District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party RIDGE RUNNER RECOURCES OPERATING, LLC	OGRID 373013
Contact Name Kelvin Fisher (COO)	Contact Telephone 432-684-7877
Contact email kfisher@3ROperating.com	Incident # *(assigned by OCD)*
Contact mailing address 1004 N. Big Spring Street Suite 325 Midland, TX 79701	

Location of Release Source

Latitude 32.434438 Longitude -104.149565
(NAD 83 in decimal degrees to 5 decimal places)

Site Name STATE 36 #001	Site Type GAS
Date Release Discovered 7/20/2019	API# *30-015-21198*

Unit Letter	Section	Township	Range	County
L	36	21S	27E	EDDY

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:*)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☒ Crude Oil	Volume Released (bbls) 15BBL	Volume Recovered (bbls) 0BBL
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release unknown
Discovered during the removal of the former tank battery, area was delineated both horizontally and vertically. Soil calculations used the highest discovered TPH values to reverse calculate the release volume. See attached

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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: Kelvin W Fisher Title: COO

Signature: Kelvin W Fisher Date: 2/24/2020

email: kfisher@3ROperating.com Telephone: (432) 684-7877

OCD Only

Received by: Date:

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date

What is the shallowest depth to groundwater beneath the area affected by the release?	27 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☐ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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: Kelvin W Fisher Title: COO

Signature: [signature] Date: 2/24/2020

email: kfisher@3RQperating.com Telephone: (432) 684-7877

OCD Only

Received by: _____ Date: _____

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ 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: Kelvin W Fisher Title: COO

Signature: [signature] Date: 2/24/2020

email: kfisher@3ROperating.com Telephone: (432) 694-7877

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Kelvin W Fisher Title: COO

Signature: Kelvin W Fisher Date: 2/24/2020

email: kfisher@3ROperating.com Telephone: (432) 684-7877

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St
Roswell, NM 88201
Voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

February 17, 2020

#state36_env_19

NMOCD District 2
811 S. First St.
Artesia, New Mexico 88210

SUBJECT: Remediation Closure Report for the State 36 #001 Release (NCE2002851831), Eddy County, New Mexico

Dear NMOCD District 2,

On behalf of Ridge Runner Resources (RRR), Atkins Engineering Associates INC. (AEA) has prepared this Remediation Closure Report that describes the remediation of a release related to oil and gas production activities at the State 36 #001. The site is in Unit L, Section 36, Township 21S, Range 27E, Eddy County, New Mexico, on Private land. Figure 1 illustrates the vicinity and site location on an USGS 7.5-minute quadrangle map.

Table 1 summarizes release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	State 36 #001	Company	Ridge Runner Resources
API Number	30-015-21198	Location	32.434439 -104.1495656
Incident Number	NCE2002851831		
Estimated Date of Release	<1996	Date Reported to NMOCD	12/02/19
Land Owner	Private	Reported To	NMOCD District 2
Source of Release	Release found beneath the former tank battery		
Released Volume	15 bbls	Released Material	Crude Oil
Recovered Volume	0 bbls	Net Release	15 bbls
NMOCD Closure Criteria	<50 feet to groundwater (TDS >10,000)		
AEA Response Dates	1/15/2019 6/5/2019 7/9/2019 12/19/2019		

1.0 Background

The timeline of events related to the discovery of the legacy (prior to 1996) release found beneath the former tank battery on the property (State 36 #001) are as follows. In August 21, 2018 A report outlining the potential environmental liability at the State 36 #001 found no record of an NMOCD reportable release, and an onsite investigation performed by Pike Environmental did not find evidence of the potential release. AEA conducted a site assessment January 15, 2019 and proposal some general site maintenance, AEA sampled the proposed new tank battery location on site. On Jan 2019 Tank battery on location was re-located. AEA started general maintenance activities and conducted an area groundwater assessment, report April 22, 2019 confirming groundwater TDS >10k mg/ml On May 5, 2019, a 20mil plastic liner was discovered during the removal of the old tank battery. The liner was approximately a foot below the surface grade of the pad or approximately 4ft below the surface of the old tank battery. AEA reviewed State land office records (NMSLO), NMOCD and Bureau of Land Management (BLM) records to see if the found plastic was a reserve, drilling or production pit. AEA records review found no records found and on June 10, 2019 AEA field personnel were on site to delineate potential found release.

Initial response activities were conducted by the operator, with the source eliminated by removal of the old tank battery. Figures 1 and 2 illustrate the vicinity and site location, Figure 3 illustrates the release location. The C-141 forms are included in Appendix A.

2.0 Site Information and Closure Criteria

The State 36 #001 is located approximately 7 miles East of Carlsbad Eddy County, New Mexico on privately-owned land at an elevation of approximately 3105 feet above mean sea level (amsl).

Based upon AEA drilled temporary monitoring well (TMW) (Appendix B), depth to groundwater in the area is estimated to be 27 feet below grade surface (bgs). Both field EC and laboratory analysis confirm that TDS concentrations over 10,000 milligrams per Liter (mg/L), which indicated that the groundwater at the Site is not suitable for beneficial use and therefore, does not require remediation to the NMAC 20.6.2.3103 Standards. There are no known water sources within ½-mile of the location, according to the NMOSE database. (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 4/10/2019). The nearest significant watercourse is Pecos River , located approximately 6 miles southwest of the location. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of between 51-100 feet bgs. The site has been restored to meet the standards of Table I of 19.15.29.12 NMAC.

Table 2 demonstrates the Closure Criteria applicable to this location. Temporary monitor well data is attached in Appendix B.

3.0 Release Characterization and Remediation Activities

AEA performed site delineation activities on June 10, 2019, by collecting soil samples around the release site and throughout the previously excavated area. Soil samples were field screened for chloride using an electrical conductivity (EC) meter and petroleum hydrocarbons with a (PID).

A total of 6 sample locations were investigated using excavated test pits, to depths up to 10 feet bgs. A minimum of two samples were collected at each sampling location and field-screened using the method above. A total of 15 samples were collected for laboratory analysis for total chloride using EPA Method 300.0., EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

As summarized in Table 3, results indicated that most of the old battery had hydrocarbon contamination (TPH) from depths of four (4) to six (6) feet. an area approximately 50feet wide and 60 feet long was found to be impacted. The area is located directly under the old production tank battery.

AEA returned to the site to oversee the excavation of contaminated soil directly beneath the old tank battery. AEA guided the excavation activities by collecting soil samples for field screening. The walls and base were excavated until field screening results indicated that the NMOCD Closure Criteria would be met or as close to production equipment as could be safely allowed.

The center of the contaminated area is dominated by a large continuous vain of dolomite measuring approximately fifteen (15) feet wide and longer than the excavation. The solid rock vain began at four (4) to six (6) feet bgs and continued past the bottom of the excavation at ten (10) feet.

On December 4, 2019 AEA met with NMOCD district 2 personal on the presence of the solid rock vain. NMOCD guided AEA to pressure wash the rock and hydro excavate any contaminated soil from the surface and sides of the rock. On December 18, 2019 AEA field personal pressure washed the rock face with 330 gallons of (Liquid Remediact) a bio-degradable soap and hydrocarbon ingesting bacteria amendment (see attached SDS). All associated leachate and soil from the washing event was collected and disposed. The impacted soil staging location on site was also sampled at the completion of excavation hauling activities (SP1).

The confirmation samples were collected from within the excavation in accordance with a systematic sampling approach as defined by SW846 using Gilbert, 1987 equation 5.2.3 for Stratified Random Sampling which is detailed in Appendix C. This systematic method meets the EPAs data quality assessment standards (DQA) for composite sampling as defined by (Myers 1997) Using Confirmation samples were comprised of five-point composites of the base resampling the original delineation sample locations (D1,D2) and sidewalls (SW1-SW8). Sidewall samples were collected from the rock face in the center of the excavation with a hammer drill and are represented by (SW3,SW5).

Lab analysis showed that sample locations SW3 and SW5 are still elevated in TPH compared to background concentrations. No further excavation was attempted because SW3 and SW5 are comprised f solid rock. All additional samples collected where no-detectable (ND) or below the NMOCD standards of Table I of 19.15.29.12 NMAC.

All samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

Figure 3 shows the extent of the excavation and sample locations. All laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

In addition to meeting the Closure Criteria, for the well pad meet the Reclamation requirement of 19.15.29.13(D)(1). Contaminated soils were removed and hauled to a NMOCD approved facility (waste

manifest available upon request. The contaminated soil was transported and disposed of at R360 Halfway facility Lea County, NM.

4.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparing this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact Austin Weyant at 575-626-3993

Submitted by:
Atkins Engineering Associates INC

J. Austin Weyant

Austin Weyant
Geoscientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Surface Water Radius Map
Figure 3: Site and Sample Location Map

Tables:

Table 2: NMOCD Closure Criteria Justification
Table 3a: Summary of Initial Sample Results
Table 3b: Summary of Closure Sample Results

Appendices:

Appendix A: Form C141
Appendix B: NMOSE Wells Report & AEA TMW report
Appendix C: VSP Sampling Protocol
Appendix D: Laboratory Analytical Reports
Appendix E: Open Excavation Photo Log

FIGURES

State 36
Sec 36, T 21S, R 27E,
N.M.P.M.

- Sidewall
- Sample Location

N

0 25 50 100
Feet

Atkins
ENGINEERING ASSOCIATES

TABLES

Table 1:
Summary of Sample Results

Sample ID	Sample Date	Depth (feet bgs)	Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	Total TPH mg/Kg	Cl- mg/Kg
NMED Closure Criteria				50	10				2500	600
SP1	7/10/2019	0.5	Disposed	-	-	9.9	2100	620	2730	-
SP2	7/10/2019	0.5	Disposed	-	-	30	2300	700	3030	-
D1	7/10/2019	1	excavated	-	-	9.7	5200	2900	8109.7	-
D1-4	7/10/2019	4	excavated	-	-	<5.0	<10	<50	<65	-
D1-6	7/10/2019	6	excavated	-	-	<4.9	<10	<50	<65	-
D1-10	7/10/2019	10	excavated	-	-	<4.9	<10	<50	<65	-
D2	7/10/2019	1	excavated	-	-	27	7600	2300	9927	-
D2-4	7/10/2019	4	excavated	-	-	1100	1400	200	2700	-
D2-6	7/10/2019	6	excavated	-	-	170	3300	680	4150	-
D2-10	7/10/2019	10	excavated	-	-	84	520	100	704	-
D3	7/10/2019	1	excavated	-	-	61	3100	750	3911	-
D3-4	7/10/2019	4	excavated	-	-	1400	6100	<47	7500	-
D4	1/8/2019	1	excavated	-	-	98	2000	<46	2098	-
D4-4	1/9/2019	4	excavated	-	-	<5.0	190	170	360	-
D5	1/10/2019	1.5	excavated	-	-	<5.0	130	83	213	-
Closure Sample Event										
SP1	1/4/2020	9.5	In-Situ	<0.099	<0.025	<4.9	140	<42	140	320
SW1	1/4/2020	10.5	In-Situ	<0.099	<0.025	<4.9	<9.2	<46	0	82
SW2	1/4/2020	11.5	In-Situ	<0.099	<0.025	<5.0	150	44	194	190
SW3	1/4/2020	12.5	In-Situ Rock	0.62	0.024	29	970	210	1209	130
SW4	1/4/2020	13.5	In-Situ	0.41	<0.025	14	350	110	474	<60
SW5	1/4/2020	14.5	In-Situ Rock	1.9	<0.023	70	1200	230	1500	120
SW6	1/4/2020	15.5	In-Situ	<0.099	<0.025	<5.0	<8.8	<44	0	<60
SW7	1/4/2020	16.5	In-Situ	<0.1	<0.025	<5.0	13	<48	13	68
SW8	1/4/2020	17.5	excavated	<0.094	<0.023	<4.7	430	300	730	880
SW8	1/16/2020	18.5	In-Situ	<0.10	<0.025	<5.0	<9.4	<47	0	63
D1	1/4/2020	19.5	In-Situ	<0.1	<0.025	<5.0	23	<42	23	<60
D2	1/4/2020	20.5	In-Situ	<0.095	<0.025	<4.7	26	<50	26	<60
Backfill	1/4/2020	0.5	In-Situ	-	-	-	-	-	-	100

APPENDIX A
FORMS C141

APPENDIX B

NMOSE WELLS REPORT

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

April 22, 2019

Mr. Kelvin Fisher
Chief Operating Officer
Ridge Runner Resources
1004 N. Big Spring St., Suite 325
Midland, TX 79701

RE: WATER QUALITY AND AVAILABILITY BENETH RIDGE RUNNER RESOURCE EAST CARLSBAD OPERATIONS, EDDY COUNTY, NEW MEXICO

Dear Mr. Fisher:

Atkins Engineering Associates, Inc. (AEA) is pleased to provide this summary letter of the environmental consulting services conducted at Ridge Runner (RRR) Leases (Sites) located east of Carlsbad, NM: Sections 25,35,36 Township 21South Range 27 East. In accordance with the New Mexico Oil and Gas Associations (NMOGA) voluntary Baseline Sampling Guidance. AEA recommended that RRR confirm the non-beneficial use of the ground water beneath their current operations in the area. NMOGA guidance states that, "sampling is recommended to help provide guidance for oil and gas operations and landowners. Testing water wells that exist within a quarter mile of a new or existing oil or gas well." AEA proposed the sampling of a minimum of three locations across the production area, to keep with the recommendations in the NMOGA guidance. Because there were no existing wells located within the southernmost production area, AEA had to drill temporary sampling wells to collect groundwater samples.

Archival Research

A review of the geologic formations in the RRR production area show mixed alluvium over laying the Salado formation. The Salado, named "salty" in Spanish, is comprised of evaporites of halite with interbedded with lenses of potash salts such as, sylvite, carnallite, and polyhalite. This means that any water that collects near the formation would likely be diffused with salt. The well logs in the sections to the north confirm this phenomenon.

AEA found several temporary monitory wells that had been drilled in the northernmost RRR production area prior to RRR purchasing the area assets. The most relevant were in response for a NMOCD reportable release at the Finley Station on August 21, 2015 and was closed by NMOCD on December 2016 (three monitoring wells were drilled). The groundwater monitoring well MW-1 was installed approximately 150 feet north of the excavation source area, in an apparent up-gradient location relative to the well site see Figure #1.

Groundwater measurements were collected April 2016 and June 2016, the work was approved by NMOCD for closure of RP #: 2RP-3461 and 2RP-3568. Groundwater gauging event recorded groundwater depths ranging from 10.79 to 11.58 ft bls. The report found that based on the groundwater elevations associated with each of the on-Site groundwater monitoring wells, groundwater generally flowed to the south or south/southwest with an average gradient of 0.002 ft/ft during the April 2016 groundwater gauging event has been

completed. The two-sample event shows that background groundwater TDS concentration is greater than 10,000 ppm TDS.

Table 1 Groundwater Sample Analytical Results (Site investigation Summary Report September 2016 Apex submitted to NMOCD in response to 2RP-3461,3568)

Monitoring Well #1	Date Collected	Chloride (mg/L)	Total Dissolved Solids (mg/L)
	4/12/2016	4,610	14,600
	6/29/2016	4,270	14,800

Based on the laboratory analytical results, groundwater samples collected in April 2016, from monitoring well MW-1 exhibited TDS concentrations over 10,000 milligrams per Liter (mg/L), indicated that the groundwater at the site is not suitable for beneficial use and therefore, does not require remediation to the NMAC 20.6.2.3103 Standards. This was submitted and approved by NMOCD.

Atkins Field Activities

On January 15, 2019 AEA staff collected soil samples at the Austin State #1, State 36 #1, Pecos Fed #1 and Reeves Fed #2. The new proposed tank battery locations at the Austin, State 36 and Pecos Fed where analyzed for total salt (EC method NRCS 1:1) and total petroleum hydrocarbons (TPH EPA method 418.1). All three of the proposed locations were found to be non-detect for TPH and have background NMOCD acceptable concentrations of total salt. Soil samples were also collected at the reserve pits of the Austin, Reeves 2 and Pecos Fed recommendations for the closure and revegetation of those pits is outlined in the summary reports submitted to RRR on February 25, 2019.

With the northern most production area proven to have groundwater that is non-protectable, as defined by NMAC 20.6.2.3103 definition. AEA set off to prove that this trend of high TDS ground water was applicable to the southernmost areas of RRR operation.

Prior to mobilization AEA "white line" the proposed soil borings with lathe and white marking tape or white pin flags. AEA placed a New Mexico 811 ticket number 19MA251030 48 hours prior to field activities.

Three (3) soil borings were advanced to approximately 30 feet bls utilizing a Mobile B58 Hollow Stem Auger with an inside diameter of 3.25 inches. Groundwater when present was located approximately eleven to twenty seven (11-27) feet bls; therefore, soil borings were terminated at 30 feet bls. Each of the boreholes where logged using the Universal Soil Classification System (USCS) method. Field assessment of soil and water samples were accomplished by the NRCS 1:1 EC method with use of Deionized Water (DI). The soil bores that did not encounter ground water were plugged to surface with bentonite pellets. This was the case for Dig 1 and Dig 4. Both soil bores where advanced to 30ft allowed to develop, but no water was detected.

One water sample was collected from Dig 5 and sent to Hall Analytical Laboratory and analyzed for TDS SM2540C and chloride by EPA Method 300/300.1. All samples were placed in a cooler on ice and shipped with the appropriate chain of custody documentation to Hall Environmental Analysis Laboratory located in Albuquerque, New Mexico. Results are summarized in Table #2.

Table 2 Groundwater Sample Analytical Results Dig #5

Dig # 5 AEA	Date Collected	Chloride (mg/L)	Total Dissolved Solids (mg/L)
	3/29/2019	3,200	25500

Conclusions

Soil samples and soil bore logs at Dig #4 and Dig #5 show and elevated EC at depths, this corresponds with the poor water quality found at MW1 and Dig #5. Dig #1 closest to the Finley Station and the northern most AEA soil bore location, had soil white gypsum deposits form 7 ft bls to it termination at 30 ft bls, see attached logs. Dig #5 was the only soil bore that encountered groundwater discovered at 25-27ft bls. Both field EC and laboratory analysis confirm that TDS concentrations over 10,000 milligrams per Liter (mg/L), which indicated that the groundwater at the Site is not suitable for beneficial use and therefore, does not require remediation to the NMAC 20.6.2.3103 Standards.

In accordance with NMAC 19.2.100.66 and 19.15.29.8A, "all releases regardless of volume must be remediated". This means even non-reportable releases (<5bbl) do have to be remediated and AEA recommends that RRR remediate all impacted soil found during any planned maintenance or equipment replacement operations. AEA also recommends that RRR sample all non-reportable or legacy releases after remediation to affirm the soil meets the closure requirements as defined by NMAC 19.15.29 for all constituents of concern. This internal documentation will become valuable if or when the assets are sold or retired.

This report is a summary and if additional clarification or supplemental information is required, do not hesitate to contact me directly at 575.626.3993.

Sincerely,

J. Austin Weyant

J. Austin Weyant
Project Manager/ Geoscientist

Attachments
Figure 1: Soil Bore and Monitoring Well Map
Appendix A: Logs and Analytical Data

FIGURES

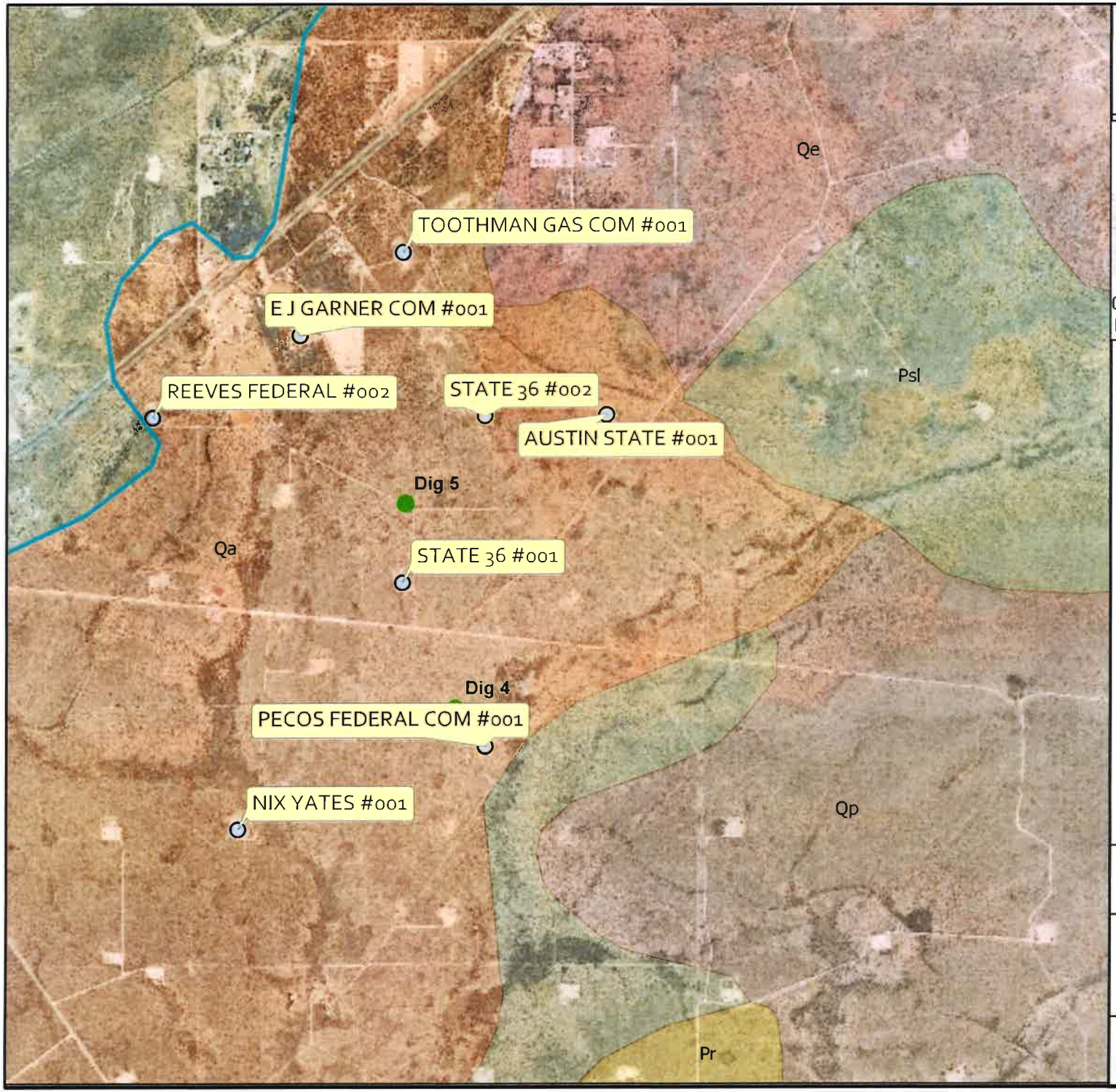
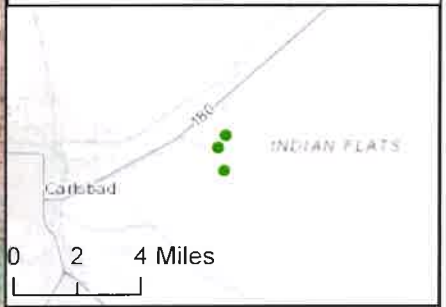


FIGURE 1
Ridge Runner
East Carlsbad



LEGEND

- Well Locations
- Dig
- Monitoring Well 1

Geologic Formations

- Pr-Rustler Formation
- Psl-Salado Formation
- Qa- Alluvium
- Qe-Eolian deposits
- Qp-Piedmont alluvial

0 0.25 0.5 Miles

N

Scale: 1:30,547

32.442822° -104.146243°

JOB No. rrrgene_rnv_18

DATE FIELD: 03/28/19 DRAWN LCM

DATE DRAWN: 4/22/2019 REVIEW CC

Atkins ENGINEERING ASSOCIATES

APPENDIX A

Log

DIG-1

Page 1 of 1

Client:	Ridge Runner	Completion Date	03/28/2019	Latitude	32.442822
Location:	East Carlsbad,NM	Drilling Contractor	Atkins Engineering Associates	Longitude	104.146243
Purpose:	Delineation for Chlorides	Drilling Method	Hollow Stem Auger	Surface Elevation (ft)	3,119
Project:	rrrgene_rnv_18	Boring Diameter	6.5"	Total Depth (ft)	30
		Sample Type	Auger		

Depth in Feet	Lithology	USCS	Description
0 – 5		MP	Silty , Small clay
		SP	sandy fine grained powery
		S	fine grained samd
5 – 30		GY	Gypsum

Lithology
Gypsum
Silt
Sand

10ft of Bentonite Hole Plug 3/8 with backfill to surface
No Water was Reached

Atkins ENGINEERING ASSOCIATES

2904 W 2nd St
Roswell, New Mexico 88201

Log

DIG-1

Page 1 of 1

Client:	Ridge Runner	Completion Date	03/28/2019	Latitude	32.442822
Location:	East Carlsbad,NM	Drilling Contractor	Atkins Engineering Associates	Longitude	104.146243
Purpose:	Delineation for Chlorides	Drilling Method	Hollow Stem Auger	Surface Elevation (ft)	3,119
Project:	rrrgene_rnv_18	Boring Diameter	6.5"	Total Depth (ft)	30
		Sample Type	Auger		

Depth in Feet	Lithology	USCS	Description
0		M	silt, dry
		X	Calchie
5		M	Silty Loam, small clay
		M	Silty Loam, small clay
10		SM	Sandy Loam
15		SM	Sandy Loam
20		S	Medium/fine sandstone
25			
30			

Lithology: Sand, Silt, Loam

10ft of Bentonite Hole Plug 3/8 with backfill to surface
No Water was Reached

Atkins ENGINEERING ASSOCIATES

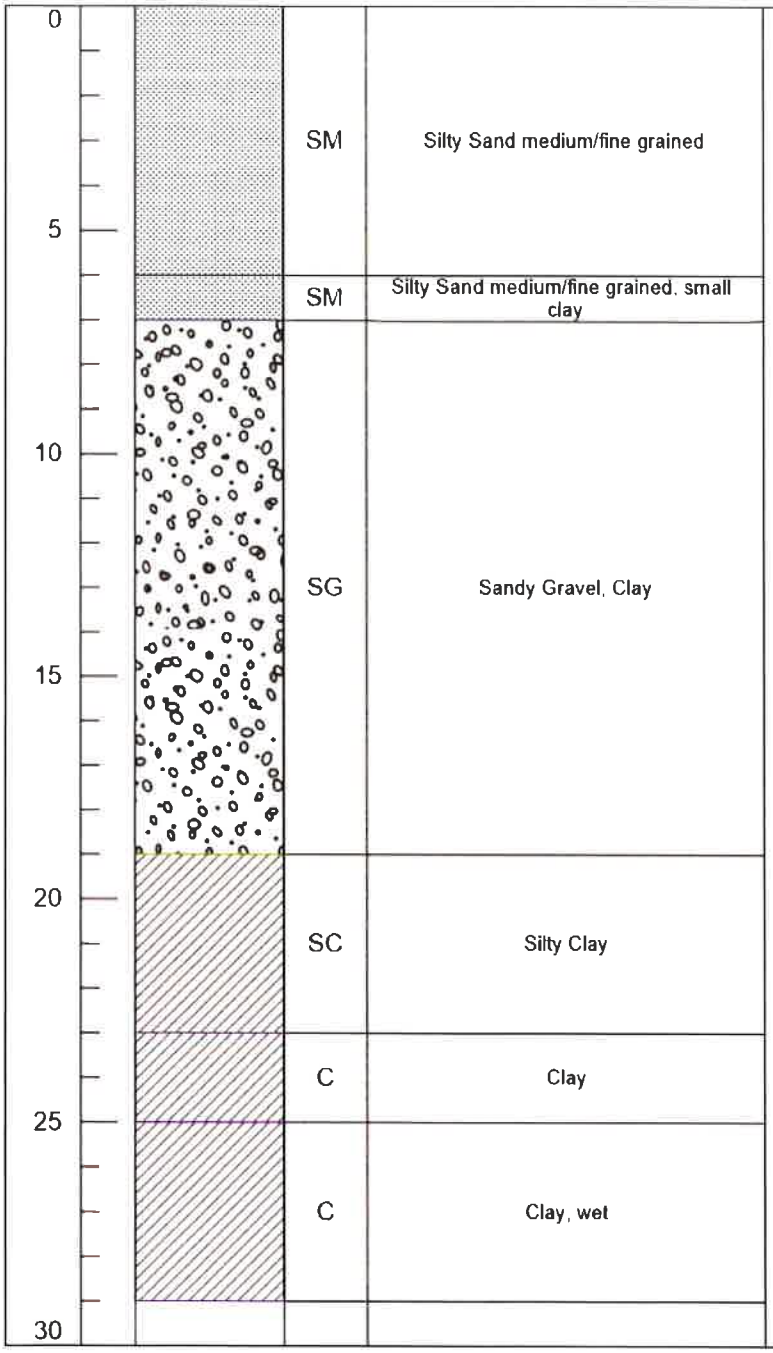
2904 W 2nd St
Roswell, New Mexico 88201

Log

DIG-1

Page 1 of 1

Client:	Ridge Runner	Completion Date	03/28/2019	Latitude	32.442822
Location:	East Carlsbad NM	Drilling Contractor	Atkins Engineering Associates	Longitude	104.146243
Purpose:	Delineation for Chlorides	Drilling Method	Hollow Stem Auger	Surface Elevation (ft)	3,119
Project:	rrrgene_rnv_18	Boring Diameter	6.5"	Total Depth (ft)	30
		Sample Type	Auger		



Lithology
Clay
Silt
Sandy Gravel

10ft of Bentonite Hole Plug 3/8 with backfill to surface
No Water was Reached

Atkins ENGINEERING ASSOCIATES

2904 W 2nd St
Roswell, New Mexico 88201

Analytical Report
Lab Order **1904074**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: Ridge Runner
Lab ID: 1904074-001 **Matrix:** AQUEOUS

Client Sample ID: DIG #4
Collection Date: 3/28/2019 12:03:00 PM
Received Date: 4/2/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	3200	100	*	mg/L	200	4/6/2019 6:54:30 PM	R58969
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	25500	200	*D	mg/L	1	4/5/2019 12:59:00 PM	44069

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode
H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix

APPENDIX D

LABORATORY ANALYTICAL REPORTS

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

January 10, 2020

Austin Weyant
Atkins Engineering Associates
2904 West Second Street
Roswell, NM 88201
TEL: (575) 624-2420
FAX (575) 624-2421

RE: State 36 001 OrderNo.: 2001153

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 12 sample(s) on 1/7/2020 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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-001 **Matrix:** SOIL

Client Sample ID: SW7
Collection Date: 1/4/2020 8:49:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	68	60		mg/Kg	20	1/9/2020 2:37:10 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	13	9.6		mg/Kg	1	1/8/2020 12:13:57 PM	49679
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/8/2020 12:13:57 PM	49679
Surr: DNOP	118	70-130		%Rec	1	1/8/2020 12:13:57 PM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/8/2020 9:43:43 AM	49670
Surr: BFB	86.1	66.6-105		%Rec	1	1/8/2020 9:43:43 AM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 9:43:43 AM	49670
Toluene	ND	0.050		mg/Kg	1	1/8/2020 9:43:43 AM	49670
Ethylbenzene	ND	0.050		mg/Kg	1	1/8/2020 9:43:43 AM	49670
Xylenes, Total	ND	0.10		mg/Kg	1	1/8/2020 9:43:43 AM	49670
Surr: 4-Bromofluorobenzene	98.4	80-120		%Rec	1	1/8/2020 9:43:43 AM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-002 **Matrix:** SOIL

Client Sample ID: SW6
Collection Date: 1/4/2020 8:58:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	1/9/2020 2:49:31 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	1/8/2020 12:41:43 PM	49679
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	1/8/2020 12:41:43 PM	49679
Surr: DNOP	115	55.1-146		%Rec	1	1/8/2020 12:41:43 PM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/8/2020 10:54:01 AM	49670
Surr: BFB	80.8	66.6-105		%Rec	1	1/8/2020 10:54:01 AM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 10:54:01 AM	49670
Toluene	ND	0.050		mg/Kg	1	1/8/2020 10:54:01 AM	49670
Ethylbenzene	ND	0.050		mg/Kg	1	1/8/2020 10:54:01 AM	49670
Xylenes, Total	ND	0.099		mg/Kg	1	1/8/2020 10:54:01 AM	49670
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	1/8/2020 10:54:01 AM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-003 **Matrix:** SOIL

Client Sample ID: SW3
Collection Date: 1/4/2020 9:10:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	130	60		mg/Kg	20	1/9/2020 3:26:33 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	970	17		mg/Kg	2	1/9/2020 8:33:04 AM	49679
Motor Oil Range Organics (MRO)	210	86		mg/Kg	2	1/9/2020 8:33:04 AM	49679
Surr: DNOP	140	55.1-146		%Rec	2	1/9/2020 8:33:04 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	29	4.8		mg/Kg	1	1/8/2020 12:04:33 PM	49670
Surr: BFB	320	66.6-105	S	%Rec	1	1/8/2020 12:04:33 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.024		mg/Kg	1	1/8/2020 12:04:33 PM	49670
Toluene	ND	0.048		mg/Kg	1	1/8/2020 12:04:33 PM	49670
Ethylbenzene	ND	0.048		mg/Kg	1	1/8/2020 12:04:33 PM	49670
Xylenes, Total	0.62	0.096		mg/Kg	1	1/8/2020 12:04:33 PM	49670
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/8/2020 12:04:33 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-004 **Matrix:** SOIL

Client Sample ID: SW5
Collection Date: 1/4/2020 9:16:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	120	60		mg/Kg	20	1/9/2020 3:38:53 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	1200	41		mg/Kg	5	1/8/2020 1:46:11 PM	49679
Motor Oil Range Organics (MRO)	230	200		mg/Kg	5	1/8/2020 1:46:11 PM	49679
Surr: DNOP	118	55.1-146		%Rec	5	1/8/2020 1:46:11 PM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	70	4.7		mg/Kg	1	1/8/2020 12:51:39 PM	49670
Surr: BFB	660	66.6-105	S	%Rec	1	1/8/2020 12:51:39 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	1/8/2020 12:51:39 PM	49670
Toluene	ND	0.047		mg/Kg	1	1/8/2020 12:51:39 PM	49670
Ethylbenzene	ND	0.047		mg/Kg	1	1/8/2020 12:51:39 PM	49670
Xylenes, Total	1.9	0.093		mg/Kg	1	1/8/2020 12:51:39 PM	49670
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	1	1/8/2020 12:51:39 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-005 **Matrix:** SOIL

Client Sample ID: SW8
Collection Date: 1/4/2020 9:27:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	880	60		mg/Kg	20	1/9/2020 3:51:14 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	430	39		mg/Kg	5	1/9/2020 8:42:02 AM	49679
Motor Oil Range Organics (MRO)	300	200		mg/Kg	5	1/9/2020 8:42:02 AM	49679
Surr: DNOP	103	55.1-146		%Rec	5	1/9/2020 8:42:02 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/8/2020 1:38:44 PM	49670
Surr: BFB	79.0	66.6-105		%Rec	1	1/8/2020 1:38:44 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	1/8/2020 1:38:44 PM	49670
Toluene	ND	0.047		mg/Kg	1	1/8/2020 1:38:44 PM	49670
Ethylbenzene	ND	0.047		mg/Kg	1	1/8/2020 1:38:44 PM	49670
Xylenes, Total	ND	0.094		mg/Kg	1	1/8/2020 1:38:44 PM	49670
Surr: 4-Bromofluorobenzene	88.2	80-120		%Rec	1	1/8/2020 1:38:44 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-006 **Matrix:** SOIL

Client Sample ID: SW1
Collection Date: 1/4/2020 9:30:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	82	60		mg/Kg	20	1/9/2020 4:03:36 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	1/9/2020 8:51:03 AM	49679
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/9/2020 8:51:03 AM	49679
Surr: DNOP	81.8	55.1-146		%Rec	1	1/9/2020 8:51:03 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/8/2020 2:02:18 PM	49670
Surr: BFB	82.5	66.6-105		%Rec	1	1/8/2020 2:02:18 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 2:02:18 PM	49670
Toluene	ND	0.049		mg/Kg	1	1/8/2020 2:02:18 PM	49670
Ethylbenzene	ND	0.049		mg/Kg	1	1/8/2020 2:02:18 PM	49670
Xylenes, Total	ND	0.099		mg/Kg	1	1/8/2020 2:02:18 PM	49670
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	1/8/2020 2:02:18 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-007 **Matrix:** SOIL

Client Sample ID: SP1
Collection Date: 1/4/2020 9:35:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	320	60		mg/Kg	20	1/9/2020 4:15:56 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	140	8.3		mg/Kg	1	1/9/2020 9:00:08 AM	49679
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	1/9/2020 9:00:08 AM	49679
Surr: DNOP	101	55.1-146		%Rec	1	1/9/2020 9:00:08 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/8/2020 2:25:43 PM	49670
Surr: BFB	80.6	66.6-105		%Rec	1	1/8/2020 2:25:43 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 2:25:43 PM	49670
Toluene	ND	0.049		mg/Kg	1	1/8/2020 2:25:43 PM	49670
Ethylbenzene	ND	0.049		mg/Kg	1	1/8/2020 2:25:43 PM	49670
Xylenes, Total	ND	0.099		mg/Kg	1	1/8/2020 2:25:43 PM	49670
Surr: 4-Bromofluorobenzene	91.6	80-120		%Rec	1	1/8/2020 2:25:43 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-008 **Matrix:** SOIL

Client Sample ID: SW2
Collection Date: 1/4/2020 9:41:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	190	60		mg/Kg	20	1/9/2020 4:28:17 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	150	7.8		mg/Kg	1	1/9/2020 9:09:13 AM	49679
Motor Oil Range Organics (MRO)	44	39		mg/Kg	1	1/9/2020 9:09:13 AM	49679
Surr: DNOP	95.7	55.1-146		%Rec	1	1/9/2020 9:09:13 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/8/2020 2:49:22 PM	49670
Surr: BFB	80.1	66.6-105		%Rec	1	1/8/2020 2:49:22 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 2:49:22 PM	49670
Toluene	ND	0.050		mg/Kg	1	1/8/2020 2:49:22 PM	49670
Ethylbenzene	ND	0.050		mg/Kg	1	1/8/2020 2:49:22 PM	49670
Xylenes, Total	ND	0.099		mg/Kg	1	1/8/2020 2:49:22 PM	49670
Surr: 4-Bromofluorobenzene	91.1	80-120		%Rec	1	1/8/2020 2:49:22 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-009 **Matrix:** SOIL

Client Sample ID: D1
Collection Date: 1/4/2020 9:53:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	1/9/2020 5:05:18 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	23	8.4		mg/Kg	1	1/9/2020 11:16:51 AM	49679
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	1/9/2020 11:16:51 AM	49679
Surr: DNOP	68.3	55.1-146		%Rec	1	1/9/2020 11:16:51 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/8/2020 3:13:01 PM	49670
Surr: BFB	83.6	66.6-105		%Rec	1	1/8/2020 3:13:01 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/8/2020 3:13:01 PM	49670
Toluene	ND	0.050		mg/Kg	1	1/8/2020 3:13:01 PM	49670
Ethylbenzene	ND	0.050		mg/Kg	1	1/8/2020 3:13:01 PM	49670
Xylenes, Total	ND	0.10		mg/Kg	1	1/8/2020 3:13:01 PM	49670
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	1/8/2020 3:13:01 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-010 **Matrix:** SOIL

Client Sample ID: D2
Collection Date: 1/4/2020 10:00:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	1/9/2020 5:17:38 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	26	10		mg/Kg	1	1/9/2020 11:34:59 AM	49679
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/9/2020 11:34:59 AM	49679
Surr: DNOP	82.0	55.1-146		%Rec	1	1/9/2020 11:34:59 AM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/8/2020 3:36:38 PM	49670
Surr: BFB	80.9	66.6-105		%Rec	1	1/8/2020 3:36:38 PM	49670
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/8/2020 3:36:38 PM	49670
Toluene	ND	0.047		mg/Kg	1	1/8/2020 3:36:38 PM	49670
Ethylbenzene	ND	0.047		mg/Kg	1	1/8/2020 3:36:38 PM	49670
Xylenes, Total	ND	0.095		mg/Kg	1	1/8/2020 3:36:38 PM	49670
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	1/8/2020 3:36:38 PM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-011 **Matrix:** SOIL

Client Sample ID: SW4
Collection Date: 1/4/2020 10:02:00 AM
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	1/9/2020 5:29:59 PM	49718
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	350	8.0		mg/Kg	1	1/8/2020 2:52:58 PM	49679
Motor Oil Range Organics (MRO)	110	40		mg/Kg	1	1/8/2020 2:52:58 PM	49679
Surr: DNOP	118	55.1-146		%Rec	1	1/8/2020 2:52:58 PM	49679
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	14	5.0		mg/Kg	1	1/8/2020 11:59:19 AM	49670
Surr: BFB	209	66.6-105	S	%Rec	1	1/8/2020 11:59:19 AM	49670
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	1/8/2020 11:59:19 AM	49670
Toluene	ND	0.050		mg/Kg	1	1/8/2020 11:59:19 AM	49670
Ethylbenzene	ND	0.050		mg/Kg	1	1/8/2020 11:59:19 AM	49670
Xylenes, Total	0.41	0.099		mg/Kg	1	1/8/2020 11:59:19 AM	49670
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/8/2020 11:59:19 AM	49670

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 **2001153**
Date Reported: **1/10/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Project: State 36 001
Lab ID: 2001153-012 **Matrix:** SOIL

Client Sample ID: Backfill
Collection Date: 1/4/2020
Received Date: 1/7/2020 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	100	60		mg/Kg	20	1/9/2020 5:42:20 PM	49718

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001153**

10-Jan-20

Client: Atkins Engineering Associates

Project: State 36 001

Sample ID: **MB-49718**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **49718**	RunNo: **65671**							
Prep Date: **1/9/2020**	Analysis Date: **1/9/2020**	SeqNo: **2256323**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-49718**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **49718**	RunNo: **65671**							
Prep Date: **1/9/2020**	Analysis Date: **1/9/2020**	SeqNo: **2256324**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

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#: **2001153**

10-Jan-20

Client: Atkins Engineering Associates

Project: State 36 001

Sample ID: **2001153-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SW7** Batch ID: **49679** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254762** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	9.4	46.95	13.50	97.1	57	142			
Surr: DNOP	4.1		4.695		88.0	70	130			

Sample ID: **2001153-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SW7** Batch ID: **49679** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254763** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	72	9.8	49.07	13.50	118	57	142	19.0	20	
Surr: DNOP	4.7		4.907		96.2	70	130	0	0	

Sample ID: **LCS-49679** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **49679** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254764** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.8	63.9	124			
Surr: DNOP	4.0		5.000		80.7	70	130			

Sample ID: **MB-49679** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **49679** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254765** 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	9.6		10.00		95.9	70	130			

Sample ID: **LCS-49661** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **49661** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254953** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.7		5.000		94.8	55.1	146			

Sample ID: **MB-49661** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **49661** RunNo: **65636**
Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254954** Units: **%Rec**

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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001153**

10-Jan-20

Client: Atkins Engineering Associates

Project: State 36 001

Sample ID: **MB-49661**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **49661**	RunNo: **65636**
Prep Date: **1/7/2020**	Analysis Date: **1/8/2020**	SeqNo: **2254954** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		119	55.1	146			

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#: **2001153**

10-Jan-20

Client: Atkins Engineering Associates

Project: State 36 001

Sample ID: **mb-49670** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBS** Batch ID: **49670** RunNo: **65651**

Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254957** 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	920		1000		91.6	66.6	105			

Sample ID: **lcs-49670** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSS** Batch ID: **49670** RunNo: **65651**

Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254958** 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	95.6	80	120			
Surr: BFB	1000		1000		99.5	66.6	105			

Sample ID: **2001153-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **SW7** Batch ID: **49670** RunNo: **65651**

Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254960** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	24.08	0	100	69.1	142			
Surr: BFB	940		963.4		97.5	66.6	105			

Sample ID: **2001153-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **SW7** Batch ID: **49670** RunNo: **65651**

Prep Date: **1/7/2020** Analysis Date: **1/8/2020** SeqNo: **2254961** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.9	24.34	0	102	69.1	142	3.12	20	
Surr: BFB	890		973.7		91.4	66.6	105	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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2001153**

10-Jan-20

Client: Atkins Engineering Associates

Project: State 36 001

Sample ID: **mb-49670**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **49670**	RunNo: **65651**
Prep Date: **1/7/2020**	Analysis Date: **1/8/2020**	SeqNo: **2254975** 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	1.0		1.000		104	80	120			

Sample ID: **LCS-49670**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **49670**	RunNo: **65651**
Prep Date: **1/7/2020**	Analysis Date: **1/8/2020**	SeqNo: **2254976** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	92.4	80	120			
Toluene	0.95	0.050	1.000	0	94.6	80	120			
Ethylbenzene	0.94	0.050	1.000	0	93.6	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.0	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID: **2001153-002ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SW6**	Batch ID: **49670**	RunNo: **65651**
Prep Date: **1/7/2020**	Analysis Date: **1/8/2020**	SeqNo: **2254979** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.024	0.9597	0	98.3	78.5	119			
Toluene	0.96	0.048	0.9597	0.01119	98.5	75.7	123			
Ethylbenzene	0.95	0.048	0.9597	0	98.5	74.3	126			
Xylenes, Total	2.9	0.096	2.879	0.01911	99.3	72.9	130			
Surr: 4-Bromofluorobenzene	0.89		0.9597		92.7	80	120			

Sample ID: **2001153-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SW6**	Batch ID: **49670**	RunNo: **65651**
Prep Date: **1/7/2020**	Analysis Date: **1/8/2020**	SeqNo: **2254980** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.024	0.9416	0	99.4	78.5	119	0.778	20	
Toluene	0.96	0.047	0.9416	0.01119	101	75.7	123	0.330	20	
Ethylbenzene	0.95	0.047	0.9416	0	100	74.3	126	0.0209	20	
Xylenes, Total	2.9	0.094	2.825	0.01911	101	72.9	130	0.271	20	
Surr: 4-Bromofluorobenzene	0.92		0.9416		97.5	80	120	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

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: ATK Work Order Number: 2001153 RcptNo: 1

Received By: Desiree Dominguez 1/7/2020 8:50:00 AM DD

Completed By: Isaiah Ortiz 1/7/2020 9:51:21 AM I-OK

Reviewed By: YG 1/7/20

Chain of Custody

1. Is Chain of Custody sufficiently 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. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
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: JR 1/7/20

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	3.1	Good	Yes			

Chain-of-Custody Record

Client: AEA

Mailing Address: 2904 W 2ND ROSWELL NM

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☑ Rush SDAY

Project Name: STATE 36 #001

Project #:

Project Manager: Austin Weiman

Sampler:

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(Including CF): 2.7+0.4=3.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2001153	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)
1/4/20	9:49	SOIL	SW 7			-001	X	X					X			
	9:58	SOIL	SW 6			-002	X	X					X			
	10:14	SOIL	SW 3			-003	X	X					X			
	9:16	SOIL	SW 5			-004	X	X					X			
	9:17	SOIL	SW 8			-005	X	X					X			
	9:30	SOIL	SW 1			-006	X	X					X			
	9:35	SOIL	SW 1 DUP			-007	X	X					X			
	9:41	SOIL	SW 2			-008	X	X					X			
	9:55	SOIL	D 1			-009	X	X					X			
	10:09	SOIL	D 2			-010	X	X					X			
	10:02	SOIL	SW 4			-011	X	X					X			
	AM	SOIL	BACKFILL			-012							X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
1/6/20	3:30				1/6/20	1530
1/6/20	1900			Courier	1/7/20	8:50

Remarks:

APPENDIX E
OPEN EXCAVATION PHOTO LOG

Photo Log

State 36 #001

SW1 Geo- Reference photo

Location
Lat: 32.43443382° Long: -104.14953371°

Edited by kjreed on 1/14/20 at 10:52 AM

Point layer

Site Name
36

Boring Location
SW-1

Sample Type
Comp

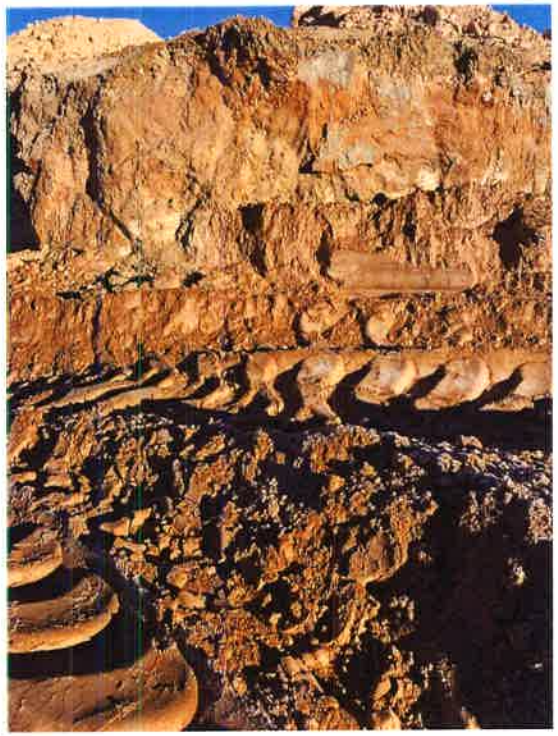
Soil Type

Total Depth
10

Notes
SW

Attachments

Photo 1.jpg
760.8 KB



SW2 Geo- Reference photo

Map Details

Location
Lat: 32.43440716° Long: -104.14946108°

Edited by kjreed on 1/14/20 at 10:52 AM

Point layer

Site Name
36

Boring Location
SW-2

Sample Type

Soil Type

Total Depth
6

Notes
SW

Attachments

Photo 1.jpg
690.8 KB

SW3 Geo- Reference photo

Map Details

Location
Lat: 32.43441205° Long: -104.14953183°

Station ID

Number of Satellites

Fix Time
1/4/2020 8:12:37 AM

Average Horizontal Accuracy (m)

Average Vertical Accuracy (m)

Averaged Positions

Standard Deviation (m)

Sample NAme
SW3

Sample Collection
Comp

Depth
6

Site Name

Attachments

Photo 1.jpg
799.4 KB

SW4 Geo- Reference photo

Map Details

Location
Lat: 32.43442825° Long: -104.14961341°

Edited by kjreed on 1/14/20 at 10:52 AM

Point layer

Site Name
36

Boring Location
SW-4

Sample Type

Soil Type

Total Depth
10

Notes
SW

Attachments

Photo 1.jpg
734.6 KB

Excavation and Dolomite Reference photo

SW5 Geo- Reference photo

Map Details

Location
Lat: 32.43441555° Long: -104.14950305°

Edited by kjreed on 1/14/20 at 10:52 AM

Point layer

Site Name
36

Boring Location
SW-5

Sample Type

Soil Type

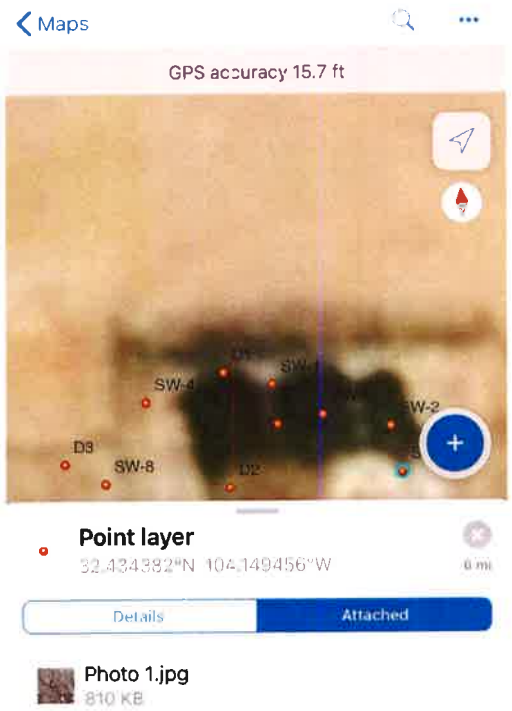
Total Depth
4

Notes
SW

Attachments

Photo 1.jpg
750.5 KB

SW6 Geo- Reference photo



Excavation Backfill and Soil staging areas Reference photo