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

June 13, 2019

#diamond_env_19

NMOCD District 1
1625 N. French Drive
Hobbs, New Mexico 88210

SUBJECT: Remediation Closure Report for the Diamondback Tank Battery Release (1RP-5399), Lea County, New Mexico

Dear NMOCD District 1,

On behalf of Chisholm Energy Operating (CEO), Atkins Engineering Associates INC. (AEA) has prepared this Remediation Closure Report that describes the remediation of a release of liquids related to oil and gas production activities at the Diamond Back Tank Battery. The site is in Unit A, Section 24, Township 19S, Range 32E, Lea County, New Mexico, on Federal land. Figure 1 illustrates the vicinity and site location on an USGS 7.5-minute quadrangle map.

Table 1 summarizes release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	Diamondback Tank Battery	Company	Chisholm Energy
API Number	N/A	Location	32.652795 -103.713401
Incident Number	1RP-5399		
Estimated Date of Release	3/03/19	Date Reported to NMOCD	3/03/19
Land Owner	BLM	Reported To	NMOCD District I
Source of Release	FITTING BUSTED ON PIPE BETWEEN TANK AND 3BEAR FIELD SERVICES WATER PUMP		
Released Volume	520 bbls	Released Material	Produced Water
Recovered Volume	260 bbls	Net Release	260 bbls
NMOCD Closure Criteria	>100 feet to groundwater		
AEA Response Dates	3/15/2019 4/10/2019 5/9/2019		

1.0 Background

On March 3, 2019,, a release was discovered at the Diamondback Pad Location and Tank Battery due to pipe fitting failing. The pipe is metered, and the release volume was calculated by subtracting the LACT meter from the gauged tank. Initial response activities were conducted by the operator, and included source elimination by means of repair and immediate site stabilization and release recovery. Figures 1 and 2 illustrate the vicinity and site location, Figure 3 illustrates the release location. The C-141 forms are included in Appendix A.

2.0 Site Information and Closure Criteria

The Diamondback Tank Battery is located approximately 36 miles East of Hobbs Lea County, New Mexico on Federal (BLM) land at an elevation of approximately 3630 feet above mean sea level (amsl).

Based upon the New Mexico Office of the State Engineers (NMOSE) online water well database, (Appendix B), depth to groundwater in the area is estimated to be 102-340 feet below grade surface (bgs). There are no known water sources within ½-mile of the location, according to the NMOSE database. (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 4/10/2019). The nearest significant watercourse is unnamed Salt Lake , located approximately 3 miles south of the location. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

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

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

3.0 Release Characterization and Remediation Activities

On March 3, 2019, CEO personnel arrived on site in response to the release associated with Diamondback Tank Battery. AEA performed site delineation activities on April 10, 2019, by collecting soil samples around the release site and throughout the previously excavated area. Soil samples were field-screened for chloride using an electrical conductivity (EC) meter.

A total of 18 sample locations (SW1 – SW10 & BH1 – BH8) were investigated using a hand-auger, to depths up to 2 feet bgs. A minimum of two samples were collected at each sampling location and field-screened using the method above. A total of 18 samples were collected for laboratory analysis for total chloride using EPA Method 300.0., EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

As summarized in Table 3, results indicated that most of the location was remediated successfully by the initial action performed by CEO and its contractors. an area approximately 40feet wide and 60 feet long remained impacted. The area is located to the east of the pad behind the production tank battery an run north near the knockouts. The impacted area is also bordered by a Lucid Energy Co. high pressure gas line to the east.

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

On May 9, 2019 AEA began conducting confirmation sampling of the walls and base of the excavation. The areas around sample locations SW3, SW4 and BH2 were excavated to a depth of 2 feet bgs. The areas around sample locations SW5 and BH4 were excavated to 1.5 bgs

The confirmation samples were collected from within the excavation in accordance with a systematic sampling approach as defined by SW846 using Gilbert, 1987 equation 5.2.3 for Stratified Random Sampling which is detailed in Appendix C. This systematic method meets the EPAs data quality assessment standards (DQA) for composite sampling as defined by (Myers 1997) Using Confirmation samples were comprised of five-point composites of the base (BH1-BH8) and walls (SW1-SW10).

Lab analysis showed that sample locations SW6, SW7 and BH2, BH4 were still elevated in chlorides compared to background concentrations but well below the 20,000-ppm limit. No further excavation was attempted because SW6 and SW7 border the locations pipe racks and further excavation was unsafe to perform. BH2 and BH4 where near the locations tank battery and because of the sandy soil and the neighboring high-pressure gas line and the digging restrictions outlines in the one call no further excavation was attempted.

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

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

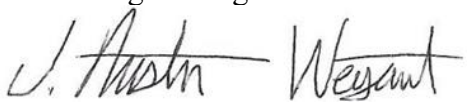
In addition to meeting the Closure Criteria, for the well pad meet the Reclamation requirement of 19.15.29.13(D)(1). Contaminated soils were removed and hauled to a NMOCD approved facility (waste manifest available upon request. The contaminated soil was transported and disposed of at R360 Halfway facility Lea County, NM.

4.0 Scope and Limitations

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

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

Submitted by:
Atkins Engineering Associates INC



Austin Weyant
Geoscientist

ATTACHMENTS:

Figures:

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

Tables:

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

Appendices:

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

FIGURES

DIAMONDBACK 24 FEDERAL 2BS 1H
Sec 24, T 19S, R 32E, N.M.P.M

- DIAMONDBACK 24 FEDERAL 2BS 1H
- 500 Feet
- 1,000 Feet
- 0.5 Mile
- Springs Seeps
- Streams Canals
- Rivers
- Flowlines SENM
- Lakes Playas
- FlowlineSENM 200MBuffer
- FEMA Flood Zones 2011

N

0 500 1,000 2,000
Feet

Atkins
ENGINEERING ASSOCIATES

TABLES

Table 3:
Summary of Sample Results

Chisolm Energy
Diamond Back

Sample ID	Sample Date	Depth (feet bgs)	Proposed Action/ Action Taken	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	Total TPH mg/Kg	Cl- mg/Kg
NMED Closure Criteria							**2500**	**20000**
SW1	5/9/2019	0.5	in-situ	<5.0	120	98	218	86
SW2	5/9/2019	1	in-situ	<5.0	<9.8	<48	<48	970
SW3	5/9/2019	0.5	in-situ	<4.9	200	160	360	120
SW4	5/9/2019	1	in-situ	<5.0	150	<50	150	910
SW5	5/9/2019	0.5	in-situ	<4.9	280	250	530	120
SW6	5/9/2019	1	in-situ	<4.9	110	80	190	5100
SW7	5/9/2019	1	in-situ	<4.6	78	65	143	4700
SW8	5/9/2019	0.5	in-situ	<5.0	190	95	285	73
SW9	5/9/2019	0.5	in-situ	<4.9	190	120	310	85
SW10	5/9/2019	0.5	in-situ	<5.0	<9.9	<49	<49	<60
BH1	5/9/2019	4	in-situ	<4.9	<9.3	<46	<46	340
BH2	5/9/2019	2	in-situ	<4.8	<9.5	<47	<47	2100
BH3	5/9/2019	2	in-situ	<5.0	450	250	700	590
BH4	5/9/2019	2	in-situ	<5.0	200	<49	200	1000
BH5	5/9/2019	1.5	in-situ	<5.0	190	95	285	73
BH6	5/9/2019	1.5	in-situ	<4.9	230	220	450	140
BH7	5/9/2019	1.5	in-situ	<5.0	400	310	240	240
BH8	5/9/2019	1.5	in-situ	<5.0	350	290	640	110

"--" = Not Analyzed

APPENDIX A
FORMS C141

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party CHISHOLM ENERGY OPERATING, LLC	OGRID 372137
Contact Name TIM GREEN/JENNIFER ELROD	Contact Telephone 432-413-9747
Contact email tgretgreen@chisholmenergy.com/jelrod@chisholmenergy.com	Incident # *(assigned by OCD)*
Contact mailing address 801 CHERRY STREET, SUITE 1200-UNIT 20, FORT WORTH, TX 76102	

Location of Release Source

Latitude 32.652795 Longitude --103.713401
(NAD 83 in decimal degrees to 5 decimal places)

Site Name DIAMONDBACK PAD LOCATION	Site Type WELL PAD LOCATION
Date Release Discovered 03/03/2019	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
A	24	19S	32E	LEA

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 520 BBLS	Volume Recovered (bbls) 260 BBLS
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release FITTING BUSTED ON PIPE BETWEEN TANK AND 3BEAR FIELD SERVICES WATER PUMP

CALCULATED AMOUNT SPILLED BY USING AMOUNT THAT HAD RUN THROUGH LACT METER SUBTRACTED BY AMOUNT LEFT IN TANK.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? OVER 25 BBLS SPILLED

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
NOTICE WAS GIVEN 03/04/2019 TO DIST 1 OCD OFFICE

Initial Response

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

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

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

Jim Amos w/BLM met with Tim Green on location; location has been scraped and Jim also asked that all wet sand off location be dug out to below spill level on the south, east, and north side of location.

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

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

Printed Name: JENNIFER ELROD Title: SR. REGULATORY ANALYST

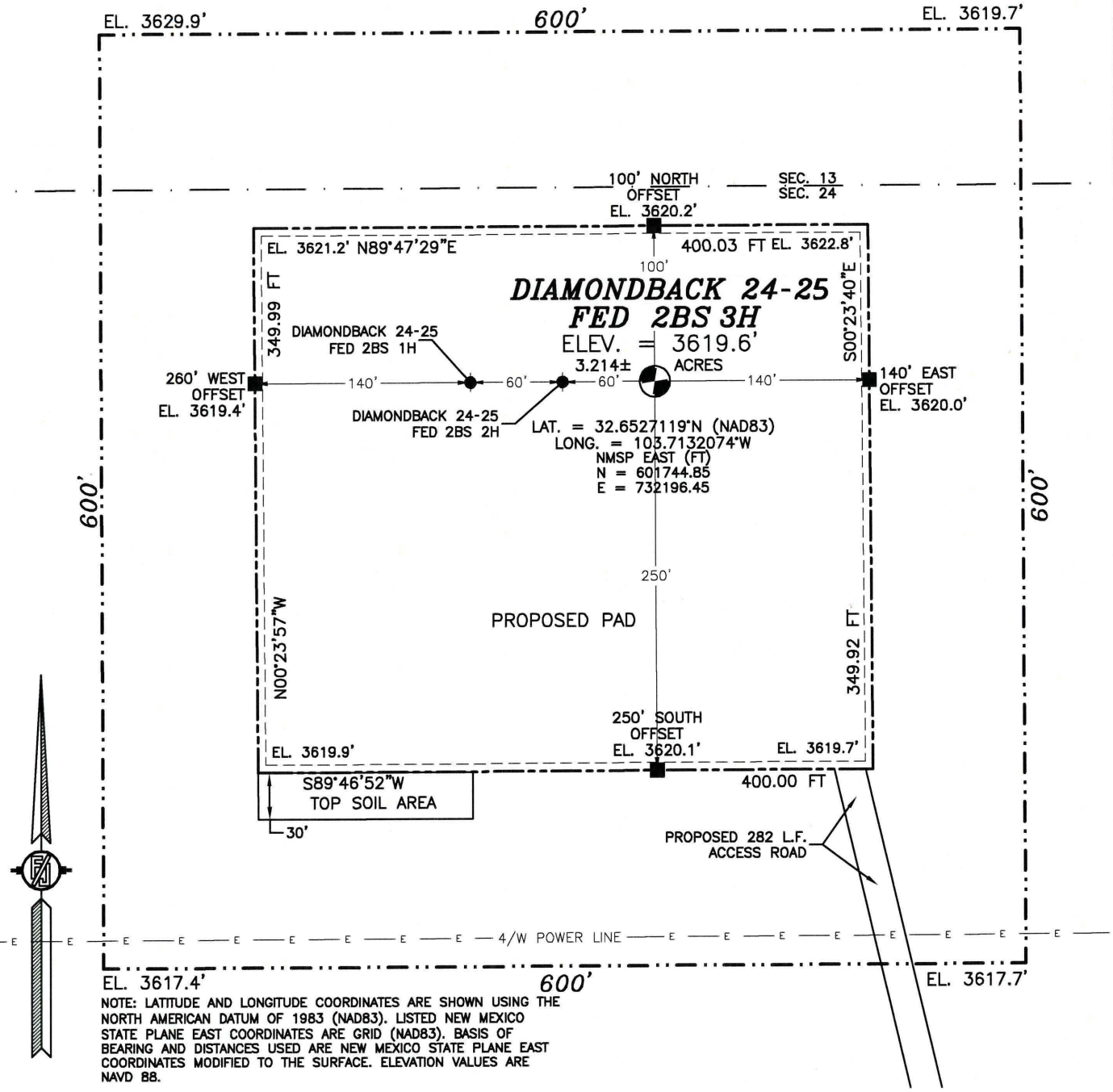
Signature: Jennifer Elrod Date: 03/06/2019

email: JELROD@CHISHOLMENERGY.COM Telephone: 817-953-3728

OCD Only

Received by: _____ Date: _____

SECTION 24, TOWNSHIP 19 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
SITE MAP



NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. ELEVATION VALUES ARE NAVD 88.

010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM STATE ROAD 243 AND CR. 126 (MALJAMAR RD.) GO NORTH ON CR. 126 6.0 MILES, TURN RIGHT ON CALICHE ROAD (DRY LAKE RD.) AND GO EAST 5.0 MILES, TURN RIGHT AND GO SOUTH 0.75 MILE, TURN RIGHT AND GO WEST 0.45 MILE TO A ROAD SURVEY AND FOLLOW FLAGS NORTH–NORTHWEST 282' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

CHISHOLM ENERGY OPERATING, LLC

DIAMONDBACK 24-25 FED 2BS 3H

LOCATED 125 FT. FROM THE NORTH LINE AND 630 FT. FROM THE EAST LINE OF SECTION 24, TOWNSHIP 19 SOUTH, RANGE 32 EAST, N.M.P.M. LEA COUNTY, STATE OF NEW MEXICO

SEPTEMBER 26, 2017

SURVEY NO. 5588

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

APPENDIX B
NMOSE WELLS REPORT

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	CP 00563 POD1	1	1	2	19	19S	32E	612118	3613376*

x

Driller License: 122 **Driller Company:**

Driller Name: ARMOR SUPPLY CORPORATION

Drill Start Date:		**Drill Finish Date:**		**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	10.00	**Depth Well:**	300 feet	**Depth Water:**	

x

***UTM location was derived from PLSS - see Help**

APPENDIX D

LABORATORY ANALYTICAL REPORTS

Analytical Report
Lab Order **1905676**
Date Reported:

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW1
Project: Diamond Back
Collection Date: 5/9/2019 9:50:00 AM
Lab ID: 1905676-001 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	86	60		mg/Kg	20	5/16/2019 11:19:20 PM	44983
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	120	9.9		mg/Kg	1	5/15/2019 4:04:09 PM	44914
Motor Oil Range Organics (MRO)	98	49		mg/Kg	1	5/15/2019 4:04:09 PM	44914
Surr: DNOP	251	70-130	S	%Rec	1	5/15/2019 4:04:09 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/15/2019 7:22:45 PM	44904
Surr: BFB	101	73.8-119		%Rec	1	5/15/2019 7:22:45 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 7:22:45 PM	44904
Toluene	ND	0.050		mg/Kg	1	5/15/2019 7:22:45 PM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/15/2019 7:22:45 PM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/15/2019 7:22:45 PM	44904
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	5/15/2019 7:22:45 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW2
Project: Diamond Back
Collection Date: 5/9/2019 9:55:00 AM
Lab ID: 1905676-002 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	970	60		mg/Kg	20	5/17/2019 12:51:25 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/15/2019 4:28:31 PM	44914
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/15/2019 4:28:31 PM	44914
Surr: DNOP	220	70-130	S	%Rec	1	5/15/2019 4:28:31 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/15/2019 8:33:23 PM	44904
Surr: BFB	97.1	73.8-119		%Rec	1	5/15/2019 8:33:23 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 8:33:23 PM	44904
Toluene	ND	0.050		mg/Kg	1	5/15/2019 8:33:23 PM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/15/2019 8:33:23 PM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/15/2019 8:33:23 PM	44904
Surr: 4-Bromofluorobenzene	93.2	80-120		%Rec	1	5/15/2019 8:33:23 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW3
Project: Diamond Back
Collection Date: 5/9/2019 10:02:00 AM
Lab ID: 1905676-003 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	120	60		mg/Kg	20	5/17/2019 1:28:39 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	200	9.7		mg/Kg	1	5/15/2019 4:53:03 PM	44914
Motor Oil Range Organics (MRO)	160	49		mg/Kg	1	5/15/2019 4:53:03 PM	44914
Surr: DNOP	218	70-130	S	%Rec	1	5/15/2019 4:53:03 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/15/2019 8:56:47 PM	44904
Surr: BFB	93.8	73.8-119		%Rec	1	5/15/2019 8:56:47 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	5/15/2019 8:56:47 PM	44904
Toluene	ND	0.049		mg/Kg	1	5/15/2019 8:56:47 PM	44904
Ethylbenzene	ND	0.049		mg/Kg	1	5/15/2019 8:56:47 PM	44904
Xylenes, Total	ND	0.098		mg/Kg	1	5/15/2019 8:56:47 PM	44904
Surr: 4-Bromofluorobenzene	90.4	80-120		%Rec	1	5/15/2019 8:56:47 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW4
Project: Diamond Back
Collection Date: 5/9/2019 10:12:00 AM
Lab ID: 1905676-004 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	910	60		mg/Kg	20	5/17/2019 1:41:04 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	150	9.9		mg/Kg	1	5/15/2019 5:17:26 PM	44914
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/15/2019 5:17:26 PM	44914
Surr: DNOP	151	70-130	S	%Rec	1	5/15/2019 5:17:26 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/15/2019 9:20:08 PM	44904
Surr: BFB	91.5	73.8-119		%Rec	1	5/15/2019 9:20:08 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 9:20:08 PM	44904
Toluene	ND	0.050		mg/Kg	1	5/15/2019 9:20:08 PM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/15/2019 9:20:08 PM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/15/2019 9:20:08 PM	44904
Surr: 4-Bromofluorobenzene	88.6	80-120		%Rec	1	5/15/2019 9:20:08 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW5
Project: Diamond Back
Collection Date: 5/9/2019 10:14:00 AM
Lab ID: 1905676-005 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	120	60		mg/Kg	20	5/17/2019 1:53:28 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	280	9.6		mg/Kg	1	5/15/2019 5:42:02 PM	44914
Motor Oil Range Organics (MRO)	250	48		mg/Kg	1	5/15/2019 5:42:02 PM	44914
Surr: DNOP	136	70-130	S	%Rec	1	5/15/2019 5:42:02 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/15/2019 9:43:30 PM	44904
Surr: BFB	95.7	73.8-119		%Rec	1	5/15/2019 9:43:30 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	5/15/2019 9:43:30 PM	44904
Toluene	ND	0.049		mg/Kg	1	5/15/2019 9:43:30 PM	44904
Ethylbenzene	ND	0.049		mg/Kg	1	5/15/2019 9:43:30 PM	44904
Xylenes, Total	ND	0.097		mg/Kg	1	5/15/2019 9:43:30 PM	44904
Surr: 4-Bromofluorobenzene	92.9	80-120		%Rec	1	5/15/2019 9:43:30 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW6
Project: Diamond Back
Collection Date: 5/9/2019 10:18:00 AM
Lab ID: 1905676-006 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	5100	150		mg/Kg	50	5/19/2019 9:16:57 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	110	9.5		mg/Kg	1	5/15/2019 6:31:08 PM	44914
Motor Oil Range Organics (MRO)	80	47		mg/Kg	1	5/15/2019 6:31:08 PM	44914
Surr: DNOP	252	70-130	S	%Rec	1	5/15/2019 6:31:08 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/15/2019 10:07:00 PM	44904
Surr: BFB	93.6	73.8-119		%Rec	1	5/15/2019 10:07:00 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 10:07:00 PM	44904
Toluene	ND	0.050		mg/Kg	1	5/15/2019 10:07:00 PM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/15/2019 10:07:00 PM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/15/2019 10:07:00 PM	44904
Surr: 4-Bromofluorobenzene	89.3	80-120		%Rec	1	5/15/2019 10:07:00 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW7
Project: Diamond Back
Collection Date: 5/9/2019 10:21:00 AM
Lab ID: 1905676-007 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	4700	150		mg/Kg	50	5/19/2019 9:29:22 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	78	10		mg/Kg	1	5/15/2019 6:55:48 PM	44914
Motor Oil Range Organics (MRO)	65	50		mg/Kg	1	5/15/2019 6:55:48 PM	44914
Surr: DNOP	182	70-130	S	%Rec	1	5/15/2019 6:55:48 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/15/2019 10:30:34 PM	44904
Surr: BFB	93.8	73.8-119		%Rec	1	5/15/2019 10:30:34 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 10:30:34 PM	44904
Toluene	ND	0.049		mg/Kg	1	5/15/2019 10:30:34 PM	44904
Ethylbenzene	ND	0.049		mg/Kg	1	5/15/2019 10:30:34 PM	44904
Xylenes, Total	ND	0.099		mg/Kg	1	5/15/2019 10:30:34 PM	44904
Surr: 4-Bromofluorobenzene	90.0	80-120		%Rec	1	5/15/2019 10:30:34 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW8
Project: Diamond Back
Collection Date: 5/9/2019 10:27:00 AM
Lab ID: 1905676-008 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	73	60		mg/Kg	20	5/17/2019 2:30:41 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	190	9.9		mg/Kg	1	5/15/2019 7:20:29 PM	44914
Motor Oil Range Organics (MRO)	95	49		mg/Kg	1	5/15/2019 7:20:29 PM	44914
Surr: DNOP	192	70-130	S	%Rec	1	5/15/2019 7:20:29 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/15/2019 11:40:30 PM	44904
Surr: BFB	96.2	73.8-119		%Rec	1	5/15/2019 11:40:30 PM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/15/2019 11:40:30 PM	44904
Toluene	ND	0.050		mg/Kg	1	5/15/2019 11:40:30 PM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/15/2019 11:40:30 PM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/15/2019 11:40:30 PM	44904
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	5/15/2019 11:40:30 PM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW9
Project: Diamond Back
Collection Date: 5/9/2019 10:40:00 AM
Lab ID: 1905676-009 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	85	60		mg/Kg	20	5/17/2019 2:43:05 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	190	9.6		mg/Kg	1	5/15/2019 7:44:49 PM	44914
Motor Oil Range Organics (MRO)	120	48		mg/Kg	1	5/15/2019 7:44:49 PM	44914
Surr: DNOP	201	70-130	S	%Rec	1	5/15/2019 7:44:49 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/16/2019 12:03:50 AM	44904
Surr: BFB	94.9	73.8-119		%Rec	1	5/16/2019 12:03:50 AM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/16/2019 12:03:50 AM	44904
Toluene	ND	0.050		mg/Kg	1	5/16/2019 12:03:50 AM	44904
Ethylbenzene	ND	0.050		mg/Kg	1	5/16/2019 12:03:50 AM	44904
Xylenes, Total	ND	0.10		mg/Kg	1	5/16/2019 12:03:50 AM	44904
Surr: 4-Bromofluorobenzene	91.4	80-120		%Rec	1	5/16/2019 12:03:50 AM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: SW10
Project: Diamond Back
Collection Date: 5/9/2019 10:43:00 AM
Lab ID: 1905676-010 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	5/17/2019 3:20:19 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/15/2019 8:09:32 PM	44914
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/15/2019 8:09:32 PM	44914
Surr: DNOP	116	70-130		%Rec	1	5/15/2019 8:09:32 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/16/2019 12:27:11 AM	44904
Surr: BFB	98.6	73.8-119		%Rec	1	5/16/2019 12:27:11 AM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/16/2019 12:27:11 AM	44904
Toluene	ND	0.049		mg/Kg	1	5/16/2019 12:27:11 AM	44904
Ethylbenzene	ND	0.049		mg/Kg	1	5/16/2019 12:27:11 AM	44904
Xylenes, Total	ND	0.098		mg/Kg	1	5/16/2019 12:27:11 AM	44904
Surr: 4-Bromofluorobenzene	95.3	80-120		%Rec	1	5/16/2019 12:27:11 AM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH1
Project: Diamond Back
Collection Date: 5/9/2019 10:00:00 AM
Lab ID: 1905676-011 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	340	60		mg/Kg	20	5/17/2019 3:32:44 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	5/15/2019 8:33:54 PM	44914
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/15/2019 8:33:54 PM	44914
Surr: DNOP	116	70-130		%Rec	1	5/15/2019 8:33:54 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/16/2019 12:50:39 AM	44904
Surr: BFB	97.0	73.8-119		%Rec	1	5/16/2019 12:50:39 AM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/16/2019 12:50:39 AM	44904
Toluene	ND	0.049		mg/Kg	1	5/16/2019 12:50:39 AM	44904
Ethylbenzene	ND	0.049		mg/Kg	1	5/16/2019 12:50:39 AM	44904
Xylenes, Total	ND	0.098		mg/Kg	1	5/16/2019 12:50:39 AM	44904
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	5/16/2019 12:50:39 AM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH2
Project: Diamond Back
Collection Date: 5/9/2019 10:09:00 AM
Lab ID: 1905676-012
Matrix: SOIL
Received Date: 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2100	60		mg/Kg	20	5/17/2019 3:45:08 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/15/2019 8:58:31 PM	44914
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/15/2019 8:58:31 PM	44914
Surr: DNOP	137	70-130	S	%Rec	1	5/15/2019 8:58:31 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/16/2019 1:14:22 AM	44904
Surr: BFB	98.6	73.8-119		%Rec	1	5/16/2019 1:14:22 AM	44904
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	5/16/2019 1:14:22 AM	44904
Toluene	ND	0.048		mg/Kg	1	5/16/2019 1:14:22 AM	44904
Ethylbenzene	ND	0.048		mg/Kg	1	5/16/2019 1:14:22 AM	44904
Xylenes, Total	ND	0.097		mg/Kg	1	5/16/2019 1:14:22 AM	44904
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	5/16/2019 1:14:22 AM	44904

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH3
Project: Diamond Back
Collection Date: 5/9/2019 10:17:00 AM
Lab ID: 1905676-013 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	590	60		mg/Kg	20	5/17/2019 3:57:33 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	450	9.5		mg/Kg	1	5/15/2019 9:23:11 PM	44914
Motor Oil Range Organics (MRO)	250	47		mg/Kg	1	5/15/2019 9:23:11 PM	44914
Surr: DNOP	177	70-130	S	%Rec	1	5/15/2019 9:23:11 PM	44914
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/16/2019 1:37:56 AM	44917
Surr: BFB	96.5	73.8-119		%Rec	1	5/16/2019 1:37:56 AM	44917
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/16/2019 1:37:56 AM	44917
Toluene	ND	0.050		mg/Kg	1	5/16/2019 1:37:56 AM	44917
Ethylbenzene	ND	0.050		mg/Kg	1	5/16/2019 1:37:56 AM	44917
Xylenes, Total	ND	0.099		mg/Kg	1	5/16/2019 1:37:56 AM	44917
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	5/16/2019 1:37:56 AM	44917

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH4
Project: Diamond Back
Collection Date: 5/9/2019 10:25:00 AM
Lab ID: 1905676-014 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	1000	60		mg/Kg	20	5/17/2019 4:09:57 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**TOM**
Diesel Range Organics (DRO)	200	9.7		mg/Kg	1	5/16/2019 6:16:45 PM	44940
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/16/2019 6:16:45 PM	44940
Surr: DNOP	146	70-130	S	%Rec	1	5/16/2019 6:16:45 PM	44940
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/16/2019 2:48:25 AM	44917
Surr: BFB	90.6	73.8-119		%Rec	1	5/16/2019 2:48:25 AM	44917
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	5/16/2019 2:48:25 AM	44917
Toluene	ND	0.050		mg/Kg	1	5/16/2019 2:48:25 AM	44917
Ethylbenzene	ND	0.050		mg/Kg	1	5/16/2019 2:48:25 AM	44917
Xylenes, Total	ND	0.10		mg/Kg	1	5/16/2019 2:48:25 AM	44917
Surr: 4-Bromofluorobenzene	86.7	80-120		%Rec	1	5/16/2019 2:48:25 AM	44917

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH5
Project: Diamond Back
Collection Date: 5/9/2019 10:30:00 AM
Lab ID: 1905676-015 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	4400	600		mg/Kg	200	5/17/2019 4:22:22 PM	44993
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	97	10		mg/Kg	1	5/16/2019 6:41:14 PM	44940
Motor Oil Range Organics (MRO)	70	50		mg/Kg	1	5/16/2019 6:41:14 PM	44940
Surr: DNOP	162	70-130	S	%Rec	1	5/16/2019 6:41:14 PM	44940
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/17/2019 1:24:28 PM	44917
Surr: BFB	77.6	73.8-119		%Rec	1	5/17/2019 1:24:28 PM	44917
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/17/2019 1:24:28 PM	44917
Toluene	ND	0.050		mg/Kg	1	5/17/2019 1:24:28 PM	44917
Ethylbenzene	ND	0.050		mg/Kg	1	5/17/2019 1:24:28 PM	44917
Xylenes, Total	ND	0.10		mg/Kg	1	5/17/2019 1:24:28 PM	44917
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	5/17/2019 1:24:28 PM	44917

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH6
Project: Diamond Back
Collection Date: 5/9/2019 10:33:00 AM
Lab ID: 1905676-016 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	140	60		mg/Kg	20	5/17/2019 6:16:43 PM	45015
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	230	9.9		mg/Kg	1	5/16/2019 7:05:59 PM	44940
Motor Oil Range Organics (MRO)	220	49		mg/Kg	1	5/16/2019 7:05:59 PM	44940
Surr: DNOP	156	70-130	S	%Rec	1	5/16/2019 7:05:59 PM	44940
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/17/2019 1:47:52 PM	44917
Surr: BFB	75.0	73.8-119		%Rec	1	5/17/2019 1:47:52 PM	44917
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	5/17/2019 1:47:52 PM	44917
Toluene	ND	0.049		mg/Kg	1	5/17/2019 1:47:52 PM	44917
Ethylbenzene	ND	0.049		mg/Kg	1	5/17/2019 1:47:52 PM	44917
Xylenes, Total	ND	0.097		mg/Kg	1	5/17/2019 1:47:52 PM	44917
Surr: 4-Bromofluorobenzene	91.3	80-120		%Rec	1	5/17/2019 1:47:52 PM	44917

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH7
Project: Diamond Back
Collection Date: 5/9/2019 10:35:00 AM
Lab ID: 1905676-017 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	240	60		mg/Kg	20	5/17/2019 6:53:56 PM	45015
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	400	9.3		mg/Kg	1	5/16/2019 8:19:40 PM	44940
Motor Oil Range Organics (MRO)	310	46		mg/Kg	1	5/16/2019 8:19:40 PM	44940
Surr: DNOP	116	70-130		%Rec	1	5/16/2019 8:19:40 PM	44940
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/17/2019 2:11:38 PM	44917
Surr: BFB	76.5	73.8-119		%Rec	1	5/17/2019 2:11:38 PM	44917
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/17/2019 2:11:38 PM	44917
Toluene	ND	0.049		mg/Kg	1	5/17/2019 2:11:38 PM	44917
Ethylbenzene	ND	0.049		mg/Kg	1	5/17/2019 2:11:38 PM	44917
Xylenes, Total	ND	0.098		mg/Kg	1	5/17/2019 2:11:38 PM	44917
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	5/17/2019 2:11:38 PM	44917

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Atkins Engineering Associates
Client Sample ID: BH8
Project: Diamond Back
Collection Date: 5/9/2019 10:37:00 AM
Lab ID: 1905676-018 **Matrix:** SOIL **Received Date:** 5/14/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	110	60		mg/Kg	20	5/17/2019 7:06:21 PM	45015
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	350	9.6		mg/Kg	1	5/16/2019 8:44:16 PM	44940
Motor Oil Range Organics (MRO)	290	48		mg/Kg	1	5/16/2019 8:44:16 PM	44940
Surr: DNOP	117	70-130		%Rec	1	5/16/2019 8:44:16 PM	44940
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/17/2019 2:35:02 PM	44917
Surr: BFB	76.8	73.8-119		%Rec	1	5/17/2019 2:35:02 PM	44917
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/17/2019 2:35:02 PM	44917
Toluene	ND	0.050		mg/Kg	1	5/17/2019 2:35:02 PM	44917
Ethylbenzene	ND	0.050		mg/Kg	1	5/17/2019 2:35:02 PM	44917
Xylenes, Total	ND	0.099		mg/Kg	1	5/17/2019 2:35:02 PM	44917
Surr: 4-Bromofluorobenzene	94.2	80-120		%Rec	1	5/17/2019 2:35:02 PM	44917

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

Qualifiers:

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

APPENDIX E
OPEN EXCAVATION PHOTO LOG

Diamondback Photos