

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

December 12, 2014

Mr. Solomon Hughes  
Bureau of Land Management  
620 E. Greene St  
Carlsbad, NM 88220  
Via E-mail

Mr. Mike Bratcher  
NMOCD District 2  
811 S. First Street  
Artesia, New Mexico 88210  
Via E-mail and US Mail

RE: Southwest Royalties North Hackberry Yates Well #105 Revision #2

Dear Mr. Hughes and Mr. Bratcher:

This revised final remediation proposal presents the results of the recent vertical investigation. It supersedes and simplifies previous communications.

## Sampling Results

Plate 1 presents the locations of the samples collected on September 23, 2014 and December 4, 2014. Table 1 presents the results of the sampling and the laboratory reports are attached to this submittal as well. On December 4, 2014, we collected vertical delineation samples (PL-1-N and PL-3-C) and a sample of the asphalt hardpan.

Sample Name	Collection Date	Chloride	DRO	MRO	GRO	DRO +		TPH	BTEX
						GRO			
all units mg/kg									
Asphalt Hardpan	12/4/2014		170	1000	nd				
PL-1-C	9/25/2014	0							
PL-1-N	9/25/2014	1900							
PL-1-N 1.5	12/4/2014	39							
PL-1-N-3.0 ft	12/4/14/	ND							
PL-1-S	9/25/2014	0							
PL-2-C	9/25/2014	0	ND	ND	ND				
PL-2-N	9/25/2014	58	ND	ND	ND				ND
PL-2-S	9/25/2014	0							
PL-3-C	9/25/2014	4200	ND	ND	ND				ND
PL-3-C-1.5	12/4/2014	190							
PL-3-C-3.0 feet	12/4/2014	ND							
PL-3-N	9/25/2014	370							
PL-3-S	9/25/2014	0							
PL-4-C	9/25/2014	0	ND	ND	ND				ND
PL-4-N	9/25/2014	470							
PL-4-S	9/25/2014	510							
S-1	9/25/2014	260							
S-2	9/25/2014	ND							
S-3	9/25/2014	ND							
S-4	9/25/2014	ND							
Stockpile East	9/25/2014	410							
Stockpile West	9/25/2014	880							

## Sampling Methods

The photograph below (left) shows the sampling methodology (from PL-3-C). The sample locations of September 25 were obvious due to residual flagging and sample excavations.

As shown, we used a post-hole digger to collect samples 1.5 and 3.0 feet below the September samples at the two locations that showed relatively high chloride concentrations.



### Discussion

The sampling results from September and earlier campaigns show that petroleum hydrocarbons are not present in samples potentially impacted by the recent release. The soils impacted by the 2014 crude spill have been removed to disposal – with the exception of the west stockpile that exhibits chloride less than 1000 mg/kg.

The sample of asphalt hardpan (photograph below) has a TPH concentration of 1170 mg/kg and DRO+GRO of 1170.



Although the release is proximal to a watercourse, the 4-foot burial of the west stockpile effectively isolates this material from the environment. The 4-foot burial of the asphalt hardpan will also isolate this material from the environment. As groundwater is at least 40-feet below the arroyo bottom, the burial of the hardpan about 30-feet above the arroyo (i.e. adjacent to the production pad) creates a distance of about 70 feet between the burial and the groundwater surface. Given the proximity and age of the up gradient potash tailings pond, the probability that alluvial groundwater is significantly impaired by pond leakage is very high.

### Proposed Remedy

Southwest Royalties would like to proceed with the remedy described in the attachment as soon as possible.

Please contact me if you have any questions regarding the results or the proposed final remedy.

Sincerely,  
R.T. Hicks Consultants

Randall Hicks

Copy: Southwest Royalties

## **Remedy Instruction to Contractor**

1. Distribute the soil in the West Stockpile in the excavation such that it will rest more than 4-feet below the final grade after restoration.
2. If approved by OCD and BLM, as a voluntary effort, place the surface asphaltic material that is near the release footprint into the trench such that it lies more than 4-feet below natural grade
3. If the trench is filled to within 4-feet of final grade and soil in the West Stockpile remains, remove the stockpile to disposal.
4. Borrow clean sand from adjacent to the release footprint as required to restore the natural topography.
5. As a voluntary effort, restore the original drainage pattern by moving small volumes of sand to create a channel and dune (see Plate 1).
6. Seed the site employing the mixture approved/recommended by BLM.



Plate 1: Google Earth image showing sample locations and drainage pattern to be re-established (dashed blue line). The original drainage is visible in the 10/21/96 Google Earth image.



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)

December 10, 2014

Randall Hicks

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW

Suite F-142

Albuquerque, NM 87104

TEL: (505) 266-5004

FAX (505) 266-0745

RE: SWR North Hackberry 105

OrderNo.: 1412311

Dear Randall Hicks:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/5/2014 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.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1412311

Date Reported: 12/10/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-1-N-1.5

**Project:** SWR North Hackberry 105

**Collection Date:** 12/4/2014 12:16:00 PM

**Lab ID:** 1412311-001

**Matrix:** SOIL

**Received Date:** 12/5/2014 1:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	39	30		mg/Kg	20	12/8/2014 11:43:19 AM	16713

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1412311

Date Reported: 12/10/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-1-N-3

**Project:** SWR North Hackberry 105

**Collection Date:** 12/4/2014 12:18:00 PM

**Lab ID:** 1412311-002

**Matrix:** SOIL

**Received Date:** 12/5/2014 1:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	12/8/2014 12:08:09 PM	16713

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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1412311

Date Reported: 12/10/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-3-C-1.5

**Project:** SWR North Hackberry 105

**Collection Date:** 12/4/2014 12:24:00 PM

**Lab ID:** 1412311-003

**Matrix:** SOIL

**Received Date:** 12/5/2014 1:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	190	30		mg/Kg	20	12/8/2014 12:20:34 PM	16713

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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1412311

Date Reported: 12/10/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-3-C-3

**Project:** SWR North Hackberry 105

**Collection Date:** 12/4/2014 12:27:00 PM

**Lab ID:** 1412311-004

**Matrix:** SOIL

**Received Date:** 12/5/2014 1:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	12/8/2014 12:32:59 PM	16713

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1412311

Date Reported: 12/10/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** ASPHALT HARDPAN

**Project:** SWR North Hackberry 105

**Collection Date:** 12/4/2014 12:16:00 PM

**Lab ID:** 1412311-005

**Matrix:** SOIL

**Received Date:** 12/5/2014 1:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	170	99		mg/Kg	10	12/8/2014 12:25:23 PM	16709
Motor Oil Range Organics (MRO)	1000	490		mg/Kg	10	12/8/2014 12:25:23 PM	16709
Surr: DNOP	0	63.5-128	S	%REC	10	12/8/2014 12:25:23 PM	16709
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/8/2014 11:39:08 AM	16689
Surr: BFB	89.9	80-120		%REC	1	12/8/2014 11:39:08 AM	16689

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.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1412311

10-Dec-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** SWR North Hackberry 105

Sample ID	<b>MB-16713</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>16713</b>	RunNo:	<b>23009</b>					
Prep Date:	<b>12/8/2014</b>	Analysis Date:	<b>12/8/2014</b>	SeqNo:	<b>679787</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	<b>LCS-16713</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>16713</b>	RunNo:	<b>23009</b>					
Prep Date:	<b>12/8/2014</b>	Analysis Date:	<b>12/8/2014</b>	SeqNo:	<b>679788</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.4	90	110			

**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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1412311

10-Dec-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** SWR North Hackberry 105

Sample ID <b>MB-16709</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>16709</b>		RunNo: <b>22978</b>							
Prep Date: <b>12/8/2014</b>	Analysis Date: <b>12/8/2014</b>		SeqNo: <b>678888</b>		Units: <b>mg/Kg</b>					
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	6.8		10.00		68.1	63.5	128			

Sample ID <b>LCS-16709</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>16709</b>		RunNo: <b>22978</b>							
Prep Date: <b>12/8/2014</b>	Analysis Date: <b>12/8/2014</b>		SeqNo: <b>678889</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.3	68.6	130			
Surr: DNOP	3.9		5.000		78.4	63.5	128			

**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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1412311

10-Dec-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** SWR North Hackberry 105

Sample ID <b>MB-16689</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>16689</b>		RunNo: <b>22986</b>							
Prep Date: <b>12/5/2014</b>	Analysis Date: <b>12/8/2014</b>		SeqNo: <b>679318</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		89.8	80	120			

Sample ID <b>LCS-16689</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>16689</b>		RunNo: <b>22986</b>							
Prep Date: <b>12/5/2014</b>	Analysis Date: <b>12/8/2014</b>		SeqNo: <b>679319</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.4	65.8	139			
Surr: BFB	980		1000		97.7	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.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

**Sample Log-In Check List**

Client Name: RT HICKS

Work Order Number: 1412311

RcptNo: 1

Received by/date: CS 12/05/14

Logged By: **Celina Sessa** 12/5/2014 1:00:00 PM *Celina Sessa*

Completed By: **Celina Sessa** 12/5/2014 1:10:34 PM *Celina Sessa*

Reviewed By: AT 12/05/14

**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	3.8	Good	Not Present			





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)

October 01, 2014

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

RE: North Hackberry Yates 105

OrderNo.: 1409D42

Dear Randall Hicks:

Hall Environmental Analysis Laboratory received 6 sample(s) on 9/26/2014 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.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** R.T. Hicks Consultants, LTD  
**Project:** North Hackberry Yates 105

**Lab Order:** 1409D42

**Lab ID:** 1409D42-001 **Collection Date:** 9/25/2014 10:32:00 AM  
**Client Sample ID:** West Stockpile **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGP
Chloride	880	30		mg/Kg	20	9/29/2014 6:31:22 PM	15595

**Lab ID:** 1409D42-002 **Collection Date:** 9/25/2014 10:12:00 AM  
**Client Sample ID:** East Stockpile **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGP
Chloride	410	30		mg/Kg	20	9/29/2014 6:43:46 PM	15595

**Lab ID:** 1409D42-003 **Collection Date:** 9/25/2014 9:08:00 AM  
**Client Sample ID:** S-1 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGP
Chloride	260	30		mg/Kg	20	9/29/2014 6:56:10 PM	15595

**Lab ID:** 1409D42-004 **Collection Date:** 9/25/2014 9:10:00 AM  
**Client Sample ID:** S-2 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGP
Chloride	ND	30		mg/Kg	20	9/29/2014 7:08:35 PM	15595

**Lab ID:** 1409D42-005 **Collection Date:** 9/25/2014 9:12:00 AM  
**Client Sample ID:** S-4 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGP
Chloride	ND	30		mg/Kg	20	9/29/2014 7:45:48 PM	15595

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
- S Spike Recovery 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.
- RL Reporting Detection Limit

**Analytical Report**

Lab Order: **1409D42**

Date Reported: **10/1/2014**

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** R.T. Hicks Consultants, LTD  
**Project:** North Hackberry Yates 105

**Lab Order:** 1409D42

**Lab ID:** 1409D42-006

**Collection Date:** 9/25/2014 9:13:00 AM

**Client Sample ID:** S-3

**Matrix:** SOIL

<b>Analyses</b>	<b>Result</b>	<b>RL</b>	<b>Qual</b>	<b>Units</b>	<b>DF</b>	<b>Date Analyzed</b>	<b>Batch ID</b>
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**EPA METHOD 300.0: ANIONS**

Analyst: **LGP**

Chloride	ND	30		mg/Kg	20	9/29/2014 7:58:12 PM	15595
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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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1409D42

01-Oct-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** North Hackberry Yates 105

Sample ID	<b>MB-15595</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>15595</b>	RunNo:	<b>21544</b>					
Prep Date:	<b>9/29/2014</b>	Analysis Date:	<b>9/29/2014</b>	SeqNo:	<b>630734</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	<b>LCS-15595</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>15595</b>	RunNo:	<b>21544</b>					
Prep Date:	<b>9/29/2014</b>	Analysis Date:	<b>9/29/2014</b>	SeqNo:	<b>630735</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

**Qualifiers:**

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | 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.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

**Sample Log-In Check List**

Client Name: RT HICKS

Work Order Number: 1409D42

RcptNo: 1

Received by/date: AF 09/26/14

Logged By: Lindsay Mangin 9/26/2014 10:48:00 AM *Lindsay Mangin*

Completed By: Lindsay Mangin 9/26/2014 12:23:02 PM *Lindsay Mangin*

Reviewed By: *MG 09/26/14*

**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

**Approved by client**

# 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	10.1	Good	Not Present			





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)

October 01, 2014

Randall Hicks

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW

Suite F-142

Albuquerque, NM 87104

TEL: (505) 266-5004

FAX (505) 266-0745

RE: North Hackberry Yates 105

OrderNo.: 1409D40

Dear Randall Hicks:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/26/2014 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.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-1 S

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:31:00 AM

**Lab ID:** 1409D40-001

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	9/29/2014 3:12:49 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-1 Center

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:29:00 AM

**Lab ID:** 1409D40-002

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	9/29/2014 3:50:03 PM	15595

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.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-1 North

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:31:00 AM

**Lab ID:** 1409D40-003

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	1900	75		mg/Kg	50	10/1/2014 12:37:45 AM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-2 North

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:33:00 AM

**Lab ID:** 1409D40-004

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	58	30		mg/Kg	20	9/29/2014 4:14:52 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-2 Center

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:35:00 AM

**Lab ID:** 1409D40-005

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/29/2014 1:31:20 PM	15534
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/29/2014 1:31:20 PM	15534
Surr: DNOP	110	57.9-140		%REC	1	9/29/2014 1:31:20 PM	15534
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/28/2014 5:31:02 PM	15551
Surr: BFB	89.8	80-120		%REC	1	9/28/2014 5:31:02 PM	15551
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.049		mg/Kg	1	9/28/2014 5:31:02 PM	15551
Toluene	ND	0.049		mg/Kg	1	9/28/2014 5:31:02 PM	15551
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2014 5:31:02 PM	15551
Xylenes, Total	ND	0.098		mg/Kg	1	9/28/2014 5:31:02 PM	15551
Surr: 4-Bromofluorobenzene	93.2	80-120		%REC	1	9/28/2014 5:31:02 PM	15551
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	52	30		mg/Kg	20	9/29/2014 4:27:16 PM	15595

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.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-2 South

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:36:00 AM

**Lab ID:** 1409D40-006

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	9/29/2014 4:39:41 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-3 North

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:46:00 AM

**Lab ID:** 1409D40-007

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	370	30		mg/Kg	20	9/29/2014 5:16:54 PM	15595

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

<b>Qualifiers:</b>	*	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	Page 7 of 16
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-3 Center

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:48:00 AM

**Lab ID:** 1409D40-008

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/29/2014 2:01:38 PM	15534
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/29/2014 2:01:38 PM	15534
Surr: DNOP	105	57.9-140		%REC	1	9/29/2014 2:01:38 PM	15534
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2014 5:59:36 PM	15551
Surr: BFB	90.6	80-120		%REC	1	9/28/2014 5:59:36 PM	15551
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.048		mg/Kg	1	9/28/2014 5:59:36 PM	15551
Toluene	ND	0.048		mg/Kg	1	9/28/2014 5:59:36 PM	15551
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2014 5:59:36 PM	15551
Xylenes, Total	ND	0.095		mg/Kg	1	9/28/2014 5:59:36 PM	15551
Surr: 4-Bromofluorobenzene	94.4	80-120		%REC	1	9/28/2014 5:59:36 PM	15551
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	4200	750		mg/Kg	500	10/1/2014 12:50:10 AM	15595

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.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-3 South

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:50:00 AM

**Lab ID:** 1409D40-009

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	9/29/2014 5:41:43 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-4 North

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:54:00 AM

**Lab ID:** 1409D40-010

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	470	30		mg/Kg	20	9/29/2014 5:54:08 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-4 Center

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 9:57:00 AM

**Lab ID:** 1409D40-011

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/29/2014 2:32:05 PM	15534
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/29/2014 2:32:05 PM	15534
Surr: DNOP	105	57.9-140		%REC	1	9/29/2014 2:32:05 PM	15534
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/28/2014 6:28:17 PM	15551
Surr: BFB	90.2	80-120		%REC	1	9/28/2014 6:28:17 PM	15551
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.049		mg/Kg	1	9/28/2014 6:28:17 PM	15551
Toluene	ND	0.049		mg/Kg	1	9/28/2014 6:28:17 PM	15551
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2014 6:28:17 PM	15551
Xylenes, Total	ND	0.097		mg/Kg	1	9/28/2014 6:28:17 PM	15551
Surr: 4-Bromofluorobenzene	93.3	80-120		%REC	1	9/28/2014 6:28:17 PM	15551
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	ND	30		mg/Kg	20	9/29/2014 6:06:33 PM	15595

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.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1409D40

Date Reported: 10/1/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** PL-4 South

**Project:** North Hackberry Yates 105

**Collection Date:** 9/25/2014 10:01:00 AM

**Lab ID:** 1409D40-012

**Matrix:** SOIL

**Received Date:** 9/26/2014 10:48:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	510	30		mg/Kg	20	9/29/2014 6:18:57 PM	15595

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

<b>Qualifiers:</b>	*	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.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1409D40

01-Oct-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** North Hackberry Yates 105

Sample ID	<b>MB-15595</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>15595</b>	RunNo:	<b>21544</b>					
Prep Date:	<b>9/29/2014</b>	Analysis Date:	<b>9/29/2014</b>	SeqNo:	<b>630734</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	<b>LCS-15595</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 300.0: Anions</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>15595</b>	RunNo:	<b>21544</b>					
Prep Date:	<b>9/29/2014</b>	Analysis Date:	<b>9/29/2014</b>	SeqNo:	<b>630735</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

**Qualifiers:**

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | 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.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1409D40

01-Oct-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** North Hackberry Yates 105

Sample ID <b>MB-15534</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>15534</b>		RunNo: <b>21518</b>							
Prep Date: <b>9/26/2014</b>	Analysis Date: <b>9/29/2014</b>		SeqNo: <b>630645</b>	Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	57.9	140			

Sample ID <b>LCS-15534</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>15534</b>		RunNo: <b>21518</b>							
Prep Date: <b>9/26/2014</b>	Analysis Date: <b>9/29/2014</b>		SeqNo: <b>630646</b>	Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	68.6	130			
Surr: DNOP	4.8		5.000		95.7	57.9	140			

**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
- S Spike Recovery 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.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1409D40

01-Oct-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** North Hackberry Yates 105

Sample ID <b>MB-15551</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>15551</b>		RunNo: <b>21502</b>							
Prep Date: <b>9/26/2014</b>	Analysis Date: <b>9/28/2014</b>		SeqNo: <b>628928</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		89.7	80	120			

Sample ID <b>LCS-15551</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>15551</b>		RunNo: <b>21502</b>							
Prep Date: <b>9/26/2014</b>	Analysis Date: <b>9/28/2014</b>		SeqNo: <b>628929</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	65.8	139			
Surr: BFB	940		1000		94.5	80	120			

Sample ID <b>MB-15551 MK</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>R21502</b>		RunNo: <b>21502</b>							
Prep Date:	Analysis Date: <b>9/28/2014</b>		SeqNo: <b>628939</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	900		1000		89.7	80	120			

Sample ID <b>LCS-15551 MK</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>R21502</b>		RunNo: <b>21502</b>							
Prep Date:	Analysis Date: <b>9/28/2014</b>		SeqNo: <b>628940</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	940		1000		94.5	80	120			

Sample ID <b>5ML RB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>R21524</b>		RunNo: <b>21524</b>							
Prep Date:	Analysis Date: <b>9/29/2014</b>		SeqNo: <b>629693</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	880		1000		87.7	80	120			

Sample ID <b>2.5UG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>R21524</b>		RunNo: <b>21524</b>							
Prep Date:	Analysis Date: <b>9/29/2014</b>		SeqNo: <b>629694</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	960		1000		96.1	80	120			

**Qualifiers:**

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery 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.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1409D40

01-Oct-14

**Client:** R.T. Hicks Consultants, LTD

**Project:** North Hackberry Yates 105

Sample ID	<b>MB-15551</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8021B: Volatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>15551</b>	RunNo:	<b>21502</b>					
Prep Date:	<b>9/26/2014</b>	Analysis Date:	<b>9/28/2014</b>	SeqNo:	<b>628956</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		93.3	80	120			

Sample ID	<b>LCS-15551</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8021B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>15551</b>	RunNo:	<b>21502</b>					
Prep Date:	<b>9/26/2014</b>	Analysis Date:	<b>9/28/2014</b>	SeqNo:	<b>628957</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.050	1.000	0	98.0	80	120			
Toluene	0.97	0.050	1.000	0	96.7	80	120			
Ethylbenzene	1.0	0.050	1.000	0	100	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.3	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		100	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.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

Client Name: RT HICKS

Work Order Number: 1409D40

RcptNo: 1

Received by/date: AF 09/26/14

Logged By: Lindsay Mangin 9/26/2014 10:48:00 AM *[Signature]*

Completed By: Lindsay Mangin 9/26/2014 12:14:19 PM *[Signature]*

Reviewed By: mg 09/26/14

**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)? Approved by client. 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? Yes  No   
(Note discrepancies on chain of custody)
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? Yes  No   
(If no, notify customer for authorization.)

# 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: \_\_\_\_\_

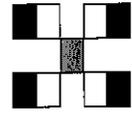
17. Additional remarks:

**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.1	Good	Not Present			

# Chain-of-Custody Record

Turn-Around Time:



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chloride
----------------------------	------	-----------------------------	--------------------	--------------------	---------------------------	---------------	--	------------------------------	-------------	-----------------	----------

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
9/25/14	931	Soil	PL-1 <del>Center</del> S	1 Glass		14091410
	929		PL-1 Center	"		-001
	931		PL-1 NORTH	"		-002
	933		PL-2 NORTH	"		-003
	935		PL-2 Center	"		-004
	936		PL-2 South	"		-005
	946		PL 3 - NORTH	"		-006
	948		PL 3 - Center	"		-007
	950		PL 3 South	"		-008
	954		PL-4 NORTH	"		-009
	957		PL 4 Center	"		-010
	10:01		PL 4 - South	"		-011
						-012

Project Name: NORTH HAZARDRY YATES 105

Project #: SPILL

Project Manager: RTA

Sampler: On Ice:  Yes  No

Sample Temperature: 10

Received by: [Signature] Date: 9/26/14 10:48

Relinquished by: [Signature] Date: 9/26 10:48

Remarks:

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