	4oz/1	Ice	-011			X									X				
8/14/19	1145	S	HSA 23A 9-10	4oz/1	Ice	*-012			X									X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/14/19	16:45	James McNeary	Christ Waltz	8/14/19	1645 ~~1720~~
8/14/19	2040	Christ Waltz	[signature]	8/15/19	0800

Remarks: 24 Hr TAT

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979-324-2139

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush Same Day

Project Name:

Project #: SJ 27-5 #69

Project Manager: Jim Foster

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 3

Cooler Temp(including CF): 1.5+0.2(CF)=1.7°C 4.1+0.2(CF)=4.3°C, 3.6+0.2(CF)=3.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 408840	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)	BTEX
8/14/19	1148	S	HSA 23A 10-11	4oz/1	Ice	*-013		X									X
8/14/19	1150	S	HSA 23A 14-15	4oz/1	Ice	-014		X									X
8/14/19	1200	S	HSA 24 7-8	4oz/1	Ice	*-015		X									X
8/14/19	1205	S	HSA 24 9-10	4oz/1	Ice	*-016		X									X
8/14/19	1210	S	HSA 24 14-15	4oz/1	Ice	-017		X									X
8/14/19	1222	S	HSA 25 5-6	4oz/1	Ice	-018		X									X
8/14/19	1225	S	HSA 25 9-10	4oz/1	Ice	*-019		X									X
8/14/19	1230	S	HSA 25 10-11	4oz/1	Ice	*-020		X									X
8/14/19	1234	S	HSA 25 14-15	4oz/1	Ice	*-021		X									X
8/14/19	1240	S	HSA 25 16-17	4oz/1	Ice	*-022		X									X
8/14/19	1245	S	HSA 25 17-18	4oz/1	Ice	*-023		X									X
8/14/19	1305	S	HSA 26 6-7	4oz/1	Ice	-024		X									X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
8/14/19	1645	James McNutt	Chet Wade		8/14/19	1645
8/14/19	2040	Chet Wade		courier	8/15/19	0800

Remarks: 24 Hr TAT

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

393

Chain-of-Custody Record

Client: Timberwolf Environmental

Mailing Address:

Phone #: 979-324-2139

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☒ Rush Same Day

Project Name:

Project #:
SJ 27-5 #69

Project Manager:
Jim Foster

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.5+0.2(CF)=1.7°C
4.1+0.2(CF)=4.3°C, 3.6+0.2(CF)=3.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1908840	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	BTEX				Air Bubbles (Y or N)
8/14/19	1310	S	HSA 26 9-10	4oz/1	Ice	*-025			X									X				
8/14/19	1315	S	HSA 26 14-15	4oz/1	Ice	-026			X									X				
8/14/19	1328	S	HSA 27 9-10	4oz/1	Ice	*-027			X									X				
8/14/19	1333	S	HSA 27 12-13	4oz/1	Ice	*-028			X									X				
8/14/19	1336	S	HSA 27 14-15	4oz/1	Ice	-029			X									X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/14/19	1645	James McN	Chad Ward	8/14/19	1645
8/14/19	2040	Chad Ward	courier	8/15/19	0800

Remarks:
24 Hr TAT

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 10, 2019

Jim Foster

Timberwolf Environmental
1920 W Villa Maria Ste 205
Bryan, TX 77807
TEL: (979) 324-2139
FAX

RE: SJ 27 5 69 OrderNo.: 1910503

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 1 sample(s) on 10/9/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1910503**
Date Reported: **10/10/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental
Client Sample ID: HSA 32 7-8'
Project: SJ 27 5 69
Collection Date: 10/8/2019 10:30:00 AM
Lab ID: 1910503-001 **Matrix:** AQUEOUS **Received Date:** 10/9/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	370	93		mg/Kg	10	10/9/2019 11:55:31 AM	48034
Motor Oil Range Organics (MRO)	610	460		mg/Kg	10	10/9/2019 11:55:31 AM	48034
Surr: DNOP	0	70-130	S	%Rec	10	10/9/2019 11:55:31 AM	48034
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	10/9/2019 10:53:17 AM	48018
Surr: BFB	108	77.4-118		%Rec	1	10/9/2019 10:53:17 AM	48018
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.020		mg/Kg	1	10/9/2019 10:53:17 AM	48018
Toluene	ND	0.040		mg/Kg	1	10/9/2019 10:53:17 AM	48018
Ethylbenzene	ND	0.040		mg/Kg	1	10/9/2019 10:53:17 AM	48018
Xylenes, Total	0.098	0.080		mg/Kg	1	10/9/2019 10:53:17 AM	48018
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	10/9/2019 10:53:17 AM	48018

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910503**

10-Oct-19

Client: Timberwolf Environmental

Project: SJ 27 5 69

Sample ID: **LCS-48034**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48034**	RunNo: **63526**
Prep Date: **10/9/2019**	Analysis Date: **10/9/2019**	SeqNo: **2170429** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.7	63.9	124			
Surr: DNOP	4.8		5.000		95.7	70	130			

Sample ID: **MB-48034**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48034**	RunNo: **63526**
Prep Date: **10/9/2019**	Analysis Date: **10/9/2019**	SeqNo: **2170430** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1910503**
10-Oct-19

Client: Timberwolf Environmental
Project: SJ 27 5 69

Sample ID: **MB-48018**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **48018**	RunNo: **63539**							
Prep Date: **10/8/2019**	Analysis Date: **10/9/2019**	SeqNo: **2171100**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		99.0	77.4	118			

Sample ID: **LCS-48018**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **48018**	RunNo: **63539**							
Prep Date: **10/8/2019**	Analysis Date: **10/9/2019**	SeqNo: **2171101**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80	120			
Surr: BFB	1100		1000		108	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1910503**

10-Oct-19

Client: Timberwolf Environmental

Project: SJ 27 5 69

Sample ID: **MB-48018**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **PBS**	Batch ID: **48018**	RunNo: **63539**							
Prep Date: **10/8/2019**	Analysis Date: **10/9/2019**	SeqNo: **2171137**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.2	80	120			

Sample ID: **LCS-48018**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**							
Client ID: **LCSS**	Batch ID: **48018**	RunNo: **63539**							
Prep Date: **10/8/2019**	Analysis Date: **10/9/2019**	SeqNo: **2171138**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.5	80	120			
Toluene	0.96	0.050	1.000	0	95.9	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.2	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: TIMBERWOLF ENVIRON Work Order Number: 1910503 RcptNo: 1

Received By: **Leah Baca** 10/9/2019 8:20:00 AM Leah Baca

Completed By: **Yazmine Garduno** 10/9/2019 9:11:25 AM Yazmine Garduno

Reviewed By: DM 10/8/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: EJM 10/8/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.8	Good				
2	2.8	Good				

Chain-of-Custody Record

Client: Timberwolf Env

Mailing Address:

Phone #: Jim Foster 979 324-2139

email or Fax#: jim@teamtimberwolf.com

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☒ Rush 24 HR TAT

Project Name: SJ 27-5 #69

Project #:

Project Manager: Invoice: Lindsay Dumas Hilcorp Energy

Sampler: Jim Foster

On Ice: ☒ Yes ☐ No

# of Coolers: (1)

Cooler Temp(including CF): 5.3 - CF = 4.8 (3.3) 0.5 = 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
10/8/19	1030	S	SJ 27-5 #69A 32 7'-8'	4oz		1910503-001	✓	✓								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
10/8/19	1430		Austin Walk		10/8/19	1430
10/8/19	1910	Austin Walk	Leah P	Courier	10/9/19	0820

Remarks: 24 HR TAT

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA28 3-4'
Project: SJ 27 5 69
Collection Date: 9/24/2019 9:55:00 AM
Lab ID: 1909E04-001 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/26/2019 11:10:25 AM	47712
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/26/2019 11:10:25 AM	47712
Surr: DNOP	77.6	70-130		%Rec	1	9/26/2019 11:10:25 AM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 12:01:56 PM	47721
Surr: BFB	94.0	77.4-118		%Rec	1	9/26/2019 12:01:56 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/26/2019 12:01:56 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 12:01:56 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 12:01:56 PM	47721
Xylenes, Total	ND	0.096		mg/Kg	1	9/26/2019 12:01:56 PM	47721
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	9/26/2019 12:01:56 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27 5 69
Lab ID: 1909E04-002 **Matrix:** SOIL

Client Sample ID: HSA28 8-9'
Collection Date: 9/24/2019 10:13:00 AM
Received Date: 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	9/26/2019 12:34:16 PM	47712
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/26/2019 12:34:16 PM	47712
Surr: DNOP	89.4	70-130		%Rec	1	9/26/2019 12:34:16 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 1:12:30 PM	47721
Surr: BFB	96.8	77.4-118		%Rec	1	9/26/2019 1:12:30 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 1:12:30 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 1:12:30 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 1:12:30 PM	47721
Xylenes, Total	ND	0.096		mg/Kg	1	9/26/2019 1:12:30 PM	47721
Surr: 4-Bromofluorobenzene	95.5	80-120		%Rec	1	9/26/2019 1:12:30 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA28 9.25-10.25'
Project: SJ 27 5 69
Collection Date: 9/24/2019 10:27:00 AM
Lab ID: 1909E04-003 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	520	8.4		mg/Kg	1	9/26/2019 12:58:02 PM	47712
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	9/26/2019 12:58:02 PM	47712
Surr: DNOP	96.4	70-130		%Rec	1	9/26/2019 12:58:02 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	260	4.8		mg/Kg	1	9/26/2019 2:23:03 PM	47721
Surr: BFB	1320	77.4-118	S	%Rec	1	9/26/2019 2:23:03 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 2:23:03 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 2:23:03 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 2:23:03 PM	47721
Xylenes, Total	8.5	0.095		mg/Kg	1	9/26/2019 2:23:03 PM	47721
Surr: 4-Bromofluorobenzene	134	80-120	S	%Rec	1	9/26/2019 2:23:03 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA28 13-14'
Project: SJ 27 5 69
Collection Date: 9/24/2019 10:35:00 AM
Lab ID: 1909E04-004 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/26/2019 1:30:51 PM	47712
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/26/2019 1:30:51 PM	47712
Surr: DNOP	85.4	70-130		%Rec	1	9/26/2019 1:30:51 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/26/2019 2:46:34 PM	47721
Surr: BFB	102	77.4-118		%Rec	1	9/26/2019 2:46:34 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.023		mg/Kg	1	9/26/2019 2:46:34 PM	47721
Toluene	ND	0.046		mg/Kg	1	9/26/2019 2:46:34 PM	47721
Ethylbenzene	ND	0.046		mg/Kg	1	9/26/2019 2:46:34 PM	47721
Xylenes, Total	0.14	0.093		mg/Kg	1	9/26/2019 2:46:34 PM	47721
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	9/26/2019 2:46:34 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA29 4-5'
Project: SJ 27 5 69
Collection Date: 9/24/2019 10:40:00 AM
Lab ID: 1909E04-005 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/26/2019 1:54:41 PM	47712
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/26/2019 1:54:41 PM	47712
Surr: DNOP	87.2	70-130		%Rec	1	9/26/2019 1:54:41 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 3:10:04 PM	47721
Surr: BFB	98.8	77.4-118		%Rec	1	9/26/2019 3:10:04 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/26/2019 3:10:04 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 3:10:04 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 3:10:04 PM	47721
Xylenes, Total	ND	0.098		mg/Kg	1	9/26/2019 3:10:04 PM	47721
Surr: 4-Bromofluorobenzene	96.7	80-120		%Rec	1	9/26/2019 3:10:04 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27 5 69
Lab ID: 1909E04-006 **Matrix:** SOIL

Client Sample ID: HSA29 7-8'
Collection Date: 9/24/2019 10:50:00 AM
Received Date: 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	540	98		mg/Kg	10	9/26/2019 9:33:57 AM	47712
Motor Oil Range Organics (MRO)	830	490		mg/Kg	10	9/26/2019 9:33:57 AM	47712
Surr: DNOP	0	70-130	S	%Rec	10	9/26/2019 9:33:57 AM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 4:44:02 PM	47721
Surr: BFB	96.7	77.4-118		%Rec	1	9/26/2019 4:44:02 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 4:44:02 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 4:44:02 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 4:44:02 PM	47721
Xylenes, Total	ND	0.095		mg/Kg	1	9/26/2019 4:44:02 PM	47721
Surr: 4-Bromofluorobenzene	91.0	80-120		%Rec	1	9/26/2019 4:44:02 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA29 10-11'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:00:00 AM
Lab ID: 1909E04-007 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	690	9.9		mg/Kg	1	9/26/2019 1:11:16 PM	47712
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/26/2019 1:11:16 PM	47712
Surr: DNOP	70.3	70-130		%Rec	1	9/26/2019 1:11:16 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 5:07:27 PM	47721
Surr: BFB	117	77.4-118		%Rec	1	9/26/2019 5:07:27 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 5:07:27 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 5:07:27 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 5:07:27 PM	47721
Xylenes, Total	ND	0.098		mg/Kg	1	9/26/2019 5:07:27 PM	47721
Surr: 4-Bromofluorobenzene	91.4	80-120		%Rec	1	9/26/2019 5:07:27 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA29 14-15'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:05:00 AM
Lab ID: 1909E04-008 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/26/2019 2:18:38 PM	47712
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/26/2019 2:18:38 PM	47712
Surr: DNOP	89.4	70-130		%Rec	1	9/26/2019 2:18:38 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/26/2019 5:54:25 PM	47721
Surr: BFB	128	77.4-118	S	%Rec	1	9/26/2019 5:54:25 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 5:54:25 PM	47721
Toluene	ND	0.047		mg/Kg	1	9/26/2019 5:54:25 PM	47721
Ethylbenzene	ND	0.047		mg/Kg	1	9/26/2019 5:54:25 PM	47721
Xylenes, Total	ND	0.094		mg/Kg	1	9/26/2019 5:54:25 PM	47721
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	9/26/2019 5:54:25 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA30 5-6'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:15:00 AM
Lab ID: 1909E04-009 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/26/2019 2:42:38 PM	47712
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/26/2019 2:42:38 PM	47712
Surr: DNOP	84.8	70-130		%Rec	1	9/26/2019 2:42:38 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 6:17:51 PM	47721
Surr: BFB	90.5	77.4-118		%Rec	1	9/26/2019 6:17:51 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 6:17:51 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 6:17:51 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 6:17:51 PM	47721
Xylenes, Total	ND	0.099		mg/Kg	1	9/26/2019 6:17:51 PM	47721
Surr: 4-Bromofluorobenzene	88.7	80-120		%Rec	1	9/26/2019 6:17:51 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA30 9-10'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:20:00 AM
Lab ID: 1909E04-010 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	770	9.1		mg/Kg	1	9/26/2019 3:06:39 PM	47712
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/26/2019 3:06:39 PM	47712
Surr: DNOP	105	70-130		%Rec	1	9/26/2019 3:06:39 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	96	25		mg/Kg	5	9/26/2019 10:04:03 AM	47721
Surr: BFB	145	77.4-118	S	%Rec	5	9/26/2019 10:04:03 AM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.12		mg/Kg	5	9/26/2019 10:04:03 AM	47721
Toluene	ND	0.25		mg/Kg	5	9/26/2019 10:04:03 AM	47721
Ethylbenzene	ND	0.25		mg/Kg	5	9/26/2019 10:04:03 AM	47721
Xylenes, Total	1.1	0.50		mg/Kg	5	9/26/2019 10:04:03 AM	47721
Surr: 4-Bromofluorobenzene	99.9	80-120		%Rec	5	9/26/2019 10:04:03 AM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA30 10-11'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:35:00 AM
Lab ID: 1909E04-011 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	1100	9.5	E	mg/Kg	1	9/26/2019 3:30:35 PM	47712
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/26/2019 3:30:35 PM	47712
Surr: DNOP	96.1	70-130		%Rec	1	9/26/2019 3:30:35 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	360	25		mg/Kg	5	9/26/2019 10:27:40 AM	47721
Surr: BFB	409	77.4-118	S	%Rec	5	9/26/2019 10:27:40 AM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.12		mg/Kg	5	9/26/2019 10:27:40 AM	47721
Toluene	ND	0.25		mg/Kg	5	9/26/2019 10:27:40 AM	47721
Ethylbenzene	1.7	0.25		mg/Kg	5	9/26/2019 10:27:40 AM	47721
Xylenes, Total	24	0.49		mg/Kg	5	9/26/2019 10:27:40 AM	47721
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	5	9/26/2019 10:27:40 AM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA30 14-15'
Project: SJ 27 5 69
Collection Date: 9/24/2019 11:40:00 AM
Lab ID: 1909E04-012 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/26/2019 3:54:35 PM	47712
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/26/2019 3:54:35 PM	47712
Surr: DNOP	86.1	70-130		%Rec	1	9/26/2019 3:54:35 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 6:41:13 PM	47721
Surr: BFB	114	77.4-118		%Rec	1	9/26/2019 6:41:13 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 6:41:13 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 6:41:13 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 6:41:13 PM	47721
Xylenes, Total	ND	0.096		mg/Kg	1	9/26/2019 6:41:13 PM	47721
Surr: 4-Bromofluorobenzene	88.6	80-120		%Rec	1	9/26/2019 6:41:13 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA31 9-10'
Project: SJ 27 5 69
Collection Date: 9/24/2019 12:00:00 PM
Lab ID: 1909E04-013 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/26/2019 4:18:34 PM	47712
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/26/2019 4:18:34 PM	47712
Surr: DNOP	94.5	70-130		%Rec	1	9/26/2019 4:18:34 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 7:04:34 PM	47721
Surr: BFB	94.6	77.4-118		%Rec	1	9/26/2019 7:04:34 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 7:04:34 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 7:04:34 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 7:04:34 PM	47721
Xylenes, Total	ND	0.099		mg/Kg	1	9/26/2019 7:04:34 PM	47721
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	9/26/2019 7:04:34 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA31 10-11'
Project: SJ 27 5 69
Collection Date: 9/24/2019 12:07:00 PM
Lab ID: 1909E04-014 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	9/26/2019 4:42:26 PM	47712
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/26/2019 4:42:26 PM	47712
Surr: DNOP	98.1	70-130		%Rec	1	9/26/2019 4:42:26 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 7:28:05 PM	47721
Surr: BFB	89.4	77.4-118		%Rec	1	9/26/2019 7:28:05 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 7:28:05 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 7:28:05 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 7:28:05 PM	47721
Xylenes, Total	ND	0.098		mg/Kg	1	9/26/2019 7:28:05 PM	47721
Surr: 4-Bromofluorobenzene	87.0	80-120		%Rec	1	9/26/2019 7:28:05 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA31 13-14'
Project: SJ 27 5 69
Collection Date: 9/24/2019 12:12:00 PM
Lab ID: 1909E04-015 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	330	9.9		mg/Kg	1	9/26/2019 5:06:21 PM	47712
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/26/2019 5:06:21 PM	47712
Surr: DNOP	97.5	70-130		%Rec	1	9/26/2019 5:06:21 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 7:51:44 PM	47721
Surr: BFB	103	77.4-118		%Rec	1	9/26/2019 7:51:44 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	9/26/2019 7:51:44 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 7:51:44 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 7:51:44 PM	47721
Xylenes, Total	ND	0.096		mg/Kg	1	9/26/2019 7:51:44 PM	47721
Surr: 4-Bromofluorobenzene	91.0	80-120		%Rec	1	9/26/2019 7:51:44 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA31 14-15'
Project: SJ 27 5 69
Collection Date: 9/24/2019 12:18:00 PM
Lab ID: 1909E04-016 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	170	9.4		mg/Kg	1	9/26/2019 5:30:24 PM	47712
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/26/2019 5:30:24 PM	47712
Surr: DNOP	97.2	70-130		%Rec	1	9/26/2019 5:30:24 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 8:38:54 PM	47721
Surr: BFB	106	77.4-118		%Rec	1	9/26/2019 8:38:54 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/26/2019 8:38:54 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 8:38:54 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 8:38:54 PM	47721
Xylenes, Total	ND	0.096		mg/Kg	1	9/26/2019 8:38:54 PM	47721
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	9/26/2019 8:38:54 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Project: SJ 27 5 69
Lab ID: 1909E04-017 **Matrix:** SOIL

Client Sample ID: HSA32 7-9'
Collection Date: 9/24/2019 12:45:00 PM
Received Date: 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	2800	97		mg/Kg	10	9/26/2019 10:22:11 AM	47712
Motor Oil Range Organics (MRO)	3100	480		mg/Kg	10	9/26/2019 10:22:11 AM	47712
Surr: DNOP	0	70-130	S	%Rec	10	9/26/2019 10:22:11 AM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 9:25:34 PM	47721
Surr: BFB	92.4	77.4-118		%Rec	1	9/26/2019 9:25:34 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	9/26/2019 9:25:34 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 9:25:34 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 9:25:34 PM	47721
Xylenes, Total	ND	0.098		mg/Kg	1	9/26/2019 9:25:34 PM	47721
Surr: 4-Bromofluorobenzene	88.0	80-120		%Rec	1	9/26/2019 9:25:34 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA32 9-10'
Project: SJ 27 5 69
Collection Date: 9/24/2019 12:55:00 PM
Lab ID: 1909E04-018 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	9/26/2019 5:54:28 PM	47712
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/26/2019 5:54:28 PM	47712
Surr: DNOP	102	70-130		%Rec	1	9/26/2019 5:54:28 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/26/2019 11:00:33 PM	47721
Surr: BFB	97.0	77.4-118		%Rec	1	9/26/2019 11:00:33 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/26/2019 11:00:33 PM	47721
Toluene	ND	0.048		mg/Kg	1	9/26/2019 11:00:33 PM	47721
Ethylbenzene	ND	0.048		mg/Kg	1	9/26/2019 11:00:33 PM	47721
Xylenes, Total	ND	0.095		mg/Kg	1	9/26/2019 11:00:33 PM	47721
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	9/26/2019 11:00:33 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA32 10-11'
Project: SJ 27 5 69
Collection Date: 9/24/2019 1:00:00 PM
Lab ID: 1909E04-019 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/26/2019 6:18:40 PM	47712
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/26/2019 6:18:40 PM	47712
Surr: DNOP	93.6	70-130		%Rec	1	9/26/2019 6:18:40 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 11:24:17 PM	47721
Surr: BFB	95.8	77.4-118		%Rec	1	9/26/2019 11:24:17 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 11:24:17 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 11:24:17 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 11:24:17 PM	47721
Xylenes, Total	ND	0.099		mg/Kg	1	9/26/2019 11:24:17 PM	47721
Surr: 4-Bromofluorobenzene	93.0	80-120		%Rec	1	9/26/2019 11:24:17 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **1909E04**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy
Client Sample ID: HSA32 13-14'
Project: SJ 27 5 69
Collection Date: 9/24/2019 1:05:00 PM
Lab ID: 1909E04-020 **Matrix:** SOIL **Received Date:** 9/25/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/26/2019 6:43:04 PM	47712
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/26/2019 6:43:04 PM	47712
Surr: DNOP	89.7	70-130		%Rec	1	9/26/2019 6:43:04 PM	47712
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/26/2019 11:48:00 PM	47721
Surr: BFB	100	77.4-118		%Rec	1	9/26/2019 11:48:00 PM	47721
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/26/2019 11:48:00 PM	47721
Toluene	ND	0.049		mg/Kg	1	9/26/2019 11:48:00 PM	47721
Ethylbenzene	ND	0.049		mg/Kg	1	9/26/2019 11:48:00 PM	47721
Xylenes, Total	ND	0.099		mg/Kg	1	9/26/2019 11:48:00 PM	47721
Surr: 4-Bromofluorobenzene	97.1	80-120		%Rec	1	9/26/2019 11:48:00 PM	47721

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 101382

COMMENTS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 101382
	Action Type: [C-141] Release Corrective Action (C-141)

COMMENTS

Created By	Comment	Comment Date
nvelez	Remediation Closure Due Date set for July 29, 2022.	4/29/2022

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 101382

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 101382
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	4/28/2022