

## Bratcher, Mike, EMNRD

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**From:** Eileen Shannon <EShannon@kleinfelder.com>  
**Sent:** Monday, July 22, 2013 2:28 PM  
**To:** Bratcher, Mike, EMNRD  
**Subject:** FW: Draft Halcon Beeson water flood line releae info - near Loco Hills  
**Attachments:** 20130624140228.pdf; 20130624140217.pdf

Hi Mike,

I thought I would resend this. Call if you get a chance, or will try to call to discuss

Thanks, Eileen

Eileen Shannon P.G.  
Project Manager  
9019 Washington NE, Building A  
Albuquerque, NM 87113  
o| 505.344.7373 Ext. 254  
c| 505.307.0722  
f| 505.344.1711



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**From:** Eileen Shannon  
**Sent:** Tuesday, June 25, 2013 2:35 PM  
**To:** Bratcher, Mike, EMNRD  
**Cc:** [DHall@halconresources.com](mailto:DHall@halconresources.com); Steve Milinichik  
**Subject:** Draft Halcon Beeson water flood line releasae info - near Loco Hills

Hi Mike,

Attached is a table and figure showing the results from drilling at the above referenced site. We have delineated laterally to the "north, east and south" and are limited by what additional can be excavated along the "west wall" due to soft blow sands surrounding the fiberglass pipeline. We also saw declining chloride concentrations. B-1 is in the bottom of the excavation, which is approximately 12 feet deeper than normal surface grade, so depth below grade is in parentheses in the info below.

We did hit perched groundwater in Boring B-1 at approximately 35 (47) feet bgs in silty sand. We then drilled into hard dry sandy clay from approximately 40 (52) feet to the TD at 56.5 (68.5) feet bgs. We did not see perched water in any of the other borings.

Would you have some time to discuss the path forward? I am heading out the field for the next 2 days and will be back in the office early afternoon on Friday. I could call you from the field tomorrow or on Thursday to discuss.

Eileen

Eileen Shannon P.G.  
Project Manager  
9019 Washington NE, Building A  
Albuquerque, NM 87113  
o| 505.344.7373 Ext. 254  
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**TABLE 1**  
**SUMMARY OF FIELD SCREENING AND ANALYTICAL DATA FOR SOIL SAMPLES**  
**HALCON BEESON WATER FLOOD INJECTION LINE RELEASE SITE**  
**JUNE 10-11, 2013**

Location	Approximate Depth (feet)	Date	TPH Field Screening (ppm)	EPA 8015B				Chloride Field Screening (mg/L)	EPA 300.0		Comments
				DRO (mg/kg)	MRO (mg/kg)	GRO (mg/kg)	Total TPH (mg/kg)		Chloride (mg/kg)		
B-1	5-6.5	6/11/2013	2,602	<10	<50	<4.8	<50	1,856	NA		
	15-16.5	6/11/2013	2,287	NA	NA	NA	NA	3,388	4,500		
	55-56.5	6/11/2013	2,859	<10	<50	<4.6	<50	ND	46		
B-2	5-6.5	6/10/2013	243	NA	NA	NA	NA	6,244	5,900		
	25-26.5	6/10/2013	375	<10	<50	<4.8	<50	2,896	NA		
	55-56.5	6/10/2013	148	<10	<50	<4.7	<50	ND	45		
B-3	10-11.5	6/10/2013	NA	<10	<50	<4.7	<50	ND	4.0		
	30-31.5	6/10/2013	NA	<10	<50	<4.8	<50	ND	2.7		
	10-11.5	6/11/2013	2,423	NA	NA	NA	NA	ND	5.6		
B-4	20-21.5	6/11/2013	2,663	<10	<50	<4.7	<50	ND	NA		
	30-31.5	6/11/2013	2,664	<10	<50	<4.6	<50	ND	30		
	10-11.5	6/11/2013	2,486	<10	<50	<4.8	<50	ND	4.4		
B-5	30-31.5	6/11/2013	2,712	<10	<50	<4.7	<50	ND	53		
OCD Recommended Remediation Action Levels (Zero Total Ranking Score) in mg/kg				-						1,000	

TPH = Total Petroleum Hydrocarbons  
DRO = Diesel-Range Organics  
MRO = Motor Oil-Range Organics  
GRO = Gasoline-Range Organics  
ND = Not Detected

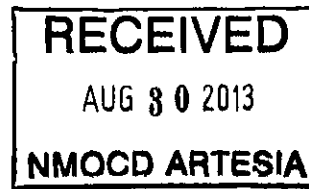
NS = not sampled  
NA = not analyzed  
mg/kg = milligrams/kilogram  
ppm = parts per million  
mg/L = milligrams per liter

**DRAFT**





August 27, 2013  
File No.: 132881



Mr. Mike Bratcher  
New Mexico Oil Conservation Division  
District 2  
811 S First Street  
Artesia, NM 88210

**Subject: Results of Phase II Investigation and Work Plan for Closure  
Halcón Beeson Water Flood Injection Line  
Loco Hills, New Mexico**

Dear Mr. Bratcher:

Kleinfelder West, Inc. (Kleinfelder), on behalf of Halcón Resources (Halcón), is pleased to submit this letter report to the New Mexico Oil Conservation Division (NMOCD). This letter report describes the scope of work, results, and conclusions of the limited Phase II Site Assessment (Phase II) performed at the above referenced site, as well as recommendations for closure.

Based on the results of this investigation, Halcón requests that NMOCD approve closure of this site (no additional investigation required) and approve the plan discussed in this report to backfill the excavation. A copy of this report is being submitted to the Bureau of Land Management (BLM) for their concurrence and approval for closure.

The site is located in the NE ¼ of the NE ¼ of Section 31, Township 17 South, Range 30 East, approximately two miles southwest of Loco Hills, New Mexico (Figure 1). The property is owned by the BLM.

#### **Release History**

The following summarizes events and activities conducted previously at the site. Historical soil analytical data is summarized on a table in Figure 2.

- August 22, 2012 – A three-inch high pressure fiberglass pipeline near Beeson "F" Federal Lease Well #29 blew out and released an unknown quantity of produced water on to the ground.
- August 28-29, 2012 – 2,124 tons of impacted soil were excavated and hauled to the Lea Landfill. The excavation, with dimensions of approximately 35 feet by 55 feet by 10 foot deep, was left open.
- August 29, 2012 – Five soil samples were collected by Southern Bay Operating, LLC from the side walls and bottom of the excavation.

- August 31, 2012 – A background soil sample was collected.
- September 24, 2012 – Four soil samples were collected from test pits dug into the northern and eastern sidewalls of the excavation above the caliche layer.
- February 1, 2013 – Kleinfelder visited the site and collected two soil samples from the northwest corner of the excavation.

### **Remediation Action Levels for Site**

The NMOCD ranks remediation levels for sites, based on the following criteria: depth to groundwater; wellhead protection; and distance to surface water. Justification for the proposed ranking of zero was included in Kleinfelder's "Summary of Soil Sampling" letter submitted to the NMOCD on March 7, 2013 (Kleinfelder, 2013). Based on a total site ranking of zero, the following are remediation action levels for the site:

- Benzene: 10 milligrams/kilogram (mg/kg);
- Total benzene, toluene, ethylbenzene, xylene (BTEX): 50 mg/kg; and
- Total TPH: 5,000 mg/kg.

### **Phase II Investigation**

Five soil borings were advanced at the site on June 10-11, 2013 to assess the horizontal and vertical extent of chloride and TPH concentrations. One soil boring was advanced at the bottom of the excavation and four borings were drilled around the perimeter of the excavation (to the north, south, east and west). The soil boring locations are shown on Figure 2.

#### Project Preparation

Prior to site mobilization, New Mexico One-Call was notified prior to drilling services to facilitate the location of underground utilities and pipelines. NMOCD staff, the BLM, and Halcón were notified in advance of field activities.

#### Field Program

A Kleinfelder geologist visited the site on June 4, 2013 with EnviroDrill, Inc. of Albuquerque, New Mexico (EnviroDrill) to conduct the site investigation. The four-wheel drive CME-75 drill rig was unable to access the site without getting stuck in the loose dry sand on site. The drilling effort was abandoned and rescheduled.

On June 10, 2013, a Kleinfelder field geologist returned to the site to conduct the site investigation. Drilling services were provided by EnviroDrill and a D-6 bulldozer from J.C Services was retained to move the drill rig to the locations needed for drilling. Soil borings were drilled using a CME-75 drill rig and 8-inch outer diameter hollow stem augers. Samples were collected at approximately every ten feet while drilling using a split spoon sampler.

Soil samples were field screened for total petroleum hydrocarbon (TPH) using a PetroFLAG kit, and for chloride using chloride titration with HACH Quantabs®. Soil samples with the highest field screening reading and the sample from the bottom of the boring were placed on ice and were retained for laboratory analysis. The soil samples were submitted under chain-of-custody to Hall Environmental Analytical Laboratory in Albuquerque, New Mexico. The samples were analyzed for chlorides by EPA Method 300.0 and TPH-gasoline range organics (GRO), -diesel range organics (DRO), and -motor oil range organics (MRO) by EPA method 8015D.

All borings were completed with cement/bentonite grout. The top three feet of boring B-1 was capped with hydrated bentonite pellets.

#### Investigation Derived Waste (IDW) Management

Cuttings from borings were stockpiled at the soil pile at the west end of the excavation. It is anticipated that this material will be used as fill material.

## **RESULTS**

Soils at the site consisted of interbedded sand with variable amounts of silt and clay, clay, and in some borings, a hard caliche. Borehole depths ranged from 31.5 to 56.5 feet bgs. The soil boring logs are included in Appendix A and a map illustrating the boring locations is included as Figure 2.

Field screening results indicated that TPH concentrations ranged from 148 (B-2 at 55-56.5 feet) to 2,859 parts per million (ppm) (B-1 at 55-56.5 feet). Field-screened chloride concentrations ranged from not detected to 6,244 milligrams per liter (mg/L) in the 5-6.5 foot sample collected from B-2. The field screening readings are included in Table 1.

According to the laboratory analytical results, total TPH (sum of TPH-DRO, TPH-MRO, and TPH-GRO) was below detection limits in all samples. Chloride concentrations ranged from 2.7 mg/kg (B-3 at 30-31.5 feet) to 5,900 mg/kg (B-2 at 5-6.5 feet). Chloride concentrations above the NMOCD Recommended Remediation Action Level of 1,000 mg/kg were detected in two samples: B-1 at 15-16.5 feet (4,500 mg/kg), and B-2 at 15-16.5 feet (5,900 mg/kg). Laboratory analytical results are summarized in Table 1 and Figure 2. The laboratory analytical report is included in Appendix B.

Based on a conversation with you on August 22, 2013, Kleinfelder recommends that the open excavation at the site be backfilled. The excavation will be backfilled to grade using the suitable fill material. The backfill material shall be wheel-roll compacted using the on-site equipment. After the completion of the backfill activities, the areas where excavation and backfilling occurred will be reseeded with a native seed mix that is approved by the BLM. Topsoil may need to be added to encourage native grass growth.

## **REFERENCES**

Kleinfelder West, Inc., 2013, "Summary of Soil Sampling, Halcón Beeson Water Flood Injection Line, Loco Hills, New Mexico," March 7, 2013.

## **CLOSING**

Our work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Acceptance of this letter report will indicate that Halcón has reviewed the document and determined that it does not need or want a greater level of service than provided. During the course of the performance of Kleinfelder's services, hazardous materials may be discovered. Kleinfelder will assume no responsibility or liability whatsoever for any expense, claim, loss of property value, damage, or injury that results from or in any way connected with pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Notwithstanding anything contained in this letter report to the contrary, Kleinfelder shall not assume the status of an owner, operator, generator, or person who arranges for disposal, transport, storage, or treatment of hazardous materials within the meaning of any governmental statute, regulation, or order. Halcón will be solely responsible for notifying all governmental agencies, and the public at large, of the existence, release, treatment, or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. Halcón will be responsible for all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

Should you have any questions regarding this letter report, please contact Eileen Shannon at 505.344.7373.

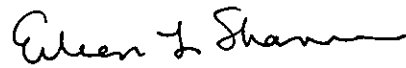
Respectfully submitted,

**KLEINFELDER WEST, INC.**



Phillip Rust, PG, LHG  
Staff Professional

**Reviewed by:**



Eileen Shannon, PG  
Project Manager

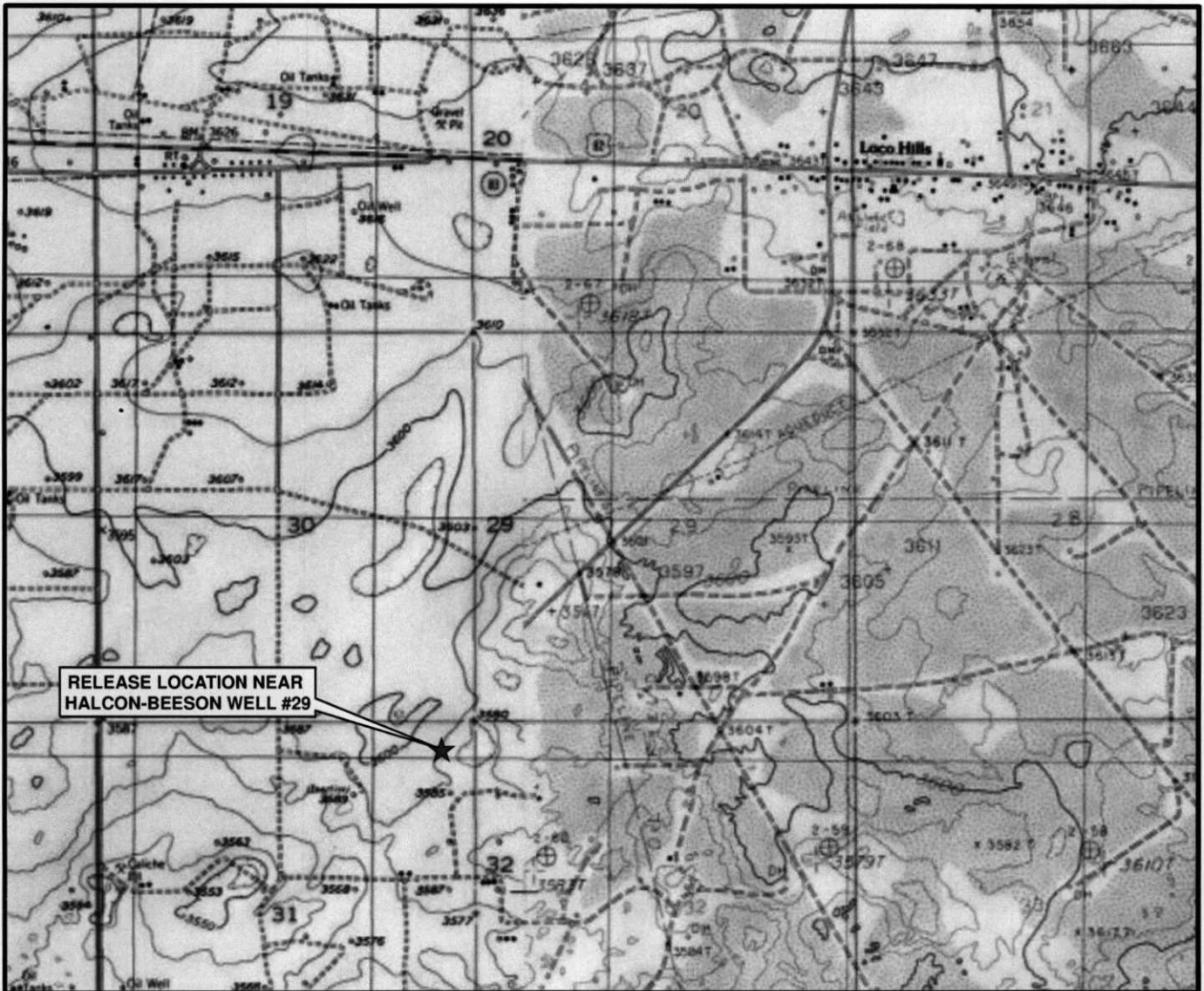
**Attachments:**

- Figures -      Figure 1 – Site Location Map  
                    Figure 2 – Soil Analytical Data, June 10-11, 2013
- Tables -        Table 1 – Summary of Field Screening and Analytical Data for Soil Samples,  
                    June 10-11, 2013
- Appendices - Appendix A – Boring Logs  
                    Appendix B – Soil Analytical Results

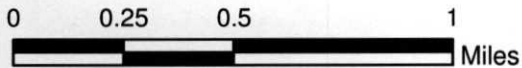
cc:            Drew Hall, Halcón Resources Corporation, 1801 California Street, Suite 3500, Denver, CO 80202  
                    Steve Milinichik, Halcón Resources Corporation, Meridian Tower, 5100 East Skelly Drive, Suite 650, Tulsa,  
                    OK 74135-6549  
                    Jim Amos, Bureau of Land Management, 620 E. Greene St., Carlsbad, NM 88220



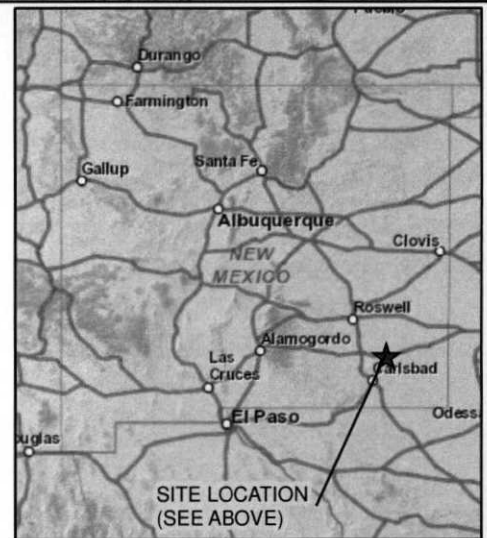
FIGURES



Source: Esri ONLINE MAPS



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PROJECT NO. 130452  
 DRAWN: 2/05/2013  
 DRAWN BY: PD  
 CHECKED BY: PR  
 FILE NAME:  
 130452\_SLM.MXD

### SITE LOCATION MAP

HALCON-BEESON WELL #29  
 LOCO HILLS  
 EDDY COUNTY, NEW MEXICO

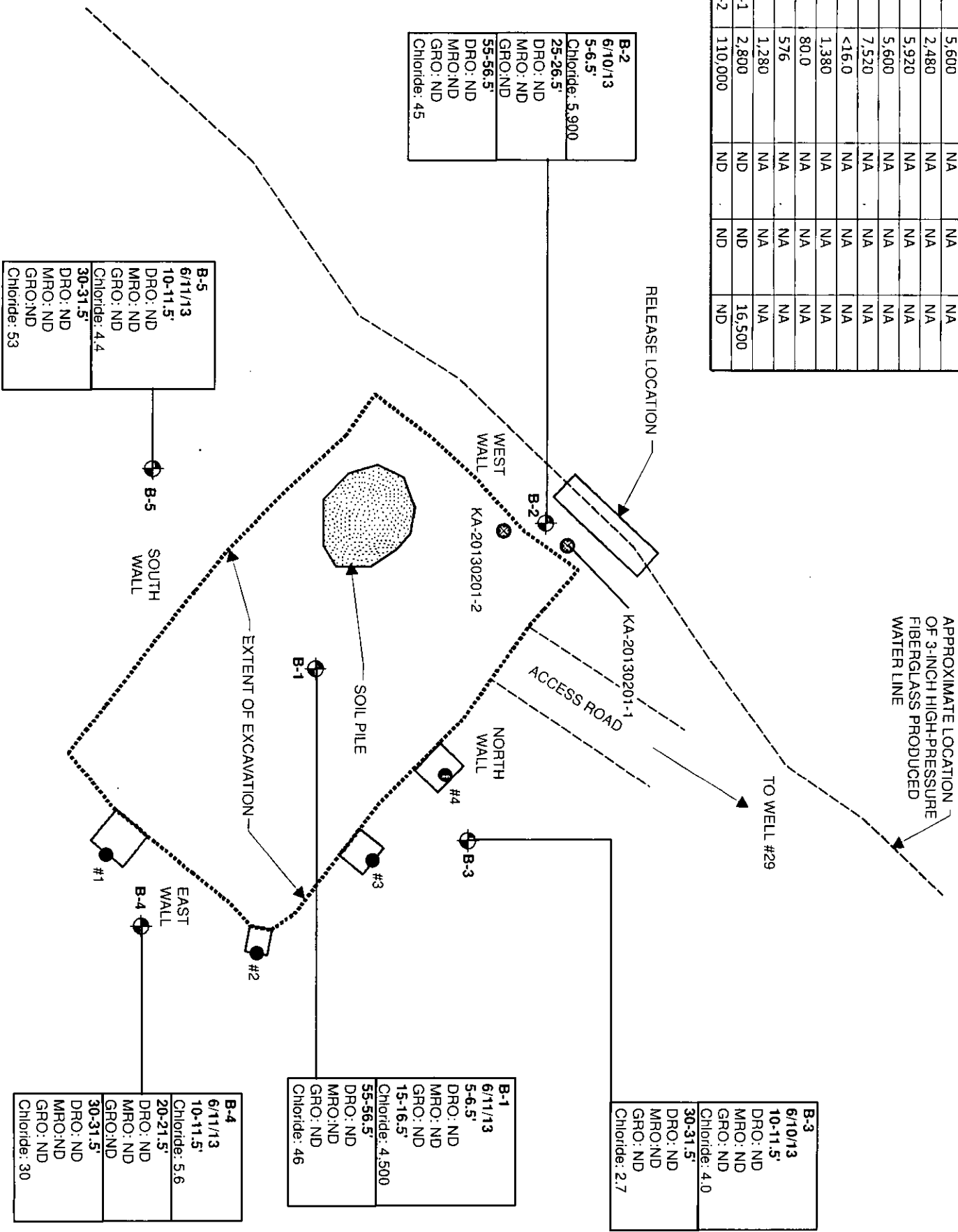
ORIGINATOR: P. RUST  
 APPROVED BY: *ES 8/23/17*  
 DRAWING CATEGORY: 1

FIGURE

**1**

HISTORICAL SOIL ANALYTICAL DATA

Sample Date	Sample ID	Chloride Concentration (mg/kg)	Benzene	BTEX	Total TPH
8/29/12	North Wall	5,600	NA	NA	NA
8/29/12	South Wall	2,480	NA	NA	NA
8/29/12	East Wall	5,920	NA	NA	NA
8/29/12	West Wall	5,600	NA	NA	NA
8/29/12	Bottom	7,520	NA	NA	NA
9/24/12	Background	<16.0	NA	NA	NA
9/24/12	Sample #1	1,380	NA	NA	NA
9/24/12	Sample #2	80.0	NA	NA	NA
9/24/12	Sample #3	576	NA	NA	NA
9/24/12	Sample #4	1,280	NA	NA	NA
2/1/13	KA-20130201-1	2,800	ND	ND	16,500
2/1/13	KA-20130201-2	110,000	ND	ND	ND

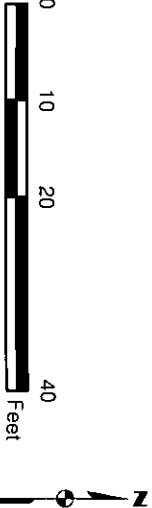


LEGEND

- Boring Location
- KA# - Kleinfielder Sample Locations
- Approximate Extent of Excavation (2-01-13)
- Potholes where Sample was Conducted on 9-24-12
- Soil Sample Results (in milligrams per/kilogram)
  - GRO Total Petroleum Hydrocarbons-as-Gasoline Range-Organics
  - MRO Total Petroleum Hydrocarbons-as-Motor Oil Range-Organics
  - DRO Total Petroleum Hydrocarbons-as-Diesel Range-Organics
  - ND Not detected

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Source: Kleinfielder field sketch.



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PROJECT NO. 132881	<b>SOIL ANALYTICAL DATA</b> <b>JUNE 10-11, 2013</b>
DRAWN BY: PD	
CHECKED BY: ES	
FILE NAME: 132881_SAD.MXD	BEESON FEDERAL WATER FLOODING LINE PROJECT LOCO HILLS EDDY COUNTY, NEW MEXICO

TABLE

**TABLE 1**  
**SUMMARY OF FIELD SCREENING AND ANALYTICAL DATA FOR SOIL SAMPLES**  
**Halcon Beeson Produced Water Release Site**  
**June 10-11, 2013**

Location	Approximate Depth (feet)	Date	TPH Field Screening (ppm)	EPA 8015B				Chloride Field Screening (mg/L)	EPA 300.0		Comments
				DRO (mg/kg)	MRO (mg/kg)	GRO (mg/kg)	Total TPH (mg/kg)		Chloride (mg/kg)		
B-1	5-6.5	6/11/2013	2,602	<10	<50	<4.8	<50	1,856	NA		
	15-16.5	6/11/2013	2,287	NA	NA	NA	NA	3,388	4,500		
	55-56.5	6/11/2013	2,859	<10	<50	<4.6	<50	ND	46		
B-2	5-6.5	6/10/2013	243	NA	NA	NA	NA	6,244	5,900		
	25-26.5	6/10/2013	375	<10	<50	<4.8	<50	2,896	NA		
	55-56.5	6/10/2013	148	<10	<50	<4.7	<50	ND	45		
B-3	10-11.5	6/10/2013	NA	<10	<50	<4.7	<50	ND	4.0		
	30-31.5	6/10/2013	NA	<10	<50	<4.8	<50	ND	2.7		
B-4	10-11.5	6/11/2013	2,423	NA	NA	NA	NA	ND	5.6		
	20-21.5	6/11/2013	2,663	<10	<50	<4.7	<50	ND	NA		
	30-31.5	6/11/2013	2,664	<10	<50	<4.6	<50	ND	30		
B-5	10-11.5	6/11/2013	2,486	<10	<50	<4.8	<50	ND	4.4		
	30-31.5	6/11/2013	2,712	<10	<50	<4.7	<50	ND	53		
OCD Recommended Remediation Action Levels (Zero Total Ranking Score)				--					5,000	1,000	

TPH = Total Petroleum Hydrocarbons  
DRO = Diesel-Range Organics  
MRO = Motor Oil-Range Organics  
GRO = Gasoline-Range Organics

NS = not sampled  
NA = not analyzed  
mg/kg = milligrams/kilogram  
ppm = parts per million  
mg/L = milligrams per liter

## APPENDIX A

### Boring Logs

Date Begin - End:	6/11/2013	Drill Company:	EDI	<b>BORING LOG B-1</b>		
Logged By:	P. Rust	Drill Crew:	C. Krozel, J. Hunt-Lynn			
Hor.-Vert. Datum:	Not Available	Drill Equipment:	CME-75 (truck-mounted)		Hammer Type - Drop:	140 lb. Auto - 30 in.
Exploration Plunge:	-90 degrees	Exploration Method:	Hollow Stem Auger			
Weather:		Auger Diameter:	8 in. O.D.			

## FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log	
							No Coordinates Available No Elevation Available  Surface Condition: Bottom of Excavated Pit 7-12 ft bgs
5		B-1 5-6.5'	16 5'	2602	1856		Clayey SAND (SC): fine grained, red brown, moist, medium dense, trace organics
15		B-1 15-16.5'	17 5'	2287	3388		Loose at 15 ft bgs
20							Poorly-Graded SAND with Silt (SP-SM): very fine grained to fine grained, red brown, moist, medium dense
25		B-1 25-26.5'	18 in.	2484	1420		
30							Silty SAND (SM): red brown, wet, medium dense



PROJECT NO.: 132881  
 DRAWN BY: PD  
 CHECKED BY: PR  
 DATE: 6/21/2013  
 REVISED:

## BORING LOG B-1

Halcon Beeson - Well 29  
 Loco Hills  
 Eddy County, New Mexico

PLATE

B-1

PAGE: 1 of 2

Date Begin - End: 6/11/2013 Drill Company: EDI BORING LOG B-1  
 Logged By: P. Rust Drill Crew: C. Krozel, J. Hunt-Lynn  
 Hor.-Vert. Datum: Not Available Drill Equipment: CME-75 (truck-mounted) Hammer Type - Drop: 140 lb. Auto - 30 in.  
 Exploration Plunge: -90 degrees Exploration Method: Hollow Stem Auger  
 Weather: Auger Diameter: 8 in. O.D.

## FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log	No Coordinates Available No Elevation Available  Surface Condition: Bottom of Excavated Pit 7-12 ft bgs
35-36.5'	B-1	17	5'	2143	708		Silty SAND (SM): red brown, wet, medium dense
45-46.5'	B-1	16	5'	2757	ND		
55-56.5'	B-1			2859	ND		
40							Sandy CLAY (CL): very fine to fine sand, red brown, dry, hard
45							
50							
55							
60							
65							

The exploration was terminated at approximately 56.5 ft. below ground surface

## GROUNDWATER LEVEL INFORMATION:

☒ Perched groundwater was observed at approximately 35 ft. below ground surface during drilling.

## GENERAL NOTES:



PROJECT NO.: 132881  
 DRAWN BY: PD  
 CHECKED BY: PR  
 DATE: 6/21/2013  
 REVISED:

## BORING LOG B-1

Halcon Beeson - Well 29  
 Loco Hills  
 Eddy County, New Mexico

PLATE

B-1

PAGE: 2 of 2




Date Begin - End: <u>6/10/2013</u>	Drill Company: <u>EDI</u>	<b>BORING LOG B-2</b>
Logged By: <u>P. Rust</u>	Drill Crew: <u>C. Krozel, J. Hunt-Lynn</u>	
Hor.-Vert. Datum: <u>Not Available</u>	Drill Equipment: <u>CME-75 (truck-mounted)</u>	Hammer Type - Drop: <u>140 lb. Auto - 30 in.</u>
Exploration Plunge: <u>-90 degrees</u>	Exploration Method: <u>Hollow Stem Auger</u>	
Weather: _____	Auger Diameter: <u>8 in. O.D.</u>	

FIELD EXPLORATION						
Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log
						No Coordinates Available No Elevation Available  Surface Condition: Bottom of Excavated Pit 3-4 ft bgs
5		B-2 5-6.5'	18 in.	243	6244	Poorly-Graded SAND (SP): fine grained, red brown, moist, medium dense, calcareous and weakly cemented
10						
15		B-2 15-16.5'		332	2896	
20						Clayey SAND (SC): very fine grained to fine grained, red brown, moist, medium dense
25		B-2 25-26.5'	18 in.	375	2896	CLAY (CL): red brown, moist, firm
30						
						Poorly-Graded SAND (SP): fine grained, red brown, moist, medium dense

<p><b>KLEINFELDER</b> Bright People. Right Solutions.</p>	PROJECT NO.: <u>132881</u>	<b>BORING LOG B-2</b>	<b>PLATE</b>  <b>B-2</b>
	DRAWN BY: <u>PD</u>		
	CHECKED BY: <u>PR</u>	Halcon Beeson - Well 29 Loco Hills Eddy County, New Mexico	
	DATE: <u>6/21/2013</u>		
REVISED: _____			PAGE: 1 of 2

<b>Date Begin - End:</b> <u>6/10/2013</u>	<b>Drill Company:</b> <u>EDI</u>	<b>BORING LOG B-2</b>
<b>Logged By:</b> <u>P. Rust</u>	<b>Drill Crew:</b> <u>C. Krozel, J. Hunt-Lynn</u>	
<b>Hor.-Vert. Datum:</b> <u>Not Available</u>	<b>Drill Equipment:</b> <u>CME-75 (truck-mounted)</u>	
<b>Exploration Plunge:</b> <u>-90 degrees</u>	<b>Exploration Method:</b> <u>Hollow Stem Auger</u>	
<b>Weather:</b>	<b>Auger Diameter:</b> <u>8 in. O.D.</u>	
<b>Hammer Type - Drop:</b> <u>140 lb. Auto - 30 in.</u>		

FIELD EXPLORATION						
Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log
No Coordinates Available No Elevation Available Surface Condition: Bottom of Excavated Pit 3-4 ft bgs						
35-36.5'	B-2	18 in.	228	3136		Poorly-Graded SAND (SP): fine grained, red brown, moist, medium dense
45-46.5'	B-2	18 in.	315	ND		CLAY (CL): red brown, moist
55-56.5'	B-2	16 in.	148	ND		Very hard at 55 ft bgs
The exploration was terminated at approximately 56.5 ft. below ground surface						
GROUNDWATER LEVEL INFORMATION: Groundwater was not encountered during drilling or after completion.						
GENERAL NOTES:						



PROJECT NO.: 132881  
DRAWN BY: PD  
CHECKED BY: PR  
DATE: 6/21/2013  
REVISED:

## BORING LOG B-2

Halcon Beeson - Well 29  
Loco Hills  
Eddy County, New Mexico

PLATE

B-2

PAGE: 2 of 2

Date Begin - End: 6/10/2013 Drill Company: EDI BORING LOG B-3  
 Logged By: P. Rust Drill Crew: C. Krozel, J. Hunt-Lynn  
 Hor.-Vert. Datum: Not Available Drill Equipment: CME-75 (truck-mounted) Hammer Type - Drop: 140 lb. Auto - 30 in.  
 Exploration Plunge: -90 degrees Exploration Method: Hollow Stem Auger  
 Weather: Auger Diameter: 8 in. O.D.

## FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log	
							No Coordinates Available No Elevation Available Surface Condition: Sagebrush over sand dunes
5							Clayey SAND (SC): red brown, dry, medium dense
10		B-3 10-11.5'	17 in.		ND		CALICHE: pale red, dry, medium dense
15							Poorly-Graded SAND (SP): very fine grained to fine grained, pale red, dry, medium dense, some clay
20		B-3 20-21.5'	16 in.		ND		
25							
30		B-3 30-31.5'			ND		Very dense at 30 ft bgs
The exploration was terminated at approximately 31.5 ft. below ground surface							GROUNDWATER LEVEL INFORMATION: Groundwater was not encountered during drilling or after completion. GENERAL NOTES:



PROJECT NO.: 132881  
 DRAWN BY: PD  
 CHECKED BY: PR  
 DATE: 6/21/2013  
 REVISED:

## BORING LOG B-3

Halcon Beeson - Well 29  
 Loco Hills  
 Eddy County, New Mexico

PLATE

B-3

Date Begin - End: 6/11/2013	Drill Company: EDI	<b>BORING LOG B-4</b>
Logged By: P. Rust	Drill Crew: C. Krozel, J. Hunt-Lynn	
Hor.-Vert. Datum: Not Available	Drill Equipment: CME-75 (truck-mounted)	Hammer Type - Drop: 140 lb. Auto - 30 in.
Exploration Plunge: -90 degrees	Exploration Method: Hollow Stem Auger	
Weather:	Auger Diameter: 8 in. O.D.	

FIELD EXPLORATION						
Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log
						No Coordinates Available No Elevation Available  Surface Condition: Sagebrush over sand dunes
5						<b>CALICHE:</b> pale red, dry, very dense
10		B-4 10-11.5'	15 in.	2423	ND	
15						
20		B-4 20-21.5'	16 in.	2663	ND	<b>CLAY (CL):</b> red brown, dry, very hard
25						<b>Poorly-Graded SAND with Silt (SP-SM):</b> very fine grained to fine grained, red brown, dry, very dense
30		B-4 30-31.5'	15 in.	2664	ND	

The exploration was terminated at approximately 31.5 ft. below ground surface

**GROUNDWATER LEVEL INFORMATION:**  
 Groundwater was not encountered during drilling or after completion.  
**GENERAL NOTES:**

Date Begin - End: 6/11/2013	Drill Company: EDI	<b>BORING LOG B-5</b>
Logged By: P. Rust	Drill Crew: C. Krozel, J. Hunt-Lynn	
Hor.-Vert. Datum: Not Available	Drill Equipment: CME-75 (truck-mounted)	Hammer Type - Drop: 140 lb. Auto - 30 in.
Exploration Plunge: -90 degrees	Exploration Method: Hollow Stem Auger	
Weather:	Auger Diameter: 8 in. O.D.	

FIELD EXPLORATION						
Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	TPH (ppm)	Chloride (ppm)	Graphical Log
						No Coordinates Available No Elevation Available  Surface Condition: Sagebrush over sand dunes
5						<b>CALICHE:</b> pale red, dry, dense
10		B-5 10-11.5'	14 in.	2486	ND	
15						
20		B-5 20-21.5'	15 in.	2735	ND	<b>CLAY (CL):</b> red brown, dry, hard, some calcareous nodules
25						<b>Silty SAND (SM):</b> fine grained, red, dry, dense, weakly cemented
30		B-5 30-31.5'	17 in.	2712	ND	
The exploration was terminated at approximately 31.5 ft. below ground surface						

GROUNDWATER LEVEL INFORMATION:  
 Groundwater was not encountered during drilling or after completion.  
GENERAL NOTES:

<p><b>KLEINFELDER</b> Bright People. Right Solutions.</p>	PROJECT NO: 132881	<b>BORING LOG B-5</b>  Halcon Beeson - Well 29 Loco Hills Eddy County, New Mexico	PLATE  <b>B-5</b>
	DRAWN BY: PD CHECKED BY: PR DATE: 6/21/2013 REVISED:		PAGE: 1 of 1

**APPENDIX B**  
**Soil Analytical Data**



**HALL  
ENVIRONMENTAL  
ANALYSIS  
LABORATORY**

*Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)*

June 24, 2013

Eileen Shannon  
Kleinfelder  
9019 Washington NE Building A  
Albuquerque, NM 87113  
TEL: (505) 344-7373  
FAX: (505) 344-1711

RE: Halcon Well 29

OrderNo.: 1306520

Dear Eileen Shannon:

Hall Environmental Analysis Laboratory received 13 sample(s) on 6/12/2013 for the analyses presented in the following report.

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

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

Sincerely,

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-1 @ 5'

Project: Halcon Well 29

Collection Date: 6/11/2013 12:35:00 PM

Lab ID: 1306520-001

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 12:03:09 PM	7884
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 12:03:09 PM	7884
Surr: DNOP	87.2	63-147		%REC	1	6/17/2013 12:03:09 PM	7884
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/14/2013 7:13:37 PM	7909
Surr: BFB	94.0	80-120		%REC	1	6/14/2013 7:13:37 PM	7909

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit



**Analytical Report**

Lab Order 1306520

Date Reported: 6/24/2013

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Kleinfelder**Client Sample ID:** B-1 @ 15'**Project:** Halcon Well 29**Collection Date:** 6/11/2013 1:00:00 PM**Lab ID:** 1306520-002**Matrix:** SOIL**Received Date:** 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: JRR	
Chloride	4500	300		mg/Kg	200	6/18/2013 10:53:06 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-1 @ 55'

Project: Halcon Well 29

Collection Date: 6/11/2013 4:40:00 PM

Lab ID: 1306520-003

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 12:24:50 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 12:24:50 PM	7907
Surr: DNOP	86.7	63-147		%REC	1	6/17/2013 12:24:50 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/14/2013 7:42:16 PM	7909
Surr: BFB	93.7	80-120		%REC	1	6/14/2013 7:42:16 PM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	46	1.5		mg/Kg	1	6/17/2013 7:42:11 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Analytical Report**

Lab Order 1306520

Date Reported: 6/24/2013

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Kleinfelder**Client Sample ID:** B-2 @ 5'**Project:** Halcon Well 29**Collection Date:** 6/10/2013 9:00:00 AM**Lab ID:** 1306520-004**Matrix:** SOIL**Received Date:** 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	5900	300		mg/Kg	200	6/18/2013 11:05:30 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Kleinfelder**Client Sample ID:** B-2 @ 25'**Project:** Halcon Well 29**Collection Date:** 6/10/2013 10:00:00 AM**Lab ID:** 1306520-005**Matrix:** SOIL**Received Date:** 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 1:30:05 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 1:30:05 PM	7907
Surr: DNOP	86.1	63-147		%REC	1	6/17/2013 1:30:05 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/14/2013 11:02:34 PM	7909
Surr: BFB	93.5	80-120		%REC	1	6/14/2013 11:02:34 PM	7909

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-2 @ 55'

Project: Halcon Well 29

Collection Date: 6/10/2013 12:10:00 PM

Lab ID: 1306520-006

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 1:51:56 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 1:51:56 PM	7907
Surr: DNOP	86.0	63-147		%REC	1	6/17/2013 1:51:56 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/14/2013 11:31:14 PM	7909
Surr: BFB	93.5	80-120		%REC	1	6/14/2013 11:31:14 PM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	45	1.5		mg/Kg	1	6/17/2013 8:31:50 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Kleinfelder**Client Sample ID:** B-3 @ 10'**Project:** Halcon Well 29**Collection Date:** 6/10/2013 1:45:00 AM**Lab ID:** 1306520-007**Matrix:** SOIL**Received Date:** 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 3:34:31 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 3:34:31 PM	7907
Surr: DNOP	81.1	63-147		%REC	1	6/17/2013 3:34:31 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/14/2013 11:59:56 PM	7909
Surr: BFB	93.5	80-120		%REC	1	6/14/2013 11:59:56 PM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	4.0	1.5		mg/Kg	1	6/17/2013 8:56:39 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-3 @ 30'

Project: Halcon Well 29

Collection Date: 6/10/2013 4:10:00 PM

Lab ID: 1306520-008

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 3:56:07 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 3:56:07 PM	7907
Surr: DNOP	81.8	63-147		%REC	1	6/17/2013 3:56:07 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/15/2013 12:28:31 AM	7909
Surr: BFB	93.8	80-120		%REC	1	6/15/2013 12:28:31 AM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	2.7	1.5		mg/Kg	1	6/17/2013 9:21:28 PM	7945

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-4 @ 10'

Project: Halcon Well 29

Collection Date: 6/11/2013 10:10:00 AM

Lab ID: 1306520-009

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: JRR
Chloride	5.6	1.5		mg/Kg	1	6/17/2013 10:11:06 PM	7945

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit



**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Kleinfelder**Client Sample ID:** B-4 @ 20'**Project:** Halcon Well 29**Collection Date:** 6/11/2013 10:30:00 AM**Lab ID:** 1306520-010**Matrix:** SOIL**Received Date:** 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 4:39:43 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 4:39:43 PM	7907
Surr: DNOP	81.8	63-147		%REC	1	6/17/2013 4:39:43 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/15/2013 12:57:08 AM	7909
Surr: BFB	94.1	80-120		%REC	1	6/15/2013 12:57:08 AM	7909

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-4 @ 30'

Project: Halcon Well 29

Collection Date: 6/11/2013 11:00:00 AM

Lab ID: 1306520-011

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/19/2013 11:42:04 AM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/19/2013 11:42:04 AM	7907
Surr: DNOP	70.0	63-147		%REC	1	6/19/2013 11:42:04 AM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/15/2013 1:25:41 AM	7909
Surr: BFB	92.8	80-120		%REC	1	6/15/2013 1:25:41 AM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	30	1.5		mg/Kg	1	6/18/2013 11:17:55 PM	7946

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

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Kleinfelder

Client Sample ID: B-5 @ 10'

Project: Halcon Well 29

Collection Date: 6/11/2013 7:30:00 AM

Lab ID: 1306520-012

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/18/2013 7:52:38 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/18/2013 7:52:38 PM	7907
Surr: DNOP	95.1	63-147		%REC	1	6/18/2013 7:52:38 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/15/2013 1:54:12 AM	7909
Surr: BFB	93.0	80-120		%REC	1	6/15/2013 1:54:12 AM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	4.4	1.5		mg/Kg	1	6/18/2013 11:30:19 PM	7946

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
				Page 12 of 17

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Kleinfelder

Client Sample ID: B-5 @ 30'

Project: Halcon Well 29

Collection Date: 6/11/2013 8:30:00 AM

Lab ID: 1306520-013

Matrix: SOIL

Received Date: 6/12/2013 4:44:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/17/2013 5:45:15 PM	7907
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/17/2013 5:45:15 PM	7907
Surr: DNOP	64.2	63-147		%REC	1	6/17/2013 5:45:15 PM	7907
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/15/2013 2:22:51 AM	7909
Surr: BFB	94.4	80-120		%REC	1	6/15/2013 2:22:51 AM	7909
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: JRR
Chloride	53	1.5		mg/Kg	1	6/18/2013 11:42:44 PM	7946

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1306520

24-Jun-13

Client: Kleinfelder  
Project: Halcon Well 29

Sample ID: MB-7945	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 7945	RunNo: 11366								
Prep Date: 6/17/2013	Analysis Date: 6/17/2013	SeqNo: 321063	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-7945	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 7945	RunNo: 11366								
Prep Date: 6/17/2013	Analysis Date: 6/17/2013	SeqNo: 321064	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	96.8	90	110			

Sample ID: MB-7946	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 7946	RunNo: 11366								
Prep Date: 6/17/2013	Analysis Date: 6/17/2013	SeqNo: 321113	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-7946	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 7946	RunNo: 11366								
Prep Date: 6/17/2013	Analysis Date: 6/17/2013	SeqNo: 321114	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.7	90	110			

## Qualifiers:

- |  |  |
|--|--|
| * Value exceeds Maximum Contaminant Level.   | B Analyte detected in the associated Method Blank    |
| 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               |
| O RSD is greater than RSDlimit               | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits       | RL Reporting Detection Limit                         |

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1306520

24-Jun-13

Client: Kleinfelder  
Project: Halcon Well 29

Sample ID: MB-7884 SampType: MBLK TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: PBS Batch ID: 7884 RunNo: 11274

Prep Date: 6/12/2013 Analysis Date: 6/13/2013 SeqNo: 319035 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		106	63	147			

Sample ID: LCS-7884 SampType: LCS TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: LCSS Batch ID: 7884 RunNo: 11274

Prep Date: 6/12/2013 Analysis Date: 6/13/2013 SeqNo: 319036 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.6	77.1	128			
Surr: DNOP	5.4		5.000		108	63	147			

Sample ID: MB-7907 SampType: MBLK TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: PBS Batch ID: 7907 RunNo: 11331

Prep Date: 6/13/2013 Analysis Date: 6/17/2013 SeqNo: 320321 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.3		10.00		83.2	63	147			

Sample ID: LCS-7907 SampType: LCS TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: LCSS Batch ID: 7907 RunNo: 11331

Prep Date: 6/13/2013 Analysis Date: 6/17/2013 SeqNo: 320322 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.4	77.1	128			
Surr: DNOP	4.4		5.000		87.5	63	147			

Sample ID: 1306520-003AMS SampType: MS TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: B-1 @ 55' Batch ID: 7907 RunNo: 11331

Prep Date: 6/13/2013 Analysis Date: 6/17/2013 SeqNo: 320449 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.10	0	79.1	61.3	138			
Surr: DNOP	3.9		5.010		78.7	63	147			

## Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

Full Environmental Analysis Laboratory, Inc.

WO#: 1306520

24-Jun-13

Client: Kleinfelder  
Project: Halcon Well 29

Sample ID: 1306520-003AMSD SampType: MSD TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: B-1 @ 55' Batch ID: 7907 RunNo: 11331

Prep Date: 6/13/2013 Analysis Date: 6/17/2013 SeqNo: 320523 Units: mg/Kg

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	49.90	0	84.6	61.3	138	6.26	20	
Surr: DNOP	4.1		4.990		82.5	63	147	0	0	

Sample ID: LCS-7942 SampType: LCS TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: LCSS Batch ID: 7942 RunNo: 11358

Prep Date: 6/17/2013 Analysis Date: 6/18/2013 SeqNo: 321057 Units: %REC

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.8		5.000		75.2	63	147			

Sample ID: MB-7942 SampType: MBLK TestCode: EPA Method 8015D: Diesel Range Organics

Client ID: PBS Batch ID: 7942 RunNo: 11358

Prep Date: 6/17/2013 Analysis Date: 6/18/2013 SeqNo: 321058 Units: %REC

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	7.3		10.00		73.4	63	147			

## Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2 for VOA and TOC only.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1306520

24-Jun-13

Client: Kleinfelder  
Project: Halcon Well 29

Sample ID: MB-7909	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 7909	RunNo: 11327								
Prep Date: 6/13/2013	Analysis Date: 6/14/2013	SeqNo: 320050	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.9	80	120			

Sample ID: LCS-7909	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 7909	RunNo: 11327								
Prep Date: 6/13/2013	Analysis Date: 6/14/2013	SeqNo: 320051	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	62.6	136			
Surr: BFB	1000		1000		102	80	120			

## Qualifiers:

- |  |  |
|--|--|
| * Value exceeds Maximum Contaminant Level.   | B Analyte detected in the associated Method Blank    |
| 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               |
| O RSD is greater than RSDlimit               | P Sample pH greater than 2 for VOA and TOC only.     |
| R RPD outside accepted recovery limits       | RL Reporting Detection Limit                         |



# Sample Log-In Check List

Client Name: Klein

Work Order Number: 1306520

RcptNo: 1

Received by/date: AG 06/12/13

Logged By: Anne Thorne

6/12/2013 4:44:00 PM

*Anne Thorne*

Completed By: Anne Thorne

6/13/2013

*Anne Thorne*

Reviewed By: IO

06/13/13

## Chain of Custody

1. Custody seals intact on sample bottles? Yes ☒ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

## Log In

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

# of preserved  
bottles checked  
for pH:

(<2 or >12 unless noted)

Adjusted? \_\_\_\_\_

Checked by: \_\_\_\_\_

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

17. Additional remarks:

## 18. Cooler Information

Cooler No.	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.9	Good	Not Present			







# DOCUMENT TRANSMITTAL FORM

<b>TO:</b> Mr. Mike Bratcher NMOCD District 2 811 S First Street Artesia, NM 88210	<b>PAGE</b>	1	<b>OF</b>	1
	<b>TRANSMITTAL DATE:</b>	8/27/2013		
	<b>TRANSMITTAL DCN:</b>	132881.2-ALB13TS001		
<b>RETURN RESPONSES/COMMENTS TO:</b>		Eileen Shannon		
<b>RETURN RESPONSES/COMMENTS BY:</b>		9/10/2013		

<b>PROJECT NO.:</b>	132881	<b>PROJECT NAME:</b>	Halcòn - Beeson Remediation
<b>ACTIVITY/DESCRIPTION:</b>	Report		

DOCUMENTS BEING TRANSMITTED				
ITEM	REV.	PAGES	DATE	DESIGNATOR
Results of Phase II Investigation and Work Plan for Closure	0	39	8/27/2013	132881.2-ALB13RP001
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<b>INSTRUCTIONS/REMARKS</b>  Copies to: Jim Amos, Drew Hall & Steve Milinichik	<input type="checkbox"/> Mark previous issues "obsolete", "superceded", or "uncontrolled" <input type="checkbox"/> Destroy previous affected material <input type="checkbox"/> Return old material with this record <input checked="" type="checkbox"/> New issue (no previous copies received) <input type="checkbox"/> Replace with revised/new material <input type="checkbox"/> Maintain as controlled copy <input type="checkbox"/> Not Applicable
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<b>RECEIPT AND READ ACKNOWLEDGEMENT</b> Please Sign and Return To:  <b>ADMINISTRATIVE SUPERVISOR</b>  9019 WASHINGTON NE, BUILDING A ALBUQUERQUE, NM 87113 FAX: 505.344.1711 OR KKNIGHTS@KLEINFELDER.COM	<div style="border: 2px solid black; padding: 10px; text-align: center;"><b>RECEIVED</b> AUG 30 2013 NMOCD ARTESIA</div>
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<b>CLIENT RECEIPT</b>	<b>PRINT NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
Complete & Return this page via Fax/Mail/Email			

<b>KLEINFELDER RECEIPT</b>	<b>PRINT NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
Complete this section upon receipt from client			