R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996 Artesia ▲ Carlsbad ▲ Durango ▲ Midland

May 16, 2018

Olivia Yu NMOCD District 1 1625 N. French Dr. Hobbs, NM 88240 By Olivia Yu at 8:24 am, Jun 18, 2018 NMOCD approves of the delineation completed for 1RP-4896 & 1RP-4925. For the proposed remediation, based on data, at least 2 ft. of impacted soil must be removed. Bottom and sidewall confirmation samples required.

APPROVED

RE: Purvis Operating Antelope #001 Site Characterization Report and Remediation Plan API: 30-025-38867. Unit A, 7, T15S. R35E. Lea County, NM 1RP-4896 & 1RP-4925

Ms. Yu:

R.T. Hicks Consultants (Hicks Consultants) is pleased to submit the above-referenced document on behalf of Purvis Operating Company. This document addresses:

- 1RP-4896 that occurred on December 07, 2017
- 1RP-4929 that occurred on December 18, 2017
- A release of less than 5 bbls of crude that occurred on January 25, 2018.

The Proposed Remediation Plan relies on data collected during our:

- January 2018 initial characterization, and
- April 2018 delineation and characterization

Appendix A discusses our January and April 2018 sampling programs. Appendix B discusses depth to groundwater. As identified in Appendix B, calculated depth to groundwater at the location is 53.6-feet.

We followed NMOCD's proposed application to repeal and replace Rule 19.15.29 NMAC (the Rule) to characterize and delineate the release. Appendix E is a copy of the proposed Rule.

The proposed Rule does not cause conflict with the existing Rule. Rather the proposed Rule provides clarity, recognition of decades of data and certitude whereas the existing Rule relied upon 1993 guidance and upon the varied expertise and sometimes conflicting decisions of Districts. We are fully confident that OCD would not be the sponsor of the proposed Rule if the changes did not support the legal mandate of protecting fresh water, public health and the environment.

The proposed Rule also recognizes the fact that the existing Rule and decades of previous practice did not require submission and approval of a characterization work plan. The proposed Rule does incorporate appropriate elements of the directive of Mr. Griswold (attached to the signed C-141 from OCD; Appendix H).

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The release area is contained on the active production pad. As we understand section 19.15.29.12.B(2) of the proposed Rule, the impacted surface area of this release is "otherwise contained" and is subject to restoration rather than remediation to proposed Table I Closure Criteria¹.

Characterization Results

Plates 1-11 show that this site meets the characterization criteria established by proposed section 19.15.29.11.A.1-4. The proposed Rule 19.15.29.11.A.5.b describes the required vertical and horizontal characterization and details of release characterization activities to satisfy this section of the proposed Rule are discussed in Appendix A.

Table 1, attached, presents the result of all sampling conducted at the site during characterization. It is important to recognize that soil samples collect at the surface is representative of a release (less than 5 barrels) that occurred on January 25, 2018 due to a packing blowout. Samples collected at 0 and 1-foot on 04/02/2018 are representative of the January 25 release and is not representative of past restoration activities. Upon OCD approval of this remediation plan, the caliche impacted by this most recent release will be excavated and transported off-site for proper disposal.

As shown on Table 1 and Plate 11, no impairment from the releases occurred below 2-feet for constituents listed in the proposed Table I. Site characterization showed hard caliche from 5-inches to 7.5 feet below ground surface (bgs). Impairment limited to the upper 2-feet is not surprising due to the presence of the hard caliche. Borehole logs show that caliche was present to total depth of at least 11-feet below the location.

Please refer to Appendix C for the borehole logs and Appendix D for the Laboratory Certificates of Analysis.

Proposed Remediation Plan

Per proposed Section 19.15.29.12.B(2), releases occurring on a contained production site require restoration, not remediation to proposed Table I Closure Criteria. Per the proposed section, restoration is discussed as "…removal of materials the release contaminated and replacement with clean, uncontaminated materials".

Restoration of the December 2017 releases occurred on January 11, 2018 as discussed in Appendix A. According to proposed section 19.15.29.12.A, all releases must be remediated regardless of volume. Therefore, we propose to restore the production pad to conditions that existed prior to the releases in conformance with proposed section 19.15.29.12.B(2) to include the non-reportable release that occurred on January 25, 2018.

¹ (2) The responsible party shall restore the impacted surface area of a release occurring on a lined, bermed or otherwise contained exploration, development, production or storage site to the condition that existed prior to the release. Restoration of the site must include, but is not limited to, removal of materials the release contaminated and replacement with clean, uncontaminated materials. The responsible party must place the replacement materials to the near original relative positions and contour the replacement materials so as to achieve erosion control, long-term stability and preservation of surface water.

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Within 30-days of approval, restoration will include:

- Removal of materials beneath the footprint of the January 25 release to a depth of 2-feet or extent practical; whichever is less. We estimate the extent practical at 9-inches to 1-foot due to the hard caliche observed during drilling and past restoration activities. Our past observations also documented that the depth of penetration of crude stopped within the upper 5-inches of the hard caliche. Assuming a 9-inch removal depth, total volume of removed material will be approximately 4,405 cu. ft (=5874 sq ft x 0.75 ft). Plate 10 shows the release extent.
- Replace with clean, uncontaminated material.

Within 30-days of completion of restoration activities (90-days of plan approval), we will submit a closure report along with form C-141.

Sincerely, R.T. Hicks Consultants, Ltd.

Adenta

Andrew Parker Project Scientist

Copy: Hobbs NMOCD office – Oliva Yu (Olivia.Yu@state.nm.us) NMOCD – Brad Billings (bradford.billings@state.nm.us) NM SLO - Mark Naranjo (mnaranjo@slo.state.nm.us)

TABLES

Table 1 Antelope #1

Sample Name	Date	PID	Cl	Cl	BTEX	Benzene	Toluene	Ethylbenzene	Xylenes	TPH	GRO+DRO
		(ppm)	(field)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Proposed 19.15.29 NMAC											
Closure Criteria											
Upper 4-feet				600	50	10				2,500	1,000
> 4-feet											
groundwater 51 to 100 ft				10,000	50	10				2,500	1,000
Pad Northwest @ 5"	1/11/2018			224	2.5	<0.050	0.426	0.546	1.53	4814.6	4,056.6
SB-Central @ 0 ft	4/2/2018			1,700	37.3	2.2	11	8.1	16	41,668	25,560
SB-Central @ 2 ft	4/2/2018			490	205.8	5.8	69	44	87	8,400	6,900
SB-Central @ 4 ft	4/2/2018			47	<0.224	<0.025	<0.050	<0.050	<0.099	<57.8	<13.8
SB-Central @ 6 ft	4/2/2018		55	<30	<0.207	<0.023	<0.046	<0.046	<0.092	<66.6	<17.6
SB-Central @ 10 ft	4/2/2018	34.5	103	<30	<0.21	<0.023	<0.047	<0.047	<0.093	<61.2	<14.2
SB-East @ 0 ft	4/2/2018			33	<1.09	<0.12	<0.24	<0.24	<0.49	<19,624	<15,024
SB-East @ 2 ft	4/2/2018			35	<11.54	<0.24	1.7	3.1	6.5	1,600	1,280
SB-East @ 4 ft	4/2/2018			<30	<0.222	<0.025	<0.049	<0.049	<0.099	<62.5	<14.5
SB-East @ 6 ft	4/2/2018	63.5	43	<30	<0.224	<0.025	<0.050	<0.050	<0.099	<61.4	<14.4
SB-North @ 0 ft	4/2/2018			1,000	<33.68	<0.48	6.5	8.7	18	18,030	13,830
SB-North @ 2 ft	4/2/2018			390	<2.57	<0.024	0.29	0.66	1.6	522	412
SB-North @ 4 ft	4/2/2018			410	<0.222	<0.025	<0.049	<0.049	<0.099	<64.8	<14.8
SB-North @ 6 ft	4/2/2018	0.0	605	520	<0.212	<0.024	<0.047	<0.047	<0.094	<59.9	<13.9
SB-North @ 7 ft	4/2/2018		207								
SB-West @ 0 ft	4/2/2018			1,200	<1.04	<0.12	<0.23	<0.23	<0.46	<12,223	<7,923
SB-West @ 2 ft	4/2/2018			970	<0.432	<0.024	<0.048	<0.048	<0.096	<61.8	<16.8
SB-West @ 4 ft	4/2/2018			64	<0.220	<0.024	<0.049	<0.049	<0.098	<65.9	<14.9
SB-West @ 6 ft	4/2/2018		87	<30	<0.210	<0.023	<0.047	<0.047	<0.093	<62.4	<14.4
SB-South @ 0 ft	4/2/2018			1,200	<0.213	<0.024	<0.047	<0.047	<0.095	<1684.7	<1104.7
SB-South @ 2 ft	4/2/2018			180	<0.217	<0.024	<0.048	<0.048	<0.097	<119.8	<70.8
SB-South @ 4 ft	4/2/2018			66	<0.216	<0.024	<0.048	<0.048	<0.096	<61.2	<14.2
SB-South @ 6 ft	4/2/2018		154	130	<0.217	<0.024	<0.048	<0.048	<0.097	<62.4	<14.4
Notes:											
Samples collected a 0ft on 04/02/2	018 is represe	entative of	a release t	hat occurre	d on Janua	ry 25, 2018 a	nd is not rep	presentative of pas	t restoration	actviities.	
No closure criteria for restorations											

PLATES

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Legend											
Poten	Potentiometric Surface (Tillery, 2007)										
—	Isocontour (ft msl)										
USGS	Gauging Station (GW Elev, Date)										
Aquife	r Code, Well Status										
	Ogallala										
\bowtie	121OGLL, Nearby site that taps the same aquifer was being pumped.										
\boxtimes	<null>, Obstruction was encountered in the well (no water level was recorded).</null>										

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite E-142	Potentiometric Surface and Groundwater Elevation	Plate 2 LEGEND
Albuquerque, NM 87104	Purvis Operating Company	February
Ph: 505.266.5004	Antelope #001	2018

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		Legend Dec 2017 Release Extent Distance from release 200 ft 300 ft 500 ft 1000 ft National Flood Hazard Layer Areas with possible but undetermined
		Flood Hazard. No flood hazard analysis has been conducted (Zone D).
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<u>R.T. Hicks Consultants, Ltd</u> 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004

FEMA Flood Map	Plate 9
Purvis Operating Company	February
Antelope #001	2018

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December 2017/January 2018 Initial Response

Within 24 hours of the December 07, 2017 release, the impacted area, which was limited to the production pad as described in the C-141, was excavated to a depth of 0.5 feet and temporarily stockpiled along the western edge of the production pad for off-site disposal. The excavated area

was backfilled with clean caliche. On December 18, 2017 a second release occurred covering an area similar to the December 7th release extent. Both releases were due to freezing conditions that caused the flowline valves and unions to burst. The valves and unions have been repaired. To prevent this occurrence in the future, a pressure gauge has been installed that will shut the wellhead down if backpressure increases above 300 psi and manual restart of the wellhead will be required.

On January 8th and 10th, 2018; Andrew Parker of R.T. Hicks Consultants was on-site to inspect the December 18th release (Figure A-1 & Plate 10). During our January 10th



Figure A-1: Photo of the Dec. 18, 2017 release as observed on Jan. 8th 2018. Photo is viewing south-southwest.

inspection, we collected surface soil samples at 3-inches below grade. As shown in Figure A-2, below, at 3-inches below grade no hydrocarbon staining was observed. We elected not to submit the surface samples for laboratory testing and to collect samples the following day (January 11th) after the impacted area was excavated

after the impacted area was excavated.

On January 11th, the December 18th release was excavated to a depth of 0.5 feet – the extent of visual hydrocarbon impairment. The excavated soil, along with the stockpiled soil from the December 7th release, was hauled off-site for proper disposal. The excavated area was backfilled with clean caliche.

Donnie Barr; the pumper for Purvis, collected a soil sample at 5-inches (approximately 0.5 feet) below grade from the northwestern extent of the release. Mr. Barr transferred the sample to Kristin Pope, of R.T. Hicks Consultants. Ms. Pope delivered the soil sample to Cardinal Laboratories in Hobbs, NM for the analysis of chloride, BTEX, GRO, DRO, and MRO. Table 1 is a summary of the analytical results. Appendix D contains the laboratory Certificate of Analysis.



Figure A-2: No visual impairment at 3inches below grade from the Dec. 2017 Release. (Jan 11th 2018)

On January 25, 2018 a third release occurred of less than 5 bbls caused by a packing blowout. The release extent remained with the December 2017 release extents. The upper 3-inches of impacted surface area was removed and replaced with clean caliche by January 27th. Additional excavation depth is necessary for restoration as we observed surface staining from the January 25 release during our April 2018 characterization.

April 2018 Characterization

On April 02, 2018 Andrew Parker and Kristin Pope of Hicks Consultants mobilized to complete characterization and delineation of the releases that occurred in December 2018. Atkins Engineering provided drilling services.

We drilled five boreholes at the locations shown on Plate 11 and Table A-1 to define the horizontal and vertical extent of the release:

- the four cardinal directions of the December 2017 releases, and
- our January 2018 field observations where we observed the highest potential of liquid pooling

We collected soil samples at 0, 2, 4, and 6 feet below ground surface at the four cardinal locations. Vertical delineation ceased at 6 feet when:

- PID readings for VOCs were below 100 ppm (using the heated headspace method of field testing), and
- Chloride titrations were below 600 mg/kg (using field titration method).

The boring within the area of the highest potential of liquid pooling (SB-Central) vertically delineated the release. Soil samples were collected vertically every 2 feet from the surface to 4 feet bgs; then every 5 feet to total depth. Vertical delineation ceased at 11 feet when:

- PID readings for VOCs were below 100 ppm, and
- Chloride titrations were below 600 mg/kg.

Appendix C contains the lithologic logs for the sample locations.

Soil samples were submitted for laboratory testing of TPH (GRO, DRO, MRO), BTEX, Benzene, and Chloride. Soil samples were submitted to Hall Environmental Laboratory in Albuquerque, NM; on-ice and under strict chain-of-custody. Appendix D contains the laboratory Certificates of Analysis.

Protocols for chloride field titrations and VOC screening with a photoionization detector (PID) are located in Appendix G.

Sample Location	Sampling Type	Date	Depth (ft)	Latitude	Longitude
SB-North	Soil Boring	04/02/18	7	33.036494	-103.441507
SB-South	Soil Boring	04/02/18	6	33.036093	-103.441626
SB-East	Soil Boring	04/02/18	7	33.036329	-103.441398
SB-West	Soil Boring	04/02/18	6	33.036361	-103.441618
SB-Central	Soil Boring	04/02/18	11	33.036341	-103.441531

 Table A-1: Sample location and type.
 Coordinate datum is WGS84/NAD83.



Photo 1: Drilling at SB-Central, the area where release pooling was observed.



Photo 2: Drilling at SB-West at a depth of 3 feet.



Photo 3: SB-West. Spilt spoon sample from 0.5-feet (left) to 2-feet (right). Interface of weathered hydrocarbon caliche is present in the upper two feet of soil column.



Photo 4: SB-South. Spilt spoon sample of caliche from 4-feet (left) to 6-feet (right).

APPENDIX B

Depth to Groundwater

A water well listed on the New Mexico Office of the State Engineer (OSE) database shows a well at the site (L-13339-POD1; Plate 1). This was an exploratory boring conducted by R.T. Hicks Consultants in 2013 to characterize a prior release from the tank battery. The exploratory well was plugged and abandoned after completion. The depth of the boring was 21-feet. No groundwater was encountered. Appendix F contains the plugging record.

Depth to water at a nearby windmill located approximately 900 feet southeast (down gradient) of the release measured 50.28 feet in 1996 (USGS-13551; Plate 1) with an average depth to water at 51.03-feet between 1961 and 1996. Since 1961, the depth to water in the windmill has been greater than 50 feet with the exception in 1976, when the depth to water was 49.17 feet. Figure B-1 and Table B-1 shows measured water levels in the windmill since USGS started gauging the well. During our April 2018 characterization, we attempted to gain access to the USGS-13551 well (Figure B-2) to obtain a current groundwater measurement. We meet with the ranch manager to tour the well. The water well is operational but there was no access port to obtain a groundwater measurement.

Plate 2 shows the water table elevation as mapped by the USGS in 2007^{1} . Interpolation shows that the groundwater elevation at the Antelope #001 site is 3,983 ft msl; resulting in a depth to groundwater of 54-feet (= 4,037 ft surface elevation – 3,983 ft groundwater elevation). During our January 2017 site visit, observed release impact depth was approximately 3 to 5-inches. Assuming a conservative depth of 5-inches (0.42-feet), depth to water from the bottom of the release is calculated at 53.58 (= 54-0.42) feet.

Date	Depth to Water (ft)	Status
2/6/1961	52.96	
3/9/1966	56.11	Pumping
3/8/1971	50.82	Recently Pumped
3/17/1976	49.17	
1/20/1981	51.56	
1/16/1986	51.25	
3/15/1991	51.16	
3/12/1996	50.28	
Average (without pumping)	51.03	

Table B-1: Depth to water over time in USGS-13551 as shown on Plate 1. USGS site number in database is 330150103261701².

¹ Current (2004-07) Conditions and Changes in Ground-Water Levels from Predevelopment to 2007, Southern High Plains Aquifer, Southeast New Mexico-Lea County Underground Water Basin; 2008; SIM; 3044; Tillery, Anne ² https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?site_no=330150103261701&agency_cd=USGS&format=gif



Figure B-1 : Graph of data presented in Table B-1.



Figure B-2: Photo of USGS Well-13551. Access to obtain a depth to water measurement was limited.



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SD Calcore Hard 55 Hydrated Bentonia 60 770 30.0 Caliche, white Soft 34.5 103 0.0 100 1100 (7.5 to 11 li) Soft 34.5 103 100 100 120 30.0 Soft 34.5 103 100 100 1300 Soft 0.0 103 110 100 100 140 50 Soft 103 100 100 100 160 0 0 100	4.0		• • • •								4.0	
6.0 2.10 / 3.1 55 Priorised Benchnik 6.0 8.0 Caliche, while Soft 34.5 103 10.0	5.0		Caliche		Hard						5.0	
30 Caliche, while Soft 34.5	6.0		2 to 7.5 ft				55			Hydrated Bentonite	6.0	
8.0 10.0 (7.5 to 11 ft) Soft 34.5 0.0 103 0.0 8.0 0.0 11.0 12.0 13.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14	7.0										7.0	
9.0 Callche, while Soft 34.5 103 9.0 1100 (7.5 to 11 ft) 100.0 110.0	8.0										8.0	
10.0 (7.5 to 11 ft) 10.3 10.3 10.3 12.0 0.0 11.0 12.0	9.0		Caliche, white		Soft	34.5	400				9.0	
11.0 11.0 10.0 10.0 13.0 13.0 13.0 13.0 13.0 13.0 0 13.0 13.0 13.0 13.0 14.0 0 13.0 13.0 13.0 13.0 13.0 15.0 0 0 19.0 1	10.0		(7.5 to 11 ft)		0011		103				10.0	
12.0 12.0 13.0 14.0 14.0 13.0 14.0 14.0 15.0 0 16.0 0 17.0 2 18.0 4 19.0 6 20.0 10 21.0 20.0 22.0 22.0 23.0 22.0 23.0 22.0 23.0 22.0 23.0 22.0 23.0 22.0 23.0 24.0 25.0 28.0 26.0 27.0 27.0 28.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 33.0 34.0 36.0 35.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38.0 38	11.0					0.0			<u>8888</u>		11.0	
13.0	12.0										12.0	
Hito Soil Samples at: Hito Hito 160 0 0 160 170 2 160 160 180 4 180 180 180 4 180 180 200 10 200 200 200 210 200 200 200 200 220 220 220 220 220 230 260 260 260 260 260 27.0 260 280 280 27.0 280 280 280 380 300 310 30.0 310 380 310 320 380 380 380 320 330 360 360 360 320 330 360 360 360 320 330 360 360 360 320 360 360 360 360 320	13.0										13.0	
1000 000 100 <td>14.0</td> <td>1</td> <td>Soil</td> <td>Samples at: (ft)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>14.0</td>	14.0	1	Soil	Samples at: (ft)							14.0	
170 2 10 180 4 180 180 6 180 200 10 200 200 10 200 220 200 200 230 200 200 240 220 220 250 250 250 260 220 220 290 290 290 300 310 320 320 290 290 300 300 300 340 330 340 350 380 380 320 380 380 320 380 380 320 380 380 320 380 380 320 380 380 320 380 380 320 380 380 320 380 380 320 380 380	16.0	1		0 0	-						16.0	
180 4 180 190 6 190 200 10 200 210 200 200 220 220 220 230 220 220 230 220 220 240 220 220 250 220 220 250 220 220 250 220 220 250 220 280 250 280 280 250 280 280 250 280 280 250 280 280 250 280 380 250 390 300 310 320 380 350 380 380 390 390 380 450 450 450 450 450 450 450 450 450 450 450 450	17.0	1		2							17.0	
190 6 10 10 200 210 10 210 210 220 230 230 230 230 230 230 230 230 230 230 240 300 400 400	18.0	1		4							18.0	
200 10 200 200 210 220 230 220 230 220 230 240 240 240 240	19.0	1		6							19.0	
210 210 210 220 230 240 220 230 240 250 260 260 280 280 280 280 280 280 280 280 300 300 300 300 300 330 300 300 300 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380 380	20.0			10							20.0	
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24.0 24.0 24.0 25.0 25.0 25.0 27.0 27.0 27.0 28.0 27.0 27.0 29.0 27.0 28.0 30.0 30.0 30.0 31.0 32.0 32.0 32.0 33.0 33.0 34.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 36.0 36.0 36.0 36.0 37.0 38.0 38.0 38.0 38.0 38.0 39.0 40.0 44.0 44.0 44.0 44.0 44.0 44.0 44.0 45.0 45.0 45.0 45.0 45.0 45.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0	23.0										23.0	
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41.0 40.0 42.0 43.0 44.0 42.0 43.0 43.0 44.0 45.0 45.0 46.0 46.0 47.0 48.0 49.0 50.0 50.0 51.0 52.0 52.0 53.0 54.0 55.0 SB-Central 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 505-266-5004 April 2018 Characterization and Delineation May 2018	39.0 40.0	1									40.0	
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43.0 43.0 44.0 44.0 45.0 46.0 47.0 48.0 49.0 49.0 50.0 50.0 51.0 52.0 53.0 53.0 55.0 55.0 BB-Central BB-Central 901 Rio Grande Blvd NW Suite F-142 April 2018 Characterization and Delineation May 2018	42.0	1									42.0	
44.0 44.0 45.0 45.0 46.0 45.0 47.0 48.0 48.0 48.0 49.0 50.0 51.0 50.0 53.0 51.0 55.0 55.0 SB-Central May 2018 Characterization and Delineation May 2018	43.0]									43.0	
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46.0 46.0 47.0 48.0 49.0 48.0 49.0 49.0 50.0 50.0 51.0 50.0 53.0 51.0 53.0 53.0 54.0 55.0 SB-Central RT. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 April 2018 Characterization and Delineation May 2018 May 2018	45.0	ļ									45.0	
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48.0 48.0 48.0 49.0 49.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 51.0 52.0 53.0 53.0 53.0 53.0 53.0 53.0 53.0 53.0 53.0 53.0 55.0 <td< td=""><td>47.0</td><td>l</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>47.0</td></td<>	47.0	l									47.0	
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30.0 51.0 50.0 51.0 51.0 51.0 51.0 51.0 52.0 52.0 52.0 53.0 53.0 54.0 55.0 54.0 55.0 54.0 55.0 <td< td=""><td>49.0</td><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>49.0</td></td<>	49.0										49.0	
31.0 51.0 51.0 52.0 52.0 52.0 53.0 54.0 53.0 54.0 55.0 54.0 55.0 55.0 55.0 R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 April 2018 Characterization and Delineation May 2018	50.0	ł									50.0	
32.0 52.0 53.0 53.0 53.0 53.0 53.0 53.0 54.0 55.0 <td< td=""><td>51.0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>51.0</td></td<>	51.0	1									51.0	
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B.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 April 2018 Characterization and Delineation 505-266-5004 May 2018	54.0	4.0									54.0	
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142Purvis Operating CompanySB-CentralAlbuquerque, NM 87104 505-266-5004April 2018 Characterization and DelineationMay 2018	55.0	55.0									55.0	
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142Purvis Operating CompanySB-CentralAlbuquerque, NM 87104 505-266-5004April 2018 Characterization and DelineationMay 2018												
901 Rio Grande Blvd NW Suite F-142Purvis Operating CompanySB-CentralAlbuquerque, NM 87104 505-266-5004April 2018 Characterization and DelineationMay 2018	рт	R T Hicks Consultants Ltd										
Suite F-142Albuquerque, NM 87104 505-266-5004April 2018 Characterization and DelineationMay 2018	<u>K.1</u> 90	1 Rio Grand	e Blvd NW		Purvis Operating Company					SB-Central		
Albuquerque, NM 87104 505-266-5004 April 2018 Characterization and Delineation May 2018)0	Suite F-	142		······································							
505-266-5004 April 2018 Unaracterization and Delineation May 2018	А	lbuquerque.	NM 87104	A	O Characterization and	Deller			May 2040			
		505-266-	5004	April 201	o Unaracterization and	Delinea	ation			way 2018		

	Logger:	Andr	ew Parker		Client:			Well ID:	
	Driller:	Atkins	Engineering	1	Purvis Ope	rating Com	pany		
Drillin	a Method	Hollow	Stem Aure	r	Project Name:				
C	Start Date:	1101101	2/2018		Anto	lone #001		ID:	
	End Date	4/	2/2010		Location:			SB-North	
	Ling Date:	4/	212010			ng TDC III			
					Lat/Loi	ng, irto UL			
Depth		Description		l ithology	Comments	PID	Chloride	-	Depth
(feet)						(ppm)	Field Lab	Borehole Completion	(feet)
0.0	Ca	aliche Pad (0 to 0.5	5 ft)						0.0
1.0		Caliche, Black		65555	Hydrocarbon odor				1.0
2.0		0.5 to 2 ft			Thydrobal boll babi				2.0
3.0		Caliche, Light brow	'n		Hard			Hydrated Bentonite	3.0
4.0		2 to 4 ft			Thats			Tiyulated Deliterinte	4.0
5.0		Caliche light brow	n						5.0
6.0		A to 7 ft			Medium density		605		6.0
7.0		410711				0.0	207	1033	7.0
8.0									8.0
9.0									9.0
10.0									10.0
11.0									11.0
12.0		Soil	Samples at:	(ft)					12.0
13.0				0	•				13.0
14.0				2					14.0
15.0				4					15.0
16.0				6					16.0
17.0				~					17.0
18.0									18.0
19.0									19.0
20.0									20.0
21.0									21.0
22.0									22.0
23.0									23.0
24.0									24.0
25.0									25.0
25.0									25.0
20.0									20.0
27.0									27.0
20.0									20.0
29.0									29.0
30.0									30.0
22.0									22.0
32.0									32.0
24.0									24.0
34.0									34.0
36.0									36.0
37.0									37.0
38.0									38.0
30.0									30.0
40.0									40.0
41 0									41.0
42.0									42.0
43.0									43.0
44.0									44 0
45.0									45.0
46.0									46.0
47.0									47.0
48.0									48.0
40.0									40.0
43.0 50.0									43.0 E0.0
50.0									50.0
51.0									51.0
52.0									52.0
53.0									53.0
54.0									54.0
0.cc									0.00
<u>R.</u> T	R.T. Hicks Consultants, Ltd		mile Openetine O						
90	1 Rio Grand	le Blvd NW		PL	irvis Operating Comp	any	SB-North		
	Suite F-	-142							
А	lbuquerque.	NM 87104		A	Characteri-stime of t	Delinert		May 2018	
	505-266	-5004		April 2018	unaracterization and	Deimeati	on	May 2018	
	2.00 200								

	Logger:	Andr	ew Parker		Client:	Well ID:			
	Driller:	Atkins	Engineering	1	Purvis Opera	ting Com	pany		
Drillin	q Method:	Hollow	Stem Auge	r	Project Name:				
	Start Date:	4	/2/2018		Antelor	be #001		ID:	
	End Date:	4/	/2/2018		Location:			SB-South	
	D ato.	ر ۲			Lat/Long	TRSU		—	
						,			
Donth						חום	Chloride		Donth
(foot)		Description		Lithology	Comments	(nnm)	Field Lab	Borehole Completion	(feet)
	C	aliche Pad (o to 0 P	5 ft)			(ppm)			
1.0	0	Caliche, Dark grev	/						1.0
2.0		0.5 to 2 ft	,		Weathered hydrocarbons				2.0
3.0				신신신				WW Hydrated Bentonite	3.0
4.0									4.0
5.0		Calicne, Light grey	y		Medium density				5.0
6.0							154		6.0
7.0									7.0
8.0									8.0
9.0									9.0
10.0									10.0
11.0		Soil	Samples at:	(ft)					11.0
12.0				0					12.0
13.0				2					13.0
14.0				4					14.0
15.0				6					15.0
16.0									16.0
17.0									17.0
18.0									18.0
19.0									19.0
20.0									20.0
21.0									21.0
22.0									22.0
23.0									23.0
24.0									24.0
25.0									25.0
26.0									26.0
27.0									27.0
20.0									20.0
29.0									29.0
31.0									31.0
32.0									32.0
33.0									33.0
34.0									34.0
35.0									35.0
36.0									36.0
37.0									37.0
38.0									38.0
39.0									39.0
40.0									40.0
41.0									41.0
42.0									42.0
43.0									43.0
44.0									44.0
45.0									45.0
40.0 47.0									40.0 47.0
48.0									48.0
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50.0									50.0
51.0									51.0
52.0									52.0
53.0									53.0
54.0									54.0
55.0									55.0
	-								-
р т	P.T. Higks Consultants I td								
<u>K.I</u>	R.T. Hicks Consultants, Ltd 901 Rio Grande Blyd NW		Ρι	rvis Operating Compar	SB-South				
90	901 Rio Grande Blvd NW				-				
A	lbuquerane	NM 87104		A	Ohannaka	May 2018			
	505-266	-5004	4	April 2018	Unaracterization and D	enneati	on	May 2018	
	200		1						

	Logger: Andrew Parker			Client: Well ID:						
	Driller:	Atkins	Engineering	1	Purvis Opera	ting Com	pany			
Drillin	g Method:	Hollow	Stem Auge	r	Project Name:					
5	Start Date:	4/	2/2018		Antelo	pe #001				
	End Date:	4/	2/2018		Location:			SB-East		
					Lat/Long	j, TRS UL				
Depth		Description		Lithology	Commonto	PID	Chloride		Depth	
(feet)		Description		Litilology	Comments	(ppm)	Field Lab	Borehole Completion	(feet)	
0.0	Ca	aliche Pad (0 to 0.5	5 ft)					1111	0.0	
1.0		Caliche, Black			Hydrocarbon odor				1.0	
2.0		0.5-2.5							2.0	
3.0	Caliche	e, light brown (2.5	o 3.5 ft)		Hard	-		Hydrated Bentonite	3.0	
4.0									4.0	
5.0	(Caliche, Light brow	'n			62.5	10	1112	5.0	
7.0						03.5	43		0.0	
8.0						L		00000	8.0	
9.0									9.0	
10.0									10.0	
11.0									11.0	
12.0	1								12.0	
13.0	1								13.0	
14.0	1	Soil	Samples at:	(ft)					14.0	
15.0]			0					15.0	
16.0				2					16.0	
17.0	ļ			4					17.0	
18.0	ł			6					18.0	
19.0									19.0	
20.0									20.0	
21.0									21.0	
22.0									22.0	
23.0									23.0	
24.0									24.0	
25.0									25.0	
20.0									20.0	
28.0									28.0	
29.0									29.0	
30.0									30.0	
31.0									31.0	
32.0									32.0	
33.0									33.0	
34.0									34.0	
35.0									35.0	
30.0									30.0	
38.0	1								38.0	
39.0									39.0	
40.0	1								40.0	
41.0]								41.0	
42.0									42.0	
43.0	ļ								43.0	
44.0									44.0	
45.0									45.0	
46.0	ł								46.0	
47.0	1								47.0	
48.0	1								48.0	
49.0									49.0	
51.0	ł								51.0	
52.0	1								52.0	
53.0	1								53.0	
54.0	1								54.0	
55.0									55.0	
R.T	R.T. Hicks Consultants, Ltd									
90	901 Rio Grande Blvd NW		Ρι	Irvis Operating Compa	SB-East					
	Suite F-	-142								
A	lbuquerque,	NM 87104		∆nril 2019	Characterization and D	May 2018				
I	505-266-	-5004	4	-piii 2010		all	V 11	way 2010		

Logger:		Andr	drew Parker		Client:	Well ID:	Well ID:			
Driller:		Atkins	Engineering	1	Purvis Opera					
Drillin	g Method:	Hollow	Stem Auge	r	Project Name:	ID.				
Start Date:		4/2/2018			Antelop					
End Date:		4/	2/2018		Location:	SB-west				
					Lat/Long	, TRS UL				
Depth		Description		Lithology	Comments	PID	Chloride		Depth	
(feet)		2 coonpaon				(ppm)	Field Lab	Borehole Completion	(feet)	
0.0	C	aliche pad (0 to 0.5	oft)						0.0	
1.0	Ca	0.5 to 2 ft	Jiey		Weathered hydrocarbons				1.0	
2.0		0.5 to 2 ft						Hydrated Bentonite	2.0	
4.0		Caliche, Grey			Hard at 3 ft				4.0	
5.0		2 to 6 ft			Very hard at 6 ft				5.0	
6.0							87		6.0	
7.0									7.0	
8.0									8.0	
9.0									9.0	
10.0		Soil	Samplas at	(#)					10.0	
12.0			Samples al.	(II)					12.0	
12.0				2					12.0	
14.0				4					14.0	
15.0				6					15.0	
16.0									16.0	
17.0									17.0	
18.0									18.0	
19.0									19.0	
20.0									20.0	
21.0									22.0	
23.0									23.0	
24.0									24.0	
25.0									25.0	
26.0									26.0	
27.0									27.0	
28.0									28.0	
29.0									29.0	
30.0									30.0	
32.0									32.0	
33.0									33.0	
34.0									34.0	
35.0									35.0	
36.0									36.0	
37.0									37.0	
38.0									38.0	
<u> </u>									<u> </u>	
41.0									41.0	
42.0									42.0	
43.0									43.0	
44.0									44.0	
45.0									45.0	
40.0 47.0									40.0	
48.0									48.0	
49.0									49.0	
50.0									50.0	
51.0									51.0	
52.0									52.0	
53.0									53.0	
54.0									54.0	
0.6c									55.0	
R.T. Hicks Consultants, Ltd				Purvis Operating Company			SB-West			
901 Rio Grande Blvd NW				Furvis Operating Company			22	SD-West		
Suite F-142 Albuquerque, NM 87104										
Albuquerque, NM 87/104 505-266 5004			1	April 2018	Characterization and D	elineati	on	May 2018		
	505-266-5004									





January 18, 2018

ANDREW PARKER R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE, NM 87104

RE: PURVIS ANTELOPE #1

Enclosed are the results of analyses for samples received by the laboratory on 01/12/18 10:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keine

Celey D. Keene Lab Director/Quality Manager



Analytical Results For:

R T HICKS CONSULTANTS ANDREW PARKER 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104 Fax To: NONE

Received:	01/12/2018	Sampling Date:	01/11/2018
Reported:	01/18/2018	Sampling Type:	Soil
Project Name:	PURVIS ANTELOPE #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: PAD NORTHWEST @ 5" (H800138-01)

BTEX 8021B	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/15/2018	ND	2.14	107	2.00	0.521	
Toluene*	0.426	0.050	01/15/2018	ND	2.16	108	2.00	0.239	
Ethylbenzene*	0.546	0.050	01/15/2018	ND	2.15	107	2.00	0.359	
Total Xylenes*	1.53	0.150	01/15/2018	ND	6.67	111	6.00	0.965	
Total BTEX	2.50	0.300	01/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	112 %	6 72-148							
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	01/15/2018	ND	448	112	400	3.64	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	56.6	10.0	01/16/2018	ND	228	114	200	1.07	
DRO >C10-C28*	4000	10.0	01/16/2018	ND	231	115	200	5.45	
EXT DRO >C28-C36	758	10.0	01/16/2018	ND					
Surrogate: 1-Chlorooctane	98.4 %	6 41-142							
Surrogate: 1-Chlorooctadecane	216%	6 37.6-142	7						

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatscever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including whose shall be deemed waived unless of use, or loss of profits incurred by client, its subsidiaries, affiliates or successor arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager


Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatscever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including whose shall be deemed waived unless of use, or loss of profits incurred by client, its subsidiaries, affiliates or successor arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager

Relinquished By Relinquished By Relinquished By Delivered By	PLEASE NOTE: Llability an	FOR LAB USE OWLY Lab I.D.	Company Name. Project Manager: Address: 90/ / City: A/buou Phone #: 50/5 Project #: Project Name: / Project Location: Sampler Name:	
$\frac{1}{2} out of critical to the performance of services homendations of services homendation$	Toot NottillW651 @	Sample I.D.	R. I. HICKS CONSULTU Andrew Parker lio Grande BING NWI, lio Grande BING NWI, state: NMI - 866-5004 Fax#: - 866-5004 Fax#: - 9666-5004 Fax#: - 9666-5004 Fax#: - 9666-5004 Fax#: - 9666-5004 Fax#: - 9666-5004 Fax#:	1 East Marland, Hobbs, NM 88 75) 393-2326 FAX (575) 393-24
Received By: Received By: Received By: Received By: Sample Cond Cool Intact	tor any claim ansing whether based in contrat	GROUNDWATER WASTEWATER OIL SLUDGE	7753 F-/42 Zip: 87/04 er: /	PS
tilon CHECKED BY:	t or fort, shall be invited to the amount paid by interview of position and the invited to the amount paid by interview of position incurred by cleent.	OTHER : ACID/BASE: VICE / COOL OTHER : DATE	P.O. #: Company: RT Hicks Attn: Address: Address: City: State: State: Phone #: Fax #: Fax #:	BILL TO
andrew@rt.	la clant for the classical and	X BTEX X DRO/GR X Chlorid	no / mro le	AIN-OF-CUSTODY
hicksconsult.co				AND ANALYSIS RE
sult. com				QUEST

Page 4 of 4



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

April 20, 2018

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: Purvis Antelope 001

OrderNo.: 1804247

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 22 sample(s) on 4/4/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0190

Sincerely,

ander

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-Central 0' Collection Date: 4/2/2018 8:00:00 AM

Lab ID: 1804247-001	Matrix:	Received	Received Date: 4/4/2018 9:55:00 AM			
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analys	t: MRA
Chloride	1700	75	mg/Kg	50	4/17/2018 7:23:53 PM	37540
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG
Gasoline Range Organics (GRO)	560	97	mg/Kg	20	4/9/2018 7:40:11 PM	37460
Surr: BFB	108	70-130	%Rec	20	4/9/2018 7:40:11 PM	37460
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	5			Analys	t: TOM
Diesel Range Organics (DRO)	25000	500	mg/Kg	50	4/9/2018 10:04:46 AM	37462
Motor Oil Range Organics (MRO)	16000	2500	mg/Kg	50	4/9/2018 10:04:46 AM	37462
Surr: DNOP	0	70-130	S %Rec	50	4/9/2018 10:04:46 AM	37462
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG
Benzene	2.2	0.024	mg/Kg	1	4/9/2018 10:02:28 AM	37460
Toluene	11	0.97	mg/Kg	20	4/9/2018 7:40:11 PM	37460
Ethylbenzene	8.1	0.97	mg/Kg	20	4/9/2018 7:40:11 PM	37460
Xylenes, Total	16	1.9	mg/Kg	20	4/9/2018 7:40:11 PM	37460
Surr: 4-Bromofluorobenzene	88.7	70-130	%Rec	1	4/9/2018 10:02:28 AM	37460
Surr: Toluene-d8	84.4	70-130	%Rec	1	4/9/2018 10:02:28 AM	37460

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

- * 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 Page 1 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

1804247-002

Purvis Antelope 001

Project:

Lab ID:

Client Sample ID: SB-Central 2'Collection Date: 4/2/2018 8:30:00 AMMatrix: SOILReceived Date: 4/4/2018 9:55:00 AM

Analyses	Result	PQL (Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analys	t: MRA
Chloride	490	30		mg/Kg	20	4/11/2018 5:52:11 PM	37540
EPA METHOD 8015D MOD: GASOL	INE RANGE					Analys	t: AG
Gasoline Range Organics (GRO)	2800	240		mg/Kg	50	4/9/2018 8:03:15 PM	37460
Surr: BFB	103	70-130		%Rec	50	4/9/2018 8:03:15 PM	37460
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS					Analys	t: TOM
Diesel Range Organics (DRO)	4100	98		mg/Kg	10	4/9/2018 10:53:36 AM	37462
Motor Oil Range Organics (MRO)	1500	490		mg/Kg	10	4/9/2018 10:53:36 AM	37462
Surr: DNOP	0	70-130	S	%Rec	10	4/9/2018 10:53:36 AM	37462
EPA METHOD 8260B: VOLATILES	SHORT LIST					Analys	t: AG
Benzene	5.8	0.12		mg/Kg	5	4/9/2018 11:11:55 AM	37460
Toluene	69	2.4		mg/Kg	50	4/9/2018 8:03:15 PM	37460
Ethylbenzene	44	2.4		mg/Kg	50	4/9/2018 8:03:15 PM	37460
Xylenes, Total	87	4.7		mg/Kg	50	4/9/2018 8:03:15 PM	37460
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	5	4/9/2018 11:11:55 AM	37460
Surr: Toluene-d8	93.6	70-130		%Rec	5	4/9/2018 11:11:55 AM	37460

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

- * 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 Page 2 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-Central 4' Collection Date: 4/2/2018 9:00:00 AM

Lab ID:	1804247-003	Matrix: S	Matrix: SOIL		Received Date: 4/4/2018 9:55:00 AM		
Analyses		Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA ME	THOD 300.0: ANIONS					Analysi	: MRA
Chloride		47	30	mg/Kg	20	4/16/2018 8:16:56 PM	37631
EPA ME	THOD 8015D MOD: GASOL	INE RANGE				Analyst	: AG
Gasoline	e Range Organics (GRO)	ND	5.0	mg/Kg	1	4/9/2018 12:44:27 PM	37460
Surr:	BFB	124	70-130	%Rec	1	4/9/2018 12:44:27 PM	37460
EPA ME	THOD 8015M/D: DIESEL RA	ANGE ORGANICS	;			Analyst	t: TOM
Diesel R	ange Organics (DRO)	ND	8.8	mg/Kg	1	4/9/2018 11:18:00 AM	37462
Motor O	il Range Organics (MRO)	ND	44	mg/Kg	1	4/9/2018 11:18:00 AM	37462
Surr:	DNOP	94.1	70-130	%Rec	1	4/9/2018 11:18:00 AM	37462
EPA ME	THOD 8260B: VOLATILES	SHORT LIST				Analyst	: AG
Benzene	e	ND	0.025	mg/Kg	1	4/9/2018 12:44:27 PM	37460
Toluene		ND	0.050	mg/Kg	1	4/9/2018 12:44:27 PM	37460
Ethylber	nzene	ND	0.050	mg/Kg	1	4/9/2018 12:44:27 PM	37460
Xylenes,	, Total	ND	0.099	mg/Kg	1	4/9/2018 12:44:27 PM	37460
Surr:	4-Bromofluorobenzene	125	70-130	%Rec	1	4/9/2018 12:44:27 PM	37460
Surr:	Toluene-d8	88.5	70-130	%Rec	1	4/9/2018 12:44:27 PM	37460

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

- * Value exceeds Maximum Contaminant Level.D Sample Diluted Due to Matrix
- 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 Page 3 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-Central 6' Collection Date: 4/2/2018 9:15:00 AM ----- J.D. A. . 4/4/2019 0.55.00 AM -

Lab ID: 1804247-004		Matrix: S	Matrix: SOIL		Received Date: 4/4/2018 9:55:00 AM			
Analyses		Result	PQL Qu	al Units	DF	Date Analyzed	Batch	
EPA ME	THOD 300.0: ANIONS					Analyst	t: MRA	
Chloride	9	ND	30	mg/Kg	20	4/11/2018 6:04:35 PM	37540	
EPA ME	THOD 8015D MOD: GASOL	INE RANGE				Analyst	t: AG	
Gasolin	e Range Organics (GRO)	ND	4.6	mg/Kg	1	4/9/2018 1:07:33 PM	37460	
Surr:	BFB	121	70-130	%Rec	1	4/9/2018 1:07:33 PM	37460	
EPA ME	THOD 8015M/D: DIESEL RA	ANGE ORGANICS				Analyst	t: TOM	
Diesel F	Range Organics (DRO)	13	9.8	mg/Kg	1	4/9/2018 11:42:32 AM	37462	
Motor O	il Range Organics (MRO)	ND	49	mg/Kg	1	4/9/2018 11:42:32 AM	37462	
Surr:	DNOP	82.6	70-130	%Rec	1	4/9/2018 11:42:32 AM	37462	
EPA ME	THOD 8260B: VOLATILES	SHORT LIST				Analyst	t: AG	
Benzen	e	ND	0.023	mg/Kg	1	4/9/2018 1:07:33 PM	37460	
Toluene	•	ND	0.046	mg/Kg	1	4/9/2018 1:07:33 PM	37460	
Ethylber	nzene	ND	0.046	mg/Kg	1	4/9/2018 1:07:33 PM	37460	
Xylenes	, Total	ND	0.092	mg/Kg	1	4/9/2018 1:07:33 PM	37460	
Surr:	4-Bromofluorobenzene	121	70-130	%Rec	1	4/9/2018 1:07:33 PM	37460	
Surr:	Toluene-d8	89.4	70-130	%Rec	1	4/9/2018 1:07:33 PM	37460	

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

- * Value exceeds Maximum Contaminant Level. D
- Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-Central 10' Collection Date: 4/2/2018 9:30:00 AM oired Datas 4/4/2018 0.55.00 AM n.

Lab ID: 1804247-005	Matrix: S	Matrix: SOIL		Received Date: 4/4/2018 9:55:00 AM			
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch	
EPA METHOD 300.0: ANIONS					Analys	t: MRA	
Chloride	ND	30	mg/Kg	20	4/13/2018 1:16:05 AM	37587	
EPA METHOD 8015D MOD: GASO	LINE RANGE				Analys	t: AG	
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	4/9/2018 1:30:40 PM	37460	
Surr: BFB	113	70-130	%Rec	1	4/9/2018 1:30:40 PM	37460	
EPA METHOD 8015M/D: DIESEL F	ANGE ORGANICS	;			Analys	t: TOM	
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	4/9/2018 12:07:00 PM	37462	
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	4/9/2018 12:07:00 PM	37462	
Surr: DNOP	85.6	70-130	%Rec	1	4/9/2018 12:07:00 PM	37462	
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG	
Benzene	ND	0.023	mg/Kg	1	4/9/2018 1:30:40 PM	37460	
Toluene	ND	0.047	mg/Kg	1	4/9/2018 1:30:40 PM	37460	
Ethylbenzene	ND	0.047	mg/Kg	1	4/9/2018 1:30:40 PM	37460	
Xylenes, Total	ND	0.093	mg/Kg	1	4/9/2018 1:30:40 PM	37460	
Surr: 4-Bromofluorobenzene	115	70-130	%Rec	1	4/9/2018 1:30:40 PM	37460	
Surr: Toluene-d8	72.4	70-130	%Rec	1	4/9/2018 1:30:40 PM	37460	

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

- * Value exceeds Maximum Contaminant Level. D
- Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-East 0' Collection Date: 4/2/2018 10:15:00 AM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1804247-006	Matrix: SOIL		Received I	Received Date: 4/4/2018 9:55:00 AM		
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analys	t: MRA
Chloride	33	30	mg/Kg	20	4/13/2018 1:28:31 AM	37587
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG
Gasoline Range Organics (GRO)	ND	24	mg/Kg	5	4/9/2018 1:53:50 PM	37460
Surr: BFB	108	70-130	%Rec	5	4/9/2018 1:53:50 PM	37460
EPA METHOD 8015M/D: DIESEL R/	ANGE ORGANICS	5			Analys	t: TOM
Diesel Range Organics (DRO)	15000	470	mg/Kg	50	4/9/2018 12:31:43 PM	37462
Motor Oil Range Organics (MRO)	4600	2300	mg/Kg	50	4/9/2018 12:31:43 PM	37462
Surr: DNOP	0	70-130	S %Rec	50	4/9/2018 12:31:43 PM	37462
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG
Benzene	ND	0.12	mg/Kg	5	4/9/2018 1:53:50 PM	37460
Toluene	ND	0.24	mg/Kg	5	4/9/2018 1:53:50 PM	37460
Ethylbenzene	ND	0.24	mg/Kg	5	4/9/2018 1:53:50 PM	37460
Xylenes, Total	ND	0.49	mg/Kg	5	4/9/2018 1:53:50 PM	37460
Surr: 4-Bromofluorobenzene	108	70-130	%Rec	5	4/9/2018 1:53:50 PM	37460
Surr: Toluene-d8	89.6	70-130	%Rec	5	4/9/2018 1:53:50 PM	37460

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

- * 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 Page 6 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-East 2' Collection Date: 4/2/2018 10:20:00 AM

Lab ID: 1804247-007	Matrix:	Matrix: SOIL		Received Date: 4/4/2018 9:55:00 AM		
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	: MRA
Chloride	35	30	mg/Kg	20	4/13/2018 1:40:55 AM	37587
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analyst	: AG
Gasoline Range Organics (GRO)	320	47	mg/Kg	10	4/9/2018 2:17:01 PM	37460
Surr: BFB	102	70-130	%Rec	10	4/9/2018 2:17:01 PM	37460
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	5			Analyst	TOM
Diesel Range Organics (DRO)	960	18	mg/Kg	2	4/10/2018 12:04:01 PN	37462
Motor Oil Range Organics (MRO)	320	90	mg/Kg	2	4/10/2018 12:04:01 PM	37462
Surr: DNOP	96.6	70-130	%Rec	2	4/10/2018 12:04:01 PM	37462
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analyst	: AG
Benzene	ND	0.24	mg/Kg	10	4/9/2018 2:17:01 PM	37460
Toluene	1.7	0.47	mg/Kg	10	4/9/2018 2:17:01 PM	37460
Ethylbenzene	3.1	0.47	mg/Kg	10	4/9/2018 2:17:01 PM	37460
Xylenes, Total	6.5	0.95	mg/Kg	10	4/9/2018 2:17:01 PM	37460
Surr: 4-Bromofluorobenzene	103	70-130	%Rec	10	4/9/2018 2:17:01 PM	37460
Surr: Toluene-d8	90.8	70-130	%Rec	10	4/9/2018 2:17:01 PM	37460

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

- * Value exceeds Maximum Contaminant Level. D Sample Diluted Due to Matrix
- Н
- Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 7 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-East 4' Collection Date: 4/2/2018 10:30:00 AM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1804247-008	Matrix: SOIL		Received 1	Received Date: 4/4/2018 9:55:00 AM			
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch	
EPA METHOD 300.0: ANIONS					Analys	t: MRA	
Chloride	ND	30	mg/Kg	20	4/13/2018 1:53:20 AM	37587	
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG	
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	4/9/2018 2:40:11 PM	37460	
Surr: BFB	123	70-130	%Rec	1	4/9/2018 2:40:11 PM	37460	
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	5			Analys	t: TOM	
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	4/9/2018 1:44:57 PM	37462	
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	4/9/2018 1:44:57 PM	37462	
Surr: DNOP	86.7	70-130	%Rec	1	4/9/2018 1:44:57 PM	37462	
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG	
Benzene	ND	0.025	mg/Kg	1	4/9/2018 2:40:11 PM	37460	
Toluene	ND	0.049	mg/Kg	1	4/9/2018 2:40:11 PM	37460	
Ethylbenzene	ND	0.049	mg/Kg	1	4/9/2018 2:40:11 PM	37460	
Xylenes, Total	ND	0.099	mg/Kg	1	4/9/2018 2:40:11 PM	37460	
Surr: 4-Bromofluorobenzene	124	70-130	%Rec	1	4/9/2018 2:40:11 PM	37460	
Surr: Toluene-d8	84.9	70-130	%Rec	1	4/9/2018 2:40:11 PM	37460	

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

- * 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 Page 8 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Date Reported: 4/20/2018 Client Sample ID: SB-East 6' Collection Date: 4/2/2018 10:45:00 AM

Project:	Purvis Antelope 001			Collection I	Date: 4/2	/2018 10:45:00 AM			
Lab ID:	1804247-009	Matrix: S	Matrix: SOIL			Received Date: 4/4/2018 9:55:00 AM			
Analyses		Result	PQL Qu	ual Units	DF	Date Analyzed	Batch		
EPA MET	THOD 300.0: ANIONS					Analys	t: MRA		
Chloride		ND	30	mg/Kg	20	4/16/2018 10:41:25 AN	1 37606		
EPA MET	THOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG		
Gasoline	e Range Organics (GRO)	ND	5.0	mg/Kg	1	4/9/2018 3:03:20 PM	37460		
Surr: I	BFB	119	70-130	%Rec	1	4/9/2018 3:03:20 PM	37460		
EPA MET	THOD 8015M/D: DIESEL RA	ANGE ORGANICS				Analys	t: TOM		
Diesel R	ange Organics (DRO)	ND	9.4	mg/Kg	1	4/9/2018 2:09:21 PM	37462		
Motor Oi	il Range Organics (MRO)	ND	47	mg/Kg	1	4/9/2018 2:09:21 PM	37462		
Surr: I	DNOP	79.9	70-130	%Rec	1	4/9/2018 2:09:21 PM	37462		
EPA MET	THOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG		
Benzene	9	ND	0.025	mg/Kg	1	4/9/2018 3:03:20 PM	37460		
Toluene		ND	0.050	mg/Kg	1	4/9/2018 3:03:20 PM	37460		
Ethylben	izene	ND	0.050	mg/Kg	1	4/9/2018 3:03:20 PM	37460		
Xylenes,	, Total	ND	0.099	mg/Kg	1	4/9/2018 3:03:20 PM	37460		
Surr: 4	4-Bromofluorobenzene	121	70-130	%Rec	1	4/9/2018 3:03:20 PM	37460		
Surr:	Toluene-d8	86.6	70-130	%Rec	1	4/9/2018 3:03:20 PM	37460		

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

- * 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 Page 9 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-North 0' Collection Date: 4/2/2018 11:30:00 AM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1804247-010		Matrix: SOIL			Received Date: 4/4/2018 9:55:00 AM			
Analyses		Result	PQL (Qual	Units	DF	Date Analyzed	Batch
EPA ME	THOD 300.0: ANIONS						Analys	t: MRA
Chloride		1000	30		mg/Kg	20	4/16/2018 10:53:49 AN	1 37606
EPA ME	THOD 8015D MOD: GASOL	INE RANGE					Analys	t: AG
Gasoline	e Range Organics (GRO)	830	97		mg/Kg	20	4/9/2018 3:26:20 PM	37460
Surr:	BFB	95.3	70-130		%Rec	20	4/9/2018 3:26:20 PM	37460
EPA ME	THOD 8015M/D: DIESEL R	ANGE ORGANICS					Analys	t: TOM
Diesel R	ange Organics (DRO)	13000	480		mg/Kg	50	4/9/2018 2:58:07 PM	37462
Motor O	il Range Organics (MRO)	4200	2400		mg/Kg	50	4/9/2018 2:58:07 PM	37462
Surr:	DNOP	0	70-130	S	%Rec	50	4/9/2018 2:58:07 PM	37462
EPA ME	THOD 8260B: VOLATILES	SHORT LIST					Analys	t: AG
Benzene	e	ND	0.48		mg/Kg	20	4/9/2018 3:26:20 PM	37460
Toluene		6.5	0.97		mg/Kg	20	4/9/2018 3:26:20 PM	37460
Ethylber	nzene	8.7	0.97		mg/Kg	20	4/9/2018 3:26:20 PM	37460
Xylenes,	, Total	18	1.9		mg/Kg	20	4/9/2018 3:26:20 PM	37460
Surr:	4-Bromofluorobenzene	99.1	70-130		%Rec	20	4/9/2018 3:26:20 PM	37460
Surr:	Toluene-d8	94.9	70-130		%Rec	20	4/9/2018 3:26:20 PM	37460

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

- * 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 Page 10 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-North 2' Collection Date: 4/2/2018 11:40:00 AM **Possived Dete:** 1/1/2018 0.55.00 AM

Lab ID: 1804247-011	Matrix: S	SOIL	Received	Received Date: 4/4/2018 9:55:00 AM					
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch			
EPA METHOD 300.0: ANIONS					Analys	t: MRA			
Chloride	390	30	mg/Kg	20	4/16/2018 11:55:53 AM	1 37606			
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG			
Gasoline Range Organics (GRO)	82	4.8	mg/Kg	1	4/9/2018 3:49:25 PM	37460			
Surr: BFB	105	70-130	%Rec	1	4/9/2018 3:49:25 PM	37460			
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	;			Analys	t: TOM			
Diesel Range Organics (DRO)	330	9.4	mg/Kg	1	4/10/2018 12:54:50 PM	1 37462			
Motor Oil Range Organics (MRO)	110	47	mg/Kg	1	4/10/2018 12:54:50 PM	37462			
Surr: DNOP	88.2	70-130	%Rec	1	4/10/2018 12:54:50 PM	1 37462			
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG			
Benzene	ND	0.024	mg/Kg	1	4/9/2018 3:49:25 PM	37460			
Toluene	0.29	0.048	mg/Kg	1	4/9/2018 3:49:25 PM	37460			
Ethylbenzene	0.66	0.048	mg/Kg	1	4/9/2018 3:49:25 PM	37460			
Xylenes, Total	1.6	0.095	mg/Kg	1	4/9/2018 3:49:25 PM	37460			
Surr: 4-Bromofluorobenzene 106 70-1		70-130	%Rec	1	4/9/2018 3:49:25 PM	37460			
Surr: Toluene-d8	85.2	70-130	%Rec	1	4/9/2018 3:49:25 PM	37460			

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

- * Value exceeds Maximum Contaminant Level. D
- Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limit Page 11 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-North 4' Collection Date: 4/2/2018 11:50:00 AM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1804247-012	Matrix:	SOIL	Received	Received Date: 4/4/2018 9:55:00 AM				
Analyses	Result	PQL Qu	al Units	DF Date Analyzed		Batch		
EPA METHOD 300.0: ANIONS					Analys	t: MRA		
Chloride	410	30	mg/Kg	20	4/16/2018 12:08:18 PM	1 37606		
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG		
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	4/9/2018 4:12:33 PM	37460		
Surr: BFB	119	70-130	%Rec	1	4/9/2018 4:12:33 PM	37460		
EPA METHOD 8015M/D: DIESEL R	ANGE ORGANICS	5			Analys	t: TOM		
Diesel Range Organics (DRO)	ND	9.9	mg/Kg	1	4/9/2018 4:36:05 PM	37462		
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	4/9/2018 4:36:05 PM	37462		
Surr: DNOP	99.2	70-130	%Rec	1	4/9/2018 4:36:05 PM	37462		
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG		
Benzene	ND	0.025	mg/Kg	1	4/9/2018 4:12:33 PM	37460		
Toluene	ND	0.049	mg/Kg	1	4/9/2018 4:12:33 PM	37460		
Ethylbenzene	ND	0.049	mg/Kg	1	4/9/2018 4:12:33 PM	37460		
Xylenes, Total	ND	0.099	mg/Kg	1	4/9/2018 4:12:33 PM	37460		
Surr: 4-Bromofluorobenzene 120 70-130		%Rec	1	4/9/2018 4:12:33 PM	37460			
Surr: Toluene-d8	74.1	70-130	%Rec	1	4/9/2018 4:12:33 PM	37460		

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

- * 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 Page 12 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-North 6' Collection Date: 4/2/2018 12:00:00 PM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1	1804247-013	Matrix: So	JIL	Received	Received Date: 4/4/2018 9:55:00 AM				
Analyses EPA METHOD 300.0: ANIONS		Result	Result PQL Qual		DF Date Analyzed		Batch		
						Analys	t: MRA		
Chloride		520	30	mg/Kg	20	4/16/2018 12:20:42 PM	1 37606		
EPA METH	OD 8015D MOD: GASOL	INE RANGE				Analys	t: AG		
Gasoline R	ange Organics (GRO)	ND	4.7	mg/Kg	1	4/9/2018 4:35:39 PM	37460		
Surr: BFB		123	70-130	%Rec	1	4/9/2018 4:35:39 PM	37460		
EPA METH	OD 8015M/D: DIESEL R	ANGE ORGANICS				Analys	t: TOM		
Diesel Ran	ige Organics (DRO)	ND	9.2	mg/Kg	1	4/9/2018 5:00:26 PM	37462		
Motor Oil R	Range Organics (MRO)	ND	46	mg/Kg	1	4/9/2018 5:00:26 PM	37462		
Surr: DN	IOP	92.3	70-130	%Rec	1	4/9/2018 5:00:26 PM	37462		
EPA METH	OD 8260B: VOLATILES	SHORT LIST				Analys	t: AG		
Benzene		ND	0.024	mg/Kg	1	4/9/2018 4:35:39 PM	37460		
Toluene		ND	0.047	mg/Kg	1	4/9/2018 4:35:39 PM	37460		
Ethylbenze	ene	ND	0.047	mg/Kg	1	4/9/2018 4:35:39 PM	37460		
Xylenes, To	otal	ND	0.094	mg/Kg	1	4/9/2018 4:35:39 PM	37460		
Surr: 4-Bromofluorobenzene		125	70-130	%Rec	1	4/9/2018 4:35:39 PM	37460		
Surr: Tol	luene-d8	85.6	70-130	%Rec	1	4/9/2018 4:35:39 PM	37460		

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

- * 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 Page 13 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 4/20/2018

CLIENT: R.T. Hicks Consultants, LTD Client Sample ID: SB-West 0' **Project:** Purvis Antelope 001 Collection Date: 4/2/2018 12:30:00 PM Lab ID: 1804247-014 Matrix: SOIL Received Date: 4/4/2018 9:55:00 AM Analyses Result **PQL** Qual Units **DF** Date Analyzed Batch **EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride 1200 30 mg/Kg 4/16/2018 12:33:07 PM 37606 20 **EPA METHOD 8015D MOD: GASOLINE RANGE** Analyst: AG Gasoline Range Organics (GRO) ND 4/9/2018 4:58:43 PM 37460 23 D mg/Kg 5 Surr: BFB 109 70-130 D %Rec 5 4/9/2018 4:58:43 PM 37460 EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: TOM Diesel Range Organics (DRO) 7900 490 mg/Kg 50 4/9/2018 5:24:57 PM 37462 Motor Oil Range Organics (MRO) 4300 2400 mg/Kg 50 4/9/2018 5:24:57 PM 37462 Surr: DNOP %Rec 0 70-130 S 50 4/9/2018 5:24:57 PM 37462 **EPA METHOD 8260B: VOLATILES SHORT LIST** Analyst: AG Benzene ND 0.12 D mg/Kg 5 4/9/2018 4:58:43 PM 37460 Toluene ND 0.23 D 5 37460 mg/Kg 4/9/2018 4:58:43 PM mg/Kg Ethylbenzene ND 0.23 D 5 4/9/2018 4:58:43 PM 37460 Xylenes, Total ND 0.46 D mg/Kg 5 4/9/2018 4:58:43 PM 37460 Surr: 4-Bromofluorobenzene 110 70-130 D %Rec 4/9/2018 4:58:43 PM 37460 5

70-130

D

%Rec

5

4/9/2018 4:58:43 PM

37460

88.8

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

Qualifiers:

*

Surr: Toluene-d8

- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded

Value exceeds Maximum Contaminant Level.

- 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 Page 14 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-West 2' Collection Date: 4/2/2018 12:45:00 PM Received Date: 4/4/2018 9:55:00 AM

Lab ID: 1804247-015	Matrix:	SOIL	Received	Received Date: 4/4/2018 9:55:00 AM				
Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch		
EPA METHOD 300.0: ANIONS					Analys	t: MRA		
Chloride	970	30	mg/Kg	20	4/16/2018 12:45:32 PM	/ 37606		
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG		
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	4/10/2018 12:23:01 PN	/ 37460		
Surr: BFB	111	70-130	%Rec	1	4/10/2018 12:23:01 PN	/ 37460		
EPA METHOD 8015M/D: DIESEL R	ANGE ORGANICS	5			Analys	t: TOM		
Diesel Range Organics (DRO)	12	9.1	mg/Kg	1	4/9/2018 6:14:02 PM	37462		
Motor Oil Range Organics (MRO)	ND	45	mg/Kg	1	4/9/2018 6:14:02 PM	37462		
Surr: DNOP	98.8	70-130	%Rec	1	4/9/2018 6:14:02 PM	37462		
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG		
Benzene	ND	0.024	mg/Kg	1	4/10/2018 12:23:01 PN	/ 37460		
Toluene	ND	0.048	mg/Kg	1	4/10/2018 12:23:01 PN	/ 37460		
Ethylbenzene	ND	0.048	mg/Kg	1	4/10/2018 12:23:01 PN	/ 37460		
Xylenes, Total	ND	0.096	mg/Kg	1	4/10/2018 12:23:01 PN	/ 37460		
Surr: 4-Bromofluorobenzene	112	70-130	%Rec	1	4/10/2018 12:23:01 PN	/ 37460		
Surr: Toluene-d8	85.1	70-130	%Rec	1	4/10/2018 12:23:01 PN	/ 37460		

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

- * Value exceeds Maximum Contaminant Level.D Sample Diluted Due to Matrix
- D Sample Diluted Due to MatrixH Holding times for preparation or
- 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 Page 15 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 4/20/2018 Client Sample ID: SB-West //

CLIENT: R.T. Hicks Consultants, LTD			Client Sample	e ID: SB	-West 4'	
Project: Purvis Antelope 001			Collection I	Date: 4/2	2/2018 12:55:00 PM	
Lab ID: 1804247-016	Matrix:	SOIL	Received I	Date: 4/4	/2018 9:55:00 AM	
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analysi	: MRA
Chloride	64	30	mg/Kg	20	4/16/2018 12:57:56 PN	37606
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analyst	: AG
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	4/9/2018 5:44:53 PM	37460
Surr: BFB	119	70-130	%Rec	1	4/9/2018 5:44:53 PM	37460
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANICS	5			Analyst	: том
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	4/9/2018 6:38:32 PM	37462
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	4/9/2018 6:38:32 PM	37462
Surr: DNOP	89.0	70-130	%Rec	1	4/9/2018 6:38:32 PM	37462
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analyst	: AG
Benzene	ND	0.024	mg/Kg	1	4/9/2018 5:44:53 PM	37460
Toluene	ND	0.049	mg/Kg	1	4/9/2018 5:44:53 PM	37460
Ethylbenzene	ND	0.049	mg/Kg	1	4/9/2018 5:44:53 PM	37460
Xylenes, Total	ND	0.098	mg/Kg	1	4/9/2018 5:44:53 PM	37460
Surr: 4-Bromofluorobenzene	121	70-130	%Rec	1	4/9/2018 5:44:53 PM	37460
Surr: Toluene-d8	83.5	70-130	%Rec	1	4/9/2018 5:44:53 PM	37460

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

- * Value exceeds Maximum Contaminant Level. D
- Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 16 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified W

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 4/20/2018

CLIENT: R.T. Hicks Consultants, LTD		(Client Sampl	e ID: SB	-West 6'	
Project: Purvis Antelope 001			Collection I	Date: 4/2	2/2018 1:10:00 PM	
Lab ID: 1804247-017	Matrix:	SOIL	Received 1	Date: 4/4	/2018 9:55:00 AM	
Analyses	Result	PQL Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analys	: MRA
Chloride	ND	30	mg/Kg	20	4/16/2018 1:10:20 PM	37606
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analys	: AG
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	4/9/2018 6:07:56 PM	37460
Surr: BFB	124	70-130	%Rec	1	4/9/2018 6:07:56 PM	37460
EPA METHOD 8015M/D: DIESEL RANGI		;			Analys	t: TOM
Diesel Range Organics (DRO)	ND	9.7	mg/Kg	1	4/9/2018 7:03:14 PM	37462
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	4/9/2018 7:03:14 PM	37462
Surr: DNOP	84.2	70-130	%Rec	1	4/9/2018 7:03:14 PM	37462
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analys	t: AG
Benzene	ND	0.023	mg/Kg	1	4/9/2018 6:07:56 PM	37460
Toluene	ND	0.047	mg/Kg	1	4/9/2018 6:07:56 PM	37460
Ethylbenzene	ND	0.047	mg/Kg	1	4/9/2018 6:07:56 PM	37460
Xylenes, Total	ND	0.093	mg/Kg	1	4/9/2018 6:07:56 PM	37460
Surr: 4-Bromofluorobenzene	125	70-130	%Rec	1	4/9/2018 6:07:56 PM	37460
Surr: Toluene-d8	80.1	70-130	%Rec	1	4/9/2018 6:07:56 PM	37460

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

Qualifiers:	
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- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 17 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 4/20/2018

CLIENT: R.T. Hicks Consultants, LTD			Client Sampl	e ID: SB	-South 0'	
Project: Purvis Antelope 001			Collection I	Date: 4/2	/2018 1:30:00 PM	
Lab ID: 1804247-018	Matrix:	SOIL	Received I	Date: 4/4	/2018 9:55:00 AM	
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analys	t: MRA
Chloride	1200	30	mg/Kg	20	4/16/2018 1:22:45 PM	37606
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analys	t: AG
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	4/9/2018 6:31:01 PM	37460
Surr: BFB	116	70-130	%Rec	1	4/9/2018 6:31:01 PM	37460
EPA METHOD 8015M/D: DIESEL RANGI		6			Analys	t: TOM
Diesel Range Organics (DRO)	1100	99	mg/Kg	10	4/9/2018 7:27:46 PM	37462
Motor Oil Range Organics (MRO)	580	500	mg/Kg	10	4/9/2018 7:27:46 PM	37462
Surr: DNOP	0	70-130	S %Rec	10	4/9/2018 7:27:46 PM	37462
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analys	t: AG
Benzene	ND	0.024	mg/Kg	1	4/9/2018 6:31:01 PM	37460
Toluene	ND	0.047	mg/Kg	1	4/9/2018 6:31:01 PM	37460
Ethylbenzene	ND	0.047	mg/Kg	1	4/9/2018 6:31:01 PM	37460
Xylenes, Total	ND	0.095	mg/Kg	1	4/9/2018 6:31:01 PM	37460
Surr: 4-Bromofluorobenzene	118	70-130	%Rec	1	4/9/2018 6:31:01 PM	37460
Surr: Toluene-d8	75.6	70-130	%Rec	1	4/9/2018 6:31:01 PM	37460

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

- * Value exceeds Maximum Contaminant Level. Sample Diluted Due to Matrix D
- Н
- Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 18 of 27 J
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Purvis Antelope 001

Project:

Client Sample ID: SB-South 2' Collection Date: 4/2/2018 1:50:00 PM

Lab ID: 1804247-019 Matrix: SOIL Received Date: 4/4/2018 9:55:00 AM Analyses Result **PQL** Qual Units **DF** Date Analyzed Batch **EPA METHOD 300.0: ANIONS** Analyst: MRA Chloride 180 30 mg/Kg 4/16/2018 1:59:58 PM 37606 20 **EPA METHOD 8015D MOD: GASOLINE RANGE** Analyst: AG Gasoline Range Organics (GRO) ND mg/Kg 4/10/2018 12:46:09 PM 37460 4.8 1 Surr: BFB 111 70-130 %Rec 1 4/10/2018 12:46:09 PM 37460 EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: TOM Diesel Range Organics (DRO) 66 9.7 mg/Kg 1 4/9/2018 8:16:56 PM 37462 Motor Oil Range Organics (MRO) ND 49 mg/Kg 1 4/9/2018 8:16:56 PM 37462 Surr: DNOP 37462 95.7 70-130 %Rec 1 4/9/2018 8:16:56 PM EPA METHOD 8260B: VOLATILES SHORT LIST Analyst: AG Benzene ND 0.024 mg/Kg 1 4/10/2018 12:46:09 PM 37460 Toluene ND 0.048 4/10/2018 12:46:09 PM 37460 mg/Kg 1 Ethylbenzene ND 0.048 mg/Kg 4/10/2018 12:46:09 PM 37460 1 Xylenes, Total ND 0.097 mg/Kg 1 4/10/2018 12:46:09 PM 37460 Surr: 4-Bromofluorobenzene 112 70-130 %Rec 4/10/2018 12:46:09 PM 37460 1 Surr: Toluene-d8 84.9 70-130 %Rec 1 4/10/2018 12:46:09 PM 37460

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

Qualifiers:

*

- 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

Value exceeds Maximum Contaminant Level.

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 19 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Project: Purvis Antelope 001

Client Sample ID: SB-South 4' Collection Date: 4/2/2018 2:00:00 PM

Lab ID: 1804247-020	Matrix:	Received 1	Received Date: 4/4/2018 9:55:00 AM				
Analyses	Result	Result PQL Qual		DF	Date Analyzed	Batch	
EPA METHOD 300.0: ANIONS					Analys	t: MRA	
Chloride	66	30	mg/Kg	20	4/16/2018 2:12:23 PM	37606	
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analys	t: AG	
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	4/9/2018 7:17:11 PM	37460	
Surr: BFB	111	70-130	%Rec	1	4/9/2018 7:17:11 PM	37460	
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	6			Analys	t: TOM	
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	4/9/2018 8:41:44 PM	37462	
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	4/9/2018 8:41:44 PM	37462	
Surr: DNOP	89.6	70-130	%Rec	1	4/9/2018 8:41:44 PM	37462	
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analys	t: AG	
Benzene	ND	0.024	mg/Kg	1	4/9/2018 7:17:11 PM	37460	
Toluene	ND	0.048	mg/Kg	1	4/9/2018 7:17:11 PM	37460	
Ethylbenzene	ND	0.048	mg/Kg	1	4/9/2018 7:17:11 PM	37460	
Xylenes, Total	ND	0.096	mg/Kg	1	4/9/2018 7:17:11 PM	37460	
Surr: 4-Bromofluorobenzene	112	70-130	%Rec	1	4/9/2018 7:17:11 PM	37460	
Surr: Toluene-d8	84.1	70-130	%Rec	1	4/9/2018 7:17:11 PM	37460	

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

- * 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 Page 20 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 4/20/2018
Client Sample ID: SB-South 6'

CLIENT: R.T. Hicks Consultants, LTD Project: Purvis Antelope 001

1804247-021

Lab ID:

Collection Date: 4/2/2018 2:10:00 PM Received Date: 4/4/2018 9:55:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	130	30	mg/Kg	20	4/16/2018 2:24:48 PM	37606
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analyst	: AG
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	4/10/2018 6:49:28 AM	37463
Surr: BFB	128	70-130	%Rec	1	4/10/2018 6:49:28 AM	37463
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS	5			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	4/9/2018 9:06:07 PM	37471
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	4/9/2018 9:06:07 PM	37471
Surr: DNOP	86.7	70-130	%Rec	1	4/9/2018 9:06:07 PM	37471
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analyst	: AG
Benzene	ND	0.024	mg/Kg	1	4/10/2018 6:49:28 AM	37463
Toluene	ND	0.048	mg/Kg	1	4/10/2018 6:49:28 AM	37463
Ethylbenzene	ND	0.048	mg/Kg	1	4/10/2018 6:49:28 AM	37463
Xylenes, Total	ND	0.097	mg/Kg	1	4/10/2018 6:49:28 AM	37463
Surr: 4-Bromofluorobenzene	129	70-130	%Rec	1	4/10/2018 6:49:28 AM	37463
Surr: Toluene-d8	84.0	70-130	%Rec	1	4/10/2018 6:49:28 AM	37463

Matrix: SOIL

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

- * 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 Page 21 of 27
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Sample ID MB-37540 SampType: mbik TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1633382 Units: mg/Kg Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5 SampType: TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 15 1.5 15.00 97.4 90 110 SeqNo: 1538 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 30	Client: Project:	R.T. Hic Purvis A	cks Consultan Antelope 001	its, LT	Ď							
Client ID: PBS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638382 Units:: mg/Kg Analyte Result POL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chorde ND 1.5 Sample ID LCS-37540 SampType: TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result POL SPK Natue SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 15 1.5 15.00 97.4 90 110 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client 1D: Result POL <th>Sample ID</th> <th>MB-37540</th> <th>SampTyp</th> <th>be: mb</th> <th>olk</th> <th>Tes</th> <th>tCode: El</th> <th>PA Method</th> <th>300.0: Anion</th> <th>S</th> <th></th> <th></th>	Sample ID	MB-37540	SampTyp	be: mb	olk	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638382 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chierde ND 1.5 Qual Chierde ND 1.5 TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37540 RunNo: 50519 Analyte Analyte Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chierde 15 1.5 15.00 97.4 90 110 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chierde ND 1.5 <	Client ID:	PBS	Batch I	D: 37	540	F	RunNo: 50519					
Analyte Result PQL SPK value SPK ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5	Prep Date:	4/11/2018	Analysis Dat	te: 4/	11/2018	S	SeqNo: 1	638382	Units: mg/k	٢g		
Chloride ND 1.5 Sample ID LCS-37540 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result PQL SPK value SPK Kef Val %REC LowLinit HighLinit %RPD RPDLinit Qual Chioride 15 1.5 0 97.4 90 110 9 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions 10 9 Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analyte Result PQL SPK value SPK Value SPK Value 1638884 Units: mg/Kg Analyte Result POL SPK value SPK Value SPK Value SPK Value SPK Value <t< th=""><th>Analyte</th><th></th><th>Result</th><th>PQL</th><th>SPK value</th><th>SPK Ref Val</th><th>%REC</th><th>LowLimit</th><th>HighLimit</th><th>%RPD</th><th>RPDLimit</th><th>Qual</th></t<>	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID LCS-37540 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 15 1.5 15.00 97.4 90 110 10 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND	Chloride		ND	1.5								
Client ID: LCSS Batch ID: 37540 RunNo: 50519 Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chieridie 15 1.5 15.00 0 97.4 90 110 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5 TestCode: EPA Method 300.0: Anions	Sample ID	LCS-37540	SampTyp	be: Ics	;	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/11/2018 Analysis Date: 4/11/2018 SeqNo: 1638383 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 97.4 90 110 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 Sample ID LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg <td< th=""><th>Client ID:</th><th>LCSS</th><th>Batch I</th><th>D: 37</th><th>540</th><th>F</th><th>RunNo: 5</th><th>0519</th><th></th><th></th><th></th><th></th></td<>	Client ID:	LCSS	Batch I	D: 37	540	F	RunNo: 5	0519				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 97.4 90 110 0 10 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 Sample ID LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD <td< th=""><th>Prep Date:</th><th>4/11/2018</th><th>Analysis Dat</th><th>te: 4/</th><th>11/2018</th><th>S</th><th>SeqNo: 1</th><th>638383</th><th>Units: mg/k</th><th>٤g</th><th></th><th></th></td<>	Prep Date:	4/11/2018	Analysis Dat	te: 4/	11/2018	S	SeqNo: 1	638383	Units: mg/k	٤g		
Chloride 15 1.5 15.00 97.4 90 110 Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5 TestCode: EPA Method 300.0: Anions Client ID: LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 15 1.5 15	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID MB-37587 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5	Chloride		15	1.5	15.00	0	97.4	90	110			
Client ID: PBS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5	Sample ID	MB-37587	SampTyp	oe: mb	olk	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638883 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5	Client ID:	PBS	Batch ID: 37587			F	RunNo: 50520					
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride ND 1.5 Sample ID LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chioride 15 1.5 15.00 0 96.7 90 110 100 100 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions 100	Prep Date:	4/12/2018	Analysis Dat	te: 4/	12/2018	S	SeqNo: 1	638883	Units: mg/k	٢g		
Chloride ND 1.5 Sample ID LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 96.7 90 110 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 Sample ID LCS-37606	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID LCS-37587 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 96.7 90 110 0 10 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions 0 0 96.7 90 110 0 0 96.7 90 110 0 0 0 96.7 90 110 0 <td< th=""><th>Chloride</th><th></th><th>ND</th><th>1.5</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	Chloride		ND	1.5								
Client ID: LCSS Batch ID: 37587 RunNo: 50520 Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 96.7 90 110 90 110 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37606 RunNo: 50585 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 90 10 10 10 10 10 10 10 10 10 10 10 10 10 10	Sample ID	LCS-37587	SampTyp	be: Ics	;	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/12/2018 Analysis Date: 4/12/2018 SeqNo: 1638884 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride 15 1.5 15.00 0 96.7 90 110 0 10 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37606 RunNo: 50585 90 10 0 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 SeqNo: 1641438 Units: mg/Kg Sample ID LCS-37606 SampType: ICs TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Ferp Date: 4/13/2018 Analysis Date: <t< th=""><th>Client ID:</th><th>LCSS</th><th>Batch I</th><th>D: 37</th><th>587</th><th>F</th><th>RunNo: 5</th><th>0520</th><th></th><th></th><th></th><th></th></t<>	Client ID:	LCSS	Batch I	D: 37	587	F	RunNo: 5	0520				
AnalyteResultPQLSPK valueSPK Ref Val%RECLowLimitHighLimit%RPDRPDLimitQualChloride151.515.00096.7901100100 <t< th=""><th>Prep Date:</th><th>4/12/2018</th><th>Analysis Dat</th><th>te: 4/</th><th>12/2018</th><th>S</th><th>SeqNo: 1</th><th>638884</th><th>Units: mg/k</th><th>٢g</th><th></th><th></th></t<>	Prep Date:	4/12/2018	Analysis Dat	te: 4/	12/2018	S	SeqNo: 1	638884	Units: mg/k	٢g		
Chloride 15 1.5 15.00 0 96.7 90 110 Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 TestCode: EPA Method 300.0: Anions Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit<	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID MB-37606 SampType: mblk TestCode: EPA Method 300.0: Anions Client ID: PBS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5	Chloride		15	1.5	15.00	0	96.7	90	110			
Client ID: PBS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 TestCode: EPA Method 300.0: Anions Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Frep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Sample ID	MB-37606	SampTyp	be: mb	olk	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641438 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 TestCode: EPA Method 300.0: Anions Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Client ID:	PBS	Batch I	D: 37	606	F	RunNo: 5	0585				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Chloride ND 1.5 TestCode: EPA Method 300.0: Anions Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Prep Date:	4/13/2018	Analysis Dat	te: 4/	16/2018	S	SeqNo: 1	641438	Units: mg/H	٤g		
Chloride ND 1.5 Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID LCS-37606 SampType: Ics TestCode: EPA Method 300.0: Anions Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Chloride		ND	1.5								
Client ID: LCSS Batch ID: 37606 RunNo: 50585 Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Sample ID	LCS-37606	SampTyp	be: Ics	;	Tes	tCode: El	PA Method	300.0: Anion	S		
Prep Date: 4/13/2018 Analysis Date: 4/16/2018 SeqNo: 1641439 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Client ID:	LCSS	Batch I	D: 37	606	F	RunNo: 5	0585				
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual	Prep Date:	4/13/2018	Analysis Dat	te: 4/	16/2018	S	SeqNo: 1	641439	Units: mg/k	٤g		
	Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride 14 1.5 15.00 0 96.4 90 110	Chloride		14	1.5	15.00	0	96.4	90	110			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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Client: Project:	R.T. I Purvi	Hicks Consultants, LTD s Antelope 001)							
Sample ID	MB-37631	SampType: mbl	SampType: mblk TestCode: EPA Method					S		
Client ID:	PBS	Batch ID: 3763	1	R	RunNo: 50	586				
Prep Date:	4/16/2018	Analysis Date: 4/16	/2018	S	SeqNo: 16	641560	Units: mg/K	g		
Analyte		Result PQL S	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		ND 1.5								
Sample ID	LCS-37631	SampType: Ics		Test	tCode: EP	PA Method	300.0: Anion	s		
Client ID:	LCSS	Batch ID: 3763	1	R	RunNo: 50	586				
Prep Date:	4/16/2018	Analysis Date: 4/16	/2018	S	SeqNo: 16	641561	Units: mg/K	g		
Analyte		Result PQL S	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		14 1.5	15.00	0	94.1	90	110			

- * 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 Detection Limit
- W Sample container temperature is out of limit as specified
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Client: Project:	R.T. Hic Purvis A	ks Consulta ntelope 00	ants, LT I	ΓD							
Sample ID Client ID:	MB-37462 PBS	SampT Batch	ype: MI 1D: 37	3LK 462	Tesi	tCode: El	PA Method 0390	8015M/D: Di	esel Range	e Organics	
Prep Date:	4/6/2018	Analysis D	ate: 4	/9/2018	S	SeqNo: 1	633385	Units: mg/k	ίg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	Organics (DRO)	ND	10								
Motor Oil Range	e Organics (MRO)	ND	50								
Surr: DNOP		7.7		10.00		76.8	70	130			
Sample ID	LCS-37462	SampT	ype: LC	s	Test	tCode: El	PA Method	8015M/D: Di	esel Range	e Organics	
Client ID:	LCSS	Batch	n ID: 37	462	R	RunNo: 5	0390				
Prep Date:	4/6/2018	Analysis D	ate: 4	9/2018	S	SeqNo: 1	633403	Units: mg/H	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	rganics (DRO)	48	10	50.00	0	95.3	70	130			
Surr: DNOP		3.7		5.000		74.3	70	130			
Sample ID	MB-37471	SampT	уре: М	BLK	Test	tCode: El	PA Method	8015M/D: Di	esel Range	e Organics	
Client ID:	PBS	Batch	n ID: 37	471	R	RunNo: 5	0391				
Prep Date:	4/6/2018	Analysis D	ate: 4	/9/2018	S	SeqNo: 1	633657	Units: mg/ #	٤g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range C	rganics (DRO)										
	igunios (Diro)	ND	10								
Motor Oil Range	e Organics (MRO)	ND ND	10 50								
Motor Oil Range Surr: DNOP	e Organics (MRO)	ND ND 9.9	10 50	10.00		98.9	70	130			
Motor Oil Range Surr: DNOP Sample ID	e Organics (MRO)	ND ND 9.9 SampT	10 50 ype: LC	10.00	Tesi	98.9 tCode: El	70 PA Method	130 8015M/D: Di	esel Range	e Organics	
Motor Oil Range Surr: DNOP Sample ID Client ID:	LCS-37471	ND ND 9.9 SampT Batch	10 50 ype: LC	10.00 :S 471	Tesi	98.9 tCode: El	70 PA Method 0391	130 8015M/D: Die	esel Rango	e Organics	
Motor Oil Range Surr: DNOP Sample ID Client ID: Prep Date:	LCS-37471 LCSS 4/6/2018	ND ND 9.9 SampT Batch Analysis D	10 50 ype: LC 1D: 37 ate: 4	10.00 25 471 /9/2018	Tesi R S	98.9 tCode: El tunNo: 5 SeqNo: 1	70 PA Method 0391 633785	130 8015M/D: Di Units: mg/F	esel Rango	e Organics	
Motor Oil Range Surr: DNOP Sample ID Client ID: Prep Date: Analyte	LCS-37471 LCSS 4/6/2018	ND ND 9.9 SampT Batch Analysis D Result	10 50 ype: LC 1 ID: 37 ate: 4 PQL	10.00 :S 471 /9/2018 SPK value	Test R S SPK Ref Val	98.9 tCode: El tunNo: 5 SeqNo: 1 %REC	70 PA Method 0391 633785 LowLimit	130 8015M/D: Di Units: mg/F HighLimit	esel Rango Kg %RPD	e Organics RPDLimit	Qual
Motor Oil Range Surr: DNOP Sample ID Client ID: Prep Date: Analyte Diesel Range C	LCS-37471 LCSS 4/6/2018	ND ND 9.9 SampT Batch Analysis D Result 46	10 50 ype: LC 1D: 37 ate: 4, PQL 10	10.00 25 471 /9/2018 SPK value 50.00	Tesi R S SPK Ref Val 0	98.9 tCode: El RunNo: 5 GeqNo: 10 %REC 91.6	70 PA Method 0391 633785 LowLimit 70	130 8015M/D: Di Units: mg/H HighLimit 130	esel Rango (g %RPD	e Organics RPDLimit	Qual

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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WO#:	1804247
	20-Apr-18

Project: Purvis Antelope 001 Sample ID Ics-37460 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37460 RunNo: 50421 Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634694 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 108 80 120 Surr: Toluene-d8 0.44 0.5000 102 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC BatchQC BatchQ 57463<
Sample ID Ics-37460 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37460 RunNo: 50421 Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634694 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 106 80 120 Kylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List
Sample ID Ics-37460 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: Batch QC Batch ID: 37460 RunNo: 50421 Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634694 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Kylenes, Total 3.2 0.10 3.000 0 108 80 120 Sur: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Sur: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short
Client ID: Batch QC Batch ID: 37460 RunNo: 50421 Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634694 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List RunNo: 50421
Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634694 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List
Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List
Benzene 0.94 0.025 1.000 0 94.3 80 120 Toluene 0.98 0.050 1.000 0 97.9 80 120 Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37463 RunNo: 50421
Toluene 0.98 0.050 1.000 0 97.9 80 120 Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37463 BurNic: 50421
Ethylbenzene 1.1 0.050 1.000 0 106 80 120 Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37463 BurNic: 50421
Xylenes, Total 3.2 0.10 3.000 0 108 80 120 Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC Batch ID: 37463 BunNo: 50421
Surr: 4-Bromofluorobenzene 0.51 0.5000 102 70 130 Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: BatchQC BatchQC BatchQC BatchQC BatchQC
Surr: Toluene-d8 0.44 0.5000 88.2 70 130 Sample ID Ics-37463 SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: Batch ID: 37463 BunNo: 50421
Sample ID Ics-37463 SampType: ICS4 TestCode: EPA Method 8260B: Volatiles Short List Client ID: Batch ID: 37463 BunNo: 50421
Client ID: BatchOC Batch ID: 37463 RunNo: 50421
Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634695 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 92.8 80 120
Toluene 0.99 0.050 1.000 0 98.6 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 0.52 0.5000 105 70 130
Surr: Toluene-d8 0.45 0.5000 89.6 70 130
Sample ID mb-37460 SampType: MBLK TestCode: EPA Method 8260B: Volatiles Short List
Client ID: PBS Batch ID: 37460 RunNo: 50421
Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634696 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 0.61 0.5000 122 70 130
Surr: Toluene-d8 0.42 0.5000 83.6 70 130
Sample ID mb-37463 SampType: MBLK TestCode: EPA Method 8260B: Volatiles Short List
Client ID: PBS Batch ID: 37463 RunNo: 50421
Prep Date: 4/6/2018 Analysis Date: 4/9/2018 SeqNo: 1634697 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 Detection Limit
- W Sample container temperature is out of limit as specified

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Client:	R.T. Hicks Consultants	, LTD							
Project:	Purvis Antelope 001								
Sample ID mb-374	63 SampType	MBLK	Test	Code: EF	PA Method	8260B: Volat	tiles Short	List	
Client ID: PBS	Batch ID:	37463	R	unNo: 50	0421				
Prep Date: 4/6/20	Analysis Date:	4/9/2018	S	eqNo: 10	634697	Units: mg/K	٢g		
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorober	izene 0.60	0.5000		119	70	130			
Surr: Toluene-d8	0.42	0.5000		83.6	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 Detection Limit
- W Sample container temperature is out of limit as specified

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WO#: 1804247 20-Apr-18

Client: Project:	R.T. Hi Purvis A	cks Consulta Antelope 002	ants, L7 1	ſD							
Sample ID	lcs-37460	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	n ID: 37	460	F	RunNo: 5	0421				
Prep Date:	4/6/2018	Analysis D	ate: 4	/9/2018	S	SeqNo: 1	634631	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	26	5.0	25.00	0	102	70	130			
Surr: BFB		530		500.0		106	70	130			
Sample ID	lcs-37463	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	LCSS	Batch	n ID: 37	463	F	RunNo: 5	0421				
Prep Date:	4/6/2018	Analysis D	ate: 4	/9/2018	S	SeqNo: 1	634632	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	24	5.0	25.00	0	96.2	70	130			
Surr: BFB		530		500.0		106	70	130			
Sample ID	mb-37460	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	n ID: 37	460	F	RunNo: 5	0421				
Prep Date:	4/6/2018	Analysis D	ate: 4	/9/2018	S	SeqNo: 1	634633	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	je Organics (GRO)	ND	5.0								
Surr: BFB		600		500.0		121	70	130			
Sample ID	mb-37463	SampT	ype: MI	BLK	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID:	PBS	Batch	n ID: 37	463	F	RunNo: 5	0421				
Prep Date:	4/6/2018	Analysis D	ate: 4	9/2018	S	SeqNo: 1	634634	Units: mg/ł	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Rang	e Organics (GRO)	ND	5.0								
Surr: BFB		590		500.0		118	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Н 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
- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

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HALL ENVIRONMENT ANALYSIS LABORATORY	Hall Environn AL TEL: 505-345 Website: w	nental Analysis Labora 4901 Hawkins Albuquerque, NM 87 -3975 FAX: 505-345-4 www.hallenvironmental.	tory NE 109 Sam 107 com	ple Log-In Check Li	st
Client Name: RT HICKS	Work Order Nu	mber: 1804247		RcptNo: 1	
Received By: Anne Tho	rne 4/4/2018 9:55:00	AM	Anne Arm		
Completed By: Anne Tho Reviewed By: DDS	rne 4/5/2018 12:28:1 4/5/18	7 PM	Arme Arm		
MW 4/5/18 <u>Chain of Custody</u>	>				
1. Is Chain of Custody comp	lete?	Yes 🗹	No	Not Present	
2. How was the sample deliv	ered?	Client			
Log In 3. Was an attempt made to c	cool the samples?	Yes 🔽	No		
4. Were all samples received	at a temperature of >0° C to 6.0°C	Yes 🔽	Νο		
5. Sample(s) in proper contain	iner(s)?	Yes 🔽	No 🗌		
6. Sufficient sample volume f	or 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 heads	pace?	Yes 🗌	No 🗌	No VOA Vials 🗹	
10. Were any sample containe	ers received broken?	Yes 🗖	No 🗹	· · ·	
11. Does paperwork match bot (Note discrepancies on cha	tle labels? iin of custody)	Yes 🔽	No 🗌	# of preserved bottles checked for pH:	oted)
12. Are matrices correctly iden	tified on Chain of Custody?	Yes 🔽	No 🗌	Adjusteda	
13. Is it clear what analyses we	ere requested?	Yes 🔽	No 🗌	110	
14. Were all holding times able (If no, notify customer for a	to be met? uthorization.)	Yes 🗹	No 🗌	Checked by:	-
Special Handling (if app	licable)				
15. Was client notified of all di	screpancies with this order?	Yes	No 🗌	NA 🗹	
Person Notified:	Dat	e			
By Whom:	Via:	🗌 eMail [] Ph	one 🗌 Fax	In Person	
Regarding:					
Client Instructions:		······································			
16. Additional remarks:					
17. <u>Cooler Information</u> Cooler No Temp ⁰C 1 1.0	ConditionSeal IntactSeal NoGoodNot Present	Seal Date 5	Signed By		

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APPENDIX E

STATE OF NEW MEXICO OIL CONSERVATION COMMISSION

2018 JAN -3 P GASE NO. 15959

IN THE MATTER OF THE:

APPLICATION OF THE NEW MEXICO OIL CONSERVATION DIVISION TO REPEAL AND REPLACE RULE 19.15.29 NMAC; STATEWIDE.

APPLICATION

The New Mexico Oil Conservation Division hereby applies to the Oil Conservation Commission to rename and repeal and replace 19.15.29 NMAC. The proposed name change from "Release Notification" to "Releases" and the purpose of the repealed and replaced rule is to refine existing terms, define new terms, and clarify the process for responding to releases of oil, gases, produced water, condensate, or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixtures of those chemicals or contaminants that occur during drilling, producing, storing, disposing, injecting, transporting, servicing, or processing and to establish reporting, site assessment, remediation, closure, variance, and enforcement procedures.

A draft of the proposed amendments to 19.15.29 NMAC is attached hereto as *Exhibit A*. A proposed legal notice for publication is attached hereto as *Exhibit B*. A copy of the New Mexico Commission of Public Records approval of the name change is attached hereto as *Exhibit C*.

Respectfully submitted,

Keith Herrmann Assistant General Counsel New Mexico Energy Minerals and Natural Resources Department 1220 S. St. Francis Drive Santa Fe, NM 87505 (505) 476-3463 Keith.Herrmann@state.nm.us

Exhibit A – Proposed Rule 19.15.29 NMAC:
TITLE 19NATURAL RESOURCES AND WILDLIFECHAPTER 15OIL AND GASPART 29RELEASES

19.15.29.1 ISSUING AGENCY: Oil Conservation Commission. [19.15.29.1 NMAC – Rp, 19.15.29.1 NMAC, XX/XX/201?]

19.15.29.2 SCOPE: 19.15.29 NMAC applies to persons engaged in oil and gas development and production within New Mexico. [19.15.29.2 NMAC - Rp, 19.15.29.2 NMAC, XX/XX/201?]

19.15.29.3 STATUTORY AUTHORITY: 19.15.29 NMAC is adopted pursuant to the Oil and Gas Act, Section 70-2-11 NMSA 1978 (1977) and Section 70-2-12 NMSA 1978 (2004). [19.15.29.3 NMAC – Rp, 19.15.29.3 NMAC, XX/XX/201?]

19.15.29.4 DURATION: Permanent. [19.15.29.4 NMAC - Rp, 19.15.29.4 NMAC, XX/XX/201?]

19.15.29.5 EFFECTIVE DATE: _____, unless a later date is cited at the end of a section. [19.15.29.5 NMAC – Rp, 19.15.29.5 NMAC, XX/XX/201?]

19.15.29.6 OBJECTIVE: To require persons who operate or control the release or the location of the release to report the unauthorized release of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixtures of those chemicals or contaminants that occur during drilling, producing, storing, disposing, injecting, transporting, servicing or processing and to establish reporting, site assessment, remediation, closure, variance and enforcement procedures. [19.15.29.6 NMAC – Rp, 19.15.29.6 NMAC, XX/XX/201?]

19.15.29.7 DEFINITIONS:

(2)

Α.

"Major release" means:

- (1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;
 - an unauthorized release of a volume that:
 - (a) results in a fire or a fire causes;
 - (b) may with reasonable probability reach a watercourse;
 - (c) may with reasonable probability endanger public health; or
 - (d) substantially damages property or the environment;
- (3) an unauthorized release of gases exceeding 500 MCF; or

a release of a volume that may with reasonable probability be detrimental to fresh water. **B.** "Minor release" means an unauthorized release, which is not a major release and is a volume

greater than five barrels but less than 25 barrels; or for gases, greater than 50 MCF but less than 500 MCF. C. "Responsible Party" means the operator, as defined in 19.15.2 NMAC. Notwithstanding the foregoing the division in its sole discretion may also consider a person coupling the release or controlling the

foregoing, the division, in its sole discretion, may also consider a person causing the release, or controlling the location of the release as the responsible party.

[19.15.29.7 NMAC - Rp, 19.15.29.7 NMAC, XX/XX/201?]

19.15.29.8 RELEASE NOTIFICATION:

A. The responsible party must notify the division on form C-141 of a major or minor release occurring during the drilling, producing, storing, disposing, injecting, transporting, servicing or processing of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oil field related chemicals, contaminants or mixture of the chemicals or contaminants, in accordance with the requirements of 19.15.29 NMAC.

B. If state, federal or tribal lands are involved, the responsible party must send a copy of the form C-141 to the appropriate land managing agency including the State Land Office, the Bureau of Land Management or tribal authority, as applicable.

[19.15.29.8 NMAC – Rp, 19.15.29.8 NMAC, XX/XX/201?]

19.15.29.9 RELEASE NOTIFICATION REPORTING REQUIREMENTS: The responsible party must notify the division of releases in 19.15.29.8 NMAC as follows.

A. Reporting a Major Release.

(1) The responsible party must notify the division's environmental bureau chief and the appropriate division district office verbally or by e-mail within 24 hours of discovery of the release. The notification must provide the information required on form C-141.

(2) The responsible party must also notify the appropriate division district office in writing within 15 days of discovering the release by completing and filing form C-141. The written notification must verify the prior verbal or e-mail notification and include additions or corrections to the information contained in the prior verbal or e-mail notification.

B. Reporting a Minor Release. The responsible party must notify the appropriate division district office in writing within 15 days of discovery of the release by completing and filing form C-141. [19.15.29.9 NMAC – Rp, 19.15.29.9 NMAC, XX/XX/201?]

19.15.29.10 INITIAL RESPONSE: The responsible party must take the following immediate actions unless the actions could create a safety hazard that would result in injury.

A. Source Elimination and Site Security. The responsible party must take appropriate measures to stop the source of the release and limit access to the site as necessary to protect human health and the environment.

B. Containment. Once the site is secure, the responsible party must contain the materials released by construction of berms or dikes, the use of absorbent pads or other containment actions to limit the area affected by the release and prevent potential fresh water contaminants from migrating to watercourses or areas which could pose a threat to public health and environment. The responsible party must monitor the containment to ensure that it is effectively containing the material and not being degraded by weather or onsite activity.

C. Site Stabilization. After containment, the responsible party must recover any free liquids and recoverable product that can be physically removed from the surface within the containment area. The responsible party must deliver material removed from the site to a division-approved facility. [19.15.29.10 NMAC - Rp, 19.15.29.10 NMAC, XX/XX/201?]

19.15.29.11 SITE ASSESSMENT/CHARACTERIZATION: After the responsible party has removed all free liquids and recoverable products, the responsible party must assess soils both vertically and horizontally for potential environmental impacts from the release.

A. Characterization Requirements: The responsible party must submit information characterizing the release to the appropriate division district office within 90 days of discovery of the release or characterize the site by submitting a final closure report within 90 days of discovery of the release in accordance with 19.15.29 NMAC. The responsible party may seek an extension of time to submit characterization information for good cause as determined by the division. The responsible party must submit the following information to the division.

(1) Site Map. The responsible party must provide a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.

(2) Depth to Ground Water. The responsible party must determine the depth to ground water where the release occurred. If the exact depth to ground water is unknown, the responsible party must provide a reasonable determination of probable ground water depth using data generated by numeric models, cathodic well lithology, water well data, published information or other tools as approved by the appropriate division district office. If the responsible party uses water well data, the responsible party must provide all pertinent well information.

(3) Wellhead Protection Area. The responsible party must determine the horizontal distance from all known water sources within a half mile of the release including private and domestic water sources. Water sources are wells, springs or other sources of fresh water extraction. Private and domestic water sources are those water sources used by less than five households for domestic or stock purposes.

(4) Distance to Nearest Significant Watercourse. The responsible party must determine the horizontal distance to the nearest significant watercourse as defined in Subsection P of 19.15.17.7 NMAC.

(5) Soil/Waste Characteristics. The responsible party must determine the lateral and vertical extents of soil contamination, as follows.

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(a) If the release occurred within a lined containment area, the responsible party must demonstrate liner integrity after affected material is removed and the affected area of the liner is exposed and provide:

(i) certification on form C-141 that the responsible party has visually inspected the liner where the release occurred and the liner remains intact and had the ability to contain the leak in question; and

(ii) at least two business days' notice to the appropriate division district office before conducting the liner inspection.

(b) If the responsible party is unable to demonstrate liner integrity or the release occurred outside of a lined containment area, the responsible party must delineate the release horizontally and vertically using Table I constituents or other constituents as appropriate for the type of the release. The operator may use the following soil sampling methods for characterization.

(i) NRCS Field Guide;

- (ii) EPA SW-846;
- (iii) ASTM Method 4547;
- (iv) EPA 600; or
- (v) or other division-approved methods.

(c) In addition to Subparagraph (b) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, if the release occurred outside of a lined containment area and is in an area where depth to ground water is greater than 50 feet and less than or equal to 100 feet, the responsible party must delineate the vertical extent of the release to the greater of 600 mg/kg chloride or background chloride level, if:

(i) the release contains produced water that exceeds 10,000 mg/l of chloride (if the responsible party contends the fluid is less than 10,000 mg/l, the responsible party must provide current sample results to the division); and

(ii) the release is of an unknown quantity or results in greater than 200 barrels of unrecovered produced water.

(d) If the conditions are met in Subparagraph (c) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC, the responsible party must submit at least two soil samples for laboratory analysis from each borehole or sample point (highest observed contamination and deepest depth investigated). Field screening and assessment techniques are acceptable (headspace, titration, electrical conductivity [include algorithm for validation purposes], electromagnetics, etc.), but the sampling procedures must be clearly defined. The responsible party must submit copies of field notes attributable to field sampling and provide copies of the actual laboratory results including chain of custody documentation.

B. Unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

C. If the division determines that more information is needed to understand the character of the release and its potential impact on fresh water, public health and the environment, the division may request the responsible party submit additional information. Should the division request additional information, it must do so in writing to the responsible party within 30 days from receipt of the characterization report or remediation plan with what specific information the division is requesting and reasons why the additional information is needed. The responsible party has 14 days to respond to a written request for additional information. If the responsible party disagrees with the request for additional information, it may consult with the division, or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the issuance of the conditions.

19.15.29.12 REMEDIATION AND CLOSURE:

A. The responsible party must remediate all releases regardless of volume.

B. The responsible party must complete division-approved remediation for releases that endanger public health or the environment within 90 days of division approval of a remediation plan or with an abatement plan the responsible party submitted to the division in accordance with 19.15.30 NMAC. The responsible party may request an extension of time to remediate upon a showing of good cause as determined by the division. If the director determines that the release has caused water pollution in excess of the standards and requirements of 19.15.30 NMAC, the director may notify the responsible party that an abatement plan may be required pursuant to 19.15.30 NMAC.

(1) **Remediation Plan Requirements.** The responsible party must submit a detailed description of proposed remediation measures in accordance with the findings of the site assessment/characterization plan that includes:

- **(a)** delineation results, including laboratory analysis;
- a scaled sitemap showing release area with horizontal and vertical delineation **(b)**

300 feet of any continuously flowing watercourse or any other

within 300 feet from an occupied permanent residence, school, hospital,

200 feet of any lakebed, sinkhole or playa lake (measured from the

points:

- estimated volume of impacted material to be remediated; (c)
- proposed remediation technique; and (d)
- proposed timeline for remediation activities. (e)

(2) The responsible party shall restore the impacted surface area of a release occurring on a lined, bermed or otherwise contained exploration, development, production or storage site to the condition that existed prior to the release. Restoration of the site must include, but is not limited to, removal of materials the release contaminated and replacement with clean, uncontaminated materials. The responsible party must place the replacement materials to the near original relative positions and contour the replacement materials so as to achieve erosion control, long-term stability and preservation of surface water.

The responsible party shall remediate the impacted surface area of a release not occurring (3) on a lined, bermed or otherwise contained exploration, development, production or storage site to meet the standards of Table I of 19.15.29.12 NMAC and contain a minimum of four feet of non-waste material containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0. The soil cover must include a top layer which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

If a release occurs within the following areas, the responsible party must treat the release (4) as if it occurred less than 50 feet to ground water in Table I of 19.15.29.12 NMAC:

(a) within

(i)

(ii)

	• ~				
S121	nifica	ant w	aterco	ourse.	or

ordinary high-water mark); (b)

institution or church;

within

(c)

(i) 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or

(ii) 1000 feet of any fresh water well or spring;

(d) within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves;

- within 100 feet of a wetland; (e)
- within the area overlying a subsurface mine; **(f)**
- within an unstable area; or (g)
- (h) within a 100-year floodplain.

В. The division has 30 days from receipt of the proposed remediation plan to review and approve, approve with conditions, or deny the remediation plan. If 30 days have lapsed without response from the division, then the plan is deemed denied and the responsible party may file an application for a hearing pursuant to 19.15.4 NMAC within 30 days. If the responsible party disagrees with any conditions of approval or denial of the plan, it may consult with the division or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the denial or issuance of the conditions. С.

Closure Requirements.

(1) The responsible party must test the remediated areas for contamination with representative five-point composite samples and individual grab samples from any wet or discolored areas. The samples must be analyzed for the constituents listed in Table I of 19.15.29.12 NMAC.

(a) The responsible party must verbally notify the appropriate division district office two business days prior to conducting final sampling. If the division district office does not respond to the notice within the two business days, the responsible party may proceed with final sampling. The responsible party may request a variance from this requirement upon a showing of good cause as determined by the division.

4

(b) There must be separate representative wall and base 5-point composite samples to show horizontal and vertical remediation. Each composite sample must not be representative of more than 200 ft^2 . The division may add additional sampling requirements dependent on the material released and any risks to human health or the environment.

(c) The responsible party may submit an alternative sampling plan for the division's review and approval. If a division inspector is witnessing the samples, the division inspector is authorized to verbally approve an alternative sampling plan based on site observations.

(2) If all composite and grab sample concentrations are less than or equal to the parameters listed in Table I or any conditions of approval, then the responsible party may proceed to backfill any excavated areas.

D. Closure Reporting.

(1) The responsible party must submit to the division a closure report on form C-141, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The responsible party must certify that all information in the closure report and attachments is correct and that the responsible party has complied with all applicable closure requirements and conditions specified in division rules or directives. The responsible party must submit closure report along with form C-141 to the division within 90 days of the remediation plan approval. The responsible party may apply for additional time to submit the final closure report upon a showing of good cause as determined by the division. The final report must include:

- (a) a scaled site and sampling diagram;
- (b) photographs of the remediated site prior to backfill;
- (c) laboratory analyses of final sampling; and
- (d) a description of all remedial activities.

(2) The division district office has 60 days to review and approve or deny the closure report. If the responsible party disagrees with denial of the closure report, it may consult with the division or file an application for hearing pursuant to 19.15.4 NMAC within 30 days of the denial.

		Table I	
	Closure Criteria fo	or Soils Impacted by a Release	
Depth below bottom of release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
\leq 50 feet	Chloride***	EPA 300.0	600 mg/kg
	ТРН	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0	10,000 mg/kg
	ТРН	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
•	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
> 100 feet	Chloride***	EPA 300.0	20,000 mg/kg
	ТРН	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg

BTEX ·	EPA SW-846 Method 8021B or 8260B	50 mg/kg
Benzene	EPA SW-846 Method	10 mg/kg

*Or other test methods approved by the division.

**Numerical limits or natural background level, whichever is greater.

***This applies to releases of produced water or other fluids which may contain chloride.

[19.15.29.12 NMAC – N, XX/XX/201?]

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19.15.29.13 RESTORATION, RECLAMATION AND RE-VEGETATION:

A. The responsible party must substantially restore the impacted surface areas to the condition that existed prior to the release. Restoration of the site must include the replacement of removed material and must be replaced to the near original relative positions and contoured to achieve erosion control, long-term stability and preservation of surface water flow patterns.

B. Areas reasonably needed for production operations or for subsequent drilling operations must be compacted, covered, paved or otherwise stabilized and maintained in such a way as to minimize dust and erosion to the extent practical.

C. The responsible party must construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material.

D. Reclamation of Areas No Longer in Use. The responsible party shall reclaim all areas disturbed by the remediation and closure, except areas reasonably needed for production operations or for subsequent drilling operations, as early and as nearly as practical to their original condition or their final land use and maintain those areas to control dust and minimize erosion to the extent practical.

(1) The responsible party must reseed disturbed area in the first favorable growing season following closure of the site.

(2) The division will consider reclamation of all disturbed areas complete when uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds.

(3) The responsible party must notify the division when reclamation and re-vegetation are complete.

E. The surface restoration, reclamation and re-vegetation obligations imposed by federal, state agencies or tribes on lands managed or owned by those agencies supersede these provisions and govern the obligations of any responsible party subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

[19.15.29.13 NMAC – N, XX/XX/201?]

19.15.29.14 VARIANCES:

A. A responsible party may file a written request for a variance from any requirement of 19.15.29 NMAC with the appropriate division district office. The variance request must include:

(1) a detailed statement explaining the need for a variance; and

(2) a detailed written demonstration that the variance will provide equal or better protection of fresh water, public health and the environment.

B. The division district office must approve or deny the variance in writing within 60 days of receipt. If the division district office denies the variance, it must provide the responsible party with the reasons for denial.

C. If the division district office does not approve or deny a request for variance from the requirements of this rule within 60 days, of the date of the request for variance is received by the division district office, then the plan is deemed denied and the responsible party may file an application for a hearing pursuant to 19.15.4 NMAC within 30 days of the denial.

D. If the responsible party requests a hearing pursuant to 19.15.4 NMAC within 30 days after receipt of notice, the division must set the matter for hearing with notice to the responsible and appropriate division district office.

E. In addition to the notice provisions in 19.15.4 NMAC, the responsible party must provide notice of the hearing on the request for variance to the surface owner of the site by certified mail, return receipt requested, at least 20 days prior to the date of the hearing.

F. Variances must receive division approval prior to implementation. [19.15.29.14 NMAC – N, XX/XX/201?]

19.15.29 NMAC

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19.15.29.15 ENFORCEMENT:

A. The responsible party must comply with all the requirements of 19.15.29 NMAC. The division may take enforcement action against any responsible party who does not comply with 19.15.29 NMAC.

B. A responsible party may enter an agreed compliance order with the division for any violation of 19.15.29 NMAC, except for 19.15.29.9 NMAC. An agreed compliance order may be entered prior to or after the filing of an application by the division or any other party for an administrative compliance proceeding. Any administrative compliance order will have the same force and effect as a compliance order issued after an adjudicatory hearing.

C. The director or the director's designee may deny a permit to drill, deepen or plug back any application if the responsible party is not in compliance with a court order, agreed compliance order or administrative compliance order arising from 19.15.29 NMAC.

D. If the division or other party files an administrative enforcement application, the provisions of 19.15.4 NMAC apply to the enforcement proceeding, unless altered or amended by 19.15.5.10 NMAC or 19.15.29 NMAC.

[19.15.29.15 NMAC - N, XX/XX/201?]

19.15.29.16 TRANSITIONAL PROVISIONS:

A. Responsible parties with current ongoing corrective actions/remediation with approved plans and timelines as of (effective date of rule) do not have to submit revised plans.

B. Responsible parties with ongoing corrective actions/remediation without approved timelines or plans as of ______ (effective date of rule) must submit a characterization plan or corrective action/remediation plan with proposed timeframes within 90 days of ______ (effective date of rule).

[19.15.29.16 NMAC - N, XX/XX/201?]





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

6/12/2013

Office of the State Engineer, District II 1900 W 2nd St. Roswell, NM 88201

Hand-delivered to the District II Office of the State Engineer on the date of this letter.

RE: Drilling and Abandonment of L-13339-POD1

To whom it may concern:

Atkins Engineering Associates, Inc. (AEA) has completed the drilling and the plugging and abandonment of exploratory well L-13339-POD1.

Attached please find the well record and the plugging record.

If you have any questions, please contact me at (575)624-2420 or chris@atkinseng.com

Sincerely,

Justin Noles

Enclosures: well record (3), Plugging Record (3)

TIN JUN 13'A NGINEER OFFICE لب $\underline{\omega}$



PLUGGING RECORD



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NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State E	ngineer Well Number: L-13339		
Well o	wner: Purvis Operating Company	Phone No.:	432-682-7346
Mailin	address: 3101 N PECOS		
City:	Midland	State: TEXAS	Zip code: 79705
			· ·
<u>II. WI</u>	ELL PLUGGING INFORMATION:		
1)	Name of well drilling company that plu	gged well: Atkins Engineering Associa	ates, Inc.
2)	New Mexico Well Driller License No.:	1249 E	Expiration Date:
3)	Well plugging activities were supervise	d by the following well driller(s)/rig supervi	isor(s): Chris Phillips
4)	Date well plugging began: 6-4-2013	Date well plugging conclu	uded: 6-4-2013
5)	GPS Well Location: Latitude: <u>33</u> Longitude: <u>1</u>	B deg, 2 min, 8.77 103 deg, 26 min, 28.56	7 sec sec, WGS 84
6)	Depth of well confirmed at initiation of by the following manner: Weighted Tape/ Av	Plugging as: <u>21</u> ft below ground le	evel (bgl),
7)	Static water level measured at initiation	of plugging: <u>NA</u> ft bgl	
8)	Date well plugging plan of operations w	was approved by the State Engineer: $\frac{5/30/2}{2}$	2013
9)	Were all plugging activities consistent v differences between the approved plugg	with an approved plugging plan? YES ging plan and the well as it was plugged (atta	If not, please describe ach additional pages as needed):
			N N
			w z
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			្ល <u>ក</u> ្តី

Version: September 8, 2009 Page 1 of 2

Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with 10) horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

Depth (ft bgl)	Plugging <u>Material Used</u> (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement <u>Method</u> (tremie pipe, other)	<u>Comments</u> ("casing perforated first", "open annular space also plugged", etc.)
	Baroid Hole Plug	Approx. 15 gallons (3 bags)	30.35	Through HSA	landed through HSA some sluff when removing augers
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 10					
					STAT Ros
15	back fill				JUN 131A
20 21 T.D					8: 33
		MULTIPLY E cubic feet x 7.4 cubic yards x 201.5	IY AND OBTAIN 805 = gallons 7 = gallons		

For each interval plugged, describe within the following columns:

III. SIGNATURE:

I, Jackie D. Atkins

_____, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

schop. Jet Signature of Well Driller

6/12/2053 Date Date

Version: September 8, 2009 Page 2 of 2



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

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000	Purvis	Operati	ng Company					432-682-	7346			
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O B	DRILLING	FLUID:				VES - SPECIF	n Nor	ne				
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FOR OSE INTERNAL USE		WELL RECORD & LOG (Version 6/9/08)
FILE NUMBER L-13339	POD NUMBER	TRN NUMBER 528530
LOCATION EXD	155.35E.7.2	PAGE 1 OF 2

MP	TYPE O	F PUMP:	SUBMER	RSIBLE E	☐ JET ☐ CYLINDER	□ NO PUMP – WELL NOT EQUIPPED □ OTHER – SPECIFY: NA	20 722307 1997 - 20 72 1992 - 2019 1993 - 2019 1993 - 2019 1994 - 2019 1994 - 2019 1994 - 2019 1994 - 2019 1994	14.3************************************	
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	2	10	8		Caliche g	rayish brown, with some silt & very fir	e grain sand.	T YES	☑ NO
	10	11	1			Silt and light grayish brown Caliche) .	☐ YES	Ø NO
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3									
								☐ YES	D NO
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FOR OSE INTERNAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER 1- 13339	POD NUMBER	TRN NUMBER 52	8530
LOCATION Expl	155.35E.7.	223	PAGE 2 OF 2



Attachment G

Standard Operating Procedures

- PID Soil Screening
- Chloride Titration

Photo-Ionization Detector (PID) Standard Operating Procedures

Headspace analysis procedures should be conducted according to NMOCD approved industry standards or other NMOCD-approved procedures. Accepted NMOCD procedures are as follows:

- a) Fill a 0.5 liter or larger jar half full of sample and seal the top tightly with aluminum foil or fill a one quart zip-lock bag one-half full of sample and seal the top of the bag leaving the remainder of the bag filled with air.
- b) Ensure that the sample temperature is between 15 to 25 degrees Celsius (59-77 degrees Fahrenheit).
- c) Allow aromatic hydrocarbon vapors to develop within the headspace of the sample jar or bag for 5 to 10 minutes. During this period, the sample jar should be shaken vigorously for 1 minute or the contents of the bag should be gently massaged to break up soil clods.
- d) If using a jar, pierce the aluminum foil seal with the probe of either a PID or FID organic vapor meter (OVM), and then record the highest (peak) measurement. If using a bag, carefully open one end of the bag and insert the probe of the OVM into the bag and re-seal the bag around the probe as much as possible to prevent vapors from escaping. Record the peak measurement. The OVM must be calibrated to assume a benzene response factor.

FIELD PROCEDURE Chloride Titration Using 0.282 Normal Silver Nitrate Solution

1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil and other solids (e.g. drilling waste).

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

- 3.1 Collect at least 80 grams of soil from the sample collection point. Take care to ensure that the sample is representative of the general area of concern to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area.
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a <u>minimum</u> 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water or distilled water to the soil sample and shake or agitate for 20 seconds.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.
- 4.4 Carefully pour the free liquid extract from the sample, through a paper filter if necessary, into a clean plastic cup.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.

- 5.2 Add 2-3 drops potassium chromate (K₂CrO₄) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H₂O₂) to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

<u>.282 X 35,450 X ml AgNO3</u>	Х	grams of water in mixture
ml water extract		grams of soil in mixture

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on a field form.

Additional Notes

- 1) Make sure the scale is weighing in grams.
- 2) "Zero" the scale with clean, empty 40 ml container (including the cap) sitting on the scale.
- 3) Add 10 to 20 grams of sample soil to the container. Record the weight.
- 4) "Re-zero" the scale.
- 5) Add distilled water to almost fill the container. Record the weight.
- 6) Screw the cap on, and shake the container to thoroughly mix the sample with the distilled water. Set aside to allow settling of the sample. This will take only a few minutes for coarse grained material and up to 20 minutes for very fine grained sediments. The solution does not need to be perfectly clear to continue the procedure.
- 7) Add 3 drops of Potassium Chromate to a small, clean, plastic cup.
- 8) Extract 10 ml (using a large pipette at least 10 ml) of solution from the sample container and put it into the plastic cup. Record ml of solution placed in the cup.
 - a. This can be kept track of by careful recording of "before" and "after" fluid levels in the pipette.
 - b. Or: Place the plastic cup on the scale with the potassium chromate and "zero" the scale. Add solution to the cup until 10 grams is indicated on the scale.
- 9) Swirl the solution and the potassium chromate to mix them.
- 10) Using a 1 ml pipette, add silver nitrate to the mixed solution drop by drop while swirling. The entire solution will change from a pale lemon yellow color to a brick red color when sufficient silver nitrate has been added. STOP when it all turns brick red. It does not need to be a deep brick red color. This will result in an overly high result. Record ml of silver nitrate used.
- 11) The chloride concentration of the sample is given by:

$$C_{sam} = (35,450 * 0.282) * (grams of water) * (ml of silver nitrate) (grams of soil) (ml of solution)$$

or:

$$C_{sam} = (9997) * (grams of water (Step 5)) * (ml of silver nitrate (Step 10))(grams of soil (Step 3)) (ml of solution (Step 8))$$

Units are: mg(of chloride)/kg(of soil)

Equipment List:

Scale 10 ml pipettes 1 ml pipettes Controllers for pipettes (small and large), press pipette into open end (carefully) 40 ml sample containers Small plastic cups Silver Nitrate Potassium Chromate Distilled water Waste container for final solution. A robust plastic jug with lid will do for field use. DO NOT pour this down a drain. Dispose of with a chemical lab. Waste bags for used plastic cups (rinse and pour rinsing fluid into robust jug)

Calculator Nitrile gloves Safety glasses Paper towels

Safety Data

http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/silver_nitrate.html

http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/potassium_chromate.html

Attachment H

<u>District 1</u> 1625 N. Frenc	h Dr., Hobb	s, NM 88240		Sta Energy Mir	te of	f New Mex s and Natura	ico I Researce	OD			Revised	Form C-141 1 April 3, 2017
<u>District II</u> RUI S. First St	reet. Artesia	NM 88210		0:10		H)Bpa	Subr	nit 1 Conv to	annronriat	e Distric	ot Office in
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District IV	os Road, A		10	1220	SOUI nto F	III SI. FIANC	105					
1220 S. St. Fra	ancis Dr., Sa	anta Fe, NM 8	7505	Da Da	III.a I	·C, INIVI 075	05	NED				
			Kele	ase Notific	atio	on and Co	COD	Actio	n Na haite	1.0.	_	D' 1 D
Name of Co	mnany	PURVISO	OPERATI	NGCO		Contact	Don	nie E. Bro		Report		Final Repor
Address	mpany	PO Box 5	1990, Mic	lland, TX 7971	0	Telephone 1	No. 432-	682-7346	5			
Facility Nar	me	Antelope				Facility Typ	e Well	head				
Surface Ow	mer	Jean C. Jo	ones	Mineral O	wner	Fee			API No	. 30-025-	38867	
				LOCA	TIC	N OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	Nort	th/South Line	Feet from	the Eas	st/West Line		Count	ty
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				NAT	UR	E OF REL	EASE -		_			
Type of Rele	ase	Oil			UIL	Volume of	Release	known	Volume R	ecovered	3 bbls	3.
Source of Re	lease	Wellhead				Date and He	our of Occurre	nce 12-7-1	7 Date and H	lour of Disco	overy	12-7-2017
Was Immedi	ate Notice (Given?]Yes 🔲	No 🛛 Not Re	quirec	If YES, To	Whom?					
By Whom?						Date and H	lour					
Was a Water	course Read	ched?	Yes 🖂	No		If YES, Vo	olume Impac	ting the W	atercourse.			
If a Watercou	urse was Im	pacted, Descr	ibe Fully.*			RECE	IVED					
						By Oli	via Yu a	at 1:10) pm, De	ec 18, 2	2017	
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Signature:	Von	nil	Th	non	b	-			on	_		
Printed Nam	ie: Don	nie E. Brown	-	/		Approved by	/		V	_		_
Title:	Petr	oleum Engine	ег			Approval Da	ite: 12/18	/2017	Expiration	Date:		_
E-mail Addr	ress: eng	@purvisop.co	m			Conditions o	f Approval:			Attach		/
Date: 12	-12-2017	Phone: 4	432-682-73	46		see atta	ched dire	ective		Attache	u [<u>\</u>	_
Attach Add	itional She	ets If Necess	sary									
						1RP-489	06 nC	DY1735	5248031	pO۱	(1735	5249301

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _12/15/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4896_ has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete <u>division-approved corrective action</u> for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _1/18/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

• Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

• Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

• Nominal detection limits for field and laboratory analyses must be provided.

• Composite sampling is not generally allowed.

• Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold OCD Environmental Bureau Chief 1220 South St. Francis Drive Santa Fe, New Mexico 87505 505-476-3465 jim.griswold@state.nm.us State of New Mexico Energy Minerals and Natural Resources

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

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Form C-141 Revised April 3, 2017

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acility Nan	ne	Antelope	-			Facinity Typ	e riowillio	0			
Surface Owi	ner	Jean C. Jo	ones	Mineral C)wner	Fee			API No.	30-025-388	867
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Operator/Responsible Party,

The OCD has received the form C-141 you provided on _1/10/2018_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4925_ has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete <u>division-approved corrective action</u> for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _2/10/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

• Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

• Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

• Nominal detection limits for field and laboratory analyses must be provided.

• Composite sampling is not generally allowed.

• Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold OCD Environmental Bureau Chief 1220 South St. Francis Drive Santa Fe, New Mexico 87505 505-476-3465 jim.griswold@state.nm.us