

Submit 1 Copy To Appropriate District Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
Revised July 18, 2013

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-045-35747
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name
8. Well Number WDW #2
9. OGRID Number 267595
10. Pool name or Wildcat SWD; Entrada
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 5535' GL

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☐ Other Waste Water Disposal Well

2. Name of Operator
Western Refining, Southwest, Inc.

3. Address of Operator
#50 County Road 4990 (PO Box 159), Bloomfield, NM 87413

4. Well Location

Unit Letter H : 2028 feet from the North line and 111' feet from the East line
Section 27 Township 29N Range 11W NMPM San Juan County

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐
CLOSED-LOOP SYSTEM ☐
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS.X P AND A ☐
CASING/CEMENT JOB
OTHER: Entrada Water Analysis ☒

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

As per Discharge Permit (UICI-011), Western Refining, Southwest is submitting this water analysis of the water sample from the Entrada formation. Note: this is the 2nd sample provided to the NMOCD.

Spud Date:

8/15/2016

Rig Release Date:

9/9/2016

OIL CONS. DIV DIST. 3
FEB 03 2017

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Engineer/Agent DATE 2/2/2017

Type or print name John Thompson E-mail address: john@walsheng.net PHONE: 505-320-1748

For State Use Only

APPROVED BY: [Signature] TITLE Environmental Spec. DATE 2/17/17

Conditions of Approval (if any):

13



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

February 01, 2017

Kelly Robinson

Western Refining Southwest, Inc.

#50 CR 4990

Bloomfield, NM 87413

TEL: (505) 632-4135

FAX (505) 632-3911

RE: DWD #2

OrderNo.: 1701A75

Dear Kelly Robinson:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/26/2017 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Field Parameters									
Site	Sp. Cond. (uS/cm)	TDS (g/L)	DO (mg/L)	ORP (mV)	pH (Units)	Temp. (F)	Date	Time	Sampler
DWD#2	68,017	44,200	1.33	211.9	5.13	52.3	1/25/2017	11:00 AM	Matt Krakow

Analytical Report

Lab Order 1701A75

Date Reported: 2/1/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Western Refining Southwest, Inc.

Client Sample ID: DWD 2 Formation Water

Project: DWD #2

Collection Date: 1/25/2017 11:00:00 AM

Lab ID: 1701A75-001

Matrix: AQUEOUS

Received Date: 1/26/2017 7:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Fluoride	ND	2.0		mg/L	20	1/26/2017 6:37:17 PM	R40335
Chloride	23000	2500	*	mg/L	5E	1/27/2017 7:20:01 PM	R40361
Bromide	ND	2.0		mg/L	20	1/26/2017 6:37:17 PM	R40335
Phosphorus, Orthophosphate (As P _i)	ND	10		mg/L	20	1/26/2017 6:37:17 PM	R40335
Sulfate	910	25	*	mg/L	50	1/27/2017 7:07:36 PM	R40361
Nitrate+Nitrite as N	ND	20		mg/L	100	1/27/2017 7:32:26 PM	R40361
SM2510B: SPECIFIC CONDUCTANCE							Analyst: JRR
Conductivity	94000	50		µmhos/cm	50	1/30/2017 1:40:54 PM	R40366
SM2320B: ALKALINITY							Analyst: JRR
Bicarbonate (As CaCO ₃)	255.3	20.00		mg/L CaCO ₃	1	1/30/2017 11:39:53 AM	R40366
Carbonate (As CaCO ₃)	ND	2.000		mg/L CaCO ₃	1	1/30/2017 11:39:53 AM	R40366
Total Alkalinity (as CaCO ₃)	255.3	20.00		mg/L CaCO ₃	1	1/30/2017 11:39:53 AM	R40366
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	48900	2000	*D	mg/L	1	2/1/2017 3:56:00 PM	29970
EPA 6010B: TOTAL RECOVERABLE METALS							Analyst: pmf
Calcium	1700	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Magnesium	200	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Potassium	450	20		mg/L	20	1/30/2017 10:59:56 AM	29930
Sodium	16000	500		mg/L	500	1/30/2017 11:06:12 AM	29930

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



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LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental
Project: Not Indicated
Lab ID: B17011690-001
Client Sample ID: 1701A75-001C DWD 2 Formation Water

Report Date: 01/27/17
Collection Date: 01/25/17 11:00
Date Received: 01/27/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
CORROSIVITY							
pH	6.46	s.u.		0.10		SW9040C	01/27/17 10:54 / jmg

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Report Date: 01/27/17

Project: Not Indicated

Work Order: B17011690

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW9040C	Analytical Run: ORION 720A HZW_170127A								
Lab ID: ICV	Initial Calibration Verification Standard								01/27/17 10:54
pH	8.11	s.u.	0.10	101	98	102			
Method: SW9040C	Batch: R273974								
Lab ID: B17011690-001ADUP	Sample Duplicate								01/27/17 10:54
pH	6.49	s.u.	0.10				0.5	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75

01-Feb-17

Client: Western Refining Southwest, Inc.

Project: DWD #2

Sample ID	MB		SampType:	mblk		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBW		Batch ID:	R40335		RunNo:	40335			
Prep Date:			Analysis Date:	1/26/2017		SeqNo:	1264291	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID	LCSb		SampType:	lcs		TestCode:	EPA Method 300.0: Anions			
Client ID:	LCSW		Batch ID:	R40335		RunNo:	40335			
Prep Date:			Analysis Date:	1/26/2017		SeqNo:	1264293	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Bromide	2.4	0.10	2.500	0	96.4	90	110			
Phosphorus, Orthophosphate (As P)	4.8	0.50	5.000	0	96.7	90	110			

Sample ID	MB		SampType:	mblk		TestCode:	EPA Method 300.0: Anions			
Client ID:	PBW		Batch ID:	R40361		RunNo:	40361			
Prep Date:			Analysis Date:	1/27/2017		SeqNo:	1265117	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID	LCS		SampType:	lcs		TestCode:	EPA Method 300.0: Anions			
Client ID:	LCSW		Batch ID:	R40361		RunNo:	40361			
Prep Date:			Analysis Date:	1/27/2017		SeqNo:	1265118	Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.8	0.50	5.000	0	95.5	90	110			
Sulfate	9.7	0.50	10.00	0	97.2	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	98.8	90	110			

Qualifiers:

- | | |
|---|---|
| * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix | E Value above quantitation range |
| H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits |
| ND Not Detected at the Reporting Limit | P Sample pH Not In Range |
| R RPD outside accepted recovery limits | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75

01-Feb-17

Client: Western Refining Southwest, Inc.

Project: DWD #2

Sample ID	MB-29930		SampType:	MBLK		TestCode:	EPA 6010B: Total Recoverable Metals				
Client ID:	PBW		Batch ID:	29930		RunNo:	40375				
Prep Date:	1/27/2017		Analysis Date:	1/30/2017		SeqNo:	1265583		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium	ND	1.0									
Magnesium	ND	1.0									
Potassium	ND	1.0									
Sodium	ND	1.0									

Sample ID	LCS-29930		SampType: LCS		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	LCSW		Batch ID: 29930		RunNo: 40375					
Prep Date:	1/27/2017		Analysis Date: 1/30/2017		SeqNo: 1265584		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	49	1.0	50.00	0	98.3	80	120			
Magnesium	49	1.0	50.00	0	97.3	80	120			
Potassium	47	1.0	50.00	0	94.9	80	120			
Sodium	48	1.0	50.00	0	95.4	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75

01-Feb-17

Client: Western Refining Southwest, Inc.

Project: DWD #2

Sample ID	mb-1	SampType:	mbk	TestCode:	SM2320B: Alkalinity					
Client ID:	PBW	Batch ID:	R40366	RunNo:	40366					
Prep Date:		Analysis Date:	1/30/2017	SeqNo:	1266120	Units:	mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID	lcs-1		SampType: lcs		TestCode: SM2320B: Alkalinity					
Client ID:	LCSW		Batch ID: R40366		RunNo: 40366					
Prep Date:			Analysis Date: 1/30/2017		SeqNo: 1266121		Units: mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	78.04	20.00	80.00	0	97.6	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1701A75

01-Feb-17

Client: Western Refining Southwest, Inc.

Project: DWD #2

Sample ID	MB-29970		SampType:	MBLK		TestCode:	SM2540C MOD: Total Dissolved Solids				
Client ID:	PBW		Batch ID:	29970		RunNo:	40436				
Prep Date:	1/31/2017		Analysis Date:	2/1/2017		SeqNo:	1267368		Units: mg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids	ND	20.0									

Sample ID	LCS-29970		SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW		Batch ID: 29970		RunNo: 40436					
Prep Date:	1/31/2017		Analysis Date: 2/1/2017		SeqNo: 1267369		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

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



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

Sample Log-In Check List

Client Name: Western Refining Southw

Work Order Number: 1701A75

RcptNo: 1

Received by/date: At 6/12/17

Logged By: Anne Thorne 1/26/2017 7:05:00 AM

Completed By: Anne Thorne 1/26/2017 9:13:16 AM

Reviewed By: AL 1/26/17

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? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of $>0^{\circ}\text{C}$ 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
(<2 or >12 unless noted)
Adjusted? MP
Checked by: La

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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Client: Western Refining

Mailing Address: 50 CR 4990
Bloomfield, NM 87413

Phone #: 505-632-4169

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☐ EDD (Type) _____

☐ Standard ☒ Rush 2-day

DWD#2

PD-12619031-2

Kelly Robinson

Sampler: Math Krakow

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.1

[illegible]

Date:	Time:	Relinquished by:	Received by:	Date	Time
25/17	1447	<i>[Signature]</i>	Christine Wheeler	1/25/17	1447
Date:	Time:	Relinquished by:	Received by:	Date	Time
25/17	1806	Christine Wheeler	<i>[Signature]</i>	01/26/17	0705



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 + MTBE + TPH (Gas only)	
		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_3, PO_4, SO_4)	
		8081 Pesticides / 8082 PCB's	
		8260B (VOA)	
		8270 (Semi-VOA)	
X	X	See attachment	
			Air Bubbles (V or N)

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 notated on the analytical report.

All Anions	EPA Method 300.0	1-500ml unpreserved plastic 1-125 ml H ₂ SO ₄ plastic
Alkalinity	SM2320 B	Volume will come from the 500ml unpreserved plastic
eC	SM 2510B	Volume will come from the 500ml unpreserved plastic
TDS	SM 2540 C	Volume will come from the 500ml unpreserved plastic
Cations	EPA Method 200.7	1-500ml HNO ₃ Plastic
pH	EPA Method 9040	Volume will come from the 500ml unpreserved plastic

SM = Standard Methods

EPA Methods 310.1, 150.1, 160.1, 320.1 and 120.1 have been withdrawn by EPA. Most labs have
We are accredited for all of the tests listed above and we perform these methods regularly for f

We will ship out one bottle set today as listed below. Fill all bottles to the neck and keep the sa
We can rush this work on a 1-2 business day TAT.

1-500ml unpreserved plastic

1-125ml H₂SO₄ Plastic

1-500ml HNO₃ plastic